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verdicts

- ● ● ● ● OUTSTANDING
- ● ● ● EXCELLENT
- ● ● GOOD
- ● ● ● ● MEDIOCRE
- ● POOR
- £ VALUE

ELECTRONIC MAGAZINE

Go to our website www.hi-fiworld.co.uk to buy an electronic version of this magazine, individual issues or a subscription. At present we do not offer back issues, but hope to soon.



John Major's Tory leadership election, Princess Diana's *Panorama* interview and 'Bridget Jones's Diary' – what do you remember about 1995? For me, the most important thing that happened that year was the arrival of HDCD. High Definition Compatible Digital was the first step beyond Compact Disc's omnipresent rule. Previously, CD had been regarded as 'perfect' by most – even some of our rival hi-fi magazines!

Of course, HDCD never really took off in the end - it was a worthy but marginal 'bolt on' to the existing CD specification. But it did at least prepare the ground for other audiophile digital formats like Super Audio Compact Disc (SACD) and DVD-Audio a few years later. Amazingly, these too pretty much came to nought - SACD lives on in Japan, where it's a popular niche format, while DVD-Audio failed to capture anyone's imagination, and player sales fizzled out...

Fascinatingly though, we're beginning to see these formats reappear in a different form. The Oppo DV-980H [p30] outputs DSD (Direct Stream Digital – SACD's native digital data) direct through its HDMI output, meaning it can feed the new generation of A/V receivers like Marantz's SR8002 [p53], to give excellent SACD playback. The funny thing is, it's almost a 'fringe benefit' you get when you buy a product designed to do something else (i.e. play DVD video discs). With the Oppo costing barely more than £150, it's a great way to get back into the format.

Meanwhile, DVD-Audio is reappearing in a different form too – Naim's new HDX hard disk player plays 24/96 files via a USB memory stick. Fascinating how this format lives on, albeit again not quite in the way nature intended! Back at street level, budget CD players all now feature technology trickled down from this, like 24bit DACs. These are pushing a format that, as Noel Keywood reveals on p22, is rife with technical glitches, up to a more acceptable level, as our Supertest on p15 shows.

As we approach the end of this decade, digital is moving on more than the designers of HDCD could have imagined possible. 2008 may not prove quite as eventful a year as '95 did in the tittle-tattle stakes, but in technology terms it's compelling listening.

David Price, editor



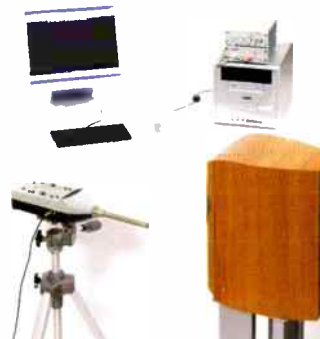
testing

To ensure the upmost accuracy in our product reviews, *Hi-Fi World* has extremely comprehensive in-house test facilities, and our test equipment - from big names like Rohde & Schwarz and Hewlett Packard - is amongst the most advanced in the world.

Loudspeakers are measured using a calibrated Bruel & Kjaer microphone feeding a Clio-based computer

analyser, using pulsed and gated sinewaves, in a large room to eliminate the room's influence. Pickup arm vibration is measured with a Bruel & Kjaer accelerometer.

No other UK hi-fi magazine has in-house testing, and none has access to such advanced tests across all types of equipment. That's why you can depend on *Hi-Fi World* reviews.



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World Radio History

news

NAIM WAV GOODBYE TO CD?

The launch of the new Naim HDX 'audiophile hard disk player' shows the direction the company is taking under the stewardship of its imaginative leader, Paul Stephenson. Surely one of the company's most important products to date, it reflects the move away from 'physical' media such as CD, towards computer music file-based players. Furthermore, it is surely also Naim's best ever sounding digital device – being capable of playing 24bit, 96kHz two channel stereo uncompressed music files which sound an order of magnitude better than 16/44 Compact Disc. Whilst the HDX will play any such file, the Naim Label aim to offer their entire catalogue in 24/96, either by download from the company's website or via USB memory sticks which the HDX plays via a front panel slot.

Said to offer, "the convenience of a portable MP3 player with the performance of a high-end CD player", the HDX rips CDs at full 16/44 bit-for-bit. The company says, "a combination of the right choice of drive, no caching, reading an absolute minimum of twice, and taking into account the C2 error data gives a 'secure' rip - extracting all the music with none of the errors – even on most copy-protected CDs". The data is copied to one of the internal 400GB drives, and every night this backs up automatically to the second internal 400GB drive. This arrangement gives around 600 uncompressed CDs, but an external USB or NAS (Network Attached Storage) drive can also be used. The HDX can also play non-DRM 24bit 88kHz or 96kHz files.

A standalone machine, it doesn't need external storage devices, sync-ing to a PC or NAS device, and doesn't need any extra software or control devices to work. However, it can also be connected to a network, play music from shared drives on a network, look up album data and get cover art. The data is collected primarily from the AMG database, which delivers rich metadata allowing searching by album and artist - as is usual - but also by composer, conductor and more. Once a collection on a hard drive(s) grows it becomes more and more essential to have good search tools and the Naim Extended Music Database excels at this, the company says. The HDX can be controlled by its front panel touch screen, the supplied remote control or with the addition of a mouse/keyboard. The HDX can also be upgraded by standard Naim XPS2 or PS555 power supplies. Good news for iTunes users is that it supports AAC, plus cooking MP3 (VBR and CBR), FLAC (up to 24/96) and WAV (up to 24/96). Vital statistics are 87x432x314mm and 10.8kg. Look out for a review in *Hi-Fi World* very soon!



LIFE IN THE FAST LANE

"Any high end product licensed by Ferrari must have an uncompromising approach to quality, breakthrough technology, and ultimate performance. The Art.Engine encompasses them all." Thus speaks G. Zambelletti of Ferrari SpA, adding that he can't think of, "a more realistic sounding speaker than this one, save perhaps a few extremely high end products from Goldmund and a few others"! This ultra high end loudspeaker comes in a limited edition of only 1,000 pieces worldwide, and is Ferrari's entry into the world of home audio, "and the single most exclusive licensed product ever to bear the Ferrari name", no less. A bi-

amplified, stereo audio system with DSP signal management and a digital wireless receiver, there are eight custom DWV 75mm (3") carbon fibre high-performance mid/woofers and one ScanSpeak custom 28mm (1.1") soft dome tweeter per channel. Four 200W digital are built into the single tower, and the primary signal input is the wireless streaming of music files or radio via iTunes running on any computer (PC or Mac), and there are also RCA phonos. Art.Engine is available in four different Ferrari colours. It is painted with actual Ferrari paint and clear coat in Rosso Corsa Red, Argento Nurburgring, Silver, Grigio Silverstone Grey, Metallic Nero Black. Price is £12,999. For more information, click on www.DWVArtEngine.com.



THE FULL TREATMENT

Arcam's design team for the A38 integrated [pictured above] and P38 power amplifier was given a simple goal, "to develop the best performing stereo amplifiers the company has ever produced". New Sanken output devices dramatically improve thermal coupling to provide an extremely stable device temperature resulting in much improved linearity, the company says, while large toroid based power supplies deliver 105W of power. Other features include Arcam's unique 'Mask of Silence' and 'Stealth Mat' EMC damping, and a SoundDeadSteel damped low-resonance chassis. Both models are available in black or silver finish for £1,200 and £800 respectively. For more information, click on www.arcam.co.uk or call +44 (0)1223 203 200.

WESTERN ELECTRICITY

ATC's new SIA 2-150 stereo integrated amplifier heads up a new range of electronics offering exceptional build quality and accurate musical reproduction, the company says. Featuring a precision machined 12mm (1/2 inch) brushed aluminium front plate, its electronic design sports fully discrete "ultra low noise preamp circuitry" coupled to a Class A/B 150W output stage, running Class A up to two-thirds output, via four MOSFETs per channel fed by a massive power supply. Facilities include four stereo inputs, tape in/out, line output and pre-out. Vital statistics are 435x135x350mm, and it costs £2,203. For more information, click on www.atc.co.uk. Look out for a review soon!



ADVANCING THEIR CAUSE

Advance Acoustic's MPP-206 preamp and MAA-406 stereo power amplifier [pictured above] "make for one very special amplifier and at a pre/power price that is virtually unattainable from any other manufacturer", the company says. £799 buys you balanced and unbalanced outputs, 12V trigger operation and a dedicated subwoofer output with switchable crossover and high/low pass filter. All of the usual inputs are fitted, with a phono input which is switchable for MM/MC cartridge type. The MAA-406 power-amplifier incorporates big toroidal transformers coupled with "very high quality components throughout". Power is rated at 220W RMS per channel. For more information, click on www.koretrade.co.uk.

UNITED STATIONS

Union Research's new Unico 100 integrated amplifier is said to be "the result of an intense period of research at Union's HQ near Venice, Italy and features a host of unique technologies that ensure its status as a true reference quality product", no less! A true dual mono solid-state/valve hybrid circuit design, it sports 180W per channel (claimed) with fully balanced operation and "highest quality audiophile components". Then there's the famous wood and metal Unison system remote control. The preamplifier section is a double triode stage that utilises the ECC83 valve, while the driver stage runs multiple low power devices as opposed to the more common use of fewer, higher power transistors. There are two 450VA toroidal transformers. An iron chassis, married with high quality, thick machined aluminium and beautifully machined and tactile front controls, is used. Price is £2,950; for more information click on www.ukd.co.uk.

HOUSE MUSIC

House of Linn presents 'Celebrating Miles', an exhibition featuring music and photography of Miles Davis "to acknowledge the birthday of the coolest man in jazz (May 26)". His astonishing legacy of studio and concert performances is now stunningly reproduced at House of Linn, with pure studio quality sound for the home by the new digital streaming music players from Linn. The Gallery at House of Linn is also home to an exhibition of limited edition prints and canvases featuring iconic concert photography of instruments and stages each with their story to tell. For further information call +44 (0) 161 766 4837 or click on www.houseoflinn.com.

PULSE ON THE WIRE

News comes to us of MonoPulse's revised Model 82A loudspeaker, a striking looking design that has just been improved whilst having its price lowered to £1,995. Power handling is upped to 300W RMS, whilst the cabinet is revised – with a more angled appearance and rounded corners. What is retained are the ferro-fluid cooled HF units, separately mounted on the quarter-inch-thick rolled-steel surrounds, which are then clamped via high-hysteresis-loss polymer, to all-bonded cabinets. The styling changes have also been made to the £1,495, Model 42A, the company's best selling model. For more information, see www.monopulse.co.uk.



TRAVEL STASH

Two new NXT-based portable speakers have been launched by Targus. Described as a "a stylish set of sleek, ultra-thin speakers that deliver clear and smooth sound quality", they can be attached to laptop computers via USB or to the supplied battery pack powered by four AAA batteries. Audio input is via a standard 3.5mm jack, ensuring the speakers are compatible with iPods, MP3 players, etc., and when not in use, the small lightweight speakers clip together magnetically for maximum protection during storage.



EDEN PROJECT

Berlin-based Adam Audio are expanding their horizons. Already well known for their professional monitor loudspeakers that are used in Abbey Road and the BBC, as well as by the likes of Giles & George Martin, Danny Elfmann, Chemical Brothers and The Prodigy, they have introduced three ranges of domestic audio loudspeakers and a rather impressive flagship, all brought to the UK by Unity Audio. The Home Monitor series [pictured below] comprising two standmounters, one centre channel and one subwoofer, is a development of ADAM's active S Line designs and are all passive. Next up the ladder is the Classic Series [above left] that consists of a standmounter, two floorstanders a centre channel and subwoofer. All models are available as passive or active, with the exception of the subwoofer, which is active only. Finally, at the top of the tree is the Tensor Series [right], comprising two standmounters, three floorstanders, a centre and sub. All apart from the sub are available as active or semi-active, with just amplifiers for the bass drivers.

All designs make use of ADAM's ART (Advanced Ribbon Technology) tweeters that are basically a development of the old Heil Air Motion Transformer, and the floorstanders also use a larger design of this type for the midrange. Prices range from to £33,500 for a pair of fully active Tensor System - thirty drivers and 3,000W of of £211,500 makes this for the seriously to p26 for an exclusive first UK review more information, contact Unity Audio on www.unityaudio.co.uk



SILVER DREAM MACHINE

Launched to celebrate the twenty fifth anniversary of the Kansas-based company's first commercial product, the CLX is MartinLogan's first full-range electrostatic design for six years, and is said to incorporate an impressive roster of technological innovations to deliver exceptional sound from a reasonably sized panel. A full-range electrostatic speaker, it sports a DualForce ESL double diaphragm, triple stator 57" dipole low-frequency electrostatic transducer, with low-frequency dipole phase stabilisation, audiophile-grade power cable, precision Vojtko filtering with thick film on aluminium substrate resistors, air core coils, polypropylene capacitors and toroidal transformers. It comes in a variety of finishes including: cherry maple and black maple hardwood; black EcoSound; black and clear anodized billet aluminium. For more information, click on www.absolutesounds.com or call +44(0)1494 681515.

RADIO ACTIVE

Nearly half a million DAB digital radios were sold in the first quarter of 2008 delivering sales growth of 28% year-on-year, according to figures from GfK, the industry's marketing service. Cumulative sales of DAB radio sets at the end of March stood at 6.94 million. In a tough retail quarter on the High Street, 489,000 DAB sets were sold in January, February and March. This is 7% above the DRDB's forecast for the period, whose acting chief executive Paul Brown said, "DAB came under fire earlier this year following announcements of withdrawal from the medium by GCap Media and the loss of several national DAB services. However, consumer, retailer and manufacturer confidence in DAB remains high as these figures demonstrate". The 28% growth year-on-year is a significant improvement on the annual volume growth rate in 2007 (16%), which reflects its incorporation in emerging sectors such as MP3 docking systems and in-car adapters. For more information, see www.drdb.org.



SPOTTED:

Would you buy a used Bentley Continental from this man? Naim Audio's Steve Sells reclines in the sumptuous surroundings of a 'Naim For Bentley' hi-fi system-equipped Crewe car. Suits you, Steve!



Physikal

David Price listens and learns from German Physiks' masterful HRS 120 Carbon loudspeaker...



There are not many companies who would say a £16,800 loudspeaker is their 'bread and butter' entry-level product, but when your top model runs out at some €240,000 I suppose the HRS 120 could be described thus. Still, back in the real world where the rest of us live, this speaker will be most people's idea of audio Nirvana. Given that you can buy two pairs of Quad 2905s and still have change for a world cruise, this gets no special pleading...

The great thing about the 'high end' loudspeaker market is that, perhaps more so than any other subsection of hi-fi, your money invariably buys you a focused approach to the problematics of playing music. Whereas you can stick a pair of £129 Wharfedale Diamond 9.1s on the end of a decent system and find that they play most types of music in a uniformly reasonable way, spending one hundred times as much (or more) often means that the speaker will fly with one type of music in one type of room and with one type of system, but sound considerably worse than the aforementioned budget box with another. The question then becomes finding the right high end speaker for you – bespoke like the best Saville Row suit...

As you might expect, the German-Physiks HRS 120 is not your average assemblage of conventional moving coil drive units in an oblong box. At its price point, you're into ribbons (Magneplanar), electrostatics (Quad, Martin Logan), dual concentrics (Tannoys) and omnis (MBL). The HRS 120, as you might have surmised from their shape, herald from the latter category. But of course, they're different inasmuch as they're powered by what German Physiks describe as their Dicks Dipole Driver (DDD).

Used on all models right up to the top of the range Gaudi, this comes in two flavours – titanium or carbon fibre. The review loudspeakers sport the latter, which are said to be a better 'real world' compromise (the former are easy to disfigure, their foil being so thin that one touch pushes them out of shape). The unusually shaped unit, described as a "bending wave convertor", runs all the way from 240 to 24,000Hz, obviating the need for a crossover point in the midband (where the ear is most sensitive) and maintaining phase coherence right where it's needed. Its omnidirectional dispersion is a further welcome benefit, making it work well in many types of listening room [see DDD THEORY box].

The trick was getting the DDD driver to work in box with a bass driver. The tall but slim (320x1145x320mm) cabinet uses heavy panels of MDF with reinforcements fitted to critical points within the structure, in an octagonal shape so the individual panels are smaller and therefore stiffer than they

Education

would be if a conventional square or rectangular cross section had been used. Hawaphon damping material [pictured overleaf] is applied to the inside of each panel - a polymer sheet containing a matrix of small cells filled with very fine steel shot, originally developed as an anti-surveillance measure for use in military buildings. It is said to add mass to the panel and reduce the resonant frequency. Onto this is added a lining of high density felt. Finally, at the bottom of the 29.7kg cabinet, a 250mm moving coil 'woofer' takes care of the last few octaves.

The HRS 120 is a single wired design, with handy jumpers at the back next to the binding posts to offer a degree of treble trim in four steps (-2dB, flat, +2dB and +4dB). This is an excellent, welcome feature; providing it doesn't impede the signal, I have no problems with level controls to get a speaker to work well in a listening room - given that the latter are so variable. Overall construction quality is very good - with fine cabinetry in the customer's choice of hand matched, hard wood veneers. There's also a carbon fibre panelled version at a considerable price premium.

SOUND QUALITY

Despite the fact that the HRS 120 is an omnidirectional loudspeaker, and thus theoretically easier to place, I must confess to spending more time than usual moving my review samples around. In my medium-to-large (by UK standards) listening room, I found they worked best about 3.5m apart, and about 0.75m from the back walls, although the stereo imaging can be improved by moving them further out into the room and closer together. Another issue was that of partnering ancillaries - with only middling efficiency [see MEASURED PERFORMANCE] these won't work with any old 3V single-ended triode tube amp. I found Quad 11-40s just about coped, as did Sugden's IA4 Class A integrated, but they really liked the firm underbelly of NuForce's Reference 9SE 250W monoblocks, allied to the MF Audio Silver Passive Preamplifier.

Despite sounding quite poor

at first, the aforementioned fettling finally pushed these German Physiks columns into their zone, whereupon there was a 'night and day' transformation, and I suddenly realised they're very high resolution transducers with all the spatial prowess that you'd expect from something that doesn't fire sound at you from a very specific angle via multiple, often tenuously matched drive units! Put simply they offer a 'cathedral-like' listening experience, throwing images way, way out of the box (or, ermm, octagonal cylinder) and apparently dissolving into thin air. The recorded acoustic that they unleash is certainly well lit, but in my system at least - complete with some very smooth source components - never sounded harsh.

Supertramp's 'Child of Vision' showcased the space, pace and grace of the HRS 120. It's a fine CD transcription of a quite bright, spry sounding original recording, and these loudspeakers communicated precisely this. Most striking was the seamlessness of the sound: not only was it vast in scale but utterly even and all-of-a-piece. Hearing these omnis shows you how intrusive multiple drivers of different sizes firing right at you can sound - there was no sense of listening to a loudspeaker. The tone of the electric piano was startling - beautifully clean and direct, yet lightning-fast and ringing with harmonics. Vocals were completely unspoiled by the sound of little cones heave ho'ing in front of you - and tonally dry but vibrant all the same.

Moving higher up, and the cymbal sound was truly impressive. Having a penchant for ribbons (i.e. Apogees) at this price point, with a strong second-choice preference for the sublime electrostatic panels of Martin Logan, I wasn't expecting what looks like a moving coil driver with a stretched cone to deliver the goods in the high frequency department! Hi-hats were smooth and very subtly etched; there was no sense of listening to a large cone trying to 'do' treble, the HRS 120 sounding just as finessed as almost any small metal dome tweeter I've heard. This great subtlety and detail up top, allied to that vast spatiality make for a lovely

DDD THEORY

At first glance, the driver looks like a conventional pistonic cone, inasmuch as it has a voice coil/magnet assembly that serves as the actuator and a cone, although this is longer and narrower than usual. But with a piston driver, when the voice coil moves, the entire cone moves together with it (which is why the cone and voice coil structure is made as rigid as possible), and the sound wave produced moves in the same direction as the movement of the cone. German Physiks says the DDD "is rather more complex", however. The lower frequency end of its operating range can be described with Thiele/Small resonant parameters, while in the next frequency band up to the coincidence frequency "it works like a pistonic driver". Next, there's an overlapping band where pistonic movement is "progressively replaced by bending waves until all the radiation is generated purely by bending movement in the cone". Due to dispersion and the cone's special shape, the coincidence frequency is spread over an extended frequency range, rather than occurring at a single frequency like the dipole frequency, says German Physiks. From the upper edge of the coincidence frequency band, it works like a pure bending Wave converter where the velocity of the travelling waves in the cone increases with frequency. Finally, the last mode of operation commences above the bending wave band at the dipole frequency, when the first standing wave occurs and where modal break-up begins.

The idea is that, by optimising the key properties of the cone material, namely thickness, elasticity and specific weight, together with the cone's bending stiffness, which is achieved by selecting the correct cone-angle, all four frequency bands may be very closely balanced. The last two modes cover the majority of the DDD driver's operating range and are what differentiate it from conventional drivers. In these two modes, when the voice coil moves, the whole cone does not move together with it, as the open end of the cone is terminated by a rubber suspension and semi-rigidly attached to the driver chassis. Instead the motion of the voice coil causes a wave to travel from the top of the cone down to the open end. This occurs because unlike the piston driver, the DDD driver cone is made from a very light and flexible foil - 0.025 mm thick titanium or 0.15 mm thick carbon fibre. While the shape of the cone gives it rigidity at rest, it is relatively easy to excite waves in the cone material. The trick is in controlling these waves.

listen.

Bass was impressive, although I'd certainly say it wasn't their strongest attribute. LFO's 'LFO' showed that what low frequencies there were, were utterly respectable - taut, tight, tuneful and very well integrated with the rest of the frequency range (certainly better than the Martin Logan Summit with its separate bass box and active drive). But more than this, there's nothing remarkable - there's no sense of massive, swingeing power and subterranean lows you



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get from B&W's 801Ds at almost half the price. Perhaps this is actually a boon

for British rooms (I found the MLs overpowering in mine); the low frequencies offering a firm, no-nonsense underpinning to an exceptional midband and treble. You'd certainly not notice this as a two-way, so well integrated are the lows with the rest of the frequency range.

My favourite classic Philips vinyl pressing of Debussy's 'Preludes' showed the beautiful subtlety of these loudspeakers; piano tone was remarkable. Sparkling harmonics – thanks in no small part to the great bandwidth of black plastic via a decent moving coil cartridge – made a dramatic impression, along with breathtaking transients. The latter is something I hadn't expected from such a big 'cone' (if you can call the DDD driver that) – the HRS 120 showcasing the pianist's dazzling speed and control. As the keys were hammered progressively harder through 'La Cathedrale Engloute', so these speakers were able to convey the power of the piece, evoking the cathedral's emergence from the misty waters...

Once the system had been properly set-up, these loudspeakers shone with almost anything they were fed, but if there was one genre they loved more than any other, it was jazz courtesy of a pair of crossed



HISTORY

After years of mathematical modelling and physical experimentation, Peter Dicks created his first design concept in 1978, but it took until the early 1990s when Mainhattan Acustik, run by IT expert Holger Mueller, licensed the design and German Physiks was born. It took two years to make the first commercial product, refining the Dicks Dipole Driver to fit the Borderland loudspeaker. In 1993, with sales continuing to rise, Mueller established a new company to exclusively manufacture the German Physiks range of loudspeakers, and since then it has prospered, especially in the Far East.

microphones, fed straight into a two-track open reel. Lou Donaldson's 'Alligator Bogaloo', courtesy of BlueNote records back in 1967, showed why. The sheer size of the recorded acoustic was astounding, dwarfing even the mighty B&W 801Ds in my listening room. Massive, smooth, even and uncoloured saxophones soared around my listening space, with life-size drums, churning hi-hats and a decently deep double bass – the player's fingers marching up and down the fretboard with military precision.

CONCLUSION

This is a very distinctive pair of loudspeakers. Having tried every high end design in my house from Quad 989s to Meridian DSP7000s, via Perigee Acoustics FK-1F and Martin Logan Summits, I have to confess that I've never been completely convinced by any of them. Yes, I've loved them all for different reasons, knowing that what they do, they do brilliantly. And so it is with the German Physiks HRS 120 – they are superb in many respects, but not all. The interesting thing though is that in their inevitable weaker areas, they are less compromised than others. For example, B&W 801Ds give stunning visceral bass but are rather tonally 'grey', Quads 989s are lovely spatially but weak and compressed at frequency extremes. These loudspeakers' least convincing aspect is their bass, but even this is still good by class standards – making them an even more enticing purchasing proposition.

Invest in an excellent pre-power amplifier combination and a decent, smooth front end – either analogue or digital – and these will unlock the music held on the disc in a joyfully natural and unfettered way. Superlative spatial projection and a wonderfully fast, even and open sound all the way up the scale make them exceptionally enjoyable. There are other loudspeakers at - or less than - their price that can do some other things better, but I can't think of any which are such consummate all rounders – as such, they're a brilliant appliance of science.

REFERENCE SYSTEM:

- Michell GyroDec/TecnoArm/vdH Frog turntable
- Note Products PhoNote phono stage
- Marantz CD63KI DP CD player
- MF Audio Silver Passive Preamp
- World Audio K5881 (modified) power amplifier
- NuForce Reference 9SE power amplifiers
- Quad 989 loudspeakers

VERDICT ●●●●●

Vast soundstaging allied to a lightning-fast, natural sound puts these up with the very best at the price - but careful set-up is essential.

GERMAN PHYSIKS

HRS 120 (approx.) £16,000
www.german-physiks.com

FOR

- sublime soundstaging
- speed, musicality, dynamics
- delicate tonality
- engineering

AGAINST

- limited bass
- system & room dependent

MEASURED PERFORMANCE

The German Physiks HRS 120 loudspeakers measure unusually for an omnidirectional design that uses a full range type driver, in that they have a rising response towards 20kHz. Usually, with full range drivers, output tails off towards the upper end of the frequency spectrum, despite designers' best efforts, as the laws of physics come into play. Simply, there is great difficulty in making a larger diaphragm move effectively at high frequencies. As a result, the technology put into the HRS 120s' DDD driver clearly is very effective in this respect.

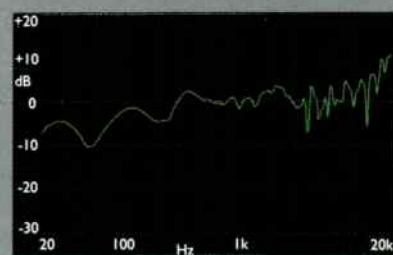
That said, the output is rather uneven, due to reflections from many surfaces interacting and it is quite likely that the sound will change according to the speakers' positioning - experimentation will be the key here.

At the low end, the German Physiks are rather uneven, with a suckout at 200Hz that may well rob upper bass detail. Other than this, output is maintained down to around 70Hz, which is fine, but the HRS 120s are unlikely to offer the ultimate in low end power.

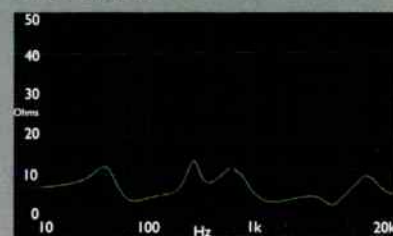
Electrically the HRS 120s are fairly even, with no impedance nasties waiting to trap unwary amplifiers. That said, however, their average measured

impedance is 5.7 Ohms, dropping to a minimum of less than 3 Ohms, so they are a stiff load and will require plenty of current from a muscular amplifier. Measured sensitivity in the listening attitude was 82.5dB, which equates to around 86dB for a conventional design, so amplifiers of 40-50W would be a wise idea. AS.

FREQUENCY RESPONSE



IMPEDANCE



perfect duo



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Survivors



Despite competition from everything from iPods to Blu-ray players, the humble budget CD player soldiers on - and the breed is better than ever, finds Adam Smith...

Regular readers know that we're all big vinyl fans here at *Hi-Fi World*, but that doesn't stop us being committed Compact Disc users too - just like the vast majority of music enthusiasts. While LPs are being pressed in ever greater quantities and digital downloads become an increasingly important part of the music software mix, CD is still the staple diet of modern music lovers.

Today's CD catalogue is vast, dwarfing that of both new vinyl LPs and digital downloads. Better still, a great many titles are now 'mid-price' (around £6), costing just one third of what eighties music buyers were paying. In short, the little silver Frisbee is surely the best value way of getting a wide range of music today.

Interestingly, the quality of budget players is getting ever better, whilst the higher end designs are now pushing the limits of the format itself. Recent developments in upsampling technology have also trickled down into the more affordable end of the market, meaning the good old silver disc still has life left in it yet...

The CD hardware market is still pretty buoyant towards the higher end, but gone are the glory days of massive sales when machines bounced off high street hi-fi dealers' shelves like rubber balls. Competition from DVD and latterly Blu-Ray, along with games consoles, mobile phones and all those other consumer electronics goodies have meant that most manufacturers have left the CD separates market altogether. Those that remain are enjoying solid sales - not least because many audiophiles

are loathe to invest in the new technology until it has 'shaken down' in price.

In this test, we try four of the latest and greatest budget machines, from Cambridge Audio, Audiolab, Pioneer and Rotel. Read on to see which gives the best sound per pound...

THE CONTENDERS:

| | | |
|------------------------------|------|-----|
| Cambridge Audio Azur 640C v2 | £250 | p16 |
| Audiolab 8000CDE | £350 | p17 |
| Pioneer PD-D6 | £350 | p18 |
| Rotel RCD-06 | £350 | p19 |

REFERENCE SYSTEM

Anatek A50R amplifier
JBL ES80 loudspeakers



CAMBRIDGE AUDIO AZUR 640C v2 £250

When it comes to high quality, low cost hi-fi, one name generally springs to most peoples' minds - Cambridge Audio. Since being relaunched under the Audio Partnership umbrella, the company has gone from strength to strength and confidently expanded their product portfolio to encompass amplifiers, DVD players, A/V receivers, phono stages and music servers, as well as a strong range of CD players.

Despite reaching up to the 840C and down to the 340C, it is the original 540C and 640C models that make up Cambridge's main sales. Both are now upgraded to 'v2' level, and for the 640C this means two

Wolfson WM8740 24bit/192kHz DACs instead of the previous model's one, a high-specification toroidal transformer for low distortion and upgraded audio filter and regulator stages, which Cambridge claim "result in the delivery of a huge dynamic range and a wonderfully clear, clean sound". Cambridge also make their own servo electronics, which allow fine-tuning of critical areas, and help to give impressively swift disc access and track selection.

Neat and compact, measuring 70x430x310mm (HxWxD) and weighing in at 4.6kg, the 640C v2 is available in black and silver and comes with one of Cambridge's lovely remote handsets which will also control a matching amplifier. The

display is a black on white type but is easily visible across the room.

SOUND QUALITY

The Cambridge is notable for its impressively clean and detailed mid and top end. Measurement shows that it is not a rolled-off player in frequency response terms, and this can be heard in the crispness that it inserts into music. Fortunately, this did not translate into harshness, merely serving to ensure that top end detail is plentiful and well ordered. Equally handy was the soundstage which spread out well in between the loudspeakers, although not especially far beyond or behind them.

Vocals from the likes of Emmylou Harris were very well rendered, sitting nicely centre-stage in the image and well cocooned by the backing instruments. In terms of orchestral pieces, each instrument's individual character was easily teased out by the 640C v2 and kept performances well ordered. Given the good old violin test, the Cambridge came through unscathed - strings of this type were undoubtedly bright and forthright but never screeched and the 640C v2 proved more than capable of maintaining composure at all times.

At the bottom end the Cambridge soon established itself as a weighty performer, attacking bass lines with gusto and proving more than capable of running with a fast rhythm. Where it was less sure of itself was in detail terms, where deeper notes tended to be a little bloated. This did not make things uncomfortable or wallowy but did tend to mask detail - as an example, the notes from well recorded bass guitars were solid and tuneful, but each one rather lacked insight, rather masking the character of strings.

MEASURED PERFORMANCE

The 640C v2 has a ruler-flat frequency response. As CD players go it will have a balance that tips toward bright, lacking the gentle filter roll off that is commonly used to ease CD's bite.

Distortion levels were very low throughout the 80dB or so available dynamic range, a -80dB dithered signal possessing 1.4% distortion (mainly dither noise), a good result. Low distortion at -60dB is largely responsible for the excellent 112dB EIAJ dynamic range figure; this is as good as it gets with CD. The 640C v2 is very linear and will not add any edge to the sound.

Output was healthy at 2.3V, noise low and channel separation wide. There was a little signal related jitter on low level signals via the SP/DIF digital output. Otherwise, much above this level both signal related and random jitter were minimal at around 10ps.

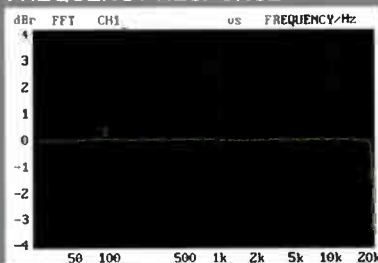
The Azur 640C v2 measured well all round. It is tightly engineered to give fine results, but it will not have a warm balance. NK

Frequency response (-1dB)
CD 2Hz - 21.2kHz

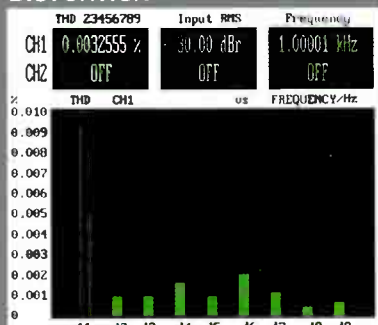
Distortion (%)
0dB 0.0004
-6dB 0.0005

| | |
|-------------------|--------|
| -60dB | 0.2 |
| -80dB | 4.4 |
| Separation (1kHz) | 121dB |
| Noise (IEC A) | -107dB |
| Dynamic range | 112dB |
| Output | 2.3V |

FREQUENCY RESPONSE



DISTORTION



VERDICT ●●●●£

Finely balanced and crisply detailed player with real musicality.

CAMBRIDGE AUDIO

AZUR 640C V2 £250

Audio Partnership

+44(0)845 900 1230

www.cambridgeaudio.com

FOR

- strong but smooth top end
- good imagery
- build and finish

AGAINST

- bass a little bloated



AUDIOLAB 8000CDE £350

Under the careful tutelage of IAG, Audiolab continue to carve themselves a niche in the affordable electronics market, with their range of two channel equipment, including amplification and source products.

The 8000CDE is the cheaper of two CD players in their range, below the £600 8000CD model. It is effectively a more affordable version of the dearer player, lacking its bigger brother's twin power supplies (one for digital section, one for the analogue) and fewer outputs on the rear. The CDE sports one pair of analogue outputs, with a digital output through a phono socket, whilst the 8000CD adds a second pair of analogue outs and further BNC and optical digital outs.

The 8000CDE still makes use of Audiolab's proprietary 'Lazy Servo'; where the laser does not hunt backwards and forwards in an attempt to locate dropped data, but simply waits for the disc to spin round again. Audiolab claim that this lowers the noise floor by minimising unnecessary servo operation.

The 8000CDE is available in black and silver, measures 74x445x335mm (HxWxD) and comes with a surprisingly large remote control handset that also controls Audiolab amplifiers. Mention should also be made of the front panel controls - these look like simple touch buttons but actually have a surprisingly long throw and rather soggy feel. My fingers didn't approve!

SOUND QUALITY

One thing that I find with regards to Audiolab is that their equipment offers a very consistent sound, no matter whether the item is an amplifier, preamplifier or source

component, you know what you're getting and this is no bad thing.

The 8000CDE holds true to this tradition and has the 'Audiolab sound' in spades. What this means is that it is a smooth and inviting performer with a fine level of detail and insight across the midrange and treble. Vocalists were vivid and clearly defined within a nicely balanced soundstage, but those blessed with more strident vocal chords could veer in the direction of shoutiness at times. Equally, orchestral moments were impressively dynamic and forthright, but strings could be a little 'plastic' sounding, being rather characterless, although not screechy in any way.

Across the treble, the Audiolab

turned in a crisp performance, picking the minutiae of finer details out well and giving good feel and impact to cymbal strikes. It also endowed music with fine spatiality, locating the image securely within the loudspeaker boundaries and also stretching it out behind in a pleasing manner.

At the bottom end, the 8000CDE offers a goodly amount of solid bass action, serving up a healthy dose of power and depth. Bass lines were deep and clean with good levels of detail to stringed bass instruments, but the Audiolab did tend to falter somewhat in terms of pace and rhythm. When the action speeded up, the 8000CDE seemed to struggle a little to keep up, compromising the timing of the music somewhat.

MEASURED PERFORMANCE

The Audiolab has a frequency response characteristic that extends smoothly up to 21.5kHz, with no droop or peaking. It will sound tonally even, but the often hard sound of CD will not be ameliorated.

Distortion levels were low over the player's entire dynamic range and a -80dB dithered signal was resolved correctly. This suggests there will be little coarseness in the sound.

Unsurprisingly, the EIAJ dynamic range value was a high 111dB, up with the best players available. Output measured 2.4V, above Philips recommended 2V.

Random jitter from the electrical SP/DIF output was low at around 10pS over a narrow band. There was some signal related jitter below 1kHz, measuring around 30pS. These are low values and the digital output is a clean one.

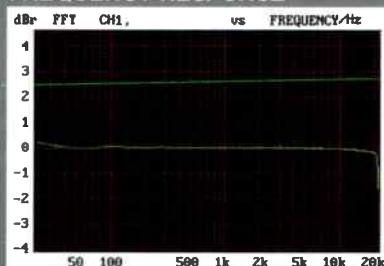
Ultimately the Audiolab 8000CDE measures well all round. It is a well engineered player. NK

Frequency response (-1dB)
CD 2Hz - 21.5kHz

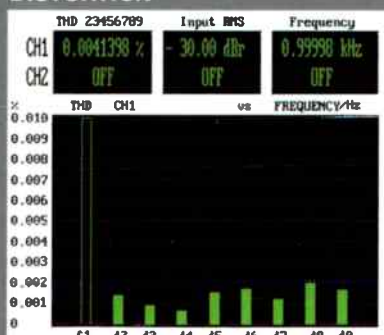
Distortion (%)
0dB 0.0007
-6dB 0.0007

| | |
|-------------------|--------|
| -60dB | 0.24 |
| -80dB | 2.5 |
| Separation (1kHz) | 121dB |
| Noise (IEC A) | -109dB |
| Dynamic range | 111dB |
| Output | 2.4V |

FREQUENCY RESPONSE



DISTORTION



VERDICT

Decent sounding, even-handed player with crisp top end and good bass weight.

AUDIOLAB 8000CDE £350

IAG UK Ltd.

+44(0)1480 447700

www.audiolab.co.uk

FOR

- fine bass weight
- good imagery
- treble detail

AGAINST

- bass timing
- slight midrange hardness
- feel of front panel buttons!



PIONEER PD-D6 £350

Pioneer were one of the first Japanese manufacturers to jump back into the high quality separates market in recent years, and set the bar high in terms of build quality and styling with the PD-D6 CD player and A-A6 amplifier. The PD-D6 is the only player here that also offers SACD playback compatibility, so Pioneer deserve credit for offering this option at such a reasonable price.

The PD-D6 also boasts 'AIR Sound Tuning', the result apparently being a quick response power supply circuit, with Pioneer claiming this means that "music is reproduced as near to the original as possible". Also

fitted is the latest variant of Pioneer's Legato Link Pro conversion, which aims to extend frequency response above 20kHz to give a more natural sound.

Fit and finish of the PD-D6 is superb and it is very sleekly styled. Sadly the remote is a small, disappointingly lightweight item. The player comes in a smart dark grey finish only, measures 100x420x340mm (HxWxD) and tips the scales at 4.5kg.

SOUND QUALITY

The Pioneer has a few interesting features that can be experimented with for optimum sound quality. Firstly, its 'Pure Direct' mode, which

shuts off the display and switches off the digital outputs, definitely adds a hint of extra focus to proceedings, plus the Legato Link, which I found improved soundstage focus across the centre, although at the expense of a little crispness. Both settings sound fine, though - experiment to see which you prefer.

Other than this, the PD-D6 really is an impressive player. It kicks out a deep, confident and tuneful bass line, with plenty of detail and fine rhythmical dexterity as the pace of the music picks up. Further up, the midrange was nicely revealing and, particularly with the Legato Link on, there was fine soundstaging across the width of the listening area. A

little less expansive was the front to rear depth, but the Pioneer nevertheless anchored everything very nicely within the loudspeakers.

At the top end, the Pioneer is a supple performer with fine levels of treble detail. Slightly crisper with the Legato Link off, the measured rolldown with this on can be heard as a slight drop in terms of impact from cymbals and the like. In either setting, the PD-D6 still misses out on a touch of atmosphere, somewhat blunting the decay from these items, but it never sounds dull or closed-in.

Dropping an SACD into the tray proved that the PD-D6 keeps its essential character in this mode, but does add back in the atmospheric spaciousness that was rather lacking with CD replay. Surprisingly, the differences were not 'night and day,' however, and I did not feel that the PD-D6's SACD performance was a huge leap over that of CD. That said, it is a handy feature to have and Pioneer are to be applauded for including it on a player at this price.

MEASURED PERFORMANCE

The Pioneer PD-D6 frequency response runs flat to 21kHz with Legato switched out, as our analysis shows. This mode also eliminates aliasing products using the usual brick wall filter. Switching Legato in introduces an unusual filtering arrangement, where audio rolls down above 16kHz, but out of band products appear to produce a pseudo analogue roll off in response, measurement showed. This is all a little artificial but it will change the sound. Linearity remains good with either system in operation, distortion levels being low, if not as low as the Cambridge. Random jitter was 20pS and signal related 200pS on a -80dB signal, a little higher than usual.

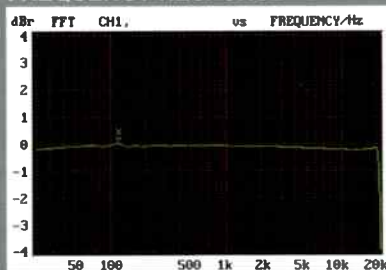
SACD performance was first rate, frequency response measuring -1dB at 45kHz and -7.6dB at 100kHz. Distortion levels were low, measuring just 0.05% at -60dB; a -100dB tone was properly resolved.

The PD-D6 is a good all-rounder under measurement. NK

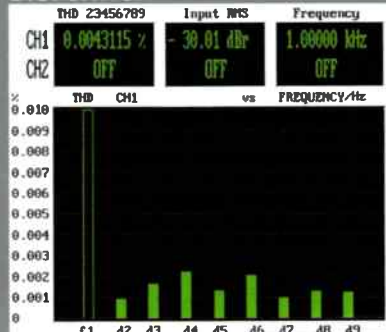
| | |
|---------------------------|-------------|
| Frequency response (-1dB) | |
| CD | 2Hz - 21kHz |
| Distortion | (%) |
| 0dB | 0.001 |
| -6dB | 0.0013 |

| | |
|-------------------|--------|
| -60dB | 0.23 |
| -80dB | 2.8 |
| Separation (1kHz) | 116dB |
| Noise (IEC A) | -123dB |
| Dynamic range | 110dB |
| Output | 2.4V |

FREQUENCY RESPONSE



DISTORTION



VERDICT

Stylish, well built player with impressively musical sound. SACD playback is a welcome bonus at the price.

PIONEER PD-D6 £350

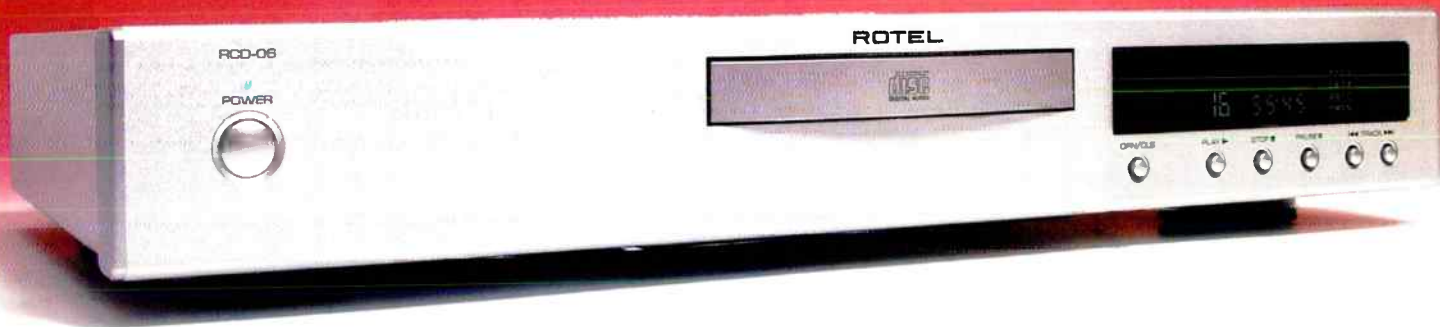
Pioneer UK
+44(0)1753 789789
www.pioneer.co.uk

FOR

- excellent bass
- SACD capability
- styling and finish

AGAINST

- slight lack of atmosphere



ROTEL RCD-06 £350

Rotel's budget 06 series has gained acclaim as a selection of finely engineered products at a reasonable price, offering excellent performance. The range comprises three integrated amplifiers, a pre/power combo, tuner and the CD player under review here.

The RCD-06 is a compact unit, measuring 72x437x342mm (HxWxD) and weighing 5kg. It is very neatly styled with a well sized display that is easy to read from a distance (unlike the Audiolab's, for example) and has the basic transport controls arranged underneath. The matching remote handset is once again specific to the player and controls nothing else, but has a rather nice metal top plate to set it apart from the herd of mass-produced nasty plastic things that come with so many similar components!

Under the bonnet, the Rotel features a number of high quality components, including short signal path routing through high specification resistors, a Burr Brown 24 bit 96kHz oversampling DAC and a high precision, overscanning disc mechanism. At the rear are a set of analogue audio outputs and a digital output via a phono socket. Also fitted are a pair of 3.5mm jack sockets - one to allow the RCD-06 to be remotely operated by an external controller, and one to allow it to be put in and out of standby mode by another piece of equipment.

Our sample did have a few quirks, in that it was reluctant to play a track which was directly selected by the numeric keypad or the track skip buttons. However, it was a rather battered review sample so I am sure this is not normal!

SOUND QUALITY

Rotel's RCD-06 immediately announced itself as the most

fluid and natural-sounding player on test. Most prominent across the midband, the RCD-06 projected vocals out from the loudspeakers in a magnificent way, but without ever making them sound strident. Equally, the rest of the instrumentation behind such vocals was tightly focused, vivid and well laid out across an image that stretched beyond the loudspeakers laterally, as well as back into the distance a good way.

This was aided and abetted by a sweet and fluid treble, that offered bags of insight but without hardness - the player was more 'expensive-sounding' than would be expected in this respect, and should successfully banish the bad memories of anyone that has suffered at the hands of a

harsh budget design of old. Cymbals shimmered and decayed off into the distance in a very convincing manner, and hi-hats were crisp and speedy with well defined stop and start to their action.

Down the bottom end, the Rotel definitely had the most tuneful bass of the contenders on test. Detail retrieval was excellent, picking up on the innate character of bass strings and kick drums and the RCD-06 clung to complex rhythms like a limpet, refusing to let anything like this unsettle it. In absolute terms it did not dig quite as deep as the Pioneer but came pretty close and I feel the difference would only come to light on a strict back to back comparison.

MEASURED PERFORMANCE

This is the only player of the group to judiciously roll down upper treble, which can clearly be seen from our convolved impulse analysis of frequency response. This is not an uncommon move in order to take the sting out of many overly bright CDs.

Distortion levels were low, but noise at -104dB was a little higher than usual. This adversely affected the EIAJ dynamic range value, giving the Rotel one of the lower values within this group, 109dB against 112dB of the Cambridge.

Output and separation figures were normal and jitter from the SP/DIF digital output was reasonably low. Random jitter measured a low 10pS or so, whilst signal related jitter was in the order of 40pS at 1kHz from a -20dB sweep and up to 100pS at low frequencies, good but not wonderful.

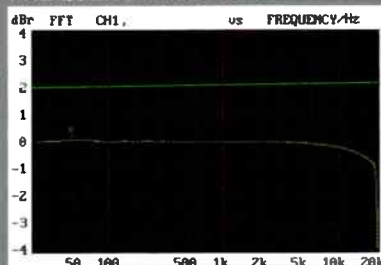
The Rotel measures well, even if it isn't quite up with the best of this group. It will have an easier sound though. NK

Frequency response (-1dB)
CD 2Hz - 20.6kHz

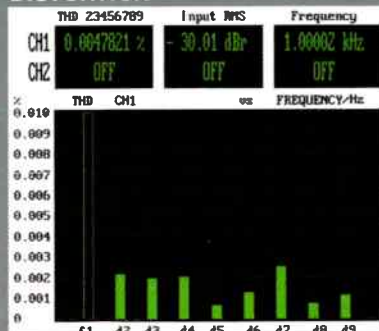
Distortion (%)
0dB 0.002
-6dB 0.0012

| | |
|-------------------|--------|
| -60dB | 0.25 |
| -80dB | 2.9 |
| Separation (1kHz) | 115dB |
| Noise (IEC A) | -104dB |
| Dynamic range | 109dB |
| Output | 2.21V |

FREQUENCY RESPONSE



DISTORTION



VERDICT

Highly satisfying player a sense of sophistication that is unusual at the price.

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FOR

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- natural sonic balance
- top end clarity

AGAINST

- nothing at the price



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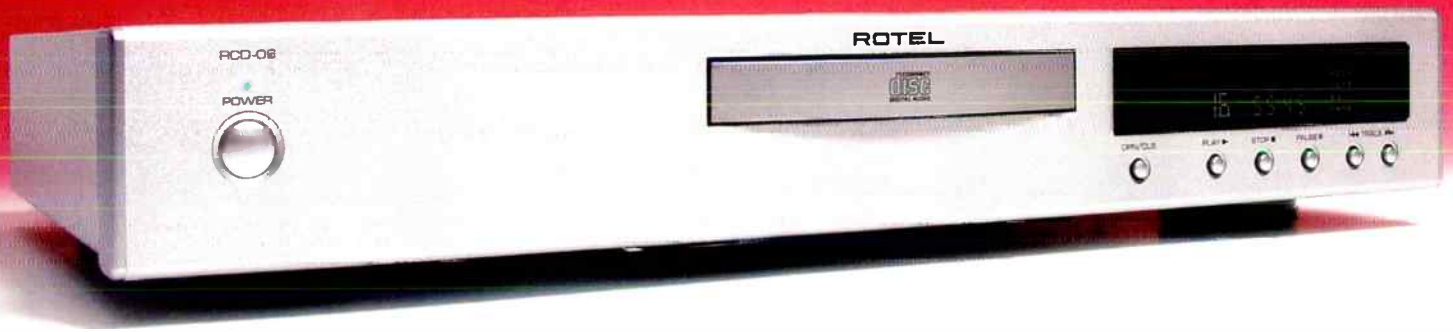
Other models: CD128, CD168, CD228,
Integrated Tube Amplifier SE-30MKII, SE-20MKII, SP-100MKII, SP-120MKII,
Preamplifier C200, Monoblock Power Amplifier M100.



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Although budget Compact Disc players don't exactly set audiophiles' hearts racing, they are functional and utilitarian items that you buy to get a job done. As such, you can excuse them for not having fancy styling, lavish finishes or elaborately built disc drawers - the main criterion is how nice they make humble 16bit Compact Discs sound.

In the old days, the budget CD player was not a thing to relish. Think back to the nineties, and with the exception of machines like Marantz's CD52SE, most £250 machines were pretty rough and ready sounding - coarse, tonally grey and generally very 'digital'. Now, some fifteen years later, the same money buys you an altogether more amenable listening experience - and of course today's £250 machine is half the cost, in real terms, of those fifteen years back. With this in mind, I think the gulf has narrowed between a £300 CD player and a £3,000 one - making an even more convincing case for any of those tested here. The rate of improvement of budget silver disc spinners has been considerably higher than their high end cousins.

Here then, we have four contenders that turn in a very pleasing performance and do not even disgrace themselves in the company of more expensive amplification and loudspeakers. All have sufficient quality of basic engineering that the addition of a few mods, or an external DAC such as our old favourite, the Russ Andrews DAC-1 USB, will not show up any weaknesses, but rather let them show off the potential available from their basic engineering even better. That said though, they do approach CD replay in slightly different manners - thanks to the way they have been designed, and this means that it's still possible to pick a favourite. So without further ado, let's do exactly that...

The first player to consider for me is the Audiolab 8000CDE. As I mentioned in the review, there is definitely an Audiolab 'family sound', which can be categorised as a

smooth and supple presentation, but occasionally tipping into midrange stridency. Sometimes this can stray too far and, to my ears at least, give a rather unpleasant overall sonic signature, but the 8000CDE does not suffer this and is a pleasing listen as a result. It has some very impressive bass power, even if it not the most rhythmically adept spinner around, and digs well into the midband of music to bring out the finer details. It also has a nicely sized and responsive remote, which means you need never touch those weirdly squidgy front panel buttons!

Next up is the Cambridge Audio Azur 640C v2 and, once again, the Cambridge boys blow a raspberry at other manufacturers by coming up with a very impressive £350 CD

"machines like Rotel's RCD-06 show that budget Compact Disc spinners are neither gone nor forgotten..."

player, which just happens to sell for £250. The 640C v2 holds its head high in this, more expensive, company and has Cambridge's typically dynamic, detailed and musically adept presentation. Add in superb build quality that would shame many more expensive items, plus an easily legible display and that lovely remote handset and the Cambridge begs to be high on an audition list. Only the slight 'sogginess' in the very low bass prevents it from sweeping all other comers aside, but it still comes highly recommended. Think of this as the 2008 equivalent of that late, great Marantz CD52 Special Edition - a true budget blockbuster that's more than good enough to survive several system upgrades.

Also scoring highly on the value for money front is the Pioneer PD-D6. Naturally, the SACD functionality is unusual at this price and works very well indeed, but Pioneer have not skimped on the CD replay ability in order to squeeze this Super Audio Compact Disc under the bonnet.

The PD-D6 is packed with useful features, like the Pure Direct mode and the optional Legato Link filtering, both of which mean that you can effectively tweak the player's sound to your taste. In any mode, though, the PD-D6 is a fine player and will suit a wide variety of systems. Its only stumbling block is its slightly constrained atmospheric but, as with the Cambridge, this is a minor point and should not dissuade you from checking it out; it is a very capable player.

However, the standout spinner in this test was the Rotel RCD-06. It really does add an extra dose of sophistication to the sound compared to the other players; I feel that if you played it to a few blindfolded listeners and asked them to guess how much

it cost, there's every chance no one would 'bid' as low as £350. The RCD-06 is a fluid and musical performer that removes the last vestiges of hardness that can sometimes afflict budget CD players, to offer a musically adept and atmospherically pleasing result.

The condition of our review sample led me to believe that its track selection foibles were a one-off and a result of abuse from less mechanically sympathetic reviewers than myself, so the Rotel gets a big thumbs up from me. Add in the neat styling and the large, easy to read display, and you have a worthy winner at the price point. Life with the Rotel RCD-06 is never unpleasant, and makes you want to go out and buy ever more silver discs - of the good old fashioned 16bit stereo variety. Of course, better CD spinners are available, but you're looking at nigh on twice the price before you get real all round benefits. Machines like this show that budget Compact Disc spinners are neither gone nor forgotten...

Dirty Digital

Noel Keywood explains some little known reasons why CD suffers from hard, grey sound...

Here are some of the peculiar problems that afflict our oldest, original digital technology - Compact Disc. This isn't a hatchet job of the poor little silver Frisbee, so much as an illustration of how the notion of it being perfect is fantasy.

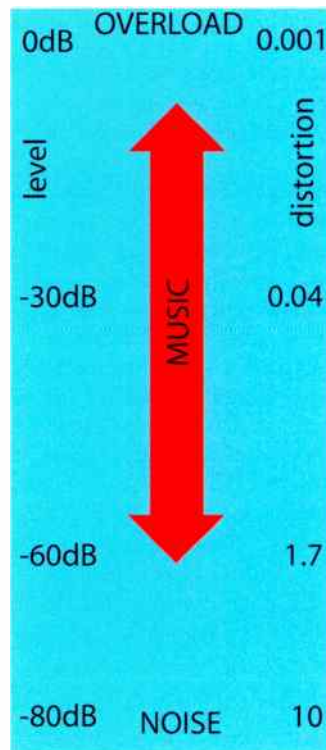
The two parameters most commonly quoted to support a claim for perfection from CD was a distortion level of 0.001% and a dynamic range of 96dB. These are very good figures, ones that seduced most people back in the 1980s. If true, CD players like those tested this month would be perfect and all we ever needed, but the reality is a little more complex.

DISTORTION LEVELS

A distortion figure of 0.001% is impressive and, in fact, today's CD players are returning 0.0003% on our test bench. Not bad - and definitely better than LP, which manages 0.1% up to 2%.

Unfortunately, figures like these are almost meaningless unless considered in more detail, and the 0.001% for CD is particularly selective and misleading. Our diagram shows the 16bit digital code of CD gives this result at peak music level only. Below it, distortion increases progressively. At -80dB it is 10% or so, a mere ten times higher than LP! It gets worse below -80dB but luckily, dither noise linearises the conversion process at low levels, which is a problem solved. Low levels on CD have been cleaned up. But what about the gap between peak level of 0dB and low levels of -80dB or so, set by dither noise? This is where the music lies.

To make a quick check on the distortion of a digital system like CD, a signal at -60dB below full level is commonly used. In the early days this gave around 1% distortion, a figure that wouldn't have sold many players had Philips ever published it. Bearing in mind that they were not at all confident CD would catch on (nor Sony I imagine) it is hardly surprising they did not use this figure, as it was



CD distortion is 0.001% only at 0dB. At -60dB 1.7% is possible. Dynamic range is limited to 85dB or so by dither noise, applied to reduce distortion at low levels

no better than LP.

Twenty five years of progress in digital convertor technology has reduced CD distortion at -60dB by five times - from 1% down to 0.2% or so, as produced by our players under test this month. Seems quite good, until another little known complexity is taken into account.

CD distortion levels are not only level dependent, they are also frequency dependent - and measurement is only made nowadays at frequencies where CD gives its best result. That 0.2% result rises to no less than 1.7%, I found when making measurements for this article. I won't explain why here, because you'll probably decide knitting could be exciting after all, so an explanation is in the box-out [see DIGITAL DISTORTIONS].

The point is that CD has a complex distortion pattern, one that

changes appreciably across the audio band, with levels reaching well above Harold Leak's declared 0.1% limit of acceptability, made back in 1945.

In its distortion, 16bit digital is quite unlike analogue - and it's something of a horror story. That CD ever managed to gather a reputation for good sound quality is a surprise, given that it measures so badly. The music business was bitten hard by the inadequacies of poor digital (recorders and players) in the early days and now tries to keep music levels well above the unacceptably high distortion floor of CD that we illustrate here. Nowadays 24bit recorders are commonly used as they give a smoother sound, even when transferred to a 16bit medium.

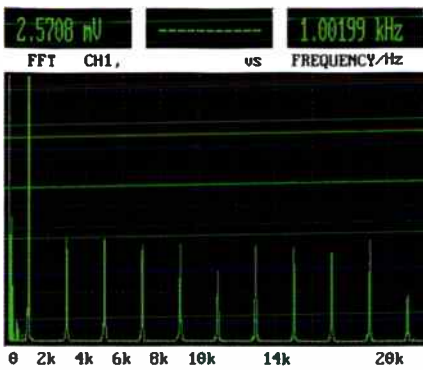
DIRTY DISTORTION

As if high distortion levels weren't bad enough, perhaps worse is that digital distortion on CD has a particularly nasty sound that the ear can detect readily. Again, I won't get too technical, but if - say - someone hits a drum at the same time as a dicky bird goes "tweet, tweet" outside, it's easy to discern one from t'other. That's because the drum produces low notes and the dicky bird high ones that the ear can differentiate because of the large frequency difference between them.

It so happens that CD behaves like this, low sounds producing 'harmonic' distortion well up the frequency band, so far separated in frequency that the ear clearly detects it (LP doesn't do this).

An aggravating factor is that most musical information exists below 3kHz and the ear is most sensitive at 7kHz where digital distortion lies. What we have here is the most unfortunate psycho-acoustically structured music playing system ever devised, possessing a pattern of distortion the ear can readily detect. CD digital does everything wrong, so it is surprising that we can listen to it all. And there's worse!

If, when the drum is banged and the dicky bird goes tweet, the latter stays in time with the former and becomes part of the music, it isn't



A 1kHz tone at -60dB and 1002Hz produces 1% distortion, this analysis shows, harmonics extending right across the audio band up to its limit of 20kHz. Readily detectable, it sounds unpleasant.

annoying. Men in white coats say the bird's tweeting is 'correlated' to the drum. If the thing tweets a tune that is completely different to the beat of the drum, it becomes both obvious and annoying; those same men in white coats say it is 'uncorrelated'. Digital distortion has a largely uncorrelated twittering pattern that the ear detects readily and finds discordant and irritating.

Again, LP does the opposite, being relatively benign in psycho-acoustic terms. It is because LP is benign and also produces ten times less distortion than CD at low levels (0.1% to 1%) that we find it aurally acceptable. It's really no mystery. Any mystery about why LP sounds good and CD dodgy is attributable to our misconceptions about the real behaviour of CD's digital code (i.e. 16bit at 44.1kHz sampling rate). Admittedly, to prove otherwise takes the use of some fairly sophisticated test equipment, such as our Rohde &

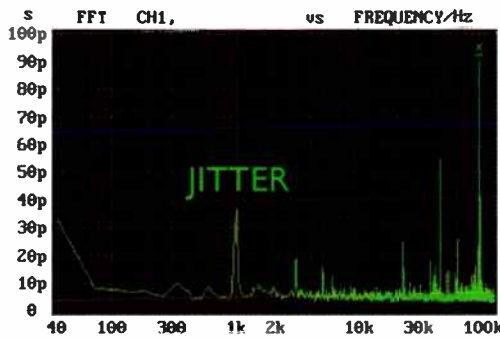
Schwarz UPL audio analyser with a digital generator, used to gather these results. The same analyser can also analyse jitter - another peculiar digital ill.

JITTER

No one thought that analogue timing errors would appear in digital, probably because digital's superiority seemed beyond dispute here, CD players being super 'quartz locked' as it were, from a crystal clock that's accurate and frequency stable, or so it was thought.

Jitter in the timing of this clock first reared its head some time ago in the music business, where it became apparent that sound quality was being badly affected by long signal lines, poor clocks and poor phase locked loops. Jitter was identified as the problem.

Nowadays, jitter is recognised as a significant digital ill and even in budget players like those within our group test this month, it is



The jitter spectrum of a good modern player. Signal related jitter is a low 35pS, with a 1kHz, -30dB tone.

suppressed by the use of a good master clock. Trichord Research (see www.trichordresearch.com)

have more information on this. DVD players run a 27MHz master clock divided down for different purposes and suffer higher jitter, they explained.

What does jitter sound like? It comes in many forms, but generally adds a mush and degrades bass impact, likely because it is often worst at low frequencies, our measurements show...

DIGITAL FILTERING

To prevent aliasing products, which can be thought of as a form of distortion, appearing in the audio band, CD players have 'brick wall' filters that cut off audio sharply at 21kHz. It's long been speculated that the phase characteristics of these filters may affect sound quality, but hard evidence has been difficult to come by. Now, however, manufacturers are starting to experiment with less drastic filtering. Generally, our experience is that this appreciably opens up the sound stage, moving its apparent limits outward

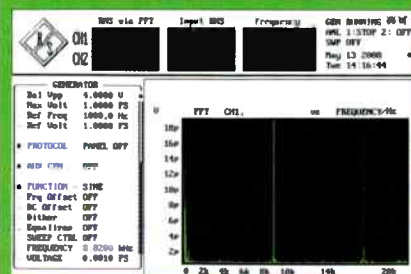
in all directions, banishing the usual letterbox shaped spread between the loudspeakers. However, distortion levels also increase and music can sound tonally grey. Pioneer's Legato Link system is a little different. It doesn't increase distortion levels, but uses out-of-band noise to simulate audio in an effort to fool the ear.

CD digital code emanates from the 1970s and has some gruesome limitations. They are lessened considerably by the use of higher sampling rates and bit depths, something we will hopefully enjoy soon when 24bit/96kHz digital becomes more common.

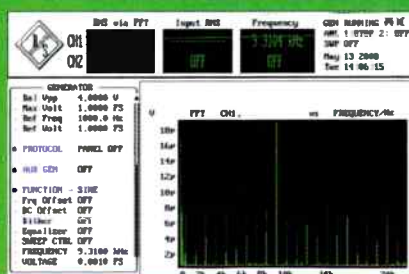
DIGITAL DISTORTIONS

The distortion behaviour of digital systems is difficult to pin down because it varies so wildly. CD suffers classic analogue style, harmonically related distortion, which we measure in our reviews, but also something termed 'quantisation noise' which is just as bad, or worse - and doesn't appear in reviews. That's because it is so hard to pin down, yet it affects sound quality. At high frequencies at least, quantisation noise does not exist at sub-multiples of CD's sampling frequency of 44,100Hz. This is illustrated here in our first

one-fifth of 44,100Hz, or 8820Hz. Compare this with a tone unrelated to the sampling frequency, where a discrete spectrum of quantisation products appears above and below the tone. In this form it can also be looked at as distortion and, summing the products gives a value of around 0.8% on a -60dB signal, which is a lot of distortion. Quantisation noise varies its amplitude and spectral distribution wildly according to the level and frequency of the signal being quantised, so putting a value on it is difficult. All the same, it is there, whether we can conveniently measure it or not, and its



A tone at 8820Hz produces no quantisation products.



A tone at 9130Hz produces strong quantisation products.

presence helps explain why CD can sound very edgy and hard.

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AKTIMATE MINI £399

Two years ago, there were precious few iPod speaker systems on the market. Indeed, one of the best was Apple's own Karl Heinz Fink-designed iPod Hi-Fi, which did what most people would want such a device to do – sound good, make a big noise and not take up too much room. In the intervening period of time though, we've been swamped with the darned things; from TK Maxx to Currys Digital, you can't go anywhere without seeing some form of active amplified speaker system for the pesky little 'Pod...

How then should we greet the Aktimate Mini? First impressions aren't good – there's nothing actually wrong with this pair of piano gloss lacquered boxes, complete with a rather ungainly iPod port on one of them, but frankly it's no oil painting. Worse still (for its sake), it's not a B&W Zeppelin, which the iPod cognoscenti at this magazine at least, agree to be the current state of the

interesting thing about this little active speaker system is its DNA – effectively it's a Creek. Which is to say that the internal amplifier circuitry was designed by Creek Audio, and the drive units were licensed from Epos (now Creek's loudspeaker brand). That means, despite its plain Jane looks, this is one exceptionally well bred iPod speaker system. It's not a Zeppelin, but in certain respects it's better – which is really saying something!

What you get is a pair of 300x185x210mm two-way active loudspeakers, fully magnetically shielded. The mid/bass unit is a 130mm moulded polypropylene cone, and the tweeter a 25mm metal dome with neodymium magnet. Inside is a National Semiconductors LM4766 Overture amp on a chip, pushing out 2x40W in Class AB, via a Burr-Brown PGA2311 digitally controlled analogue volume control, fed by a 120W toroidal power transformer.

'exceptionally inviting, they reward extended listening like no other iPod speaker...'

art. Along with Quad ESL57 and Michell GyroDec, the Zeppelin is about as great an exemplar of form and function in perfect harmony as you'll find – it looks great, it sounds great, it's beautifully designed; what more is there?

Well, that's precisely the question the Aktimate has to answer, and it doesn't answer it with its dazzling good looks. No, for me, the

The 'master' speaker has RCA phono inputs for an auxiliary source, and a single speaker cable running to the slave speaker. The dock has a full set of adaptors for every iPod. There's a single volume control on the master speaker, with a push-to-standby function. A basic remote control is bundled, and there's a rear USB input (for charging MP3 players only), plus an additional 3.5mm minijack input.

Finally, there's a video output for connection to a monitor.

The system sounds superb, but so it should – at this price it's one of the most expensive iPod speaker systems on the market. The choice of polypropylene mid/bass drive units works really well, investing what is quite a tonally dry source (i.e. an iPod) with real richness. Blondie's 'Hanging on the Telephone' showed it to be a walk on the warm side of iPod speaker systems (the B&W is the reverse; quite dry tonally), investing everything with a full-bodied bloom that proved a joy to listen to. There's no obvious disparity with the metal dome tweeters (not always a famously synergistic match with Polyprop cones, it must be said); the former are crisp and smooth (with just that touch of zing, as per all metal domes), and invest a degree of speed to the soft but fulsome bass.

Kate Bush's 'Moving' showed how good an iPod speaker could sound; even running at 320kbps, the Aktimate Mini made her voice rich, taking the emphasis off its icy coolness unlike other less euphonic rivals. But when the band kicked in, with that sumptuous bass guitar sound, those massive, thundering pan rolls and shimmering hi-hats, this system wasn't in the least bit perturbed. Even at high volumes, it held everything together with consummate skill, proving itself able to go impressively loud without losing the plot. Indeed, my only note of caution is about placement of the boxes – because the bass is so full, you have to be careful to keep the speakers off the floor and not too near corners, lest they get just a little too overpowering.

The overall effect however is superb; exceptionally musically inviting, they reward extended listening like no other iPod speaker. They lack the 'military precision' of the big B&W balloon, but make up for it with their big hearted, emotionally convincing nature – and there's no shortage of power either. Your average iPod user would be gobsmacked by the combination of clarity, detail and finesse the Aktimate Minis offer – and even hardened audiophiles will love them. No oil painting then, but a joyous performer all the same. **DP**

Contact - Aktimate
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SOUNDBITES



PrimaLuna's new Prologue Eight is one of the first CD players to reach the market with a valve driven clocking circuit. David Price watches and learns...

Clockwise

Although your grandma will associate it with the nineteen thirties jazz dance craze, jitter has a less benign connotation for audiophiles, as it's the word used to describe digital time domain distortion. Put simply, digital audio circuitry, running in 'real time' (i.e. playing music 'on the fly') needs to know exactly when to (and when not to) look for audio data coming from an optical transport. It then needs to read it at exactly the right

time before it can properly perform the various number crunching duties required to turn it into an analogue waveform. If the timing drifts ever so slightly out, then things get 'smeared' like a photograph taken at too slow a shutter speed...

Whilst the recent craze in digital audio has been upsampling – ramping the sampling frequency up to 96 or even 192kHz – where it produces few artefacts anywhere near the audio band, clever tricks like this mean nothing if the digital

data itself isn't running through the circuitry with metronomic precision – correct timing is an absolutely fundamental start point for accurate sound. The trouble is, not all digital clocks are created equal – some are like Swiss trains, others like those that randomly roll into the stations in this great country. How so? Well, wherever there's a chance to save money, manufacturers will invariably take it...

Although measurable by sophisticated electronic equipment,

the most accurate gauge of the phenomenon is the human ear, which hears jitter as tonal hardness and general lack of clarity. And because it's so fundamental, you can't really make up for it later on in the digital signal processing chain, by ramping down the treble response for example. Just like a speed-unstable analogue turntable, no amount of fancy ancillaries further down the chain can reign the problem back in.

What's needed is the best possible clock – and here we see a number of manufacturers now actively attempting this in their designs. Primaluna's ProLogue Eight is the first production CD player to come fitted with the 'SuperTubeClock', which uses a low-noise mini-triode vacuum tube. Neville Roberts tried AH!'s aftermarket version of this very design in the September 2007 issue of *Hi-Fi World*, and was most impressed. It is claimed to provide "vastly superior resolution, detail retrieval, improved clarity, increased definition from top to bottom" no less, and for once we found the manufacturer's claims matched our findings [see **MEASURED PERFORMANCE**], with this machine turning in the lowest jitter we have ever measured.

That's not the only tube in the player, because the ProLogue Eight sports more glass bottles than the perfume counter at your local House of Fraser. In addition to the single clock valve, there's a dual mono zero-feedback analogue output stage using one 12AX7 and one 12AU7 per channel, plus a vacuum tube rectified power supply incorporating eleven separate power supply regulation circuits. Custom designed isolation transformers separate the analogue and digital devices for decreased signal degradation and improved sonics, say Primaluna, and there's also a decent sprinkling of high quality resistors and polypropylene coupling capacitors fitted as standard. In-between the specially clocked transport and the tube output stage lies the latest Burr Brown PCM1792 DAC with SRC4192 upsampling circuit.

The machine wins no prizes for good looks or slick operation – the ProLogue Eight is merely purposefully styled, with the large complement of valves on top making it look strangely similar to a tube preamplifier. The thick, slab-like aluminium front panel confers a sense of quality, as does the not inconsiderable weight, but the disc drawer is a generic plastic affair, its feel remarkably similar to the cheaper Eastern Electric MiniMax CD. Round the back there's a single pair



of RCA analogue outputs, plus one coaxial and one optical digital output. A nice, substantial metal remote control unit is supplied.

SOUND QUALITY

A highly distinctive sounding design, put against my class reference Astin Trew AT3500 (a £1,100 player that easily competes with most £1,500 machines), the Primaluna turned in a dramatically different performance. Whilst the former delights with a vast, expansive soundstage and a bombastic, exuberant musicality – where everything seems a little larger than life – the latter follows an altogether different track. The Primaluna seems obviously less coloured than my reference, erring closer to the likes of Rega's

soundstage but doesn't exactly place instruments within it with millimetric precision. The ProLogue Eight is quite different; its soundstage isn't quite as huge (I've heard nothing at this price that is), but inside it things are rendered with breathtaking accuracy – both tonally and rhythmically. It's like you've just given your auto-focus camera's shutter release button first pressure, and it's suddenly snapped everything into exact focus.

Kate Bush's 'Moving' showed this in no uncertain terms. The song is a beautiful late period analogue recording (1977, Abbey Road), and sounds warm and beguiling through the AT3500, but switching to the ProLogue Eight showed it to be more than just a romantic, sumptuous, sepia-tinted epic. Instead, the

"instead of the usual digital facsimile, the song sounded earthy and organic..."

solid-state Saturn in its natural, unembellished tonality. Indeed, it's actually quite spry by comparison to the Astin Trew – with a very crisp and well lit treble.

Fun Lovin' Criminals' 'Up on the Hill', a rich, fulsome slice of classic pop/rap made for fascinating comparisons. You can hear the fact that the Primaluna has a slightly rising treble; it's not forward but is certainly atmospheric. Interestingly though, unlike some CD players even with ruler-flat response curves, there's no spitch – no sense of sibilance that suggests a 'peaky' design. At the other end of the scale, bass is obviously lighter than the AT, again the Primaluna lacking anything in the way of euphony down low, but it isn't weak knee in any sense, as we shall see later...

Obvious differences already then, but the midband is where the real action is. The Astin Trew could be criticised for being a little rich and loose here – it throws out a vast

Primaluna locked down the recorded acoustic, letting me hear the four walls of her vocal booth, the exact location of each instrument and the sound of fingers against bass guitar strings. More startling however was the way the song timed; it snapped the musicians' rhythms together, letting me hear how they were 'playing off' one another. The space between the notes became far more marked, the song sounding more broody and evocative.

Kate's vocals were carried differently too – the AT made them a little warm and mushy; very nice to listen to and suitably seductive. Tonally the ProLogue Eight gave them a chilly clarity, without erring towards hardness in the least, but more marked was the way the two players carried her phrasing. The Astin Trew sounded out of time all of a sudden, making Kate appear to be reading from the lyric sheet. The Primaluna, however, snapped her back into the soul of the song, carrying her delicate



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tones perfectly syncopated with the band. Suddenly the song had great emotional purchase, and I could 'feel' as well as hear the performance. This is precisely the sort of thing good, high end vinyl does for me, and I have to say I was surprised to be getting the same sensation from a sixteen hundred quid CD spinner.

The strains of Dave Brubeck's 'Time Out', a classic slice of breezy, modern jazz if there ever was one, proved another fascinating proving ground for the PrimaLuna. With 'Take Five', the player set up a capacious soundstage inside which dizzying amounts of detail could be heard – from the breathing of the brass players to the shaking of the double bass. Tonally smooth yet obviously well lit, this machine didn't try to artificially enhance this late fifties recording one jot, but rather tried to recreate as much of it as it could. Again, the interplay between the musicians was masterful, this new CD player capturing every last dynamic accent. Switching to my reference machine, and I got a larger than life sound, inside which things were less precise. Bass was fuller but softer, while dynamics seemed to go louder but somehow still have less impact.

Blondie's 'Atomic' ended up being a three minute-long commercial for the PrimaLuna, the Prologue Eight locking on to singer Debbie Harry's voice and conveying it with astonishing clarity and naturalness. Instead of the usual digital facsimile that comes with anything except the most expensive silver disc spinners, it sounded so earthy and organic – as if she was in the room with me. True, it lacked the body that the AT was able to muster, but the expressiveness was enthralling. The clarity with which the PrimaLuna carried the rest of the mix was also breathtaking, making an inspiring job of the interplay between the snare drum and the hi-hat cymbal. The result was that all-clusive live feel to the song that I'm used to when playing my vinyl version of 'Eat to the Beat'.

A Deutsche Grammophon recording of Vivaldi's 'Four Seasons' (Karajan, Berlin Philharmonic)

showcased the eerie clarity of this CD player, which served up a precise yet musically convincing rendition. Unlike other, so-called 'analytical' machines, the Prologue Eight doesn't suffer from a cerebral sound ('analysis paralysis') that rewards only with detail. Indeed it is dazzlingly detailed, throwing out every last squeak of an orchestra chair from the back of the hall, but never does this become a trade-off with its unerring musicality. Things bound along with a joyous, carefree nature that unipivot tonearm-using analogue addicts will instantly recognise. Indeed, the similarities are marked...

The only real downside of the PrimaLuna is its ever-so-slightly curtailed dynamics – although in no way flat or undynamic sounding, it didn't quite have the final one-tenth of visceral impact on crescendos in classical music. Its deliciously natural and lucid midband more than makes up for the rival Astin Trew's fraction more 'shove' however – that startling clarity at lower levels makes it just as lively sounding on most recordings, if not more.

CONCLUSION

A fascinating new entry to the £1,500 silver disc spinner market, the PrimaLuna Prologue Eight brings vanishingly low jitter to the game, and its associated clarity and rhythmic ease. The way it recreates the phrasing of a piece of music is breathtaking considering its price – very few machines at any market position can compete in this particular respect. It's not as warm and beguiling a machine as you'd expect considering its hefty tube complement (if you want this, the Astin Trew is class of the field), but that's not to say its only party trick is stark detailing. Rather, this is one of the most liquid sounding digital disc players I've heard, in the way the different elements of the mix seem to live and breathe by themselves. An essential audition – don't be late!

CLOCK THIS!

PrimaLuna's SuperTubeClock replaces the solid state oscillator normally found in a CD player's digital clocking device with a Russian military triode specifically designed to produce an ultra-clean sine wave. This is then shaped into a square wave with excellent speed, accuracy and jitter properties. Specifically, the parasitic noise in the 10Hz to 100kHz region is claimed to be much lower than of any of the comparative designs and this noise is considered to be the determining factor for the audibility of jitter. The absence of this should result in a reduced sense of the 'digital' sound of a CD.

REFERENCE SYSTEM

Astin Trew AT3500 CD player
Yamaha A-S2000 integrated amplifier
Monitor Audio PL100 loudspeakers

VERDICT

Exceptionally natural sounding CD player, thanks to novel engineering and rugged build.

PRIMALUNA PROLOGUE EIGHT £1,500

Pistol Music Ltd.
+44(0) 208 971 3909
www.pistolmusic.co.uk

FOR

- arrestingly natural timing
- dizzying amounts of detail
- organic musicality

AGAINST

- prosaic styling

MEASURED PERFORMANCE

CD players with valve output stages usually distort a little (0.3% or so) at peak output of 0dB, only the Edgar CD-1 did not. The Prologue Eight distorts quite heavily, producing 1.45% at 0dB, albeit of valve distortion, meaning primarily second harmonic, with higher harmonics of descending amplitude. All the same, as 0.45% exists at -6dB, musical peaks at least will distort and this may add some just perceivable thickening or muddle to the sound. The degree of subjective impact will depend upon music level on any CD played. Recordings compressed upward toward 0dB to increase loudness will be distorted in any case; those not so compressed will generally be little affected by the Prologue Eight's distortion I suspect, so distortion may not be obvious, but only listening tests can judge subjective impact.

At low music levels distortion was much the same as that of any other player and the good, but unexceptional EIAJ dynamic range value of 109dB reflects this.

Frequency response has a small tilt upward at high frequencies, our convolved impulse analysis shows. The player is unlikely to sound dull as a result. As valves deliver treble more deftly than transistors, this may not be a negative.

Intriguing was an exceptionally low jitter spectrum, presumably due to the valve based clock used in this player. I have never measured narrow band jitter levels down to 5pS before. The Prologue Eight performs exceptionally well in this area and a pure sound free from a 'grey' tonality should result.

The PrimaLuna Prologue Eight has obvious measurable weaknesses, but it has great strengths too. Its basic

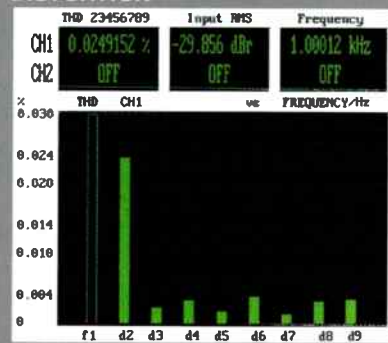
measured performance is good and its strengths may outweigh weaknesses, I suspect. NK

| Frequency response (-1dB) | |
|---------------------------|----------------|
| CD | 5Hz - 21.75kHz |
| Distortion (%) | |
| 0dB | 1.45 |
| -6dB | 0.45 |
| -60dB | 0.24 |
| -80dB | 1.8 |
| Separation (1kHz) | 102dB |
| Noise (IEC A) | -104dB |
| Dynamic range | 109dB |
| Output | 2.1V |

FREQUENCY RESPONSE



DISTORTION





Penny Black

Noel Keywood tries a bargain-priced, mail order DVD universal player, the Oppo DV-980H...

Here's an amazingly inexpensive DVD player that plays SACDs and CDs, in addition to DVD Video and DVD-Audio discs too! The Oppo DV-980H has a specification as long as your arm, and works very well despite its £156 (Euro 198) price tag.

Oppo are a Swedish company that major on internet mail order (see www.opposhop.com). When I asked for a review sample it arrived the next day, very neatly packed and with good documentation, which inspired confidence. Whilst the Handbook starts with 'Innehallsforteckning', comprehensible English is at the back!

What you get is a DVD player right up on the front line. It has an HDMI 1.2a digital output (1.3 isn't needed as DVD does not officially carry Blu-ray formats), a full set (7.1) of analogue outputs and optical and electrical S/PDIF digital outputs. So for audio purposes connection can be made to a stereo amplifier (via an analogue Mixed stereo output), or to a surround-sound receiver with a 7.1 input set. Height is 49mm and weight just 2.3kgs.

Being a European product, there's a Scart socket for connection to a TV, plus HDMI (preferable). Also provided for this purpose are Component and S-Video outputs, plus Composite. So the DV-980H will connect to just about anything, old or new, using almost every signal/cable format ever devised. Not bad considering the price...

THE AUDIO

Does it work properly? There's a difference between handling a format and doing it justice. Both DVD-A and SACD have huge dynamic range (better than 100dB) and wide bandwidth (up to 100kHz). Budget products often fail to support this, submerging low level signals beneath noise, whilst bandwidth is squandered by poor digital processing. Measurement showed the Oppo's on-board analogue audio outputs give proper CD quality and both SACD and DVD-A are measurably better, as they are meant to be, although neither quite match the performance of expensive audiophile players. Perhaps this is to be expected at the price. It's still a decent result.

Via an S/PDIF digital link, either optical or electrical, our digital analyser showed fine results, CD delivering full bandwidth and low distortion, although jitter on this link was higher than the budget CD players tested in this issue.

Through the HDMI digital link, via a Marantz SR8002 receiver (which decodes DSD), SACD replay was close to ideal and DVD-A little worse than ideal, measurement showed. I suspect the Marantz receiver set the limits here, not the Oppo player. A point to watch is that the DV-980H's HDMI video quality must be set to high-def. (720/1080i/p) for audio to work properly. Curiously, set to 480/576, audio suffers peak overload, measurement showed. For those lacking DSD decoding in their receiver, player output can be set

to PCM, with some degradation of sound quality. Unusually, loudspeaker time delay compensation (for position) can be set in this player - good news for those using the 7.1 analogue outputs.

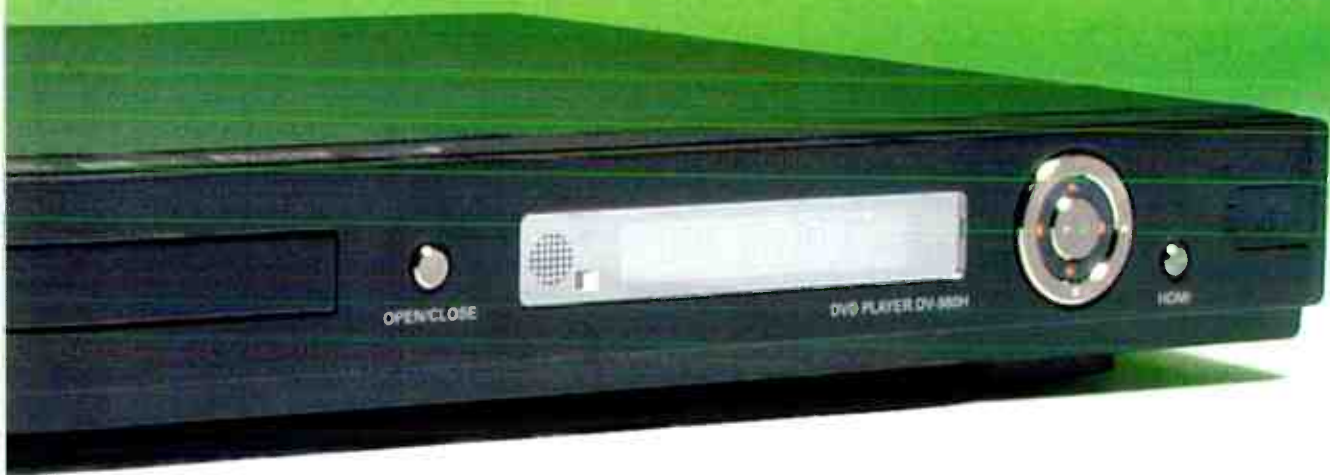
In a nutshell then, the DV-980H delivers CD, SACD and DVD-A in very respectable, if not quite perfect quality. As always it's best to use its HDMI output into a good, modern receiver. Set up is confused by blanked menu options unless there is no disc in the player, or the drawer is open.

THE VIDEO

The player outputs standard definition video or can be set to de-interlace and upscale to high definition format (720p, 1080i/p) to suit today's hi-def TVs. Our Buroschi PAL DVD test discs showed superb upscaling, better than a Samsung BD-PI400, especially when handling progressive content, as well as de-interlacing up to progressive for a progressive display. Edge definition was excellent and there was no motion judder. Grass, trees and flowers were highly detailed, as were faces. Panned shots held well, due to excellent motion adaptive deinterlacing. Picture quality was quite a shock considering price! A lot of adjustment is available too.

SOUND QUALITY

Via the analogue outputs CD quality from onboard D/A conversion showed some slight vagueness and a hint of muddle, plus central stage



"staggering ability at an extraordinary price..."

dominance. The Oppo offers good CD quality, if not audiophile results.

Digital connection via S/PDIF and HDMI yielded a more evenly spread sound stage, provided by the Marantz SR8002's digital converters of course. There was a little messiness in the digital sound, likely due to jitter [see MEASURED PERFORMANCE].

Comparison to a low jitter Samsung BD-P1400 revealed slight loss of low level detail from the DV-980H, drums lacking visceral impact with the Eagles 'Last Good Time in Town' for example, and there was a lack of digital tidiness.

I enjoyed DVD-As like Toy Matinee, and Santana's 'Supernatural', which displayed that slightly stark but vivid presentation typical of the format. Via analogue or HDMI outputs, all the separation of instruments and vocals was there, if not quite the full cleanliness nor again the bass impact that is possible with expensive audiophile players.

The star was SACD sound quality, which sounded good via analogue connection but superb via HDMI, when set to DSD digital (which, I found, mutes SACD via the analogue outputs). All the smooth sophistication of SACD was there, with that great sense of atmosphere only LP can otherwise convey. Yolanda Kondonassis playing 'Malaguera', from 'Andalucia, Suite Espagnole', had me in awe - both at her performance and the way it was conveyed by the DV-980H through the Marantz SR8002 DSD converters. Plucked harp strings were harmonically rich yet excitingly forceful, the gathering pace of the piece underlined by the effortless

timing of good DSD digital. The blare of a saxophone from Vivino Brothers was captured in full dynamic measure, and drums had the sort of resonant power not quite managed by DVD-A from this player: SACD quality was about the best I have ever heard, which is saying something from a £156 player.

CONCLUSION

This is a complex DVD player that

offers a staggering amount of ability at an extraordinarily low price. Sound quality of CD, DVD-A and SACD via the onboard converters and analogue outputs was good. Connected to a modern receiver via HDMI the player sounded even better, especially with SACD where it was superb. Something of a must for penny-pinching audiophiles with DVD-A and SACD collections, this is a super online bargain.

VERDICT

Massive ability and a good all round performance, superb with SACD.

OPPO DV-980H £156

Oppo Digital
+46 21 188718
www.oppo-shop.com

FOR

- superb SACD quality
- fine DVD-A and CD
- excellent video quality

AGAINST

- digital jitter
- set up difficulties

MEASURED PERFORMANCE

Via the onboard analogue outputs (Mix), CD measured well. Frequency response was flat to 20kHz and distortion low, resulting in a fine EIAJ Dynamic Range value of 111dB. So the DV-980H offers a good measured result from CD.

High jitter existed on the S/PDIF digital outputs. The Oppo DV-980H measured 200pS at 1kHz, rising to 1nS at 100Hz, a poor result. This suggests its digital sound (S/PDIF only) will not be quite as clean as one might hope when using this link into a receiver. This apart, our digital analyser showed S/PDIF also gave flat response to 20kHz and low distortion, with lower distortion (2.8%) at -80dB than the analogue outputs (4.4%).

Via the onboard analogue outputs SACD and DVD-A gave slightly improved results over CD as one would hope, but neither matched dedicated audio players, which measure around 0.04% distortion at -60dB, compared to the Oppo's 0.13% figure. The picture was the same when looking at frequency response, both SACD and DVD-A reaching 35kHz, which is a bit limited (DVD-A should reach 100kHz). All the same, improvements in sound quality will be audible, if not quite as marked as you'd get from dedicated audio players, which also cost a lot more of course.

Via HDMI through a Marantz SR8002 receiver, when set to output DSD, frequency response reached 42kHz and distortion was negligible right down to -80dB (0.06%), with a -100dB tone properly resolved. This is full SACD quality, bandwidth being limited a little by the receiver's decoding I suspect. Results were similar when output was set to PCM, although quantisation products appeared and bandwidth dropped to 33kHz. So for best SACD results DSD should be transmitted raw to a modern receiver that can handle it (Onkyo, Pioneer, Marantz).

DVD-Audio reached 45kHz (-1dB) via HDMI and was -8dB down at 90kHz, a good result and again likely decided by the receiver rather than the player. Distortion at -60dB measured 0.12%, which is better than CD (0.2%) but not as good as DSD (0.06%) or the best dedicated DVD-A players that once roamed the earth. It's still a good result though.

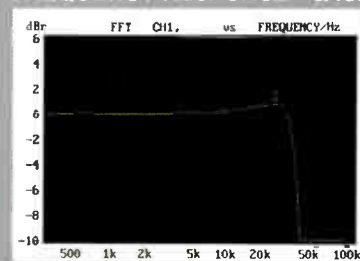
The DV-980H measured well with CD, SACD and DVD-A. Its analogue outputs do not quite match the performance offered by expensive audiophile players, but they get close. The S/PDIF digital output is fine, except for jitter. Via HDMI results depend upon the receiver and full SACD and DVD-A performance are available. All-in-all then, impressive. NK

| Frequency response (-1dB) | |
|---------------------------|-------------|
| CD | 2Hz - 20kHz |
| DVD-A | 2Hz - 35kHz |
| SACD | 4Hz - 35kHz |

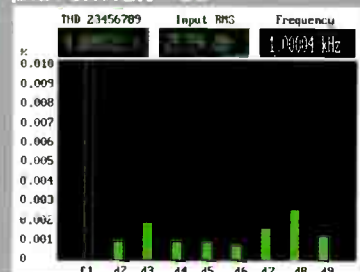
| Distortion (%) | CD DVD SACD | | |
|----------------|-------------|-------|-------|
| | -6dB | 0.006 | 0.003 |
| -60dB | 0.18 | 0.13 | 0.13 |
| -80dB | 4.4 | 1.2 | 1.1 |
| -100dB | - | 15 | 11 |

| | |
|-------------------|--------|
| Separation (1kHz) | 104dB |
| Noise (IEC A) | -122dB |
| Dynamic range | 111dB |
| Output | 2.4V |

FREQUENCY RESPONSE - SACD



DISTORTION - CD





“This is one of the most impressive hi-fi products I’ve heard this year”

KETAN BHARADIA, TECHNICAL EDITOR WHAT HI-FI? SOUND AND VISION AWARDS 2007

THE ANILA CD PLAYER WITH SUZUKI MDX AND A MULTI-DAC CONVERTER TECHNOLOGY PROVIDES BREATHTAKING FIDELITY. A LIPS ECHO, THOUGH, IS THE ONLY PLACE IT DOESN'T BELIEVE.

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KID

Rock!



David Price plugs his Apple iPod into the Krell Interface Dock, with surprising results...

Just in case you've been away for the past five years, Apple has sold over one hundred and twenty million iPod portables around the world, and counting. The polycarbonate peril (okay, the latest ones are made of aluminium) has radically transformed the way people listen to music, the closest parallel being that of Compact Cassette a couple of generations ago.

However, iPods and audiophiles are not exactly synonymous with one another – and until recently the former hasn't even appeared on the latter's radar. Something big happened late last year though – Apple introduced the iPod Classic, with either 80GB or 160GB of storage starting from £159. This meant it was possible to store Apple Lossless or even PCM, making the iPod a 'full fat' 16bit, 44.1kHz digital source for the first time.

The arrival of Arcam's rDock (£130) took the humble Pod into the hi-fi world for the first time – you could buy Apple's own version for twenty quid, but the Arcam sounded so much better. Suddenly we began to think of it as a serious music source. And now, please be upstanding for Krell's KID (Krell Interface Dock), which takes the rDock principle to an altogether higher level – along with its price!

To be brutally frank, you probably don't need this bit of kit. In the same way that cassette aficionados didn't need a Nakamichi Dragon, the KID is the sort of thing you buy yourself for your birthday – or better still, get

someone else to! Whilst the Arcam makes a fine fist of getting the signal out of Apple's universal connector, bypassing the iPod's nasty headphone amp, the Krell goes further...

It's said to be the first product to utilize the fully differential output of the iPod's internal Wolfson DAC, opto-isolating it (so no electrical noise passes from the iPod to the KID) and porting it out in its native balanced mode before running it through the Krell's own 255-step custom-taper volume control. The KID then squeezes every last pip out of the iPod's DAC, bypassing the latter's analogue output stage (which is its real weak point), and adds a preamplifier with digitally controlled analogue bass and treble controls. Balanced differential Class A circuitry is maintained throughout the signal path and fed to the balanced (XLR) and single-ended (RCA phono) outputs.

The unit is nicely compact (330x70x277mm), but don't get the idea that you're buying a box half filled with air – looking inside the KID, it's pretty much full-to-brimming with passive componentry, and it weighs more than many CD players at 4.5kg. It's beautifully built (and so it should be at this price!), with a fine brushed aluminium fascia finish featuring three blue LED displays for bass, treble and output level. There are corresponding up/down buttons beneath, and a 3.5mm minijack input. Round the back are chunky RCA phono outputs, XLR balanced outputs and composite and S-Video outs.

SOUND QUALITY

Slotting in my 80GB iPod Classic running Apple Lossless (uncompressed, bit-for-bit 16/44), I pressed the two output level buttons together to lock the KID into 'direct' mode, so it becomes a fixed output source component. Obviously the iPod's own DAC isn't exactly in the dCS Elgar class, but without ruination from its poor analogue output stage, it's amazing how good the Apple can sound...

Even through a pair of £17,000 German Physiks HRS 120 loudspeakers, I got a surprisingly spacious and smooth performance, with impressive rhythmic snap and strong, full bodied dynamics. Kraftwerk's 'Tour De France Étape 1' was beautifully mellifluous, the KID capturing those warm analogue synthesiser samples and chunky kick drum with aplomb. I was amazed at the space inside the mix, each strand of percussion being readily discernable. Bass stopped at started with precision, hi-hats flickered hypnotically and that famous vocoded lead vocal sounded almost tangible – a brilliant result.

CONCLUSION

In terms of absolute value, the Krell KID is debatable, but if the best iPod dock/preamp is what you want, then you've just found it. A truly lovely bit of kit, the wonders it works on the signal coming out of your humble Apple digital music portable are such that you might even start convincing yourself that it was, after all, an essential purchase – just like your Nakamichi!

ELECTROKID
Krell's UK distributor Absolute Sounds is offering the Krell KID with a pair of Martin Logan's superb 200W active Purity floorstanding electro-static loudspeakers to create the ElectroKID system for £3,740; watch out for a review soon!

VERDICT

Superbly engineered, state of the art iPod dock with jaw-dropping sonics – but it will cost you!

KRELL KID £1,350
Absolute Sounds
+44(0)20 8971 3909
www.absolutesounds.com

FOR

- amazing sound from iPods
- superb engineering
- design, build, finish

AGAINST

- not cheap!

Birthday Boys

Adam Smith dons his party hat and joins in the birthday celebrations, courtesy of Mordaunt Short and Dali's limited edition loudspeakers...



Now, we're a happy bunch here at *Hi-Fi World* and there's nothing we like more than a good party. At the faintest excuse, we're more than happy to stick on a silly hat and start gorging ourselves on sausage rolls and cheese and pineapple on sticks... Consequently, with not one, but two birthdays to celebrate this month, we're all in danger of developing an allergy to jelly and an intolerance to party poppers. Of course, this partying has all been in a good cause as two very well known names in the loudspeaker industry are reaching 'major goal' ages, namely DALI and Mordaunt Short.

It was twenty five years ago in Denmark that Danish Audiophile Loudspeaker Industries were born and they have carved themselves a solid niche in the world loudspeaker market. With a wide range of products from the small and affordable up to the rather impressive Megaline flagships, DALI have built up a loyal following and adopted a number of key technologies, such as their use of what they call their "Hybrid Tweeter Module" which mates a soft dome

tweeter to a ribbon in order to "deliver the full spectrum of high frequency sound across a wider listening area". Their headquarters at Nørager in Denmark occupies nearly 200,000 square feet and includes everything necessary for loudspeaker production, including extensive R&D facilities, a cabinet assembly shop and full paint spraying abilities.

One of the most popular loudspeaker families from DALI is the Helicon range, now in Mk2 guise. For their quarter-century, DALI have selected the smaller floorstander from the range, the Helicon 400Mk2, as most suitable candidate for a little tinkering and this has become the Helicon 400LE 25th. This uses the same driver line up as the standard 400Mk2, namely a pair of 6.5in (170mm) wood fibre coned bass drivers, and the aforementioned Hybrid Tweeter Module, which comprises a 25mm soft dome unit, and a 10x55mm ribbon.

Internally however, the 400LE 25ths benefit from updated, audio-grade, crossover components that are taken from DALI's flagship Euphonia range. Finally, a rather swish coat of gloss piano black paint and a golden logo badge complete the transformation, so that you know you have something special each time you glance at your new loudspeakers. You will realise it when you buy them however, as all these transformations do not come cheap, hiking the price from £3,799 for the standard items, to £5,299 for the LEs. Five hundred pairs will be made.

Over this side of the North Sea, Mordaunt Short have been around a for a few more years, and recently celebrated their fortieth. It was in 1967 that Norman Mordaunt and Rodney Short first put their heads together to come up with a range

of loudspeakers, so strictly speaking, MS are actually forty one, but I am reliably informed that work on the Performance 6LE did indeed commence last year! Those original ranges eventually included models like the Carnival and Pageant, plus the 700 series of the 1970s that used the Decca ribbon tweeter.

Bought by Audio Partnership in 1999, MS's fortunes have gone from strength to strength recently, with names like Declaration, Avant Premiere and Genie becoming firmly ensconced in the high quality budget arena. However, in 2004 the MS team pulled out all the stops to release the Performance Series, including the floorstanding Performance 6 flagship, and it is this model that MS have chosen to tweak for their Ruby anniversary.

Like the DALIs, the outside of the loudspeaker has received a coat of 'Midnight Black' gloss paint. Driver lineup is still the same, namely a pair of 6.5" (170mm) Aluminium CPC bass drivers, a 4" (100mm) CPC midrange and a 1" (25mm) aluminium dome tweeter featuring Mordaunt Short's 'Aspirated Tweeter Technology' (ATT).

Under the bonnet, Head of Acoustics Graeme Foy has fettled further, upgrading crossover components to include Clarity Caps, changing internal wiring and coming up with a new crossover PCB layout that incorporates a few subtle circuit tweaks. More important are the changes to the cabinet. As part of the necessity to meet ROHS compliance, changes were made to the material used to form the cabinet and the result was found to be denser but still with excellent damping properties. As a result, the design team were able to rework the internal strengthening

braces, trimming material here and there, and gaining an extra half a litre of internal cabinet volume. As Tesco keep reminding us - every little helps...The resulting LE edition commands a relatively modest £500 price premium over the £3,500 of the standard model and MS is anticipating making two hundred and fifty pairs.

SOUND QUALITY

Setting up the DALIs first, I was rewarded with an impressively bold and dynamic sound. Most notable was the top end - the Hybrid Tweeter Module really does work well, conferring the best aspects of both a good soft dome and a ribbon onto the sound. Ribbons can work on their own, with good lateral dispersion, but do tend to be curtailed in vertical imagery terms - get everything right in the listening position and, more often than not, everything will go dull when you stand up. This was not the case with the DALIs however, as they were impressively consistent over a wide range of vertical and horizontal angle. DALI do not recommend toeing-in the loudspeakers at all but I found that there is room for experimentation here. Positioned firing straight ahead, the central image of vocalists was vivid, although backing instruments tended to lack focus. Toeing-in the speakers to face me, as we usually do, those backing instruments improved greatly, but the central image became a little diffuse. Consequently I settled on a halfway position which worked well - the DALIs are nicely tweakable in this respect.

The 400LE 25ths' top end was very sweet and crisp, with excellent insight into all instruments, adding a lovely shimmer to cymbals without making them harsh. As a result, finer details in recordings were well revealed and the Helicon 400LEs made sure that nothing was allowed to go unnoticed. Fortunately this was not accompanied by the sort of forthright hardness that can afflict similarly detailed designs. The dip in output around 1-4kHz actually aids this, as it reins in the region in which the ear is most sensitive and makes sure that the overall balance never becomes strident. The only other effect of this was that I did feel that the image was hung back behind the loudspeakers somewhat, rather than being projected right out into the room. It did stretch back a good way however, and so is definitely not a bad point, more a character trait.

At the low end, the Helicon 400LE 25ths were most assured. Bass lines were deep, solid and

tuneful with excellent pace and timing. Low end detail was also highly commendable, perhaps not right up with the very best in terms of revealing the ultimate in filigree detail of stringed bass instruments, but still fine nonetheless, and the sort of thing you would really only pick up on in an arduous A/B demo. All in all, fed with a wide range of music, The DALIs never failed to impress.

Switching over to the Mordaunt Shorts brought about an interesting contrast. Although it is not my intention to directly pit the two designs against each other, I could not help but notice how the DALIs, with their response that drops off a little towards the middle, compared to the Mordaunt Shorts, which lift a little in output towards 1kHz.

What this means is that the Performance 6LEs excel in vocal reproduction and instrument detail. I could almost feel the hairs on my neck tickling as Tori Amos crooned 'Pretty Good Year', sitting absolutely right in front of me with her piano to the right. When the backing cello came in later in the track, it was clearly over to the right and the bow on the strings had a delightful muted rasp as it formed each note. Spinning Charlie Haden's new CD on the Naim label, 'The Private Collection', the atmosphere of the live venues in which the albums were recorded was palpable - the Performance 6LEs really put you right into the action.

As I mentioned with the B&W CM7s last month, the idea of metal dome tweeters all being hard and clanky has long gone and once more the Mordaunt Shorts prove this perfectly. Their more budget loudspeakers like the Avant range definitely err towards being brighter (but still not nasty), but the Performance 6LEs are as supple as they come. The Aspirated Tweeter Technology adds air and depth to the top end but the dome itself is a smooth and fluid performer, imparting insight into performances without adding any artificial sheen.

Helping this along nicely is the well balanced midrange driver that avoids any metallic colouration and digs right into the heart of the music played. Instruments were lifelike, vocalists excellently emotive and the integration between this unit and the tweeter was impeccable. In fact, 'integration' sums up the Performance 6LEs - across the frequency range they have an evenhandedness that is missing from many designs.

This also extends down to the bass, which is superbly tight and tuneful and blessed with commodious

amounts of detail; bass strings were vivid and notes started and stopped with precision. For me though, the low end is still the only slight area of weakness for the Performance 6LEs in that they still do not dig especially deep. As an example, the very deepest bass notes from Newton Faulkner's 'Teardrop' were only just audible and, although as mentioned, the quality of the bass is beyond reproach, a little more quantity would not go amiss.

CONCLUSION

As mentioned earlier, it was not my intention to compare these loudspeakers. They are both very fine designs and are excellent ways of showcasing the strengths of each company, in a very enticing, limited edition, package. Both sound a little different and the end results are a both highly satisfying, but in different ways.

In the case of the DALIs, this means a crisp, punchy presentation, with good levels of top end insight and bottom end impact, brought together by a smooth and spacious midrange. The Helicon 400LE 25ths are eminently tweakable in terms of position to find the sound you like



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Linn Ex Dem List

| Source | Price | Condition | Colours available |
|------------------------------|--------|-----------|---------------------------|
| Linn CD12 CD Player | £6000 | Used | Silver |
| Unidisk 1.1 Universal Player | £4500 | Ex Dem | Black & Silver |
| Unidisk 2.1 Universal Player | £2500 | Used | Black & Silver |
| Unidisk SC | £2250 | Ex Dem | Black & Silver |
| Karik CD Player | £350 | Used | Black |
| Numerik DA Converter | £400 | Used | Black |
| Control | Price | Condition | Colours available |
| Kisto AV Processor | £5000 | Ex Dem | Black |
| Kinos AV Processor | £3750 | Ex Dem | Black |
| Kairn Pre Amplifier | £400 | Used | Black |
| Playback | Price | Condition | Colours available |
| Klimax Solo Power Amplifiers | £4950 | Ex Dem | Silver |
| Klimax Solo Power Amplifier | £4000 | Used | Silver |
| Chakra 5100 Power Amplifier | £1400 | Ex Dem | Black & Silver |
| Chakra 2100 Power Amplifier | £1000 | Ex Dem | Black |
| 2250 Power Amplifier | £900 | Used | Silver |
| LK140 Power Amplifier | £400 | Used | Black |
| LK85 Power Amplifier | £400 | Used | Black |
| Komri Loudspeakers | £14000 | Used | Maple |
| Linn Keltik Loudspeakers | £1800 | Used | Rosemat (Immaculate) |
| Artikulat 350A Loudspeakers | £15000 | Ex Dem | High gloss Black & Cherry |
| Artikulat 350P Loudspeakers | £8000 | Ex Dem | Rosemat |
| Artikulat 345 Subwoofer | £2600 | Ex Dem | High gloss Cherry |
| Artikulat 340A Loudspeaker | £6000 | Ex Dem | High gloss Cherry |
| Artikulat 320A Loudspeakers | £9000 | Ex Dem | High gloss Cherry |
| Akurate 242 Loudspeakers | £4000 | Ex Dem | Rosemat |
| Akurate 212 Loudspeakers | £2500 | Ex Dem | Maple |
| Akurate 221 Subwoofer | £1400 | Ex Dem | Maple & Black |

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and will make a fine partner for many systems. Really, my only reservation is that the Limited Edition version does carry a fair price premium of £1,500 and their resulting £5,299 cost is actually £100 more than the standard top of the range Helicon 800Mk2s!

In the case of Mordaunt Short, the 'LE' upgrades have only added to the already fine Performance 6 loudspeakers to result in a charmingly enjoyable and beautifully integrated loudspeaker. A little more bass would have been nice, but the impressive levels of low end detail

and accuracy mean that the Performance 6 LEs never sound lightweight. Pair with a punchy sounding amplifier and source and they will never fail to impress.

So happy birthday to DALI and Mordaunt Short, and thank you for your anniversary specials - listening to them, I had a ball.

REFERENCE SYSTEM
 Scheu Analog Black Diamond turntable
 Ortofon 2M Black cartridge
 Whest Two phonostage
 Yamaha CD-S2000 CD player
 Creek OBH-22 passive preamplifier
 Quad II-eighty power amplifiers



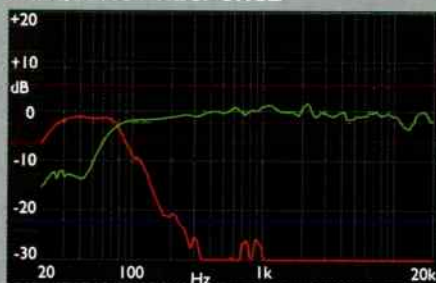
MEASURED PERFORMANCE - MS

The Mordaunt Short Performance 6LEs offer a very flat response across their bandwidth, with just a slight rise towards the 500-2kHz region. This will add presence across the midband and should bring vocals well to the front of the soundstage. At the top end, the Performance 6LEs are smooth and well extended, with just a slight ripple in the 12-15kHz region. This is only in the region of a 1-2dB fluctuation however, and so should not be obvious.

At the low end, the twin 6.5in drivers roll down below 70Hz and the front-firing port works over a wide range down to its tuning frequency of around 40Hz. Port output is even, with little unwanted additions further up the frequency range, so bass should be solid and tight, if not exactly floor-shaking.

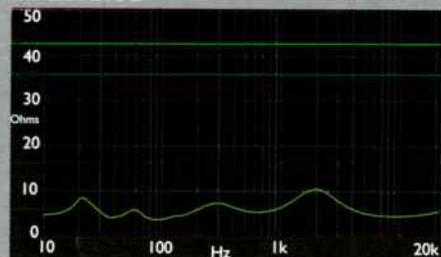
Electrically, the Performance 6 LEs have a very even response across the frequency range and are well damped at the low end. As a result, average measured impedance is 5.2 Ohms, but only dipping to a minimum of around 4 Ohms, so the Mordaunt Shorts are a relatively benign 4 Ohm load. Sensitivity is fine at 87dB and so matching amplifiers of 40W or more should be good partners. AS

FREQUENCY RESPONSE



Green - driver output
 Red - port output

IMPEDANCE



VERDICT ●●●●●

Skillfully integrated and emotive performers, considerably improving on the originals. Excellent value.

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 Audio Partnership
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www.mordauntshort.com

- FOR**
- overall integration
 - vocal insight
 - low end detail
 - styling and finish

- AGAINST**
- slight bass shyness

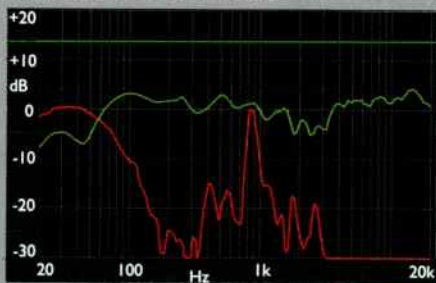
MEASURED PERFORMANCE - DALI

The DALI Helicon 400LEs have an interesting response in that they have something of a 'saddle' shape to their output graph. This means that output at the top and bottom of the frequency range is a little higher than that in the midband, and is likely to endow the Helicon 400LEs with a crisp and weighty sound but one that may be slightly wanting in terms of midrange impact. DALI do recommend that the 400LEs be measured at 15 degrees off axis, as this is how they are designed, so this was complied with but it seemed to make very little difference. Ribbon tweeters do generally perform well off-axis horizontally, and this endowed the 400LEs with good consistency in this respect.

Bass from the twin drivers is good down to 70Hz and the port carries this down to around 30Hz, so the DALIs are likely to have a solid low end. Higher levels of extraneous port output were noted at around 850Hz, but as the ports are rear-firing, this should not be audible.

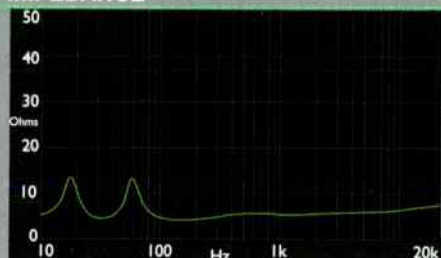
Electrically, the 400LEs measure very evenly and are well damped. Average measured impedance was 5.4 Ohms, dropping to a minimum of around 4 Ohms so, once again, they are a genuine 4 Ohm load. Sensitivity was good at 88.5dB and so 30-40W should see them performing well. AS

FREQUENCY RESPONSE



Green - driver output
 Red - port output

IMPEDANCE



VERDICT ●●●●●

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- FOR**
- treble detail
 - capacious soundstaging
 - bass weight and pace
 - finish

- AGAINST**
- price hike over standard



When one of Japan's finest brands meets Britain's latest affordable audiophile sensation, you just know it's going to be – ermm – polite but fun. And so it was when Yamaha's lovely new A-S2000 met Leema's charming Pulse integrated, reports David Price...

Civil English War

I can still remember a brilliant bit of journalism in the news section of the Flat Response magazine, some twenty two years ago. There were two pictures, one of a generic Japanese integrated and the other was a British 'black box'. They'd costed every part of each and the verdict was – shall we say – not completely complimentary about the former. The gist of the article was that the Japanese manufacturer (I think it was Sony, but can't be sure) had spent rather a lot more on the price of the casework, knobs and switchgear, and rather less on the componentry...

In truth, that didn't surprise me – because in the mid eighties, your average 'cottage industry' Brit integrated had so few features it would have been impossible for the Japanese not to have spent more...

I now find myself pitting a mass market Japanese jobbie against – shall we say – a 'niche' English design. Things have changed though, as we shall see... Firstly, that famous 'Made in Japan' moniker is nowhere to be found on the Yamaha. Such has been

the ascent of the Yen, and the cost of living in the land of the Rising Sun, that the company now produce their more 'affordable' kit in Malaysia. Second, aside from its country of origin, Leema has little to do with eighties British cottage industry practices – as anyone who's seen any of their products will know. No, they don't fall to bits, catch fire or look like they've been designed by a man who can't tell his face from the back of his head...

LEEMA PULSE

Not to put too fine a point on it, this is a cost-cut version of Leema's highly acclaimed Tucana amplifier. Costing £1,195 it's less than half that of the latter, but is actually very similar, save for a few added features and a slightly less muscular power supply. No, that doesn't mean a Naim Nait (One)-style 13W RMS per channel, because Leema claim 80W [see MEASURED PERFORMANCE] into 8 Ohms, or nearly twice that into 4. The case is a thoroughly conventional size (435x90x375mm) – no half-midi boxes here – and weighs a

hefty 12kg. The review unit looked neat in its black finish (big respect to the eighties!) but, true to its ancestral tradition, there are some crude looking screws either side of the amp, and the silver fascia version (to my eyes) looks uneasy with a black painted casing. In every other respect the Pulse is very well built and finished, and the knobs, fascia styling and electronic switching all work superbly.

There's a battery of RCA phono inputs on the back panel, including separate MM and MC cartridge inputs, a LIPS-configurable A/V input and a front panel mounted MP3 player input. There's also a record output, full remote control and – unlike the old skool of Brit black boxes - full short circuit protection.

YAMAHA A-S2000

Spookily retro in style, this warps me straight back to the seventies. Indeed, by the eighties, when the likes of Yamaha's AX-300 ruled the Japanese budget roost, they'd dispensed with the chunky wooden side panels (found on this amp) and

given it an 'any colour you like as long as it's black' paintjob! The A-S2000 is a beautiful looking bit of kit then, but doesn't quite have the silky feel of previous Japanese-made Yamahas. What it lacks here, it more than makes up for in weight – a back breaking 22.7kg. It's also bigger than a crate load of classic Naim NaitS – at 435x137x465mm you might say it is needlessly large. Perhaps this explains its claimed 120W RMS into 8 Ohms [see MEASURED PERFORMANCE] and 190W into 4!

Yamaha say this integrated uses "an entirely new floating and balanced power amp that, by using power transistors with the same polarity that are not complementary, achieves complete symmetry of operation at the output stage and permits full balanced transmission (amplification) from the input jack to just before the speaker jack". The A-S2000 uses parallel operation of three digital volume integrated circuits for each channel to ensure best sound quality during both tone control and default operation, says Yamaha. Four large capacity power supplies are fitted, plus fully discrete headphone and phono amps, the latter with a dedicated MC head amp.

SOUND QUALITY

Don't worry, I'm not going to try and ascribe national characteristics to each integrated amplifier – but listen to one against the other and you're left in no doubt that they're very different. I kicked off the listening with Madonna's 'Frozen', a wonderful William Orbit produced song that's almost exclusively electronic. That means lots of grumbling sub bass, squelchy analogue synths and a hard kick drum sound that you can imagine emanating from a Technics SL1200 in some trendy club somewhere...

The Yamaha loved this track – the way it handled the kick drum showed that its designer drinks the Japanese equivalent of Irn Bru (Pocari Sweat!). It was gut churningly dynamic even through the tiny reference Spondor SA1s I was using – it made them sound like Linn Isobariks sat too close to the wall. Most impressive was the way it didn't seem in any way flustered when the sub bass kicked in; it had a nonchalant sort of 'bring it on' attitude, seemingly

is a mid eighties indie song, awash with Byrds-style twelve string guitars and cymbals, and the Leema made it an altogether more intuitive event. Singer Bobby Gillespie's fey vocals sounded creamier through the Leema, whereas the Yamaha again imbued them with a touch of steel. The guitars sounded sweeter, yet more engaging via the Leema, whereas through the Yamaha they had a powerful, raucous rock sound. Bass guitar was gut-thumping through

"the guitars sounded sweeter, yet more engaging via the Leema, whereas through the Yamaha they had a powerful, raucous rock sound."

desperate for me to crank up the loud pedal even more so it could show its tremendous power, super stiff power supply and general barrel-chestedness.

Moving to the Leema, and things were altogether more demure. I found myself turning up the volume slightly, not just because it wasn't putting out anywhere near as much bass, but because it was less fatiguing and I found myself wanting to 'listen in to the soundstage', rather than sit back being pulverised by it. This amplifier is definitely tonally smoother than the Yamaha; not in a bland way; rather it sounds like it has lower distortion. Despite a lighter bass, it is generally slightly richer and warmer, lacking the Yamaha's steely upper mid. The result is that it impresses less, and satisfies more.

How so? Well, moving to Primal Scream's 'Gentle Tuesday' showed the differences no less starkly. This

the Japanese amp, whereas it was a little lighter yet somehow more fluid via the Brit. The overall effect was a smoother, more inviting wash of sound via the Pulse, whereas the A-S2000 deconstructed the track then fired it back at me.

At this point, I'd normally be tempted to characterise the Yamaha as a more "hi-fi sounding design", but there was one technical point where it fell way behind the Leema – soundstaging. The Leema consistently turned in a far wider and more capacious recorded acoustic; Kraftwerk's 'Tour de France Soundtracks' made the A-S2000 seem rather narrow from left to right and closed in by comparison to its rival. This isn't any particular failing of the Yam; rather it's because the Leema is superb in this respect. It is truly a capacious performer, pushing out big, wide images into the room. By way of revenge though, the accuracy with



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MEASURED PERFORMANCE

YAMAHA A-S2000

The Yamaha A-S2000 produced 98 Watts into 8 Ohms and 170 Watts into 4 Ohms under test. It has plenty enough power to drive the most insensitive loudspeakers to high volume in large rooms. With a high damping factor of 64 bass should always sound controlled and there's likely to be a good feeling of punch.

Some crossover distortion was measurable in the output, and our analysis shows odd order harmonics, with third dominant. Yamaha amplifiers are usually notable for their silkiness however, a house sound as it were, so the effect isn't likely to be anything other than subtle. Results were identical via the Balanced inputs.

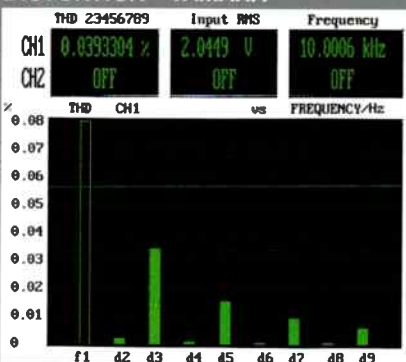
Similarly, both unbalanced and balanced inputs were equally sensitive, needing a very low 150mV for the amp to achieve full output. Noise levels were almost the same through balanced and balanced, the latter showing a 2dB advantage.

The phono inputs (MM and MC) were accurately equalised, but both MM and MC had some treble lift (+0.3dB at 10kHz) just enough to add some forwardness and analysis to the sound. MC sensitivity was extremely high at 0.15mV, and equivalent input noise (e.i.n.) very low, so it looks like a state-of-the-art super low noise front end has been used. No warp filter exists, but subsonic gain (i.e. below 20Hz) has been rolled down so as not to emphasise warps in the 5Hz region.

This is a neatly engineered amplifier that measures well all round. NK

| | |
|--------------------|---------------|
| Power | 98 Watts |
| CD/tuner/aux. | |
| Frequency response | 4Hz - 72kHz |
| Separation | 95dB |
| Noise | -99dB |
| Distortion | 0.02% |
| Sensitivity | 150mV |
| Disc (MM/MC) | |
| Frequency response | 15Hz - 57kHz |
| Separation | 68dB |
| Noise (e.i.n.) | 0.11uV/0.05uV |
| Distortion | 0.02% |
| Sensitivity | 2.4/0.15mV |
| Overload | 45/3mV |

DISTORTION - YAMAHA



LEEMA PULSE

The Leema Pulse produces 84 Watts into 8 Ohms, rising to 132 Watts into 4 Ohms so, in spite of its compact size and low weight, plenty of power is available and the Leema will go very loud through any loudspeaker.

Distortion remained low at all powers and frequencies, third harmonic being dominant and contributing most to a 0.012% figure recorded at 10kHz, 1 Watt output into 4 Ohms. This is a relatively low amount and there are no high order harmonics that the ear can easily detect. Third harmonic sharpens the sound a little and it can often be detected as intrinsic character more than overt effect, but not at this low level.

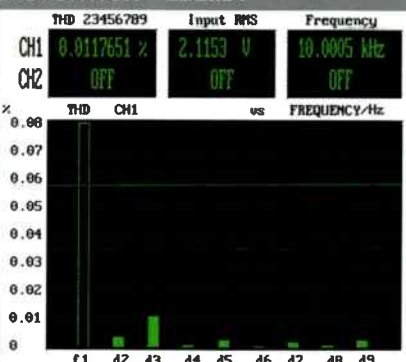
A high damping factor of 50 means the amplifier will sound well controlled at low frequencies, being able to tame loudspeakers with light acoustic damping. Input sensitivity is low at 400mV so some external phono stages may not match, but as an MC/MM stage is onboard this matters little.

There are separate MM and MC input sockets. Both inputs are accurately equalised right across the audio band, with no warp filter to reduce low frequency warp signals. MC sensitivity was high at 0.18mV so the Pulse has enough gain for very low output Moving Coils. Noise levels were about average as good designs go, low enough for hiss not to be audible.

The Pulse measures well in all areas. It should give fine results from a small package, from both CD and pickup cartridges. NK

| | |
|----------------------------|----------------|
| Power | 84 Watts |
| CD/tuner/aux. | |
| Frequency response | 5Hz - 40kHz |
| Separation | 78dB |
| Noise | -88dB |
| Distortion | 0.01% |
| Sensitivity | 400mV |
| Disc (MM/MC) | |
| Frequency response (MM&MC) | 9Hz - 70kHz |
| Separation | 78dB |
| Noise (e.i.n.) | 0.4uV / 0.07uV |
| Distortion | 0.002% |
| Sensitivity | 3.3/0.18mV |
| Overload | 170/9.6mV |

DISTORTION - LEEMA



which it placed the instruments within the stage was no match for the Yamaha, which virtually nailed each one to a fixed point in space!

CONCLUSION

Ultimately, I came away a little confused. Actually, I loved both amps, but it would be the Leema I took home. It doesn't have the breathtaking punch and the general 'swagger' of the Yamaha, but it makes music an altogether more emotional affair. It has a lovely warmish tonality, a super wide and deep soundstage and a generally highly inviting demeanour – you just want to turn the volume up and listen more. The Yamaha, by contrast, is what you put on if you want to be impressed, rather than moved. If only the two were a little more like one another, both would be as near as dammit the best mid-price integrations I could possibly conceive. As they are, think of it like this: on the left we have the Sugden A2|a S2 with its dizzying clarity, wonderful musicality and very limited power, and on the right we have the Yamaha A-S2000 with mighty bass and tree felling dynamics, plus a slight tonal coldness. In the middle is the Leema Pulse, which is tonally warm, expansive and engaging to a tee. For me, this means it offers a some of the best of both worlds – a typical British fudge you might say but, like our tiny island, it's a charming compromise!

REFERENCE SYSTEM

Marantz CD63KI DP CD player
Sugden IM4 integrated amplifier
Spendor SA1 loudspeakers

VERDICT ●●●●£

Archetypal Japanese battleship integrated with massive power and build to match.

VERDICT ●●●●●

Highly musical all rounder with a plethora of useful real-world facilities.

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www.yamaha-uk.com

LEEMA PULSE £1,195
Leema Acoustics
☎ +44 (0)1635 291 357
www.leema-acoustics.com

FOR

- massive power
- dynamic swagger
- detail retrieval
- styling, build, finish

AGAINST

- slight upper mid hardness-

FOR

- musical insight
- smooth, creamy tonality
- capacious soundstage
- fluid bass

AGAINST

- casework detailing



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BOSE QUIETCOMFORT 3 £350

For years, the noise cancelling headphone market was serviced by a number of anonymous designs with only a tenuous link to the world of real hi-fi. Then came Sennheiser, whose PXC-250 gave the travelling public the chance to hear something that more closely resembled the signal being fed into it, and the breed seemed to take off. Still, the term 'noise cancelling' remained something of a misnomer, as noise is reduced rather than cancelled out completely,

and, even then, only at certain frequencies. Worse still, the music also gets interfered with – a conventional passive 'phone will always be better.

The trick then is to make the least intrusive, most usable design, best suited to life on the road (or train or plane) and, like Sennheiser, Bose have now risen to the challenge.

Whereas most such designs come with fiddly, heavy inline battery boxes, often suspended by lanyards you're supposed to wear around your neck, the QuietComfort 3 has everything built in, including a rechargeable battery giving about twenty hours of playing time. It's small too – Sennheiser's PXC450 rival is considerably bigger and

heavier. By comparison, the Bose's lightweight (159g) headset is both big enough to fit over the ear snugly and small enough to walk around with. This, along with the soft padding and superb build, makes it one of the most comfortable over-ear headphones around – the leather-trimmed earpads offering a relaxing, gentle and sweat-free fit. They seal out noise surprisingly well, but power the phones up and the din falls away further still, cutting out whirs and hums as well the best of the Bose's rivals. Sound is surprisingly bouncy and musical, yet with real finesse. Even up against the super sounding PXC450, the QC3 does more than hold its own, lacking a little fine detail but proving a more engaging listen. Beautifully built, easy to use and really impressive to hear, these are one of the very best noise cancelling headphones on sale – but you pay for it! **DP**

Contact: Bose
0800 085 9021
www.bose.co.uk

soundbites

AUDIO TECHNICA ATH-ANC3 £69.95

Technology is changing in the so-called 'noise cancelling' headphone arena, and this pair of in-ear types shows how. The manufacturer claims that, unlike most noise-cancelling headphones, these utilise 'feed-forward' technology (from Wolfson) rather than the 'traditional feedback' approach. Wolfson, who also make the DACs for Linn and Arcam amongst others, says that their 'feed-forward' technology has the microphone fitted outside the earpiece which enables only the ambient noise to be altered and not the audio, for better sound quality. This stands in contrast to 'feedback' designs which influence both audio and noise with microphones inside the earpiece.

The ANC3s come beautifully built in white or black, with tougher and more flexible than usual cable connections, an airline adapter, extension lead and small, medium and large earplugs. They also come with a sturdy carry case for protection.

In operation they use discreet ergonomics and design with the lapel-attachable control box housing a single AAA battery for about fifty hours noise-cancelling, mute switch and on/off switch. The company claims a frequency response of 15-22kHz and up to 20dB of noise reduction.

Compared to Sennheiser's excellent conventional in-ear CX-300 headphones, which cost £40, the Audio-Technica ATH-ANC3s had superior midrange and bass when reproducing vocals, horns and orchestrations. The higher frequencies were well controlled and informative, even in dynamic crescendos. They have a punchy, vibrant musicality, full of resolution and depth, so are superb for sound quality. Their active noise-cancelling is also very good indeed, and effectively quietened down the



irritating hiss and mechanical rumble of a train journey and incessant fan noise of a laptop PC close by. And as such, after a long journey, you really notice the difference good noise-cancellation makes, especially when it's so discreetly done. Sturdily built and with excellent protective casework, this is one of the best sounding in-ear designs available. **CV**

Contact: Audio-Technica
+44 (0)1235 511166
www.theadphones.com

Demand Management

Steve Green explains how the brave new world of media streaming is going to work...

The last couple of years have seen Internet streaming take off in a big way, with the phenomenal rise of YouTube, and the equally impressive start the BBC iPlayer has made. However, some experts think the popularity of current online video applications are just part of a small wave that will grow into a 'video tsunami', which will cause an 'exaflood' of Internet traffic – so-named because the global Internet is predicted to carry over 100 exabytes (an exabyte is one billion billion bytes) of traffic annually by 2011. This amounts to a four-fold increase in traffic compared to today!

Internet router manufacturer, Cisco Systems, calls the current crop of video applications 'Internet video-to-PC', which it says are part of the first of three waves of video to hit the Internet, with the next wave being Internet video-to-TV, and the third wave, which Cisco doesn't expect to take hold until 2015, will consist of interactive video communications, which is similar to the concept of the videophone.

The first two waves of video that we'll see between now and 2011 will generate large volumes of traffic for different reasons: the first wave is characterised by a high number of people using the applications, whereas the number of users will be far smaller for the second wave, but it will consist of people watching live and on-demand TV on IPTV platforms, which is characterised by the enormous amount of data that HDTV and SDTV streams consume.

LIVE STREAMS

With such a huge volume of video traffic predicted within the next few years, new technologies will need to be adopted to avoid the Internet grinding to a halt. One is called multicast, which is a highly bandwidth-efficient distribution technology for carrying live TV and radio streams. The way live

streams are sent over the Internet at the moment, using unicast, is that each user receives his or her own individual stream, so if there are 1,000 users the broadcaster needs to send 1,000 streams. With multicast, only one stream of each channel needs to be carried on any Internet link, so multicast eliminates all of the duplicated streams, which saves the broadcasters and the ISPs huge amounts of bandwidth, and this allows the broadcasters to use higher bit rate levels to improve the quality.

Multicast is a key technology for enabling IPTV providers to carry live TV channels, and due to the predicted growth of TV on the Internet, all but one of the biggest UK broadband providers are either gearing

up to provide IPTV services to their customers, or they're already providing it, and it now looks likely that all ISPs that will be providing IPTV will support multicast once BT has rolled out its new 21CN (21st Century Network) nationally by 2010.

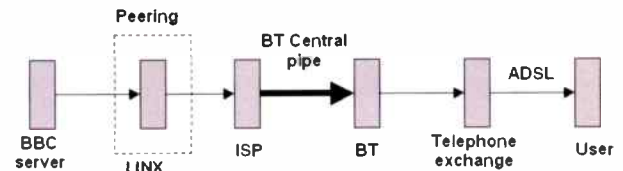
As well as live TV channels, multicast also allows radio streams to use higher bit rate levels than the broadcasters have been using up to now for their existing radio streams, which use unicast, and the BBC's national stations and some of the bigger commercial radio stations are currently using formats such as 128kbps AAC and 192kbps WMA on the BBC's multicast trial, and these formats provide audio quality that is as high or higher than DAB+ is ever likely to, let alone DAB.

ON-DEMAND STREAMS

One of the main features that differentiates the Internet (and cable) from the other broadcast platforms is its ability to deliver on-demand content, which includes both video-on-

demand streams on IPTV platforms as well as the applications from the first wave of online video, such as the BBC iPlayer and YouTube; so on-demand content is expected to account for a large proportion of all the video traffic generated over the next few years.

Unfortunately, multicast only saves bandwidth for live streams, so a different solution to the bandwidth problem needs to be used for on-demand streams, and since the BBC has come under a lot of fire from the ISPs due to the amount of bandwidth the iPlayer is expected to generate



the iPlayer's route from the Beeb to your computer.

over the coming years, the BBC has been investigating the idea of using a content delivery network (CDN), which would ease the bandwidth burden for the ISPs – and ultimately it would stop our monthly broadband bills from escalating.

To help explain why using a CDN would improve the situation, the figure above shows the typical route that an iPlayer stream takes as it crosses the Internet from the BBC to a user's computer. The bandwidth costs problem is mainly caused by the fact that a lot of ISP traffic travels over BT's network, and for complex reasons that I won't go into, Ofcom makes BT charge the other ISPs high prices for the bandwidth that crosses its network.

The CDN the BBC is considering using would consist of around 200 'caches' (each consisting of a few hard disk drives) being installed in BT's telephone exchanges, and each cache would store copies of the BBC iPlayer TV and radio programme files, which the cache would deliver to users on request. The advantage

of doing this is that the iPlayer streams wouldn't need to travel over the ISPs' or BT's networks, so it would drastically reduce or possibly even completely eliminate the ISPs' bandwidth costs due to iPlayer traffic.

Installing caches inside the telephone exchanges would also avoid the bandwidth bottlenecks further upstream, so effectively the only limitation on the stream bit rates levels would be users' broadband connection speeds. So if the BBC does install a CDN, it could potentially provide the iPlayer TV streams at HD-quality, and it would be easy to provide the Listen Again radio streams at high quality too.

RADIO STREAMS AT BETTER QUALITY

Unfortunately, multicast isn't quite ready yet, and the CDN is still only a proposal at this stage, so we won't see the quality improvements they could offer for a while at best. But in the meantime there has been a promising development regarding the BBC's existing radio streams, because James Cridland, who's in charge of the Internet side of BBC Radio, wrote on a BBC blog recently that the live and on-demand radio streams will start using "new audio formats" in July and May respectively, which should mean that they will start using AAC or AAC+, in which case the Internet radio streams should overtake DAB in terms of quality – and about time too, because the BBC has had the opportunity of using AAC and AAC+ for its Internet radio streams for over four years now!

NEXT-GENERATION BROADBAND

The vast majority of people's broadband connections are already fast enough to receive SDTV channels and radio, but the current "up to 8Mbps" ADSL broadband connections can't handle even the lowest resolution HDTV format (720p). The next step forward for broadband will be to ADSL2+, which provides "up to 24Mbps" connection speeds, and BT is enabling its exchanges to support ADSL2+ when it switches exchanges over to its new 21CN network, so it's likely that most UK broadband users will migrate to using ADSL2+ at some point between now and 2010. However, as with all flavours of DSL technology, connection speed is dependent on the length of copper wire that connects a user's home to the local telephone exchange – the shorter the better – so even though the headline speed of 24Mbps sounds like it will provide a large increase

in speed over ADSL, one analyst has estimated that just a third of UK broadband subscribers have an ADSL2+ connection fast enough for HDTV at 8Mbps.

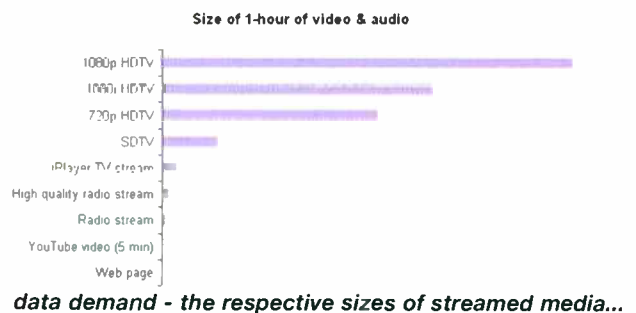
The ideal solution would be for the UK to follow countries such as Japan, South Korea and Hong Kong, which are currently migrating *en masse* to 100Mbps fibre-to-the-home (FTTH) connections – fibre-optic cable can handle bandwidths in the Gbps range, though, so it's not limited to 100Mbps. But BT thinks FTTH is too expensive to roll out in the UK, and BT's chairman mentioned last year that they were looking into using VDSL2 instead. VDSL2 would almost certainly be combined with fibre-to-the-cabinet (FTTC), which consists of fibre-optic cable being laid from the telephone exchanges to the roadside telecoms cabinets.

The reason for doing this is to reduce the all-important length of the copper wire that travels to people's homes, which limits people's connection speeds, and the combination of using VDSL2 with FTTC should allow the vast majority of people to have a connection speed of 50-100 Mbps – although when BT is going to start rolling this out is anyone's guess...

Although 50-100Mbps would be fast enough for the vast majority of people, there's a very promising technology that's currently being researched called Dynamic Spectrum Management (DSM) which can be combined with DSL technologies to provide connection speeds of 500Mbps for people who live within 400 metres of their telephone exchange. So if this new technology were combined with BT rolling out fibre-to-the-cabinet, the UK probably wouldn't need to use FTTH at all, or at least not for a very long time.

MOBILE BROADBAND

After years of it being promised, broadband download speeds on 3G mobile networks have finally arrived over the last year or so due to the adoption of HSDPA (High-Speed Downlink Packet Access), and the mobile networks are now offering download speeds of between 1.8-7.2Mbps. The launch of mobile broadband has also allowed the mobile operators to provide much higher download allowances than previously, which makes it feasible to access broadcast content on mobiles and laptops with a USB dongle, whereas previously the download allowances were so low and so expensive that they effectively ruled this out. As a result of HSDPA being used, Cisco Systems predicts



that mobile Internet traffic will be the fastest growing type of traffic between now and 2011.

As a sign of where things are heading in this area, the BBC recently made the iPlayer TV streams available to Apple iPhone users, and the BBC is currently looking at making the iPlayer available on other smartphones as well.

Another area that is likely to take off over the next few years is people listening to Internet radio streams on their mobiles, especially once the BBC's Listen Again radio programmes have been incorporated into the iPlayer later this year, and some of GCap Media's biggest radio stations are now available on the iPhone as well. And not to be outdone by the new kid on the block, Nokia released a free software application just before Christmas that allows owners of Nokia N-Series and (unofficially) E-Series phones to access Internet radio stations via Wi-Fi or 3G, and there are a number of other free and paid-for Internet radio software applications available on the Internet that can be installed on smartphones that are using the Symbian operating system.

There are a couple of issues with listening to Internet radio on mobile phones at the moment though, such as that the battery life isn't very long when streaming, although that shouldn't be an insurmountable problem for live streams, and it could be solved completely for on-demand content if the broadcasters allowed the file to be downloaded.

It's even possible to listen to Internet radio in the 2008 Ford Fiesta by tuning into an Internet radio station on a mobile phone, and streaming the audio to the car's entertainment system via Bluetooth. That's hardly the most elegant of solutions ever devised, but now that mobile broadband is affordable, surely it's only a matter of time before car entertainment systems start featuring mobile broadband connections?

Anthony Rose, the man in charge of the BBC iPlayer said recently, "in ten years it would be surprising if television wasn't all over the Internet". It's looking like it won't take anywhere near as long as that...



Adam Smith welcomes his namesake to the UK and takes a listen to their fully active Tensor Gamma floorstanders...

Gamma Raise

The crossover between the professional audio market and the domestic hi-fi arena can sometimes be an uncomfortable one. The priorities in each situation are quite different and what works for one can be a disaster for the other. Professional monitoring loudspeakers are designed to reveal exactly what's in a recording, warts and all. Any bad aspects need to be obvious so that

suitable corrections can be made, but in the home such a loudspeaker will usually be unbearable to listen to after a while, especially with some of the poor recordings doing the rounds these days...

However, some manufacturers have made a great success of bridging the two markets. The likes of Tannoy, JBL and Dynaudio all make highly respected professional monitoring loudspeakers alongside their

domestic products and very often technologies intermix between the two lines. However, the most recent name to attempt to make the leap of faith is Germany's ADAM Audio.

Founded in 1999, ADAM Professional Audio has built itself an enviable reputation for professional loudspeakers, and these are used extensively in the likes of Abbey Road Studios, and by 20th Century Fox Digital and the BBC, as well as

by music producers such as George Martin and Alex Callier. They have decided the time is right to now attack the home market with several ranges of loudspeakers distributed in the UK by Unity Audio.

At the top of these ranges, but below the mighty OSS flagship, are the Tensor series, amusingly described by ADAM as "Highest End", above the "Higher End" Classic Series. From the top down, the Tensor range comprises the Alpha, Beta and Gamma floorstanders, the Delta and Epsilon standmounters, the 'Center' centre channel and SW393 subwoofer.

Throughout the range are two ADAM trademarks, namely their use of PWM switching amplifiers in the active portions of the loudspeakers, in this case, B&O's ICEpower modules [the same Class D chips used to aspirate Rotel's massively powerful RA-1092 power amp - *Ed.*], and the use of what the company calls 'ART' tweeters; this stands for 'Accelerating Ribbon Technology' and is basically a development of the Air Motion Transformer drive unit designed by Dr. Oskar Heil in 1973. More details can be seen about this in my Loudspeaker History feature (*Hi-Fi World* April 2008, p30), but briefly, the membrane consists of a folded diaphragm that moves in and out like an accordion in response to the input signal. ADAM claim that this offers a much better interface between the driver and the air than a conventional dome tweeter, paying huge dividends in terms of clarity and transient response.

More unusually, ADAM also use this type of driver for the midrange, called X-ART (eXtended ART) on the Delta, Gamma, Beta and Alpha Models. This covers the 600Hz-3.2kHz frequency range and should offer a much better sonic integration across the treble and midrange than if a conventional unit was used.

In the Gammas, the driver lineup consists of one ART tweeter, measuring approximately 30x35mm and with a diaphragm weighing in at 0.15g and one X-ART midrange (50x75mm, 0.72g). Below this are two 9in (220mm) Hexacone bass drivers - one facing forward and acting as a bass/midrange unit, and one at the rear covering bass only.

As with the other models in the Tensor range, the Gammas are available in semi-active and fully active versions. The former accepts normal speaker-level inputs and uses this to drive the midrange and tweeter, along with feeding a pair of 250W amplifiers, one for each bass driver. These retail for £10,000,

saving £2,500 over the fully active versions reviewed here. The fully actives add another pair of 250W amplifier modules for the tweeter and midrange and accept input through an XLR socket - Unity can supply suitable XLR to phono cables if required.

Alongside the inputs on the rear panel are a number of adjustments, namely one for adjusting the tweeter's top end roll off, one to adjust its level, a similar one for the midrange level and an input gain control, variable from -10dB to +10dB to allow compatibility with a wide range of preamplifiers. A parametric equaliser is fitted, and this is basically the same as the Notch Filter that Mordaunt Short have been fitting to their active subwoofers for a number of years, but it allows boost as well as cut [see MEASURED PERFORMANCE for more details]. Finally, an LED Dim button is fitted, which cuts illumination to the 'ADAM Tensor' script on the front panel, leaving only the logo illuminated. A main power switch for each

(Notionally Optimised Electrostatic Loudspeaker?) in the future, I wouldn't be surprised...

SOUND QUALITY

The question on my mind as I fired up the Tensor Gammas was indeed whether they would have me diving for cover in a ruthless barrage of detail and mastering disasters from the material with which they were fed. Fortunately, the answer was a resounding *no*, but it wasn't quite that simple, more of which later.

My goodness, though, if there are a pair of loudspeakers out there that create a more solid and vivid central image, then I have yet to hear them. The way in which the Tensor Gammas fill the space in between themselves is nothing short of astounding. Vocalists could easily have been sat straight in front of me and the way in which their backing instruments were laid out around them was like little else I have ever heard. People talk, quite rightly, about the imaging abilities of the likes of Quad electrostatics for example, but

"if there are a pair of loudspeakers out there that create a more solid and vivid central image, then I have yet to hear them."

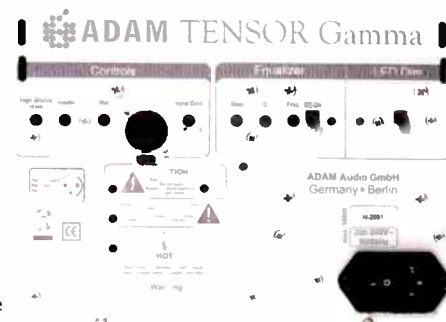
loudspeaker is on the rear panel, alongside the IEC mains input socket, and an illuminated on/standby button is on the front panel, by the logo.

The Tensor Gammas' cabinets are very sturdy indeed, as they comprise two layers of wood with a layer of sand in between. Rather cutely, three 'windows' are fitted to the rear panel, presumably so that you can check they've remembered to put some sand in... As a result, the Gammas are not vast, measuring 1080x340x320mm (HxVxD) but they weigh in at an impressive 54kg each. Finishes available are gloss silver or gloss black all over, or gloss black with silver driver panel. Incidentally, the driver mounting panel is an aluminium honeycomb design, offering rigidity but remaining acoustically inert at the same time.

Finally, much as I would like to be flattered by the company's use of my own name, the plain truth is that ADAM actually stands for Advanced Dynamic Audio Monitor. Still, they could be onto something here, and if we see a range of DAVID amplifiers (Dynamic Amplifier - Valve Integrated Design?) or a NOEL 'speaker

I have always found these to give an impressively expansive, but slightly diffuse performance. The ADAMs may not stretch things off into the distance like a pair of 2905s, but the precision with which they fill the area that they do encompass is positively mathematical.

Undoubtedly, this is due to the way in which the midrange and treble integrate. The Gamma top end is sweet and crisp, with a lightness and swiftness of response that belies the large box from which it is emanating. This hands seamlessly over to the midrange unit to ensure that vocals are emotive, instruments are incredibly realistic, and the atmosphere of recordings is reproduced in an utterly convincing manner. Spinning Jennifer Warnes' 'The Hunter' showcased the Tensor Gammas' talents perfectly - the lady herself could have been stood in the room in front of me and each backing instrument was vivid and





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Rear view of the Tensor Gammas, plus a close-up of one of the cabinet's sand 'inspection windows'.



astonishingly lifelike. The whole performance was blessed with a sense of air that makes most other loudspeakers sound closed-in and disinterested.

Moving to classical, the ADAMs were equally emotive and precise. The sound of bows scraping across stringed instruments was more noticeable than I have ever been aware of before on the CDs I was using, and performances came together in a highly satisfying manner. On one or two less well mastered CDs, I did note that violins could be a little 'edgy' and have a slight sheen to them, but tweaking both tweeter and midrange level controls down by a dB or so took the edge off the problem perfectly - the Tensor Gammas are very user-friendly in this respect and the parametric adjustments fitted are subtle but effective.

At the bottom end, the Tensor Gammas are, if anything, even more competent. The force-cancelling opposed woofers and solid cabinet mean that there is no boom, no wallow and no cabinet intrusion. In fact, on first listening you could almost convince yourself that they're

a bit bass-light, until you realise that your favourite bass torture track has just set the sofa rumbling underneath you without the Gammas even breaking into a sweat. These loudspeakers go deep, remaining clean and composed all the way.

On 'Somewhere, Somebody', from Jennifer Warnes' 'The Hunter' album, there is a vocal 'pop' into the microphone a couple of minutes in which usually only manifests itself through a subwoofer. However, through the Tensor Gammas it was loud and clear. Equally, the bass notes from Newton Faulkner's version of 'Teardrop', which are firmly in the 'where the heck did they get those from?' category, were clean and not overpowering, yet had objects rattling on the shelf beside me.

All in all, no matter what I fed the Tensor Gammas, they lapped it up. They are true monitor-quality loudspeakers however, and the professional heritage can be found in one aspect of their performance, namely that of dealing with poor recordings. As I mentioned earlier, true monitors that take a no-nonsense approach to sound can often sound dire with lesser recordings but the Tensors did not suffer in this way. They did show the deficiencies present quite clearly but still were able to get on with digging out the music therein and actually made a fine job of sorting out some messier recordings, such as a mid-price, mid-eighties CD pressing of Led Zeppelin II that's frankly pretty nasty! The Gammas did not mask the poor recording in any way but still allowed Plant, Page and the boys to fight their way through the mush and make a good tune. The problem is, though, that the

Tensor Gammas are so brilliant with good recordings that anything less than impressive comes across as a bit of a disappointment. Buy these loudspeakers and you may find that some of your CDs and LPs start to get played less and less, not because the results are unlistenable, but purely because they don't do the ADAMs justice.

CONCLUSION

I was incredibly impressed by the ADAM Tensor Gammas - their combination of staggering soundstaging, deep, tight, tuneful bass and astounding realism that they impart to music makes them one of the finest pairs of loudspeakers I've yet auditioned.

If you like your loudspeakers to have a nice, soft, fluffy, warm and cuddly presentation, then they will not be for you. However, if you really want to hear your music as it was intended and, unlike me, can afford the £12,500 asking price, the Tensor Gammas should be right at the very top of your audition list. Beware though, do heed *Sound on Sound* magazine's words from 2006 regarding the ADAM P11A monitors as I believe they apply in this case as well, "hear them at your peril; you're unlikely to leave the shop without them"!

VERDICT ●●●●●

Magnificently designed and built monitor loudspeakers with neutrality, central image stability and bass like very few others.

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FOR

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- build and finish

AGAINST

- price

MEASURED PERFORMANCE

The Adam Audio Tensor Gammas exhibit an impressively flat frequency response across the full audio bandwidth, with all drivers well integrated. This is a distinct advantage of active loudspeakers as the crossover is electronic and allows easier manipulation of the frequency range for optimum integration. Generally, the output rises ever so slightly towards the top end, with a slight lift around 2kHz - this will add presence to the sound but is unlikely to add harshness.

At the bottom end, the Gammas roll down at around 70Hz, but are reinforced by the down-firing ports which operate down to 30Hz. The additional rear-mounted driver operates in phase with, but in the opposite direction to, the main driver, providing cancellation of forces within the cabinet and augmenting bass output to the rear of the speaker. The Tensors should, as a result, have a clean and solid low end.

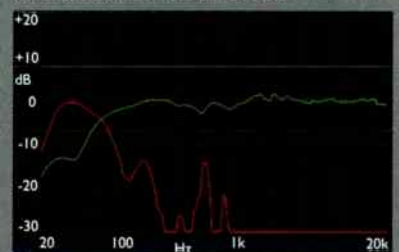
The filter tuning options on the Gammas are comprehensive, allowing treble rolloff to be raised or lowered above 6kHz, by up to +/-6dB at 20kHz. The tweeter and midrange levels can also be adjusted, the former by +/-4dB above 4kHz and the latter by +/-2dB from 800Hz to 4kHz. These should prove useful in fine-tuning the speakers' response for less than sympathetic

materials (or source components, for that matter) and they are subtle in their action but have enough range of adjustment to be effective.

Finally, the Parametric Equaliser allows a signal boost or cut of up to 12dB across frequencies between 20 and 200Hz with a variable Q. Using the guide in the manual, this can be used to fine-tune bass response according to room conditions and the 'cut' is very effective in attenuating room boom, although this is no substitute for proper positioning, of course.

All in all the Tensor Gammas measure very well and appear to have been carefully designed. Their range of filtering should mean that they will work well in virtually any room and they should offer a tight, detailed and stable sound. AS

FREQUENCY RESPONSE



Green - driver output
 Red - port output



Music First Audio's long awaited Reference preamplifier is finally here, and it has been well worth the wait, says Andrew Harrison...

Reference, Class

It was hard to say what surprised me more - the intriguing curled italic script across the front panel bearing the curious description 'Passive Magnetic Pre amplifier', or the dynamic, transparent sound that greeted me when the unit was plumbed into my system. Some four years later, Music First Audio now have a new design, substantially higher up the price scale than that first £1,500 copper wired Passive Pre...

What set the original apart from the crowd was its transformer volume control (TVC), which has spawned several imitators. Since then I've tried cheaper versions that start to approach the benchmark set by the MFA Passive Magnetic, all the way up to a far costlier preamp based on tapped transformers, with a price tag swinging to £20,000. Yet the original MFA unit has remained the touchstone at its relatively affordable price point.

When the company made a special edition using pure silver wire for the transformer windings, the basic form remained identical. It had the same six inputs - two of these fully-balanced on XLRs - with two outputs, one each of RCA and XLR. It was still a fully manual affair, requiring the listener to get up to change source or adjust volume setting. And for this listener, its sound quality was an unsettling combination

of 'mostly better', with more polished and silken high treble alongside a question mark over image solidity and midband focus. Like many a silver-treated audio product, it was capable of wondrous things providing your system could welcome the indulgence...

Now though, the company has surpassed itself, and well-heeled couch potatoes need do no more than lift a remote - for volume adjustment at least - as Music First Audio has finally landed in the twentieth century, just as the rest of the world prepares for the twenty first's second decade! The long awaited remote-controlled Music First Audio Reference preamplifier is upon us.

Gone is the four-square box, replaced by something much wider, heavier and rounded on the ends. We still have a six-way rotary switch to select between sources A to F, but the volume control now has 46 positions, giving from +6dB down to -60dB gain, in finer 1.5dB rather than 2dB steps. The extra steps are particularly welcome when using balanced sources (with their higher output) at late-night listening levels.

Inside, the principal attenuation transformers have been breathed upon, starting with 25% more Permalloy in their cores. This tends to improve low-frequency response and control, and the handling of

high-level signals. In the words of MFA, "the transformers are a labyrinth of layers of winding wire and paper, resulting in a construction so complex it pushes towards the limits of manufacturing possibilities". These new transformers are said to have a revolutionary geometry borne out of a neurotic addiction to symmetry. Each channel has over two kilometres of copper wire, wound to tolerances of a millionth of a metre.

Of course, the company behind Music First Audio, Stevens & Billington Limited, knows a thing or two about making transformers. Founded in 1963 by Christopher Stevens and John Stanley Billington, the company specialised in producing transformers and wound components from its premises in East Grinstead. Now lead by Jonathan Billington, son of the co-founder and a modern authority in the near-lost art of transformer technology, Stevens & Billington continues to make high-quality transformers selected by professional and high-end audio brands. At its new premises in Hastings, the small company uses a combination of classic nineteen sixties tooling and modern winding machinery to create sought-after audio transformers and inductors. In the case of the Reference preamp, around a hundred man-hours are needed to complete just one unit.

In addition to new attenuation

transformers within, there are also buffer transformers to provide fixed tape outputs. Two sets of XLR plus two sets of RCA pre outs make bi-amping a breeze, while the +6dB option of earlier units is now incorporated into the main volume control. There's still a three-way ground switch at the rear, handy to counter earth loops in certain setups.

Managing the remote control of volume is a stepper motor behind a big US-made Shallco rotary switch. This new combination has the unfortunate side effect of making the knob extremely stiff to twist by hand. To keep most of the required control electronics away from the signal-carrying inner wiring, the remote sensor sits outside the chassis in a separate box, and connects via a short jack-terminated cable. A wall-wart power transformer is also required, this plugged into an adjacent jack socket.

In use, volume changes made by the one-trick pony remote (actually a touch-screen unit, able to learn commands for other system components) are accompanied by a loud mechanical chug-chug-chug-chug as the knob rotates. And you'll still need to be fairly close to the Reference preamp to use this handset – in tests I found the remote had a reliable range of only about 4m, and that's within a narrow angle of acceptance...

SOUND QUALITY

Transformer volume controls are funny things. Who would have thought that routing a delicate line-level audio signal through thousands of metres of thin copper wire would equal or surpass the use of trusted transistors or thermionic valves?

Before running through the differences wrought by the substitution of a standard Music First TVC with the new Reference model, it may be beneficial to recap the effect of a TVC when compared to a familiar active preamp. Because there are no powered gain stages, there's no added hiss, making the system sound 'blackier' than normal between tracks – and even between notes. Dynamics are preserved, such that high-level transients jump into the room, while near-inaudible low-level details are always preserved, maintaining the subtlety of a musical performance.

Bass had a cleaner, lighter touch heard through the new MF Audio Reference – bloom was kept better in check to allow a more even balance across instruments and voices. That added tidiness in the low end transferred well to

upbeat rock material. Witness the choppy electric guitars of 'Pigs (Three Different Ones)' from Pink Floyd's 'Animals', where the kick drum and understated bass guitar joined as one, with a visceral punch to punctuate the repeated organ arpeggio. Here was slam and control that could play under the lyrical theme, furthering the impact of the song. As the song fades out into pastoral calm before the onslaught of 'Sheep', the out-of-phase chorused electric piano showed the widest, most 'wraparound' surround effect I've yet heard here. So, this duly became my test track as I alternated between different preamps to compare their gently varied presentations...

A standard Music First Audio copper-wound unit gave a colourful insight into the song. Good low-level detail retrieval, such as could be heard in the synthetic modulation of decaying electric piano notes, was offset by a slightly untidier top end. Bass was full and rhythmic, if not quite as taut as it could be. Moving to the silver-wound version gave the more 'hi-fi' representation – sharper detailing, a little more scintillation than before through the upper octaves. Front-to-back imaging was not as clearly expressed either, yet the purity of the treble, while more ostentatious, made the copper sound almost husky in places.

The new Reference preamp played the third bear role here, being neither too hot nor too cold, but 'just right'. It could uncover great detailing without promoting any tinselly artifice, and its supreme bass control really told you which precise microsecond the notes stopped and started – light when required, profound to near-DC at other times. Its pinpoint fixture of stereo images made any other preamp an also-ran in the holographic stakes, and I heard more menace through the song – from the subversive plectrum-picked shuffle-pattern bass guitar to the sustained vocal lines that mutate into vocoded banshee synthesiser. Heady stuff!

CONCLUSION

By adding remote volume control, even in a somewhat rudimentary fashion, Music First Audio has made its original transformer passive design more appealing to modern users used to the utility of sofa adjustments. Yet without source switching, this still leaves it outdated in convenience terms. And the epic price jump from the classic version to this

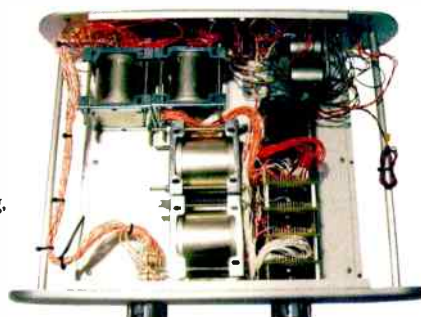
TRANSFORMER VOLUME CONTROLS

Since the early days of high fidelity, the preamplifier has been almost exclusively an active unit. This is to say, it 'reproduced' the input signal through active electronics. Initially by vacuum tube, later by transistors, the music signal was effectively recreated from a modulated version of the power supply voltage – in the process gaining distortion, power supply hum and noise, even if at a very low level. When the world started going digital in the eighties, and CD players became the primary source however, canny audiophiles realised that the preamp could be dispensed with, since the high 2V output could drive a power amp directly, needing only a degree of attenuation to find a comfortable volume setting. A simple potentiometer (variable resistor) could do the trick. But in some systems this didn't work well, sounding lacklustre, flat and two-dimensional, with attendant problems of tonal changes at different volume settings. The problem was rooted in impedance matching. A resistive attenuator could present the source component with a difficult to drive low impedance, while the power amp would 'see' a troublesome high impedance. Signal energy was being wasted, literally into heat.

There is however, another way to passively adjust gain – by using a transformer. Just as a mains transformer steps down 230V to perhaps 30V for many consumer electronics devices, so a specially-wound transformer can step down the nominal 2V of a CD player to a small fraction of that, to provide the exact voltage to suit the required volume setting. The difference is that a transformer volume control will have many taps on the secondary side. Transformer volume controls such as Music First Audio's simply use a rotary switch to select the desired tap. In the process, they provide a nearly ideal impedance match to both source and power amp at most volume settings. Certainly in the low to mid settings where most listening occurs, you can expect to see an input impedance in the hundreds of kilo Ohm or even mega Ohm range, and an output impedance of just a few Ohms, great for driving long cables without loss.

elevated Reference must negate its draw for the vast majority of potential users.

Attention to the pure audio side of the design, by the further honing and refining of the crucial Stevens & Billington signal transformers, is perhaps the real story here. They may be extremely labour intensive to produce but the result is a preamplifier of uncanny transparency, delicacy and dynamic control, one which deserves the appellation Reference. Massively expensive yes, but the new Music First Audio preamplifier has a performance to match; whether or not it constitutes 'value' however, must be a decision made by you!



VERDICT ●●●●●

One of the very best preamplifiers yet made, but prohibitively expensive for most audiophiles, and the remote functionality is basic.

MF AUDIO REFERENCE PREAMPLIFIER £8,995
 MF Audio
 +44(0)1424 858260
 www.mfaudio.co.uk

FOR

- uncanny clarity
- organic musicality
- inky black silences
- superb spatiality

AGAINST

- basic remote control
- price



Noel Keywood finds hidden treasure in Marantz's SR8002 receiver - SACD decoding. Is this why they call it an "audiophile receiver"?

DSD Delight

The SR8002 is Marantz's 'audiophile' receiver, with copper plating to eliminate eddy currents and other niceties such as Pure Direct, where the processor is bypassed and displays switched off. Like its rivals in the A/V race, it delivers massive power - we measured up to 1600 Watts total across seven channels - and it comes with a handbook almost as heavy as the receiver itself! I exaggerate a little of course, but the point is A/V monsters like this come stuffed to the gills with every conceivable facility and are monstrously complicated. The inclusion of DTS Master Audio decoding will turn most A/V heads, but I found a hidden treat for audiophiles - it decodes DSD digital from SACD, giving superb sound quality.

As with all A/V receivers, CD players can be connected, as can DVD players - sometimes with surprising results, as my review of the Oppo DV-980H DVD player in this issue illustrates - and finally Blu-ray

players. Unlike some recent designs though, LP is not catered for.

Like most receivers the SR8002 has seven amplifying channels, so it can provide 7.1 (the 0.1 is a subwoofer) surround-sound, comprising three front loudspeakers and four rear ones. Best to think of this as a future proof option as there is little true discrete 7.1 around at present. In the meantime, what goes into the Back loudspeakers, as they are called, is synthesised from the Rears of 5.1, to give a better rear sound field.

If you don't want Back loudspeakers, or a Centre front loudspeaker, the SR8002 can be set to do without. For quality music reproduction a Centre front loudspeaker is usually a drawback and best left out. Using two front loudspeakers and no Backs (4.1) also allows the fronts to be bi-amped for better sound quality with the SR8002, using the unused Back channel amplifiers - another useful feature for audiophiles. Alternatively, unused

channels can be used to feed another room.

AUDIO

The SR8002 possesses every audio signal processing scheme devised, to keep up in the features war. Of note are Dolby TrueHD and Digital Plus, and all DTS schemes including the top spec. HD Master Audio. These high resolution digital streams, only found on Blu-ray, need the HDMI 1.3a digital link, which the 8002 has, in and out. It does, of course, process incoming HDMI rather than just offering a feed through to a TV. I used HDMI to pass CD, DVD-Audio and SACD into the SR8002 from an Oppo DV-980H player and it processed it all without complaint. Surprisingly, this included DSD digital code from SACD, even though the U.K. handbook does not list it as compatible (but the U.S. website does!). I also used a Samsung BD-P1400 Blu-ray for CD replay, via SP/DIF digital link.

Measurement suggested true

DSD processing takes place internally, with no sign of intermediary conversion to PCM, but the handbook mentions a "DSD to PCM converter" and a PCM flag lights up on the display panel when receiving DSD. You can download the full handbook (ISMB) from the U.S. website to peruse all this, as well as a lot more detail on facilities. Note though that the U.S. model has a different tuner to the European model reviewed here.

Whatever is happening inside, measured results from DSD processing were excellent, perhaps because of the resolution of the SR8002's 24/192 internal PCM converters, and SACD sound quality was superb as a result.

Whilst SACD gets no honourable mention in the handbook, HDCD does. This is 20bit code on CD and it gives a smoother sound, when used that is, as it is uncommon. I see Microsoft now own the rights.

VIDEO

Video wise, there are Composite, S-Video and Component analogue inputs, plus outputs to a TV. There are also four HDMI digital inputs, plus two monitor outputs. Format conversion is provided from

"needless to say, with rock, the SR8002's powerful sound worked well."

analogue to HDMI (but not HDMI to analogue) and between analogue formats (e.g. Composite to S-Video). There's a interlacer/deinterlacer too. I didn't check format conversion quality, passing 1080 video straight through from both players to a hi-def TV.

SET UP

Audyssey loudspeaker tuning is fitted and you can check its results. There is a 9-band graphic equaliser for further response tweaking and even bass and treble controls. None are useful in my acoustically treated room. I have used Audyssey many times and, although effective, I prefer careful manual adjustment. Loudspeaker sensitivity and position (i.e. time delay) can be compensated for internally, as usual. Obviously, this works for SACD as well, thanks to the SR8002's DSD processing, something that was not the case in the past thanks to the limited range of adjustments offered internally by most SACD players. Set up is a lengthy process and input assignment

not well explained, but a huge range of adjustment is provided.

There is a 7.1 preamp out and 7.1 direct input too. I connected the Oppo DV-980H to the 7.1 input to check SACD analogue replay, a typical use for it. Connecting the Oppo's analogue output to the CD input lit up the red Peak overload warning light almost continuously unless Direct or Pure Direct were selected to bypass the A/D convertor (or ATTenuator is selected). Better to connect up digitally via SP\DIF or HDMI for hi-def digital. And you must connect up digitally to decode HDCD.

There are numerous ways to process surround-sound out from stereo of course, including Dolby Pro Logic IIx, complete with Panorama, Dimension and Centre Width adjustment, plus all DTS systems, Dolby headphone surround and others. This is a fully certified THX receiver, and has THX Neural. Finally, when squeaky clean digital becomes too much, good old fashioned analogue noise is available from a Medium wave tuner, in addition to FM.

The SR8002 is big, measuring 400mm wide, 184mm high and 396mm deep. At 15kgs it is quite

a lift too. A fair amount of heat is produced, so ventilation is important. The loudspeaker terminals are fairly robust, and they are colour coded, although Marantz do not supply coloured labels, unlike Onkyo. Bare wires and 4mm plugs are accepted. The SR8002 feels solid and is well finished.

Having got used to the SR6001 I expected to have no trouble using the SR8002, but it proved something of a wrestling match at times, with a remote control that carries a bewildering array of options presented on a small, weakly illuminated, low contrast screen. Each input has up to 4 screens of options on this remote, often with abbreviations that were far from self-evident. To be fair, though, the remote is enormously capable, with tracts devoted to it in the handbook, but ease of understanding and use are the trade off.

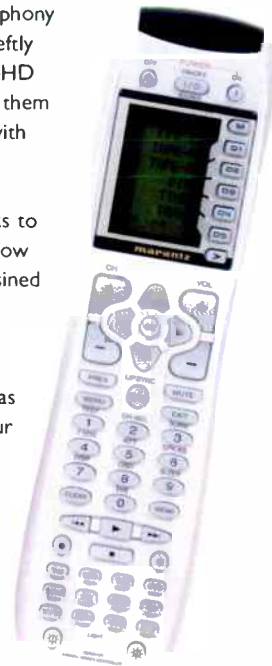
SOUND QUALITY

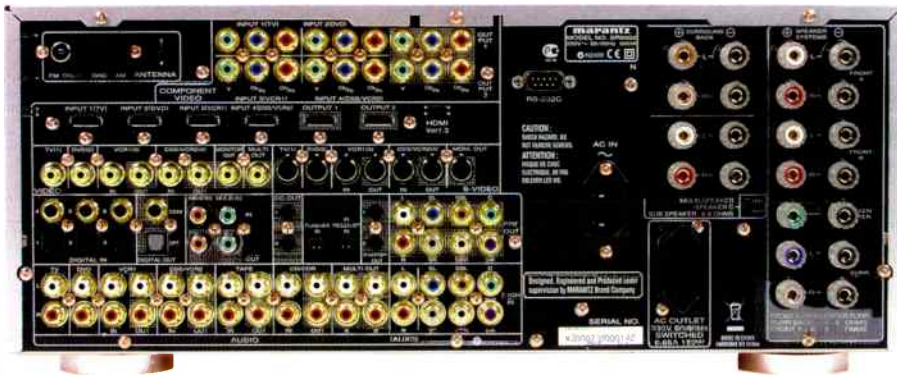
Having spent a long time using an SR6001 I found the SR8002 gave a

familiar sound. Marantz are very analytical, rather more so than rivals. They also have a dry balance with tight bass and a well lit upper midband. Strings of the San Francisco Symphony Orchestra were deftly lifted out of a TrueHD demo track, giving them a vivid presence, with strong separation between individual instruments. Thanks to a nice sense of a bow drawing across rosined strings, violins had a natural rasp and vibrant character. The big Marantz has almost technicolour dynamics, which again were apparent by the force behind interjections of the orchestra during Rachmaninov's Piano Concerto No.1 (Decca CD), also by the dry yet conspicuous power of the kettle drum. This isn't the svelte delivery of a valve amp, so much as the iron fist in a thin velvet glove that is a 1600W solid-state amplifier.

From a Samsung BD-PI400 connected up digitally via optical SP/DIF I couldn't fault the tremendous insight, explosive power and rigidly held timing of the combo, but HDMI was a trifle less clear and insightful I fancy, possibly due to jitter. Either way, results were impressive and stayed so over the long term, although the SR8002 wasn't as sweet as the SR6001 and here I believe I was picking up on its crossover distortion [see MEASURED PERFORMANCE].

Needless to say, with rock the SR8002's powerful sound worked well, Amy Winehouse given more strength and body than I have heard to date. This quintessential property of the SR8002 became even more apparent when I span a relatively old recording (1986), Billy Idol's "Sweet Sixteen". Usually sounding a trifle muddled, as you might expect of a CD from this period, through the Marantz Idol sang clearly in an uncluttered but cavernous acoustic; the SR8002 was making far more of the track than I had heard before. I suspect that the BD-PI400's ultra low jitter contributed quite substantially to what I was hearing, possibly due to re-clocking. The Eagles latest album "Long Road out of Eden" displayed very similar qualities, drums sounding deliciously taut





The SR8002 is as packed with inputs and outputs as most A/V receivers, with Component videos across the top, aerials at left, six HDMI sockets below, then a line of Composite and S-Video sockets, with SP-DIF digitals below them, and analogue ins and outs at the bottom.

and impactful, instruments sharply outlined, against an almost peculiarly deep, silent background. I really couldn't fault this, other than to note that, with what seems like a lot of low level hash removed, the sound does take on a stark quality.

This doesn't apply to the receiver's processing of DSD digital code from SACD however, which sounded almost as fluid as analogue, yet supremely clean and sweet too. I was taken aback by the glorious dynamism of DSD through the Marantz. It was a small but appreciable step up in quality from PCM so if you have an SACD collection and a player like the Oppo DV-980H that outputs DSD code over an HDMI link, the SR8002 is a

great choice.

As expected from measurement, the VHF tuner had an easy and amenable sound, with plenty of body and strong bass, but ride cymbals did tizz a little, I noticed when listening to Heart and Radio 2. It has a decent sound, if not top notch. No fewer than 60 presets are available for stations and if you have a decent aerial they will be useful, as the auto-tune system stopped at noise from my outside array, but this is common. I tuned by station frequency to avoid locking onto noise or distant transmitters.

CONCLUSION

The SR8002 is a receiver with massive ability. It can process just

about every form of digital audio thrown at it, including SACD, and as far as I am aware is future proof as a result. It is very unlikely higher resolution audio formats will appear on Blu-ray as current ones, such as 24/192 PCM haven't been taken up commercially as yet. We may get a surprise when the Blu-ray Profile 3 audio disc appears, but I doubt it because the music business has yet to migrate to 24/96 in 5.1, let alone anything of higher resolution. Still, when it arrives, the big Marantz can handle it all, delivering a fast, punchy sound underpinned by rock solid bass. It's a great performer and a very good choice for audiophiles, especially those with a valued SACD collection.

MEASURED PERFORMANCE

Power measured 150 Watts into 8 Ohms, rising to 240 Watts into 4 Ohms, so the SR8002 is very powerful. With a high damping factor of 44 the Marantz will sound punchy yet controlled.

Distortion levels were low via the Direct 7.1 inputs, but there was a distinct crossover distortion pattern that gave an extended odd-order harmonic spectrum, seen in our spectrum analysis. This will give the sound a slightly sharp edge and a sense of incision, especially into 4 Ohm loudspeakers as a low load exacerbated the effect.

The stereo inputs, when sent through the A/D convertor in Auto mode, added little to distortion levels, but noise was a little high at -80dB. The real limitation here though is input overload, which occurred at just 1.9V, because of the A/D convertor. This is low for CD, as most output 2.2V or more, and Marantz fit a red overload warning light and optional attenuator, marked ATT, as a result. It's always best to connect CD via a digital link to avoid this, as well as conversion errors, or use Direct to avoid surround processing.

The stereo line inputs are very sensitive, needing just 200mV for full output to be developed, so low

output external phono stages will work well.

The VHF tuner has an upper midrange droop, likely caused by mpx filter mis-termination. This will give it a warm balance. There is some upper treble in the form of a peak our analysis shows, so detailing will be there and this will avoid dullness.

Distortion levels were a little high at 0.33% at 50% modulation, when 0.1% is common. Noise measured -72dB, much like most modern VHF tuners, and at this level it will be inaudible. The tuner needs 0.6mV for full quieting, a low value, and sensitivity was fairly good at 38uV for -50dB hiss in stereo. Selecting Mono allows just 2.4uV to be received with -50dB hiss. The VHF tuner works well, but it isn't a top notch design.

The SR8002 is powerful and turns in a good set of results all round. NK

TUNER

| | |
|-------------------------|--------------|
| Frequency response | 26Hz - 16kHz |
| Stereo separation | 39dB |
| Distortion (50% mod.) | 0.33% |
| Hiss (CCIR) | -72dB |
| Signal for minimum hiss | 673µV |
| Sensitivity | |
| mono | 2.4µV |
| stereo | 38µV |

DISTORTION

VHF TUNER RESPONSE

AMPLIFIER

| | |
|---------------------|--------------|
| Power | 150 Watts |
| 7.1 ch Direct input | |
| Frequency response | 15Hz - 70kHz |
| Separation | 63dB |
| Noise | -100dB |
| Distortion | 0.024% |
| Sensitivity | 200mV |

VERDICT ●●●●●

Big, revealing sound from a receiver that does it all, including SACD.

MARANTZ SR8002 £1299
Marantz UK
 +44(0)1753 680868
 www.marantz.com

FOR

- Vivid, revealing sound
- SACD decode
- All latest digital formats

AGAINST

- Runs warm
- Complicated remote
- Average VHF sound

Show Time

Ever ready to face hardship in the name of hi-fi journalism, David Price and Adam Smith put down their beer steins and report from the Munich High End Show...

MBL ▶

MBL's top omnidirectional looked like the sort of thing Doctor Who would use as a force field to protect the TARDIS. The accompanying electronics could certainly deliver enough power, although the piano black and gold finish would look better on a Special Weapons Dalek...
DP



◀ ADAM AUDIO

On the subject of big loudspeakers, ADAM Audio had a room full of the things, including the complete Tensor range and topped out by their huge Olympus Sound System (OSS) flagships. Their sound frankly left me speechless in wonder - but at £211,500, so they should do! AS

BRINKMANN ▶

One of the most interesting finds for me was the brand new Oasis direct drive turntable; fascinatingly though, it rejected the traditional Japanese formula of light-ish platter and massive torque motor for precisely the opposite approach. It sounded very distinctive; look out for a review soon! DP



◀ ACOUSTIC SOLID

The turntable wonders continued with Acoustic Solid, whose display lineup rivalled Transrotor for number, variety and sheer strangeness! One of the most eye-catching was this deck, featuring liberal use of bamboo in both its armtube and arm and motor pods. AS

EMILLE LABS ▶

The KM-300SE power amplifier from Emille Labs of Korea. It uses 300Bs in Single Ended mode, with fixed bias and thermionic power supply to give 10 Watts per channel. Seriously esoteric! NK





◀ **ANGSTROM RESEARCH**

These two functional looking but beautifully built valve amplifiers come from Angstrom Research of Italy. The new Equinox B uses parallel arrays of EL84s, a popular choice when a sweet sound with useful power is the goal. Beside it is a massive thermionic power supply. Phew! NK

CAMBRIDGE AUDIO ▶

Cambridge used the show as launch pad for their new flagship Azur 840E/840W pre and power amplifier combo. The former uses Cambridge's 'Terrapin' audiophile amplifier modules and the latter develops further the 840A v2's output stage to generate an impressive 200W per channel. Initial listening was very promising - watch this space for a full review. AS



◀ **SHERWOOD**

A name long lost to Britain - Sherwood of the USA. They had a nice stand that attracted a constant stream of visitors. Sherwood, owned by Inkel of Korea, claim to OEM manufacture nearly one-third of A/V receivers on the market today - in China! NK

THORENS/ISOPHON ▶

Scattered around the show were several examples of the new Thorens flagship turntable, the TD550. This example was in the Isophon room, sporting a twelve inch Ortofon arm and Lyra cartridge, powering Isophon's flagship Arabba loudspeakers through Western Electric amplification. Fit and finish were stunning and it sounded every bit as good as it looked. AS



REVOX ▼

Switzerland's most prestigious marque was showing its L120 loudspeakers in a most unusual finish. Looking like the inside of Jock Ewing's Cadillac, these furry loudspeakers would be just the job for certain Soho nightclubs, ermm, I've been told one can visit in the wee small hours? DP



ELECTROCOMPANIE ▼

On display from the innovative Norwegians were several new products - firstly the Maestro all in one surround sound receiver/DVD player with optional wireless rear speaker amplifier, plus new flagship amplifiers based on designs from Dynamic Precision - Electrocompaniet's main rival, acquired by the company in 2007! Finally, on demo was the new Nordic Tone flagship loudspeaker, looking impressive and sounding it at 17,000Euro. AS



TRANSROTOR ▶

This room was enough to induce drooling in all but the most unsentimental analogue addicts. There were some twenty or so turntables on show, ranging from symphonies in Perspex to prim, leather-clad examples. The problem for me was that it smacked of pandering to commercialism; there was no sense that the company believed that one way of designing a turntable was better than another, because they offered every way! DP



◀ MELODY/JEAN HIRAGA

Melody unveiled a pair of shiny gloss black flagship 845-based monoblock power amplifiers and a new, more affordable CD player and amplifier, finished in white. Their system played through Jean Hiraga's new JH MS15 Reference loudspeakers, featuring a special version Great Plains Audio's new versions of Altec's classic 15in coaxial drive units. As a result, the sound in this room was dynamic and musically enlightening. AS

ADJUST ▶

Adam talks to Dr Feickert of Adjust about his cartridge alignment measurement system. It uses a specially cut test LP that works in conjunction with a computer based measuring system to provide perfect alignment. NK



◀ ESOTERIC

A "Wayne World" "we are not worthy moment" for me, this picture shows that not everybody has given up on CD Esoteric's Red Book mech, as fitted to their top 16bit silver disc spinners, was a textbook example of Japanese precision engineering. DP

PRO-JECT ▼

Lots of exciting new items from Pro-Ject. First up were some more new 'Box' series components, namely an iPod dock, computer DAC and the cutest FM tuner I have ever seen! Also new were wood or glossy coloured cases to hold two or four of these units. Finally, a prototype of their new flagship turntable was unveiled, available with either a new 12in version of their own tonearm, or with a 12in Ortofon arm, as shown. Incidentally, UK Ortofon importer, Henley Designs, is still considering whether to bring the new 9in and 12in Ortofon arms into the UK or not. MD Laurence Armstrong's last words on the subject to us were, "Hmmm... not sure, keep nagging me", so we're doing exactly that! AS





ES please

Adam Smith listens to JBL's punchy new ES80 floorstanding loudspeakers...

Of all the illustrious names in loudspeaker manufacturing, that of JBL is one of the most well known. With a history stretching back to 1927 and their founding by audio engineer, James B. Lansing, JBL have effectively been in the fray since the beginning. Initially specialising in cinema and professional sound systems JBL made several important steps in the production of compression drivers, some of which are still used to this day.

However, by the nineteen fifties, when hi-fi was becoming a serious industry, JBL took to this market as well - with great success. Their 'Hartsfield' loudspeaker, introduced in the middle of that decade, was a large unit designed to be positioned in a corner, where this placement, plus the horn that loaded the 15in bass driver, gave bass extension down to a claimed 35Hz. So popular was this unit that it continued to be made under license in the Far East until the nineteen eighties!

Progress has continued to this day, with JBL being known for everything from huge concert systems, right down to the extremely popular Control 1 monitors - I remember hearing these for the first time back in the eighties and they are still selling well today.

A glance at the current JBL website still shows a bewildering array of products to cover all bases, and the new ES series resides in the middle of this, at the affordable end of JBL's home hi-fi range. Comprising nine models, the ES80s are the most least expensive floorstanders, sitting below the ES90s and ES100s (similar, but with 8in and 10in bass drivers respectively). The ES80s use a pair of 6.5in (170mm) bass drivers, featuring 'PolyPlas' lightweight layer-pulp matrix cones and rubber surrounds. These cross over at 700Hz to a 4in (100mm) PolyPlas midrange driver with a damped silk surround. Above this, a 19mm Titanium-laminate domed tweeter comes in at 3.6kHz before being augmented by 19mm Polyester film 'Ultrahigh Frequency Transducer' that is horn loaded and claimed to give 30 degrees horizontal directivity and 60 degrees vertical. This rolls in at 12kHz and is claimed to give level output to 40kHz.

The ES80s cabinets are made from thick walled

MDF that uses non-parallel sides to reduce internal standing waves. The top front of the baffle is radiused to limit baffle diffractions from the high frequency drivers, which JBL claim give "superior stereo imaging and a predictable frequency response over a wide listening angle". This front baffle is a dark grey in finish and the wooden side cheeks are available in Black, Cherry and Beech.

Fit and finish of the ES80s is good, with the rather cheap-looking plastic foot extensions into which the spikes fit being the only rather disappointing feature of note. The loudspeakers tip the tape measure at 1084x223x330mm (HxVxD) and are a little lighter than might be expected from their size, at 21kg per unit.

SOUND QUALITY

I have to confess to a certain amount of trepidation in approaching the review of the ES80s, having spent the best part of a fortnight in the company of the £12,500 ADAM loudspeakers (p26) followed by the £5,000 DALIs and £4,000 Mordaunt Shorts (p34). I couldn't help wondering whether a drop to the £500 price point might prove

could tend to be a little glossed over when the music became more complex. Although they never went as far as to sound jumbled or confused, the JBLs nevertheless concentrated on the main action well, if at the expense of some of the atmosphere behind it. This aspect was also noted in the soundstaging, which did not extend all that far back behind the loudspeakers or out beyond their sides, but was extremely well ordered and stable within their footprint. It was easily possible to follow the action as it moved around a large orchestra, for example.

At the low end, the ES80s continued their fine performance. Bass lines were solid and punchy, with good levels of detail and rhythmicity. At the very bottom end I did detect a hint of the cabinet making itself known but, rather than being an out and out boom, it manifested itself as a slight colouring of the very lowest notes; a mild effect and not troubling.

So the ES80s proved themselves with a wide variety of music but, as might be expected given the company's heritage, they really lapped



REFERENCE SYSTEM
 Scheu Analog Black Diamond turntable
 Ortofon 2M Black cartridge
 Whest Two phonostage
 Yamaha CD-S2000 CD player
 Anatek A50R amplifier

VERDICT ●●●●£

A sizeable amount of loudspeaker for the money, the JBL ES80 is an entertaining musical partner.

JBL ES80 £500
 Harman UK Ltd
 ☎ +44 1707 278100
 www.jbl.com

- FOR**
- bright and lively top end
 - good central image
 - fine bass weight and pace
 - musically adept

- AGAINST**
- limited soundstaging
 - slight low bass 'colour'

"the ES80s really are a thoroughly exciting and enjoyable way to listen to music."

something of an aural shock...

However, I'm pleased to say it didn't. The ES80s really are a thoroughly exciting and enjoyable way to listen to music. They do have a more forward overall balance, giving a bright and clean top end to music but they are not harsh or hard. With the wrong tweeter this kind of character can have you diving for cover in terms of violin reproduction but the ES80s handled this sort of material with aplomb. Handel's 'Arrival of the Queen of Sheba' was crisp and emotive, with the strings a little lacking in richness but not screechy, which is a highly commendable result for a £500 loudspeaker.

Across the midband, vocals were neatly handled by the ES80s, putting performers centre-stage with authority and giving their performances good spatiality. There was a certain dryness to the presentation, which could add a hint of huskiness to the likes of Norah Jones and Diana Krall, but the individual inflections of their performances were still well pinpointed. Lead instruments were clear and stable but backing items

up a bit of rock and anything with a good pulse. Gamma Ray's 'Heading for Tomorrow' had them pounding out with gusto when required, yet also capturing the anticipation of the central portion of the track, where things quieten down before commencing a five minute-long build up to a rocking crescendo - great fun!

CONCLUSION

The JBL ES80s are one of those affordable loudspeakers that add up to more than the sum of their parts. Their faults are relatively benign - the sort of things that you note in passing and then move on from, rather than being aspects of their performance that leap out and slap you round

the face each time you use them. All in all, they turn in a well balanced and thoroughly enjoyable performance that enables you to simply get on with enjoying your music.

MEASURED PERFORMANCE

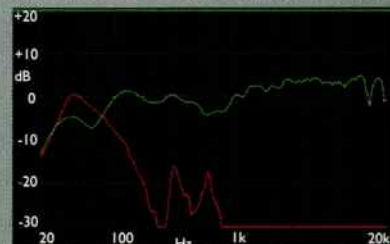
The JBL ES80s have a notable shelf in their response, lifting output by around 3dB above 2kHz compared to their average level and the pair of high frequency drivers maintain this well up to 20kHz. Below this, there is a dip in the response from 400-900Hz and these two aspects together are likely to give the JBLs a bright balance, and may rob some midband detail and presence.

Output level rises up again to peak at around 100Hz, before bass rolloff commences by around 80Hz, to be reinforced by the rear-facing port at its tuning frequency of 40Hz. This is not particularly low for a floorstander of this size but the port output is clean and the drivers and enclosure are well damped, so the ES80s should have a tight and solid low end all the same.

Electrically, the ES80s show an even result across the frequency spectrum and gave a measured average impedance of 5.8 Ohms, dropping to a minimum of around 4 Ohms towards 10kHz. This means that the ES80s do present a four Ohm load but are more current-hungry in a

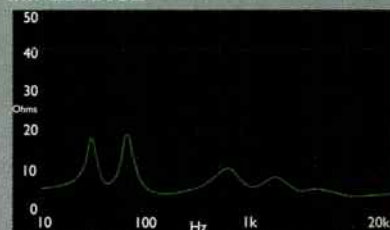
less demanding area of the frequency range, so they will not be particularly challenging to drive. Sensitivity was good at 89dB. AS

FREQUENCY RESPONSE



Green - driver output
 Red - port output

IMPEDANCE



**WIN A FANTASTIC
PAIR OF B&W CM7
LOUDSPEAKERS WORTH
£1,000 IN THIS MONTH'S
GREAT COMPETITION!**

Here's your chance to win the B&W floorstanders that so impressed Adam Smith in June 2008's *Hi-Fi World*. Here's what he had to say...

"B&W's CM series consists of just the CM1 standmounter, CM Centre channel and the CM7 floorstanders. Slotting in to B&W's range between the 600 and 700 series, the CM models are more traditionally styled, incorporating technologies from more expensive models and using "classic cabinet shapes and drive unit arrangements".

The CM7s are solid floorstanders, tipping the tape measure at 910x200x300mm and the scales at 20kg per loudspeaker. A true three-way design, driver line up consists of a 6.5in (165mm) paper/Kevlar coned bass driver, a 5in (130mm) Kevlar-coned midrange that uses B&W's FST technology, with a fine foam ring instead of a conventional surround, and a 1in (25mm) aluminium dome tweeter. These are linked via a first order crossover that uses a single high quality component per drive unit. This is fitted to a rear panel assembly that also contains the two pairs of terminals for biwiring duties, as well as the bass loading port. This is dimpled in the traditional B&W manner, to make use of their 'Flowport' technology that reduces port noise. The CM7s are available in Maple, Wenge and Rosenut veneers and the cabinet finish and construction is outstanding.

Anyone who is still of the traditional opinion that all metal dome tweeters are harsh and steely owes it to themselves to check out the CM7, which disproves this theory completely. Treble from the B&Ws was crisp and detailed, but delightfully

smooth and open at the same time. Cymbals rang out with life-like clarity and the slightest tap of a hi-hat or triangle was easy to detect but without any clanky or steely influence. This top end merged superbly with the midband to ensure that vocalists were eye-openingly vivid and all instruments sounded astonishingly real. The CM7s also offer a spacious and immaculately ordered soundstage with which to tempt the listener. I had the impression, once again, that they were not setting out to impress but simply took a recording and 'told it like it was'. With some loudspeakers you feel you are listening to an incredibly accurate reproduction of instruments; the CM7s seemed to vanish completely, leaving the instruments themselves playing for you. At the low end I found it best to insert the supplied port tuning bungs in order to take the edge off the B&Ws considerable

bass weight. With these in place, bass was still deep, tight, rhythmic and startlingly vivid. Take time to do this and they really sing. Beautifully built and finished, this pair of loudspeakers never failed to impress with a lifelike and natural performance."

If you'd like the chance to win these superb floorstanders, then all you have to do is answer the following four easy questions, and send your entries on a postcard by 30th June 2008 to: **July 2008 Competition, Hi-Fi World magazine, Unit G4, Argo House, The Park Business Centre, Kilburn Park Road, London NW6 5LF.**



QUESTIONS

[1] How many speakers are in the CM range?

- [a] 1
- [b] 2
- [c] 3
- [d] 4

[2] The CM7 is a "true" how many way design?

- [a] 1
- [b] 2
- [c] 3
- [d] 4

[3] What finishes do the CM7s come in?

- [a] Black Ash, Birch & Oak
- [b] Afromosia, Beech & Walnut
- [c] Maple, Wenge & Rosenut
- [d] Teak, Willow & Cherry

[4] What type of tweeter is fitted?

- [a] piezo electric
- [b] diamond cone
- [c] aluminium dome
- [d] ribbon

July Competition
Hi-Fi World magazine
Unit G4 Argo House
The Park Business Centre
Kilburn Park Rd.
London NW6 5LF

RULES AND CONDITIONS OF ENTRY

- ONLY ONE ENTRY PER HOUSEHOLD
- MULTIPLE ENTRIES WILL BE AUTOMATICALLY DISQUALIFIED
- PURCHASE OF THE MAGAZINE IS NOT A PRE-CONDITION OF ENTRY
- NO CORRESPONDENCE WILL BE ENTERED INTO
- THE EDITOR'S DECISION IS FINAL
- NO EMPLOYEES OF AUDIO PUBLISHING LIMITED, OR OF ANY COMPANIES ASSOCIATED WITH THE PRODUCTION OR DISTRIBUTION OF THE PRIZES, MAY ENTER

entries will be accepted on a postcard only

**APRIL 2008 MULTICHANNEL SURROUND SOUND SYSTEM WINNER:
Mr M. Alli of Lancashire**



CHORD COMPANY CARNIVAL SILVERSCREEN £6/m

New to The Chord Company's budget range is the SilverScreen loudspeaker cable. Despite the cinema-related name, the company claims it "brings significant improvements in performance to all levels of hi-fi and home cinema systems" and is suitable for all

types of setup. It uses oxygen-free copper multi-stranded conductors, low-density polyethylene insulation and a twisted-pair configuration similar to that used in the Carnival Classic.

The conductors are encased in a soft PVC jacket that is overlapped by a twin-foil shielding system, which in turn is surrounded and protected by a low Q translucent PVC outer jacket. Chord claim that the shield fitted to the Carnival SilverScreen reduces interference, lowers the noise floor and brings significant improvements to the entire frequency range of the system in which it is used.

Connecting in place of our van

den Hul Royal Jade cables, I was struck by how they lifted the sound up and out of the loudspeakers and pushed it out into the room in a highly impressive manner. The atmosphere and midrange that they add to a performance is very noticeable and this translates into an enveloping and emotive musical experience. The Carnival SilverScreen also adds a lovely shimmer to treble. The Royal Jade is a more smooth and laid back design and the Chord spotlighted this quite effectively, adding extra crispness and transient attack. Most obvious, however, was the way in which it tightens up the low end - bass lines experience quite eye-opening gains in terms of timing and tautness.

Overall, the Carnival SilverScreen is a very fine loudspeaker cable and, for the price, a resounding bargain.

AS

[Contact +44(0)1980 625700, www.chord.co.uk]

soundbites

RINGMAT PURE SIGNAL BLUE INTERCONNECT £160/1.5m

Although well known for their wide range of support and tuning products, it is not quite so widely realised that Ringmat also make mains leads, and a range of interconnects and loudspeaker cables. Ringmat state that their extensive research into the actual cables that make up these signal leads has led to designs that are "exceptional at maintaining signal phase coherence". This is something that Ringmat feel is vitally important to the signal chain throughout its journey from source to loudspeaker. The Signal Blue interconnects are the starter product, retailing at £140 for a 1m pair and £160 for the 1.5m set supplied for review. The cable itself is a flexible type with four conductors, each made up of seven strands of high purity, oxygen-free tinned copper wire giving an overall size of 0.23mm^2 . Around this is a tinned spiral screen, helically wound over polyester tape, and surrounded by a neoprene polymer jacket. Only one of the four conductors is used for the signal, the remaining three being

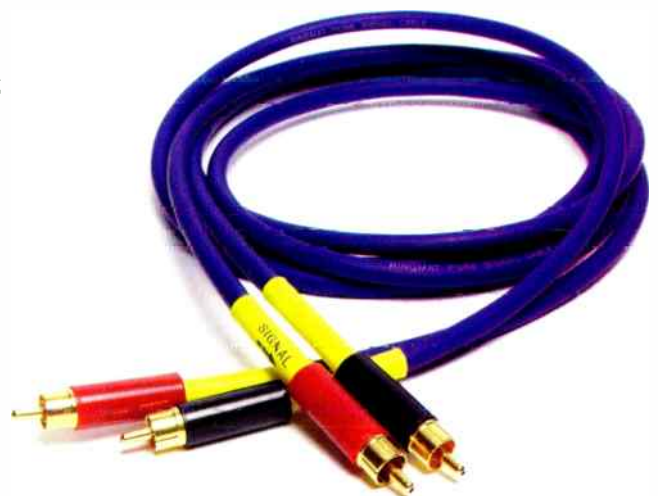
used for signal ground. The screen is connected to this ground at the destination end of the cable and the leads are marked for directionality as a result of this. The interconnects are terminated in gold plated phono plugs.

Inserting the Signal Blues into our reference system in place of the TCI Vipers that were there previously gave instant changes in terms of rhythm and clarity. The Viper is a fine interconnect, but the Ringmat item still seemed to remove a hitherto unnoticed fine layer of 'mush' from the background of the music, making instruments more stable and vivid within the soundstage. As a result, soft acoustic material gained a better impression of intimacy and atmosphere, while more complex recordings became much better defined. Backing vocalists and instruments seemed to move forward within the mix to become more prominent, adding to the feeling that the performance had gained more of a coherent

whole. The low end was confident and detailed, the Signal Blues capturing the rhythmical essence of bass lines to really bound them along with great enthusiasm and alacrity.

All in all, the Ringmat Signal Blues mark a fine and notable step up from an entry level interconnect and can be heartily recommended. AS

[Contact: +44(0)1277 200210, www.ringmat.com]



Face Value



BANG & OLUFSEN

During the nineteen eighties and nineties I remember the sound quality of Bang & Olufsen's beautifully crafted music playing systems being routinely dismissed by much of the so-called hi-fi press. This led to the perception, with audio aficionados and journalists alike, that B&O was all about style over substance...

Not one to be swayed by such vagaries, I have always loved B&O for their meticulousness; singular silver and black house design, intuitive user interfaces and superb sound quality. So, when editor DP suggested I try B&O for this system feature, I was excited by the prospect of breaking away from my usual boxy separates! I could have gone for one of B&O's more expensive systems, but having always found the entry-level range to be most revealing of a manufacturer's design philosophy, I opted for the lower-priced (by B&O's standards) £1,800 BeoSound 4 CD/Radio/SD player/recorder and £850 BeoLab 4

Expensive yes, but Channa Vithana thinks Bang & Olufsen's stylish BeoSound 4/BeoLab 4 system is well worth the money...

active loudspeakers.

As it turns out, the BeoSound 4, penned by long-time B&O designer David Lewis, is also sufficiently different and compact than its more ubiquitous 9000 and 3200 series family members - which are regularly installed in hotels and galleries, and product-placed in US and UK TV shows. Accordingly, I think the BeoSound 4's proportions are just right at 280x310x240mm and 3.7kg. Suitably attired in silver aluminium and black, it is my favourite design in B&O's current roster. The sleek dark-glass screen responds to the motion of a hand wave to glide upwards revealing an intuitive and ergonomically winning control layout with a fixed CD-transport that accepts discs manually and then clamps the spindle with slick assurance onto a CD as the smoothly profiled dark-glass glides back down. I'm sorry to report that even Linn's Classik and Arcam's Solo all-in-one music systems look and feel cumbersome by comparison, although in fairness they are considerably cheaper...

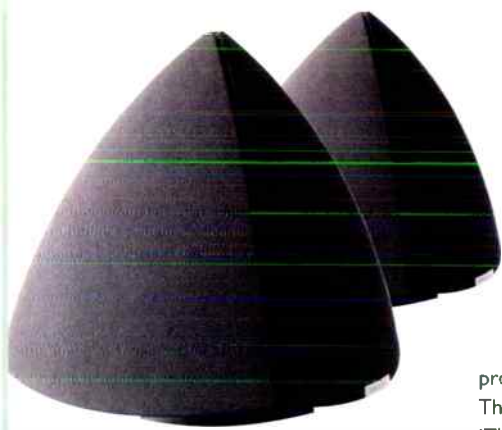
The BeoSound 4 comes with both FM and DAB radio and, as my FM aerial had been wiped out in a recent storm, I connected up the DAB and, within less than a minute, all the available radio stations were automatically loaded. The SD card recorder is a lovely lateral touch, as the cards are readily available and cheap (frequently used within digital cameras) and you can also use them with B&O's BeoSound 2 and 3 portable players - it's an easy to use iPod alternative without the

need for a computer. Though it can only record at 128kbps with SD, I didn't find this a hindrance within the context of the BeoSound 4 and BeoLab 4 - more of which later. Thus, the CD and radio can be recorded as well as an external source via a set of phono inputs, which can also connect an iPod. Additionally, there is a set of phono outputs, a 3.5mm headphone socket and a Master Link socket for B&O home/computer integration.

I could have gone for one of the larger B&O loudspeakers but I opted instead to try their smallest, most 'lifestyle' looking model, the BeoLab 4. These active designs use curved pyramid-like geometry with a discrete red/green operation light attractively surrounded by the optional £40 grilles (blue, grey, red or black). B&O's ICE Power Class D modules provide 35W each to the 19mm fabric-dome tweeter and 100mm concave-diaphragm mid/bass driver. Though there is a port to the base of the cabinet, at only 1.55 litres volume and 215x197x205mm and 1.7kg, the BeoLab 4s cannot be expected to outperform floorstanding loudspeakers in the low frequency department. However, there are three settings, for open space, corner and close to wall, and these work with B&O's Adaptive Bass Linearisation (ABL), which protects the small drive unit by gently and progressively limiting output when things get louder. The BeoLab 4s can also be floor stand (£370), wall bracket (£115), or on-wall and on-ceiling mounted (£40), with appropriate attachments.

TUNING

I opted for the B&O aluminium stands for the BeoLab 4 and £165 BeoSound 4 stand which raises it



to around 870mm in height (there is also an attractive aluminium wall-bracket at £80, or it can be sited on a table top without stands). The stands are superbly made and sturdy with adjustable feet. Upgrading is tricky as B&O uses its own 'Power Link' sockets and cables for loudspeaker connection and both components use figure-eight mains sockets. However I was, just, able to install a LAT international AC-2 MKII mains cable within the cable slot at the base of the BeoSound 4 because it is available ready-fitted with a figure-8 connector. The LAT costs from £114/0.9m and I have used it successfully on other, more expensive systems. It uses a foil screen, PTFE/Teflon and LAT's 'Silverfuse' process which includes 7N (99.99999%) purity copper. The B&O system as standard was already really good, surpassing my expectations, and then substituting the supplied mains cable with the LAT brought on deeper bass extension, more resolution and dynamics, which added the final polish to an already accomplished system without impinging on timing, openness or clarity as some upgrade cables tend to do. In use I preferred the BeoSound 4 set up close to my seating position so I could operate that slick dark glass panel and superb user-interface and this negated the necessity for the costly Beo4 (£150) or Beo5 touchscreen (£500) system remotes.

SOUND QUALITY

Correctly set up, run-in and located in a medium sized 6x4m listening room with the loudspeakers at 500mm from the rear walls, it didn't take me long to realise that here was a system that readily enjoyed the dynamics and tempo of music. Indeed, it proved wonderful with musical timing - conveying the stop-start, pinpoint precision of Aphex Twin's pulsating electronica from 'Chosen Lords' as deftly as it did the elegant phrasing of the harmonically rich violin playing of Hilary Hahn from the 'Elgar Violin Concerto'. The intricacies of both these recordings were well and truly revealed - I could readily

appreciate the grand orchestrations of the Hilary Hahn recording, where individual instruments were easily picked out.

As well as timing as crisply as a good many eighties 'flat earth' systems, the B&O set-up proved impressive in the dynamics stakes too - quite probably due to its active operation. The bass-heavy rhythms from Yello's 'The Race' proved the BeoLab 4s were truly engaging and unflustered even at high levels. Obviously, they're compact speakers so won't move air like Tannoy Westminsters, but they go surprisingly loud and stay couch right up to maximum volume.

Despite the accent on 'pace, rhythm and timing, this system isn't tonally hard or dry; a combination of decent drive units in the speakers and the B&O ICE Power Class D modules (which we liked so much in the Rotel RB-1092) give a decently warm - if not rich - tonality. Allied to a fine DAB tuner, the system was a nice way to listen to radio. I listened to a combination of Radio 2, Radio 3 and Chill - and whether it was rock, classical or electro-pop; the sound was immersive, well-resolved and eminently listenable. Even with a modest aerial, there was none of the stridency and harshness that afflicts some DAB radio implementations.

"this user experience is tragically missing on so-called 'real hi-fi'..."

The SD card recorder is a brilliant idea. Other rivals have a USB socket, such as TEAC's £350 CR-H255 (which is also a great implementation), but I have to say the compactness and ease of use of the SD card (it just plugs in to a slot in the fascia, next to the other controls) suits the B&O 'idiom' perfectly. Recording at 128kbps MP3 as it does, it of course loses out to the CD player when comparing a recording to the original, but in terms of timing and dynamics, it was still surprisingly listenable over long periods. If only they had given it up to 320kbps AAC functionality, it would have meant true compatibility with iTunes, and a lot less hassle for those already in to

'computer audio' in a big way, but there you go...

CONCLUSION

I was wondering whether I would be mildly disappointed by this handsome 'style system', but it never turned out this way. Instead I was greeted with a splendid combination of musical timing and intricate detail retrieval. Of course, at around £2,650 without stands or cables, B&O membership via the BeoSound 4 and BeoLab 4 duo is a costly affair, but still somehow the 'user experience' of this system is so special that it (almost) justifies the cost! The experience of loading a Compact Disc via that gliding dark glass panel and pressing well-damped buttons is tragically missing on almost every piece of so-called 'real hi-fi' on sale.

Granted, the diminutive BeoLab 4 loudspeakers cannot compare to floorstanding versions for bass extension, but they give nothing away in tunefulness and here the purity and sonic elegance of well-designed active loudspeakers comes into play. Furthermore, the BeoSound 4 is a versatile device - you can place it onto a desktop or a variety of stands and wall brackets and if bigger bass/bigger listening rooms is a priority you can add a BeoLab 2 subwoofer for £2,000, or substitute BeoLab 6000 (£1,900), 8000 (£2,800)

and even the BeoLab 9 (£5,200) loudspeakers, the latter receiving five-globes from B&O fan and owner, Assistant Editor AS, in *Hi-Fi World*, June 2007. In use, with only the single LAT mains cable and B&O stands, I never felt the need for more bass, as the combination of detail, timing and tunefulness was more than enough for me to forget about hi-fi and simply enjoy listening to music.



| | |
|--------------------------|--------|
| BEOSOUND 4 | £1,800 |
| BEOLAB 4 | £850 |
| Bang and Olufsen UK Ltd. | |
| ☎ +44 (0)118 969 2288 | |
| www.bang-olufsen.com | |
| LAT INTERNATIONAL AC-2 | |
| MKII | £114/M |
| Audusa | |
| ☎ +44 (0)208 241 9826 | |
| www.audusa.com | |

Plus Won

The Revo Blik RadioStation sets two records, as it's the first ever radio that supports DAB+ out-of-the-box, and the first to combine Wi-Fi Internet radio with DAB as well. Steve Green listens in...

In the great radio scheme of things, the Revo Blik RadioStation is one small but significant step into the future. No, this isn't me repeating Revo's marketing hyperbole, but a statement of fact - the reason being that it's the first product to use the new Venice 6 module from market-leading DAB receiver chip maker Frontier-Silicon. This means it has Wi-Fi, DAB and DAB+ functionality, plus the ability to stream audio wirelessly from a computer and receive FM too!

Venice 6 is Frontier-Silicon's first foray into Wi-Fi Internet radio, so I was especially intrigued to see how well they would implement it, and I'm happy to say that they've done a very good job. The RadioStation tuned most of the Internet stations I listen to very quickly (some Internet stations take longer to tune-in than others, though) and the Wi-Fi range was good. One other issue I've had with some of the other Wi-Fi Internet radios has been that, when navigating through menus, the radio sometimes pauses for two or three seconds before the menu is displayed, and the Revo was quicker here too.

stations. There were also ten presets each for Internet radio, DAB and FM stations, which could either be accessed via the credit card-sized remote control or via buttons on the neat control panel on the top of the unit. One slightly annoying issue with the operation on DAB though, was that the device always insisted in starting scrolling from the beginning of the DAB station list rather than carrying on from the station I had just tuned in to...

Both podcasts and the BBC's Listen Again streams were supported, although in what seems to be a bit more teething trouble with Frontier-Silicon's Internet setup, I could play

press of a button, so this issue of the podcasts not playing and the DAB station list starting at the top are very likely to be solved the next time the Revo receives a software update (fingers crossed).

The Revo also has a wireless media player, which allows access to music files either via shared folders or UPnP music servers. When selecting shared folders, the radio didn't successfully download the list of files, and I've experienced the same problem with other Wi-Fi Internet radios as well. UPnP servers are far

"right now, it is a landmark product..."

Managing Internet radio stations was simple after I'd registered the radio on Frontier-Silicon's new Internet radio website, which is linked to an extensive database of stations. This allowed me to create sub-menus within the 'My Favourites' menu, which saved having to scroll through a single long list of favourites on the radio itself, and I invariably used this method to tune-in to

the streams if I navigated to them from the main menu on the radio, but if I entered a podcast or BBC Listen Again stream into the My Favourites menu via the website, the radio refused to play them and it reported that there had been a 'Network error'. However, one of the best features of Wi-Fi Internet radios is that their software can be upgraded over the Internet at the



Neat keypad control layout.



faster and more flexible anyway though, and the RadioStation worked well with both Windows Media Player 11's and TwonkyMusic's UPnP servers – Windows and Mac operating systems are supported, but not Linux at present. The media player currently supports the MP3, WMA and Real audio formats, plus M3U playlists, and Frontier-Silicon told me that a software update is planned for June/July to provide support for AAC, after which they're looking at adding support for the DRM-protected versions of AAC and WMA – I've put in a request for FLAC and Ogg Vorbis.

Reception quality on DAB was very good, but like it is on all new

DAB radios these days, FM reception was poor on all but the strongest FM stations. The Revo also provided an alarm clock and what they call an 'M-Port', which allows the radio to playback audio from an MP3 player, and on the rear of the unit there are a pair of phono output sockets and a headphone jack.

SOUND QUALITY

When the quality of the source material was good, such as on high bit rate MP3 files and on the better-sounding Internet and DAB stations, the Revo delivered excellent sound quality for a device with a single, relatively small speaker. Open, detailed and dynamic, it displayed a good top-end, which is often

strangled on small portable radios like this. Speech was especially good, sounding crisp and lively. However, when the source material was of lower quality, the Revo tended to sound rather scratchy or muffled, although that's primarily the fault of the radio stations rather than the radio. FM was good on stations that have a very strong signal strength, but most stations didn't sound very good due to the Revo's poor FM reception.

Overall, Frontier-Silicon has implemented Wi-Fi Internet radio very well, the Revo provides an impressive feature list, it is future-proof, and provides good sound quality, so it is certainly well worth considering. Indeed, right now it is a landmark product, and absolutely the one to go for if you need all this functionality. However, there are better-sounding Internet radios available in its price range, such as the Roberts WM201 and the Tangent Quattro, and Roberts is also bringing out a combined Wi-Fi/DAB radio shortly, which I hope to be reviewing in the next issue or two. Watch this space.



Angular profile harks back to 1970s 'ski-slope' cassette decks!

VERDICT

The world's most advanced and most future-proof portable radio available right now, but faces stiff sonic competition from some less versatile designs all the same.

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PRO Plus

HH Electronics' Studio 50W monoblocks have Haden Boardman intrigued; can this vintage transistorised studio amplifier cut the mustard as a serious hi-fi amplifier?

Despite the obvious similarities between our two worlds, professional audio and domestic hi-fi rarely cross over. In the past few years we have seen the odd DAC or Class D amplifier come from the 'pro' arena - and occasionally an active loudspeaker - but on the whole, never the twain shall meet...

Long established HH Electronics of Cambridge have had a strong reputation in the pro audio field, and they are one of the few pro makers ever to make it into the old Hi-Fi Year books. Ten years ago I remember servicing a monster of a power amp, a 1200, with a super power supply, very high quality, and over 600W per channel! For the money the amplifier cost when new, it seemed to offer a great deal of performance for not a lot of cash. The much smaller TPA-50D featured here cost around twice that of a Quad 303 in 1973 - clearly a lot more expensive as a pro product back then - and the technical differences between the Quad and the HH could hardly be more marked.

Ignoring the rather colourful turquoise case, the HH amp is

"a set of sub-£100 monoblock power amps capable of rivalling moderns..."

well finished, and engineered along modular lines. It sports lovely retro chrome handles and a satin aluminium fascia, dominated by a red power switch and input level control. There are three sets of fuses; one for mains power, and one for each of the plus and minus power rails. Lurking around the rear are one of those horrid three pin round Bulgin mains sockets, along with a single phono socket, and two terminal speaker

connections.

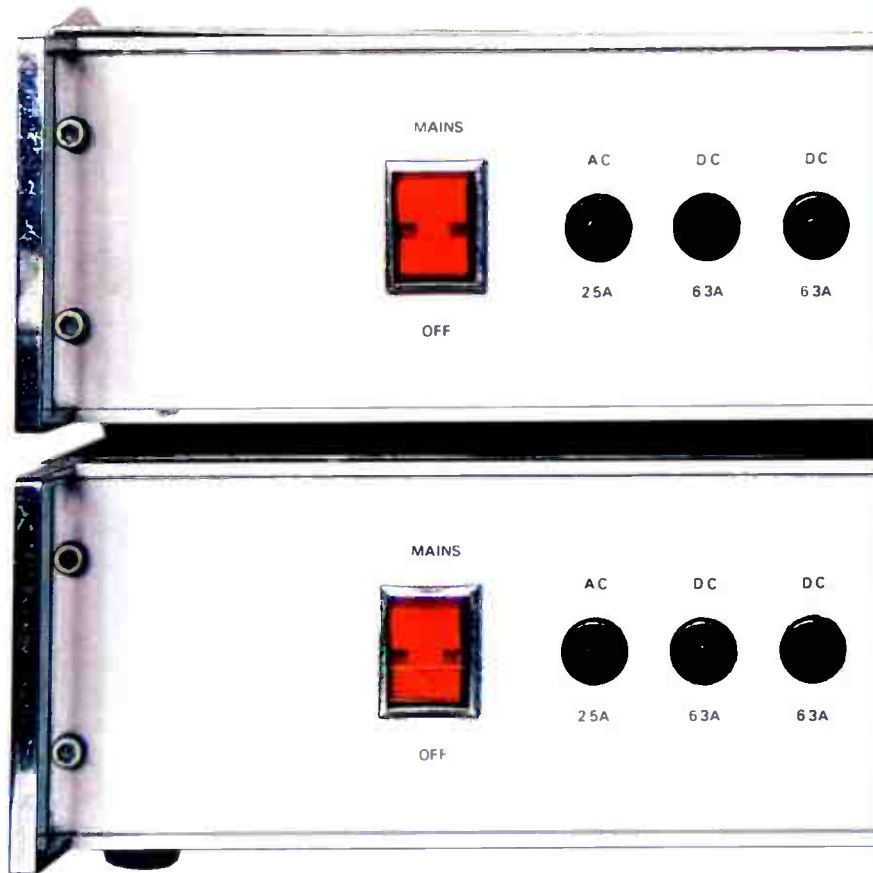
Lifting the lid reveals the HH to be at the forefront of nineteen seventies technology, with a substantial toroidal mains transformer (remember we're talking 1973 here), decent (non regulated) power supply and the high speed version of Motorola's classic output device - shock horror - an MC741

driver integrated circuit/operational amplifier, and a gold plated one at that! This was absolute state-of-the-art technology at the time. The circuit board is decent quality and well laid out, while all internal wiring is incredibly neat.

Indeed, build is generally very tidy. The same chassis was used for the larger 100W versions, and there is plenty of room inside this 50 Watt (there was also a 200 Watt

version). Operation of the output devices must be Class B, because it runs cooler than a NuForce with the power turned off! The power supply is a healthy size, and of course monoblock construction. Biggest criticism on the internal layout is the iffy quality of the internal screened audio input cable - a clear upgrade can be had by replacing this and the volume control, which is another low rent item. One of the monoblocks shown here arrived with blown fuses, and matching blown output devices, but, on replacing these items, normal service was quickly resumed and a measured comparison on the test bench revealed both amplifiers in rude health.

The amp was more than sensitive enough to run directly from a Philips CD100 player, mitigating the need for any kind of loss-inducing preamplifier. Initial listening was done on a similar vintage set of Celestion Ditton 15s (with classic HF1300 tweeters!), all wired up with Chord Company cables. In later listening, however,



B&W's excellent new 686 supplanted the Dittons and a Technics SL-P1200B the Philips.

SOUND QUALITY

Initial impression were of a fast, fresh sound - certainly not bright but not dull or soggy either, as many vintage transistor amps can be. The similarities between Quad 303, Sugden A21 (Mk I, II and III) and the

loudspeakers with ease, although they could tend to sound plummy at times. The opening remix of Roni Size's 'Heroes' has a looping bass line that can tax some combinations, but the HH had no problems imparting this track. More delicate female vocals, playing the classic Jennifer Warnes rendition of 'Famous Blue Raincoat' revealed a darker and quieter side to the amplifier's performance. I

a great shame. From my experience with this amp, there are bargains to be had out there. I bought this pair faulty for practically nothing, and have seen perfect working examples on a well known internet auction site for £60-£70 - a real bargain. A set of sub-£100 monoblock power amps capable of rivalling moderns, and with no hard-to-find parts for service issues, is a joy to behold.



MUSIC USED:
 ABBA 'The Visitors'
 Kruder & Dorfmeister 'The K&D Sessions'
 Jennifer Warnes 'Famous Blue Raincoat'

REFERENCE SYSTEM:
 Philips CD100 CD player
 Technics SL-P1200B CD player
 Cyrus 8vs integrated amplifier
 Sugden A21/II integrated amplifier
 Quad 303 power amplifier
 B&W 686 loudspeakers
 Celestion Ditton 15 loudspeakers
 Chord Signature interconnects

classic 'Wireless World' John Linsley Hood stuff can really put all of these together in one camp; and as much as I like these particular units, they are certainly rounded performers. The capacitor coupled output stages simply do not help with the current delivery! The HH is, of course, very much a different animal; a direct-coupled output stage and a far more modern design in terms of circuit topology - something that wouldn't look out of place in a new amplifier - see to this. Throwing in the harder-to-drive B&W 686s proved the point; the HH had no problems in powering these little speakers with real weight and authority.

ABBA's 'The Visitors' was played straight through and the amp showcased the complex, layered nature of this album with aplomb, along with the powerful orchestration and sublime vocal stylings. Drum and bass from Kruder & Dorfmeister had great low end weight, even driving the tiny B&W

even tried my Fostex F120A full range units on the HH, and I have to report that they worked pretty darn well. I would have expected the Quad 303 to be a better match in some ways, but no, the HH was faster, cleaner, sharper, simply more defined and refined.

CONCLUSION

In some ways this is a truly modern amplifier, especially considering it's over a third of a century old. Sure, the output devices are old hat (not that I have anything less than respect for the beloved 2N3055!) and the MC741 driver chip is an absolute antique by today's super fast op-amp standards, but the whole combination was in a different league from the rest of the UK competition at the time. As a brand, HH seems to have been totally ignored by the audiophile community, which is





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REFERENCE

"if you love hi-fi, the Munich High End Show is an essential visit..."



adam smith

Never has the phrase "child let loose in a sweet shop" been more appropriately applied to me than it was on the 24th and 25th April when I made my first pilgrimage to the High End Society's annual Hi-Fi Show at the M.O.C. in Munich.

Having been only involved with the UK hi-fi scene so far, this was an event that I was well aware of but had never really thought of in any great detail. However, since working for *Hi-Fi World*, I have been hearing more and more tales of the wonderful exhibits on show there, the number of manufacturers that we simply do not hear about in the UK and, most importantly, the number of exotic turntables on display each year. Consequently, when Noel announced that he thought it would be a good idea for us to pay the show a visit, I didn't exactly put up a fight...

Now don't get me wrong, I love the hi-fi shows here in the UK. I have been attending the Bristol Sound and Vision Show pretty much ever since it started, with only the occasional gap, and have recently started visiting most of the other UK gatherings, from the growing events in Manchester and Heathrow, to the positively intimate event at the delightful Marriott Dalmahoy hotel in Edinburgh last year.

Shows are a vital event for journalists, dealers and manufacturers. From our point of view, we get a chance to put faces to names, see brand new equipment in the flesh, sometimes for the first time, and chat directly to designers and engineers. In the UK, these shows all take place in hotels and it seems that these are an eminently obvious location, in that they have lots of available rooms for demos, and sometimes conference centres as well. Exhibitors can also stay on site and be fed and watered easily. The beauty of having a short

walk to the bar for a glass of ermm, lemonade, can never be underestimated when you've been on your feet all day, walking the floors and talking to people!

So, the main difference in Munich is that the show is held in a dedicated exhibition venue - probably the closest thing we have is the NEC, but this is just a series of big, open halls that would need to be extensively sub-divided in order to operate along a similar way. The M.O.C., however consists of four main blocks - each featuring a large exhibition hall downstairs, plus two floors of dedicated rooms above these, all arranged around a central atrium that houses refreshment and entertainment stalls.

What this description does not prepare you for, however, is the sheer size of the exhibition. This year's show occupied two of the halls and two of the complete upper floors of rooms, giving a total exhibition area of over 18,000m² and playing host to nearly 14,000 visitors over the four days in which it was held. I know the Bristol show gets incredibly crowded and busy every year but I don't believe it comes anywhere near this.

Of course, I knew all this, but it still doesn't prepare you for the sheer scale of things when you arrive. Noel and I visited on the Thursday and Friday and had to put our heads down and really go for it in order to see everyone there. Obviously there are some large rooms in the upstairs area (in fact I cannot think of any UK hotel with rooms large enough for some of the loudspeakers on display) but what surprised me were the soundproof demonstration booths in the large halls downstairs - it was not just static displays in these vast spaces.

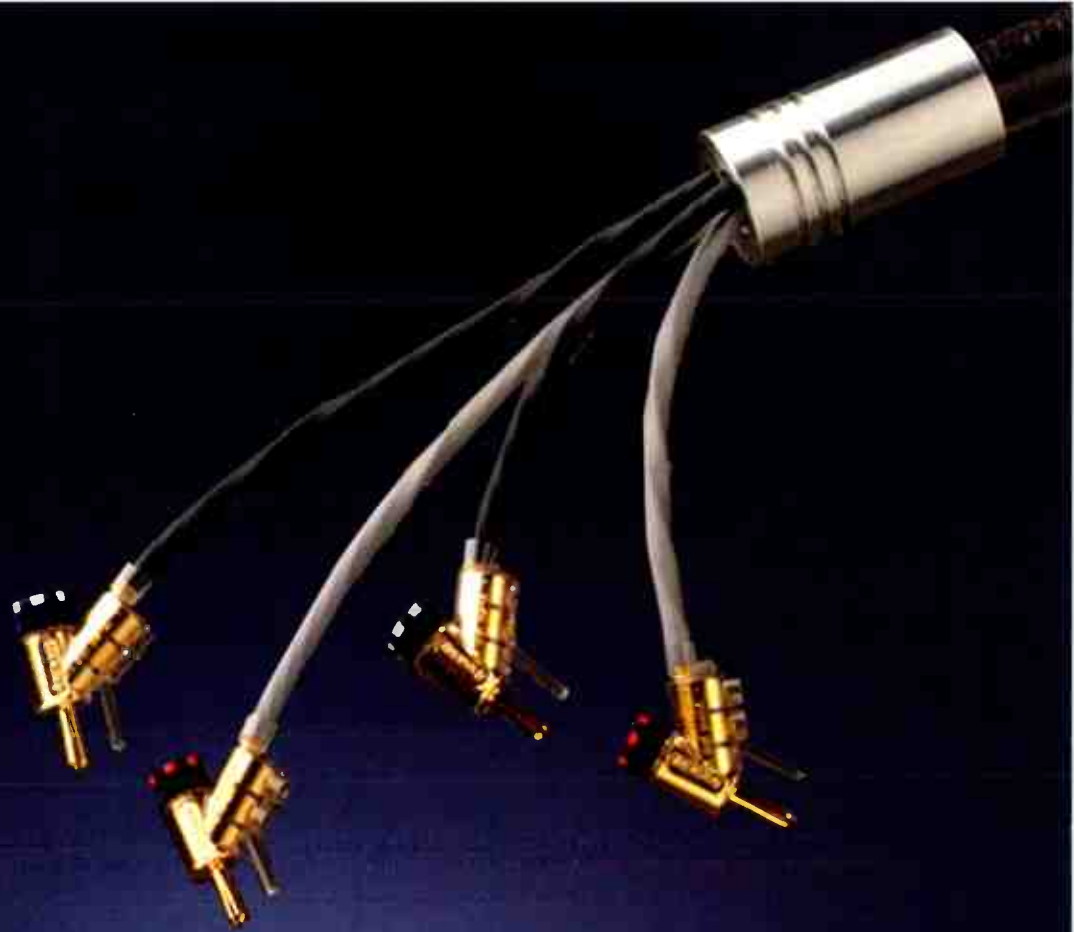
So, did the show live up to my expectations? Well, yes, and more so. The array of equipment there was absolutely astonishing and

encompassed many manufacturers that are not known in the UK. I learnt of two or three of these that will be appearing soon, as I saw plenty of UK hi-fi dealers and distributors 'doing the rounds' and drumming up new contacts.

As I had been promised, the turntable side of things was extremely well catered for and the likes of Transrotor, Acoustic Solid, Thorens, Scheu Analog, Pro-Ject, Ortofon, Brinkmann, Amazon, Morch, Nordic Concept and Dr. Feickert all came up with the sort of turntables and arms that keep me awake at night, wondering exactly how many of them I could fit into my listening room.

Even for non vinylistas, there was excitement to be found around every corner - hard disk servers, CD players that resembled kitchen waste bins, a completely gold plated valve amplifier and Vincent's bright orange tuner/preamp/power amp and speaker setup saw to that. Also present were a good number of DIY component suppliers selling their wares, which is something so far missing from any UK shows, as far as I know. Huge loudspeakers were plentiful as well, and I spent most of the train journey back to the airport wondering which essential organs I could live without, and how many I would have to sell in order to afford a pair of ADAM Audio's OSS flagships...

If you love hi-fi, the Munich High End Show is an essential visit. Transport links are easy from the airport. Munich is a safe and friendly city and the M.O.C. itself runs shuttle buses to ten of the main hotels in the area. Alternatively, the U-Bahn and S-Bahn train systems are a delight (especially if you're used to the London Underground!) and very cheap - even free if you stay in a city centre hotel. I know I'll be back next year. ●



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"anyone wanting a serious upgrade would do well to look close to home!"



david price

On the chilly evening of Sunday, February 24th, yours truly returned to his house – after a long weekend away visiting friends – to a big surprise.

As soon as I opened my front door, I got that sinking feeling...

Stepping into my hall, I encountered the sort of murky whiff you'd get from walking past a stagnant millpond. Moving a few steps further, I noticed my feet were wet and a small shoal of fish had just swum past me. Next came some whelks, a few eels, and a toad. Oh my God, my house was a swimming pool!

Well, I'm exaggerating for effect, but suffice to say I'd had a flood. As I opened the hall door into my main living (and listening) room, I got an even greater shock. Instead of a damp patch on the carpet, I looked down to see it had turned into a waterbed – the sort of thing I'd have used to grow cress back in primary school. Looking up, I noticed part of my ceiling had fallen down. Switching on the light – as one instinctively does when you walk into a room, I saw a large, halogen-white flash emanating from my fuse box, and then the lights went out. Bigger!

Within seconds, I realised this was more than just a tap left dripping. Water was cascading down the living room ceiling light and on to my head. Next, I ran to the drawer, pulled out my trusty mini Maglite and made a beeline to the water valve. After I'd switched off the mains, I ventured upstairs to see that I'd had a pipe go in the bathroom. I must have had mains water gushing out for the best part of forty eight hours, and it wasn't a pretty sight.

Fortunately the hi-fi was mostly okay. Having got past the stage in life when you put everything on the floor

– including your turntable, amp and speakers – the electronics were sitting pretty on glass equipment stands, inches above the high watermark. The three hundred or so records I keep downstairs were at 'ground zero', but mercifully on a higher section of my slightly sloping floor – even if the cardboard boxes containing them had absorbed goodly amounts of damp, by osmosis.

To cut a long story short, the inside of my house has now been rebuilt (thanks, American Express insurance services), and the final part went in just a couple of weeks ago – a lovely new wool carpet, covering almost the entire upstairs and downstairs floor area. The next thing to do was to get the system back out of storage, and get 'my music back'...

It was a unique chance to 'start again'. The equipment was the same (almost), but the setting would be different. My only criticism of my old listening room was its lively upper midband and slight reverb. Still, careful fettling and judicious use of soft furnishings had tamed it, mostly. But suddenly the opportunity was there to do things differently, to address the failings of the old room, and to put into practice *Hi-Fi World* 'best practice' I'd garnered from reading Noel's frequent articles about room acoustics! Whereas before I'd tried to look the other way, now I had no excuse to ignore his wisdom...

The first big 'sea change' for me, if you pardon the pun, was the move back to wood. Glass shelving certainly 'lights up' the upper midband of any system, so I've gone – provisionally at least – for a chunky, massy Habitat affair in thick birch. It is spiked courtesy of some pointy Michell Tenderfeet, and sounds quite neutral. On top of this is an Avid isolation platform for the Marantz CD63K1

DP CD player, while the Sugden IA4 integrated resides on SoundDeadSteel Isofeet nearby.

Now it has warmed up and bedded in, my embryonic new system is beginning to sparkle. The room shape remains the same of course, but the new, thicker carpets, thicker curtains and a couple of furry cushions that wouldn't look out of place in an episode of 'Queer Eye for the Straight Guy' have taken some of the 'zing' out of the walls, and I suddenly found myself in a, ermm, new acoustic dimension.

Tragically, all that water didn't work wonders for my poor old Yamaha NS1000M speakers, so I am currently chasing new drive units for them – if anyone has any leads, let me know! Right now though, the German Physiks HRS 120s reviewed on p10 are making a very nice noise. My turntable shall, I hope, sit on a Quadraspire rack – simply because I'm impressed by how dead they are for something so light. It strikes me that you want tonally inert but waif-like supports – which is to say it shouldn't ring or retain energy like a bell. Alongside my current reference Technics SL1200 (very heavily modded), a Marantz TT1000 will be joining it soon. Again, direct drives lack the balming, soft, sumptuousness of beltors, so wood should do better than glass here.

Hopefully by next month's column, my system will be an altogether more amazing thing than I was able to achieve after five years of the 'old' regime. So far though, I've realised what a massive difference rooms (especially walls, curtains, carpets, rugs, etc.) and supports can make – as much as any multi-thousand pound change of equipment. Strikes me that anyone looking for a serious upgrade would do well to look 'close to home!' ●

...ok paws up... maybe I did sell a few of my friends at the jumble sale... but it was only because I wanted my own Naim...



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"the Digital Radio Working Group is a sham, and licence-fee payers will have to pick up the tab..."



steven green

Last November, the Department for Culture, Media & Sport (DCMS) set up a 'task force' called the Digital Radio Working Group (DRWG), which consists of representatives from the BBC, Ofcom, commercial radio, the receiver manufacturers and transmission providers, and they've been tasked with finding answers to the following questions: What conditions need to be achieved before digital platforms become the predominant means of delivering radio? What are the current barriers to growth? How can these be overcome?

However, judging by the contents of presentation slides from a recent meeting (<http://tinyurl.com/63ercz>), the DRWG actually looks to be planning towards FM switch-off, which to my mind is a major case of mission creep. Furthermore, although they claim to be investigating the suitability of alternative digital platforms, the only platform they're seriously considering for the purpose of providing 'universal' digital radio coverage (defined to be the 98.5% population coverage that FM provides) is DAB/DAB+, and the other platforms have either been ignored completely or been dismissed without thought.

I've obtained figures from the BBC under the Freedom of Information Act, which shows how much it would cost to roll out the BBC's national DAB multiplex. At 85% population coverage it costs £4m per year. The BBC is currently in the process of moving from 85% to 90% coverage, which will take the cost up to £12m per year. For 95% population coverage, the BBC said they had estimated it would cost £38m per year. They didn't say how much 98.5% population coverage would cost, but considering that moving from 85% to 95% coverage increases the

transmission costs almost ten-fold, you have to wonder how gigantic the final figure for universal coverage is going to be – a conservative estimate would be £65m per year, which over a fifteen year period is just shy of £1 billion!

The main problem is that the law of diminishing returns seriously affects the costs. For example, the BBC national DAB multiplex was originally transmitted from thirty one transmitter sites, and this provided coverage to 65% of the population, whereas to provide universal coverage it would require over one thousand transmitters. The final move from 95% to 98.5% would only provide coverage to an additional 2.1 million people, but this could require five hundred transmitters to be installed, where the average number of people being covered by each of these transmitters would be just 4,200.

Still, the BBC's national radio stations will already have universal indoor coverage once digital TV switchover has been completed in 2012, because the BBC's stations are carried on all of the digital TV platforms. So if the BBC's national stations were broadcast on one of the satellite digital radio systems (not to be confused with Sky) that are going to launch in the next few years, this would achieve universal digital radio coverage without having to spend tens of millions per year on transmission costs. To enable people to receive the radio stations on portable radios and other audio equipment, all it would take is for a couple of devices to be designed – one for Freeview and one for satellite – which would sit in-between the aerial socket and the digital TV set-top box, and they could re-transmit the digital streams around the home using Wi-Fi or the new Wireless USB standard. They could even re-transmit them as DAB/DAB+ signals, which would allow people

to receive them on DAB/DAB+ equipment. It simply strikes me as being an absolutely ludicrous idea to spend £1 billion on providing universal coverage when it's already being provided!

If they do decide to use a terrestrial system, there are far cheaper alternatives than using DAB/DAB+. The cheapest option would be to use the Digital Radio Mondiale+ digital radio system. DRM+ uses lower transmission frequencies, which has the advantage that radio waves propagate better over longer distances, so fewer transmitters would be needed. And the transmission powers would also be far lower, so the transmitters themselves would be cheaper.

Returning to the DRWG's original – much more limited – remit of finding ways to make more people listen to digital radio, the platform that has by far the greatest potential for listening growth is broadband – both fixed-line and mobile – especially because it's the only platform that can deliver on-demand content. But the DRWG listed a number of drawbacks, almost all of which were incorrect, because they've simply ignored a whole host of new technologies that will revolutionise broadband's ability to 'broadcast' over the coming years.

The DRWG planning is basically just a sham. Jenny Abramsky, the BBC's Director of Radio, who's soon to retire, has consistently urged the radio industry to unite behind DAB, and the BBC is leading the investigation into which platforms to use, so no prizes for guessing which platform will be chosen there. And the people in the radio industry who think the future of radio is online weren't even invited to take part in the DRWG. It's basically a foregone conclusion, and licence-fee payers will have to pick up the £1 billion tab whether they like it or not. ●

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"the new 'Compendium' series takes each and every Goon show, and remasters them..."



paul rigby

Some people have a weakness for fast cars and others like fine wines, whereas I go faint when I hear about rare out-takes from The Goons. Messrs Milligan, Sellers and Secombe have been the subject of a long-term reissue project from BBC Worldwide under the Radio Collection imprint, which has been reissuing old restored radio shows (normally four shows per CD). In fact, volume 25, 'The Saga Of The Internal Mountain', has just been released...

The big news for all Goons fans however, is the launch of the new 'Compendium' series which goes further. It takes each and every Goon show and remasters them all via the original master tapes and acetates, pieces together all the missing bits which were taken out by the censors during the nineteen fifties or sixties, or were purposely trimmed because of transcription reasons, and adds a heap of out-takes. There are also special bonus tracks such as the rare Peter Sellers archive programme, 'Me And My Shadows', in which Sellers impersonates a number of the Goon characters plus specially created Radio 7 introductions from Eric Sykes.

The BBC has declared that, generally speaking, two new 'Compendium' box sets will be released per year, starting with series five of The Goons and ranging up to the truncated tenth, final series. Thereafter, the company will then look to fill in the gaps by examining all surviving Goons shows from the first four series. The first box set, 'The Goon Show Compendium Volume 1 (Series 5 Part 1)', containing seven CDs, is now out and Ted Kendall was responsible for the mastering.

Kendall has been mastering the

Radio Collection series for some time and so was an obvious choice to handle the new Compendium series. Kendall was unable to reach for the unedited, full length, master for each Goon show because they don't exist so was faced with surviving, yet edited, shows via transcription disks, edited shows via master tapes plus bits and pieces he found via his own personal collection and the collections of other fans.

"The transcription service cut these shows about for shipment to foreign radio stations, including spaces for commercial breaks. I started to work on these shows to restore them to their full transmission length," said Kendall.

Half the time, Kendall was able to 'cut-and-paste' between two major edited versions produced in the fifties and the sixties, "The Goon Shows were edited in two long series by the Transcription Service. Firstly, in the fifties, cut to twenty-nine minutes and thirty seconds per show and, again, in the sixties cut to around twenty-seven minutes – the latter mainly for the commercial breaks.

In addition, what was thought disturbing about the shows in the fifties, was not necessarily thought disturbing in the sixties and vice-versa. Anything vaguely sexual, that was thought might cause offence in the fifties, went. However, a lot of racial material passed without comment. In the more permissive sixties, many of the smut gags stayed and the racial overtone material was cut."

Collectors were then sought to fill in gaps, encouraged to loan their material under amnesty. There are still negotiations currently underway to retrieve even more 'lost' material from one or two collectors, but basically these box sets will contain everything available on The Goons

– not always in the best of quality, but the fact that this stuff exists is the main thing. Which, of course means that, as the fates will always decree, as soon as the box sets hit the streets, a new cache of material is bound to appear!

Mastering the original recordings was a complex affair. Fragile acetates were handled via a modified Revox B790, BBC I6" transcription disks and lacquers were played on a refurbished EMT 927. ("I bought a basket case and rebuilt it – which cost me six times what I paid for it."). Tapes were played, mainly on a Studer A810, "a marvellous all round machine. Its tape handling is gentle and its electronics are transparent. I also use a Telefunken M10A which has a conventional wind with the oxide towards the back of the machine, which is the way German radio had it, rather than the front."

The Telefunken was used whenever a 'cupped' acetate tape was encountered: acetate tape can suffer from differential shrinkage between the coating and the backing, so the tape curls along the long axis. Wrinkling (caused by poor winding) and polygoning (sharp bends in the tape) also called for the Telefunken. "The lovely thing about the M10A is that it's a proper dual capstan machine. The trailing capstan is partly declutched. The effect being to slam the tape flat against the head so the tape cannot misbehave."

Aurally, the 'Compendium' box set is a joy. It's wonderfully clean and dynamic. It should be grabbed by anyone with a liking for the Goons. For anyone who has the 'Radio Collection' series, if you're a dedicated Goons fan, you're going to have to buy this set too, I'm afraid. Believe me, you'll hate yourself if you don't. Bottom line? This is the ultimate in Goons Show audio. ●

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McIntosh C2300/MC501 Review
Richard Stevenson, HFN, June 08



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(new)



Deco 6, 8, 10 and 20

ART Loudspeakers have just launched their beautiful NEW DECO Range.

Each model is available in Standard and Signature versions. Again, you have the option to upgrade from Standard to Signature at a later date within that same model. For example: upgrade 6 Standard to 6 Signature, but not 6 Standard to 7 Signature.

How does each mode sound? One word - effortless! Oh and the finish is to die for. In fact, you can pretty much choose any colour finish you wish. Just in case you are wondering, we love the blue and red finishes. Deco 6 is shown (above left) with that gorgeous red finish.

design: © audiography 2008 HF-W0708

Specialist Brands include: Apollo, ART Loudspeakers, Audio Zone, Audio Physic, ATC, AVI, Bel Canto, Bryston, Chord Cables, Creek, EAR/Yoshino, Eastern Electric, Epos, GamuT, Hovland, Hyperion, IsoTek, JAS Audio, JungSon, Manley Labs, Marantz Legendary, McIntosh, Musical Fidelity, Musical First, Music Tools, Nordost, Opera, Origin Live, Pathos, PMC, Project, Resolution Audio, Shanling, SME, Tannoy Prestige, Unison Research, Vertex AQ, VPI, Wadia, Wilson Benesch and many more.

"whilst the food at the Munich High End Show was boring, the hi-fi was anything but..."



noel keywood

I knew it wasn't England because the fields are neatly laid out, flat and symmetric; I'll swear even the cows stand in straight lines. And where's all the rubbish hidden? The houses have uniform red tile roofs and cream walls: yes, this is Germany. I'm always taken aback how a country so near can be - in some ways at least - so far. What a peaceful, calm place it seems too - well Munich that is, where we were visiting the High End Show. Even the hi-fi is different I found - and interesting too.

This isn't the first time I have visited either Germany or a German Show, both privately and on press trips. But it is the first time I have seen the High End Show and Munich. To a Londoner like me, used to non-stop noise and hubbub from trains below ground, traffic on it and aircraft above it, the place was remarkably well ordered and tranquil, even when it was busy. How can they, I mused looking out of the train window as we approached the city from the airport, not need protective fences beside the railway lines for the sake of safety? Is it only the British that stumble onto railway lines by accident? Unfortunately, a few weeks later a train ploughed into a herd of cows, but this still suggests that in Germany only cows stay onto railway lines by accident, not humans! I'm still a little baffled.

The High End Show itself takes place on the edge of the city in a set of purpose-built exhibition halls that are modern, spacious and well equipped. Huge floor areas make places like this quite different from UK hotel based shows, with numerous big halls, long plazas connecting them, clean toilets and numerous open plan restaurants, the only negative being a local preference for sausages and unimaginative stodge, washed down exclusively by

beer - not a diet that appeals to my palette; I prefer the Nasi Lemak and coconut milk available at Far Eastern Shows.

But whilst the food was boring, the hi-fi was anything but. Most surprising was the presence of all things analogue and vinyl. High end turntables of the most exotic constructions were everywhere - I'll swear they outnumbered CD players. In the UK, turntable sales are the fastest rising sector within Consumer Electronics, up 17.5% last year. In Germany it seems they are even more enthusiastic about the things - and certainly keen to elevate the turntable to an engineering art form, rather than seeing it as a piece of cost constrained and slightly glib functionality of the sort we expect in Britain. Okay, so Transrotor, who had one of the most extensive collections of rotating exotica I have ever seen, take an architectural approach that cloaks functionality in ornament, but this doesn't rule out effective engineering beneath.

Most surprising for me was a certain Dr. Feickert, who has developed an LP/cartridge computer based measurement system. In brief, it looks at cross-channel phase relationships to assess cartridge and arm alignment. It might not sound much, but this is a peculiarly imprecise science that demands the use of test records that meet standards. Dr. Feickert has produced them, at a time when few others would have the knowledge, dedication or equipment to do so. He has also produced measurement software that can be loaded onto a computer. All this is for enthusiasts use, not just for measurement people like me, although I was more than happy to lighten his dem. stock by one LP and one CD that we will review very soon. I did feel this particular exhibit characterised the

generally well ordered and informed approach to audio engineering seen at this show, something we seem unable to support in the UK. What they say about German engineering is so true.

Another fascinating product we seem to have missed in *Hi-Fi World* so far was Martin Logan's new CLX full range electrostatic loudspeaker. I made a bee line for it and spoke to a charming American who seemed to know an improbably large amount about electrostatics and then, he let drop, Peter Walker, founder of Quad. It turned out I was talking to Martin Logan's Managing Director (CEO, as Americans call 'em), who had been a Quad importer and friend of the Walkers. Martin Logan have long made good electrostatics hampered by poor bass bins. With no bass from a bin, the CLX, which will start at around £10k in the U.K. should be a loudspeaker worth hearing.

Finally, Germany and the subject of engineering brings me to another small but interesting audio topic: digital sound quality. Our German audio analyser from Rohde & Schwarz is one of the few available that can analyse jitter in the digital domain and recently confirmed that differences I was hearing between an HDMI link and an S/PDIF link were due to jitter. Total absence of jitter from a Samsung BD-PI400 Blu-ray player connected to the Marantz SR8002 I review this month, confirmed by the R&S analyser, gave a stunningly clean sound, with great depth to it and tremendous insight. Via HDMI things didn't sound so good and, measurement after listening showed, jitter was the culprit. This only goes to prove what I suspected on the plane, Germans don't like rubbish, even of the digital variety, and are doing everything they can to get rid of it! They'll only fail if cows ever get on to digital lines... ●

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WD25T v2

Peter Comeau introduces a completely updated version of this modern classic.

is such that the cabinet maker can time, almost to the minute, when tool heads will need changing compared to other materials.

Before MDF came chipboard or particle board, high density versions of which were an offshoot of 'flooring grade' boards, in other words achieving a particle density which provided strength and rigidity in uncut form. Cut through chipboard, however, and you discover two things. One is that the inner core is usually 'crumbly' – an open matrix of larger particles which have a tendency to flake off in any machining process. The other is that you'll find larger lumps of hardwood and, possibly, bits of metal scattered in amongst the particle matrix.

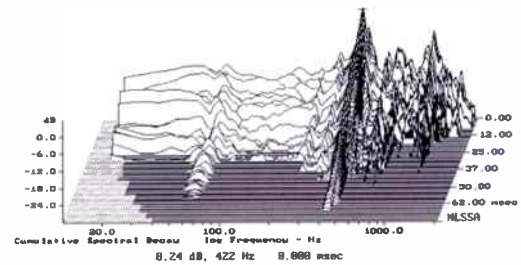
Tool wear when machining Chipboard is, at best, a hit-or-miss affair as a result and, if your router head hits a piece of metal, you can sometimes write off the cutting edge of a tool in mid-session. In addition it is difficult to maintain the consistency of bought-in Chipboard as the exact specification is as 'loose' as its central filling!

In addition, when you machine into chipboard, the flaky inner core becomes problematic. You cannot achieve precise edges, either machining cut angles or rebating. As a result rebates cut for drive units not only do not have a smooth surface to couple to the drive unit chassis but any fixing bolts or screws can 'shatter' the crumbly wood structure if sufficient torque is applied.

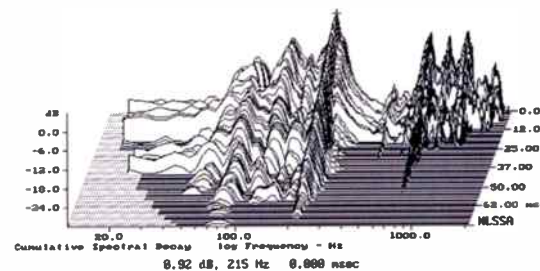
Hardly surprising, then, that cabinet makers practically forced MDF on the loudspeaker industry as

WD25T 'The Sequel' – is no 'let's do a Special to bump the sales' version just for the sake of it. Far from it. This Version 2 of a modern classic has come about because of the introduction of my take on the 'perfect' cabinet material. Although I've banged on about this before here, once again, is a view of the upsides and downsides of using MDF as a cabinet material and what you can do about it.

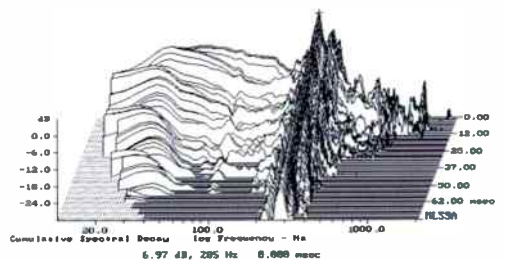
MDF is now the ubiquitous commercial cabinet material and is widely used throughout the Hi-Fi industry because of its dependability, consistency and fine machining. Note that I didn't say 'easy' machining because MDF does wear tools fast. However its consistency



Spectrogram of cabinet panel resonance for unbraced MDF cabinet. Note how all the resonant modes are clustered in the midrange with a strong mode at 422Hz plus considerable energy up to 1kHz. By contrast the bass area is relatively 'clean' which would be typical of a rigid cabinet.



Spectrogram of cabinet panel resonance for unbraced Chipboard cabinet. Here the majority of the energy is low in frequency, centred around 100Hz, and the higher frequency modes are reduced in intensity.



Spectrogram of cabinet panel resonance for unbraced Plywood cabinet. Note the considerable bass energy 'leaking' through the cabinet walls due to the flexibility of the panel. The strong resonant modes centred around 285Hz are typical of Ply panels without the addition of mass damping.

soon as it became widely available. Pick up any piece of furniture and, unless it happens to be using a craftsman made hardwood frame,



Particle Board



Plywood



MDF

'The Sequel'

you'll find MDF hidden underneath the external veneer.

CONSISTENCY

MDF is praised for its consistency and rigidity, rightly so. Specify the density and you can source material from Europe or N.America and it will behave in the way you expect, both structurally and acoustically. So that makes it the perfect cabinet material, right? Not in my books.

You see MDF has a flaw and it is directly as a result of its major strengths – consistency and rigidity. Take any panel and increase its rigidity and you drive its major resonance modes upwards in frequency. And if the material is consistent throughout its structure then those resonant modes will be clustered together.

To give you an idea of how this works out in practice, shown is an accelerometer view of a typical MDF cabinet. All we've done is attached an accelerometer to the outside of an unbraced panel in a bookshelf speaker made from MDF and then played pink noise through the drive unit attached to it. The accelerometer is showing us what the cabinet 'sounds like' by exhibiting its resonant modes. Every peak you see is added 'sound' from the cabinet in response to vibration from the drive units.

As you can see the major resonant peaks are clustered in the midrange area. They are so close in frequency as to be readily excited by any vibrational input that has frequencies which fall near the resonant modes. This will have the effect of 'amplifying' the output of the drive unit at those frequencies simply because the cabinet is, itself, adding to the sound in the room.

COLORATION

What does this mean in practice? Depending on the size and shape of the panel you may find that male or female vocals will have added presence or may become 'shouty'. You might hear a 'cardboardy' coloration to woodwind instruments.

Guitar and piano may have part of their range exaggerated or, worse, certain notes may stand out.

As you can imagine this type of cabinet coloration disturbs the overall musical structure and must be controlled in order to ensure the clarity of reproduction. The classic control method is cross bracing and bitumastic damping and this can, indeed, ensure a cabinet of low coloration from panel resonance. This is the method we have used in the construction of the WD25T cabinet.

However there is a secondary acoustic phenomenon which is directly due to the consistency of MDF and this relates to the acoustic transparency of the panels. What you may not have realised is that, at the resonant modes, a cabinet panel eagerly transmits sound from inside the cabinet as well as that imparted by vibration from the drive unit. In other words, over the range of resonance, the cabinet will be a window into the sound collecting inside the cabinet.

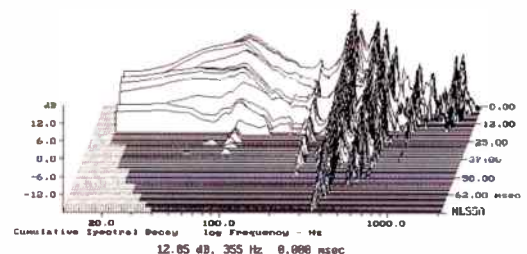
Now we normally consider the cabinet to be a closed arena as far as the rear output of a bass or midrange unit is concerned. We only think of hearing the output from the front of the drive unit – anything from the rear is going to be absorbed by the internal cabinet damping.

Unfortunately this is not the case. Apart from the fact that some of the internal sound is reflected back through the drive unit cone itself, there is the factor that the internal sound also escapes through the port and the cabinet walls too.

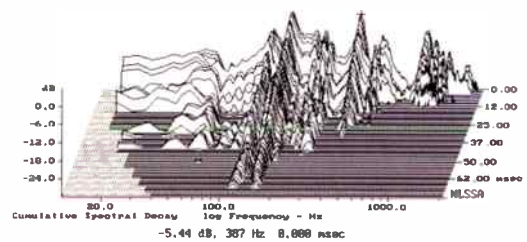
The port is a minor, but contributing, factor over a narrow range of frequencies. In fact Hi-Fi World's graphs in loudspeaker tests usually indicate the peak in midrange output from the port. In essence the port acts as a narrow band filter at high frequencies due to its 'organ pipe' resonance determined by its length. For many ports this resonance lies in the 800 – 1.5kHz area and thus can add emphasis to upper midrange and treble over a narrow range of tones or harmonics. The

simplest way to reduce the audible effect of this resonance is to place the port on the rear of the cabinet where its output is acoustically 'hidden' from the listener, a technique that I have been advocating since 1978 and which I used in my first product, the Heybrook HB2!

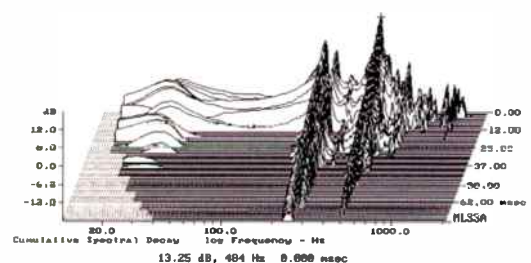
But, apart from that, how does the internal sound leak out through the cabinet walls? Again we need to



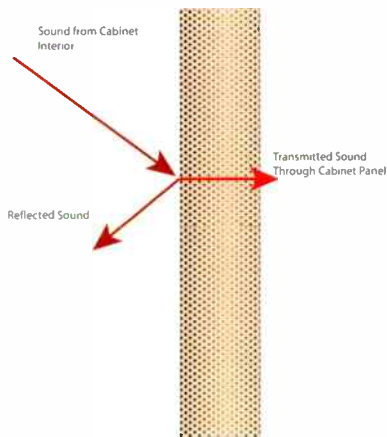
Measured result from a heavily braced MDF cabinet. The resonant modes are here very well controlled with a very clean bass response too. Again the energy output is in the mid to upper midrange.



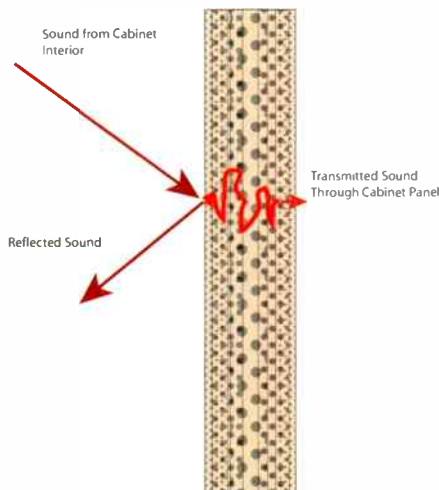
By contrast the output from a heavily braced Chipboard cabinet shows how, again, the bracing reduces the lower bass modes and breaks the panel area up to force panel resonance higher in frequency.



A Plywood cabinet, heavily cross braced by MDF, has removed the flexibility of the panels in the bass region but left strong resonance modes higher in frequency.



An MDF box conducts sound through to the outside quite effectively



The varying particulate density of Chipboard helps to minimise sound transmission through it.

look at resonance and material structure. When a panel resonates, any energy impinging on the panel at that frequency, or its harmonics, will be passed by the panel as though it wasn't there. At other frequencies the transmission of sound will be affected by the grain structure of the material itself.

SOUND TRANSMISSION

So how does that work when comparing MDF to Chipboard? These diagrams will give you some idea of what is happening when the internal sound meets the internal surface of the cabinet panels.

MDF has a consistent structure only modified by the very thin 'skin' at its surfaces and any veneer put on it. Cut through an MDF panel and you will see a 'perfect' grain structure of wood dust and resin right through the cross section. As a result any sound that enters the material at one surface will be conducted right through to the opposite surface with little attenuation.

If you want an every day example of this consider that a glass window

transmits a wide range of sound from the outside of a house to the inside room with little attenuation. The classic way of overcoming this is to provide a 'sandwich' of materials with an interleaved layer that has a markedly different impedance to the outer layers. We call this 'double glazing', essentially two layers of glass as the 'bread' of the sandwich and air as the 'filling'. The air has a markedly different density to glass and so sound waves trying to pass from one medium to another are highly attenuated.

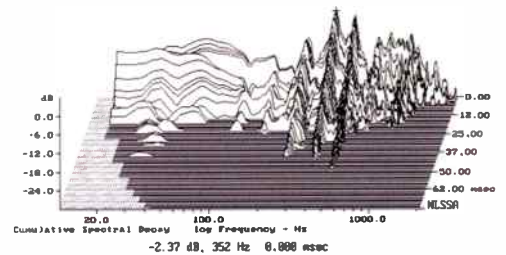
The efficacy of this system depends upon the differing impedances of the materials. Energy does not pass successfully across boundaries where there is a large impedance change. Interestingly double glazing with a small air gap (as is found with standard double glazed windows) provides noise insulation which is no better than using laminated glass. This is because the pressurised air between the two glass panes acts as a spring conductor.

In laminated glass you again have a sandwich material, in this case two layers of glass with a polybutyl layer bonded to them. If two dissimilar thicknesses of glass are used, say 6mm plus 4mm, the transmission of sound is attenuated further.

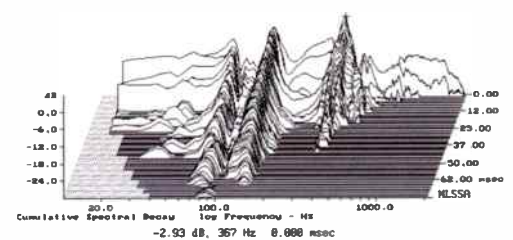
Now let's look at the structure of Chipboard. Here we find a cross section that has hard resin-bonded, highly compressed outer surface layers and an inner structure that has larger areas of resin supporting mixed particle sizes. Although this does not work as well as a true lamination it does go part of the way towards working as a natural sandwich structure. In particular higher frequencies entering the high density surface layers have great difficulty passing through the lower density, larger particle structure inner core. The path through the cross section of Chipboard is not straightforward and is broken up and impeded by the random variation of particles. Because the large particles in the core are relatively free to move they can also act as mass attenuators at mid to upper frequencies.

In fact, a complex structure like Chipboard is difficult to analyse accurately but its effects can readily be seen and heard. Being less rigid than MDF the main panel resonance is lower in frequency and, if left uncontrolled, tends to blur upper bass detail and introduces chesty coloration in the lower midrange. Mass loading by heavy bitumen pads, however, pushes the main panel resonance far lower in frequency, damps the upper panel resonances and has an added effect on reducing sound transmission. Many classic speakers of the '60s and '70s were constructed this way.

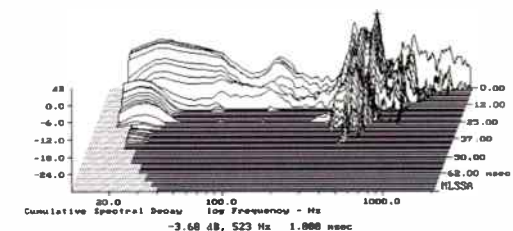
So what, then, of Birch Ply? Is this the ideal laminated material for a cabinet? Well, if it wasn't for its flexibility it might be so. High quality, cross grained, Baltic Birch Ply has 12 layers in an 18mm thick sheet and, whilst its midrange coloration is low, it exhibits little acoustic insulation



Braced MDF cabinet with added bitumastic damping pads. Midrange resonant modes are reduced by the damping to yield a good performance cabinet.



Chipboard cabinet braced and heavily damped with bitumastic. A relatively 'clean' midrange result whilst the added mass now concentrates energy in the bass area where it is less obviously audible. Again this is a well performing cabinet.



Damped and braced Plywood cabinet. The added mass from the bitumastic pads results in some very low frequency energy 'leakage' whilst the upper modes are better controlled. A classic birch ply result.

at low frequencies. Compared to Chipboard and MDF its density is low so it is best used with thick damping pads covering the majority of its surface and heavily braced to strengthen large panel areas.

Cabinets built from Birch Ply tend to exhibit apparently strong, powerful bass output though, after time, it is often realised that the quality of the bass performance is poorly defined. For small speakers this type of bass accentuation can be considered a boon, notably where the output of the drive unit proper is falling at low frequencies and is given a 'boost' by the cabinet panel output.

STRUCTURED LAMINATION

Why not, then, consider creating one's own laminated material which performs in a superior manner than any of the readily available panel materials? For commercial construction this is an expensive route to follow but has been used for some very high-end loudspeakers such as the Wilson WATT series.

Somewhere in between lies the possibility of working with a cabinet maker who is able to mix and match materials and veneers at will, not so easy to find now that the majority of commercial speaker manufacturers have deserted these shores for the Far East! Out of the blue I was contacted by Arcaydis who, through its interest in using SEAS drive units, ended up developing a trading association with World Designs which now works on joint development of projects.

Arcaydis's ability to build cabinets and veneer them in-house was just the facility I was looking for. In particular the capacity for working with a cabinet maker who understood what I was trying to achieve and was willing to experiment with different material combinations is invaluable.

In a fairly short space of time we hit on a combination of materials which suited both the design I had in mind, acoustically, and the capacity to achieve an easy to build and finish cabinet. The latter is especially important in order to keep costs down – there are many ways of achieving a relatively inert cabinet but few that are cost effective!

We called this material ARCENA and it consists of a bonded layer of Chipboard and MDF veneered on both sides. Yes, the veneer is important as it modifies the coincidence effects or the way the panel radiates across its surface at high frequencies. In tests I have readily been able to hear the difference between cabinets faced

with walnut and teak veneers for example.

In this case our veneer of choice is a light oak which grain structure spreads the coincidence effect making it less pronounced and which, as a by product, is easy to stain, varnish or oil to achieve a variety of wood finishes with a beautiful 'grain'.

ARCENA

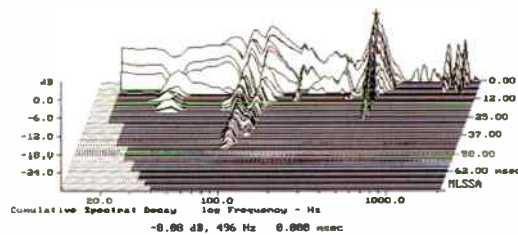
Arcena is produced in both 18mm and 24mm thicknesses, the former featuring 12mm of High Density Chipboard faced with 6mm of MDF and the 24mm thickness built from 18mm Chipboard and 6mm MDF. As you can see the MDF layer is used as both a stiffener, increasing the rigidity of the panels, and as a smooth surface layer allowing easy machining of drive unit rebates and providing a positive locator for drive unit screw fixing.

This combination utilises the positive properties of both materials. The inner chipboard layer resists acoustic transmission of the interior sound and acts as a damping layer for the outer MDF (although it is still advisable to add mass in the form of thick bitumastic pads to large panel areas). The outer layer of MDF improves the structural rigidity of the panel and is simple to machine and finish to achieve the desired quality of cabinet construction.

In our tests Arcena showed immediately how the panel resonant modes were distributed more widely with lower Q resonances but also with the low frequency bending modes typical of Chipboard reduced by the stiffening effect of the outer MDF layer. Audibly the effect is to reduce a 'shouty' quality in the presence region and, overall, the midrange output of the speaker is reduced.

Typically this is heard as an improvement in the realism of reproduced voices, guitar, piano and woodwind instruments. In addition the apparent power of bass and treble output is increased (if you reduce the midrange output then the ear hears this as an increase in bass and treble level).

The increase in treble output requires a re-alignment of the mid-treble crossover in most speakers, WD25T being no exception. Furthermore the change in characteristic of the midrange makes the



Arcena cabinet built with 18mm Chipboard and 6mm MDF, braced and damped as required by bitumastic pads. The low frequency modes around 100Hz have been reduced from the all Chipboard cabinet and the extra stiffness produces just one innocuous midrange mode at 496Hz.

current crossover alignment null and void, occasioning a rethink of the way this crossover is managed between the bass-mid and treble units.

For the increased level of bass power there are only two things that one can do to modify the overall low frequency performance. One is to increase the internal damping of the system while the other is to re-adjust the mechanical constraints of the bass unit support system.

SOLID OAK

If you've followed the WD25T design description from the beginning then you will know that the design aim was to achieve an aperiodic performance from a sealed floor standing cabinet using two internal chambers linked by a resistive 'port'. This achieves an optimally damped acoustic system so, actually, there is no option to increase the cabinet internal damping!

In this case I looked at the mechanical structure of the cabinet in relation to the room. Again, if you've followed the design principles, you'll have seen that the bass unit is braced to the main cabinet structure using its magnet, the aim being to reduce vibration in the chassis of the drive unit itself. Naturally this imparts more energy into the cabinet and it was found that this produces a small, but just discernible, rocking mode in the cabinet as it stands on the floor.

To reduce this effect we produced a solid oak plinth to support the cabinet and improve its stability. The plinth moves the floor spikes wider apart thus lowering the centre of gravity, an important factor where the drive units are high up in a column speaker, and reducing the intensity of rocking modes.

Bringing everything into line in the performance of a speaker this way is no instant task and means that the re-evaluation of the crossover will have to wait until next month. See you then for the next episode of WD25T v2, The Sequel.

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Open baffle

Loudspeaker Design Part 16

In this quick resume Peter Comeau discusses Open Baffles and bass output.

Since it has been a few months from the last episode in the Speaker Design series I think I just ought to go over a couple of points with regard to generating bass from Open Baffles.

The key point is that the output of an Open Baffle speaker will begin to fall below the frequency at which the baffle's shortest dimension - width or height - is a half wavelength. Normally, then, you would be expected to build a very large baffle in order to generate sufficient power down to, say, 40Hz.

This would indeed be the case if we were using the baffle in free air. But in practical installations there are three factors which come to our aid.

One is room gain. The boundaries of a room reflect bass frequencies very well, or at least they do if they are fairly solid as is the case in most UK houses; (in N. America you can generally expect there to be more bass 'leakage' from a room because of Dry Wall construction methods). As the frequency drops so room gain increases, normally at a factor of 6dB per octave below, say, 120Hz.

Those boundaries can also be used to 'extend' the baffle. For example the floor is a natural extension of one side of the baffle and, if the room is not too wide, the side walls can extend the baffle on another side.

The third factor, and the one that is least understood, is the effect of the Qts of the driver on the response as it approaches the natural fundamental resonant frequency (Fs) of the bass drive unit.

Now I touched on this in the previous article and noted that it really needed some experimentation to find out what was actually going on. For a drive unit to aid the frequency response down to its Fs it would, theoretically, require a Qts of 1 or greater. These high Qs are difficult to find amongst typically hi-fi drive units which have, after all, been basically developed to suit bass reflex, or at best closed box, designs.

But when we turn to the Pro

driver market we find a few drivers which meet this criteria. The brand often chosen by OB DIYers is Eminence, and with good reason. This manufacturer includes large diaphragm bass drivers with high efficiency and high Qts figures, both of which are a boon to our OB calculations.

I've chosen two sets of drivers to find out whether the high Qts theory really does work in practice.



Eminence Alpha 15" driver, Fs of 41Hz and Qts of 1.26, LF sensitivity 94dB.

One set comes from the Eminence Alpha range and the other from the Beta range. For the baffles I have in mind the 15" drivers look the most suitable.

What's the difference between the Alpha and Beta range? Simply the size of magnet and, therefore, the overall Q value. As the magnet flux in the gap becomes stronger so does the damping effect of the magnet on the voice coil. Of course this damping effect is normally considered a 'good thing' because it helps control the drive unit when it is being pushed and pulled by the amplifier and thus helps deliver a more articulate bass performance.

With a small magnet the drive unit diaphragm is more freely able to move and may not be under the full control of the amplifier at low frequencies. Indeed, as frequencies approach the fundamental resonance the speaker may begin to 'boom' or, at least, it will begin to be more difficult to ascertain exactly what a bass instrument, like drums, bass guitar or synthesiser, is actually playing.

Somewhere in between must lie

the nirvana of the Open Baffle design. The question is will it be with a Qts of 1 or more (Alpha series) or a somewhat lower value of 0.6 (Beta series)?

When I started testing these drivers I quickly found that the answer is not straightforward, which probably explains why there is no 'right way' or 'wrong way' decision to be made when selecting drivers like these for your OB design. Here's what I've found so far.

Placed on a true open baffle the Alpha 15" with a high Qts of 1.26 certainly produces the most level bass. Output falls gradually, but slowly, below the baffle cut off frequency with the driver resonance helping to give it a 'kick' upwards as it reaches F0.

Put in a room of moderate dimensions, however, and the apparent advantage of the high Qts drivers no longer seems so clear. Yes, the bass output is maintained strongly with good extension but articulation is blurred. Substituting for the Beta 15", with the lower Q of 0.58, brings much of the bass clarity back but with less subjective bass extension.

This is on a plain baffle stuck in a room, however, without tweaking to optimise room gain. I've a plan to maximise the bass output in any room which I'll be covering next month as there is a lot of work yet to be done before I can make sure it works as well as intended!



Beta-15 Eminence Beta 15" driver, Fs of 35Hz and Qts of 0.58, LF sensitivity 96dB.

vinyl section

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Paul Rigby, Hi-Fi World's most famous record collector, rounds up four of the month's best new releases...

news



LINN'S CLASSICAL GAS

Out now, the 'Messiah (Dublin version, 1742)' by the Dunedin Consort represents the first classical vinyl release by Linn Records. Available now on immaculately presented 180gm wax, the interpretation of Handel's

'Messiah' has already won a range of awards and sits well alongside the Dunedin's other, recently released production, J.S. Bach's 'Matthew Passion' which is also available via Linn Records, although only on Linn's own Studio Master series, CD and MP3 - see www.linnrecords.com.



CHILDREN OF BODOM

The sixth album release from the metal band from Finland, Children Of Bodom - named after a notorious multiple murder case in Finland in 1960(!) - retain their mix of crazed guitar solos, coarse vocalisations, wall of drums and in-your-face arrangements with synth accompaniment and a smattering of melodic hooks. Not a great album per se but one that will please the fans as it maintains the group's high standards.

SLY & THE FAMILY STONE

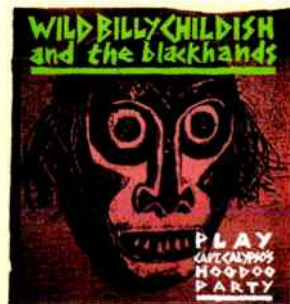
Much anticipated by fans, Sundazed's reissues of the Sly & The Family Stone albums, 'There's A Riot Goin' On', 'Stand!', 'Life', 'Fresh', 'A Whole New Thing' and 'Dance To The Music' have all finally appeared. The original wild bunch, the group was the first fully integrated outfit in rock complete with men, women, blacks and whites. Blending soul, funk, rock, psychedelia and probably half a dozen other genres too, the songs never shied away from tackling political and social issues. There's more to Sly than these six records but Sundazed has picked the best of the bunch to release. From the dark and almost contemptuous funk of 'Riot...' to the life affirmation of 'Stand!' to the pure funk classic that was 'Fresh'. Nicely mastered, this is a truly great slice of creative history and one that any music fan should have in their collection.



SMOKIN'!

US-based Classic Records has released a mixture of jazz and classical records on 200gm vinyl. Gary Karr, a classical solo bassist who first soloed with Leonard Bernstein in 1962, has been making well received albums for many years. You can hear the man in his prime via two records within one gatefold. Called 'Double Bass', one record features recordings by Alec Wilder whilst the other holds works by Eccles, Bloch, Revel and others. This Karr reissue provides clarity and a rich tone, taking you into the large cavity of the bass itself.

Classic Records has also reissued two jazz pieces. Dizzy Reece's 'Soundin' Off', from 1960, features the trumpeter's trademark passionate and audacious bop licks on this Blue Note recording that includes Walter Bishop Jr. (piano), Doug Watkins (bass) and Art Taylor (drums) who play A Ghost Of A Chance and Reece's own Blue Streak. Finally, make way for Horace Parlan's 'Movin' & Groovin'', another Blue Note reissue from 1960 but, this time, Parlan's debut. A characteristic hard bop pianist, his swing style never relents, despite his polio-enforced disability, partially paralysing his right hand. Here Parlan is joined by Sam Jones (bass) and Al Harewood (drums).



DAMAGED GOODS

Independent record label Damaged Goods often pays respect to the vinyl format and now is no different with two new releases. Wild Billy Childish and the Blackhands' 'Play Capt. Calypso's Hoodoo Party' is a reissue of the 1988 album, originally released on Hangman Records. Childish gives a bizarre, professional punk busker performance: covering songs from the Sex Pistols to The Andrews Sisters!

Next is The Cute Lepers' 'Can't Stand Modern Music', an excellent new album of old school punk, full of brash energy and bravura. In fact, I initially thought this was a nineteen seventies reissue. Beware, however, both albums are taken from digital masters and do sound a little harsh.

CLAPTON LOVES VINYL LOVERS

If Eric Clapton is your cup of tea, check out the Vinyl Lovers label which has a good selection of his classic era releases. Newly received, for example, is the classic 'Blues Breakers' via John Mayall and featuring Clapton reading the Beano on the cover. The band are joined by John McVie and Hughie Flint. Bonus live tracks include 'Stormy Monday', 'Maudie', 'Have You Ever Loved a Woman' and 'Hoochie Coochie Man'.

Also look out for two Cream albums featuring Clapton. 'Wheels Of

Fire' includes four bonus tracks: 'Anyone For Tennis', 'Hey Now Princess', 'Weird Of Hermiston' and the very rare 'Desert Ride'. The album 'Goodbye' includes an unreleased live version of 'Sunshine Of Your Love', rare studio versions of 'Lawdy Mama', 'We're Doing Wrong' and 'S.W.L.A.B.R.' plus an unreleased studio version of 'The Clearout'.





David Allcock takes SOTA's Comet SIII turntable for a spin...

Shooting Star

Time was when the sub-£1,000 turntable market was on the decline. Some twelve years back as I remember, Linn Products pulled its Basik out, having discontinued its previous 'entry level' Axis product a few years earlier. The reason given was 'lack of demand', the general trend back then being analogue addicts upgrading to ever higher end designs whilst the starter market dropped away. Back in the mid nineties, lest we forget, there were nearly no newcomers to vinyl – Compact Disc was king...

How times change! For the past five years, we've witnessed an ever growing number of products appear on the market, from Michell's TecnoDec to Rega's P5. It makes life tough for the likes of SOTA's Comet SIII, though. Although the brand is very well known and respected in the United States, it has a fight on its hands in this country with far better known British marques to contend with.

As befits an 'entry level' product

(at least in SOTA's world, if not Pro-ject's!), the Comet is a simple design, being a traditional belt drive turntable with a solid chassis standing on three feet. But that's not the end of the story, because it's been highly finished. The chassis is manufactured from several layers of MDF, sandwiched together and finished in a stunning high gloss piano black. Drive is via an AC 24 pole synchronous motor with a stepped nylon pinion, and changing from 33 to 45 rpm is accomplished in a few seconds by moving the flat-section belt. The sub platter uses a very hard polymer subplatter onto which sits the main platter which is a four layer sandwich of acrylic, with an adhesive damping layer, a second layer of acrylic with a bonded foam mat.

The main bearing is a traditional well design, but with a flat surface on the bottom of the spindle which rides on a hardened ball at the base of the well. The bearing cup is manufactured from Turcite, a self lubricating thermopolymer engineered specifically for bearings

which is very resistant to wear and very stable. To the best of my knowledge, SOTA is the only company which uses this material in turntable manufacture. The deck is beautifully finished, the black platter on the gloss black chassis looks stunning, but the switch on the top plate looks like a bit of an afterthought. It would have been nice if the designers could have relocated that switch to the underside of the chassis. This turntable shipped with a Rega RB300 but can also be ordered with an RB250 at £750, or sans arm. The Comet measures 460x145x360mm and weighs in at a chunky 12kg.

The pre-installed Rega arm made this one of the easiest turntables to set up I've encountered. Once you've removed it from the box, you simply screw on the three threaded feet, lower the sub platter into the bearing well, put on the belt, then put on the platter. Once levelled, the turntable is ready for the cartridge to be installed and you're off. It took me longer to unbox the turntable than to set it up.

I tried a number of cartridges out on the Comet, with the Sumiko BPS, Benz Glider L2 and Sumiko Blackbird as my cartridges for the duration of this review.

SOUND QUALITY

The Comet proved an enjoyable listen, with a capacious soundstage, a decent degree of rhythmic snap and a generally warm and mellifluous tonality. Starting out with Laura Branigan's album 'Self Control', a densely mixed album which has given more than a few budget turntables serious difficulty, I identified it as a rich sounding deck that gives bass guitars a fuller sound than I am used to, while Laura Branigan's voice had a fruitier tonality. The Comet succeeded in balancing the subtle vulnerability of her vocals with those soaring crescendos, whilst permitting the listener insight into the subtle inflections and vibrato on each note. It's decently fast too, with the kick

"the Comet was capable of portraying a real sense of air..."

drum exhibiting fine attack transients, and the song's introduction having sufficient extension and power to shake the room.

Another favourite of mine is Sting's 'Englishman in New York', where double bass and drum kit are interwoven throughout the track, including an explosive drum solo around two minutes in. The Comet flew through this track effortlessly, capturing the initial pluck of the strings with real snap. It did really well with Rosie Vela's 'Magic Smile', the combination of her virtuoso vocals coupled to the production talent of Steely Dan being showcased to the full. The Comet rose to the occasion, giving Vela's vocals real presence and weight in the room without sounding thick or ponderous.

Lower cost turntable/tonearm combinations often have a somewhat hard, slightly forward top end, but happily the Comet does not fall

down here. Although there's lots of detail right up the frequency range, it is superbly integrated into the overall picture. The stunning Classic Records release of Dido's 'Life for Rent' had goodly amounts of clarity – I was able to enjoy the sound of those fingers on guitar strings to great effect. With 'Sand in My Shoes', the cymbals were nicely illuminated, when they can often be unfocused or splashy. The Comet let me hear the initial impact of the stick on the cymbal, followed by a nice metallic shimmer.

One particularly strong point of this turntable is its ability to

place the soundstage beyond the speakers, making performances solid and believable within the recorded acoustic. Rendering of images in the depth plane was as impressive as the lateral plane, with images at the rear of the stage sharing the same stage width as the front. The Comet was capable of portraying a real sense of air, which is something you don't expect on a turntable at this price.

CONCLUSION

As £750 turntables go, the SOTA Comet is a good one, offering a blend of fine build and a superb piano black finish. It's very easy to set up, requires no further fettling and made a nice noise out of the box. Its expansive, warm and

fulsome sound will win it many friends in a sector of the market that has some altogether more neutral and analytical rivals, such as Michell's TecnoDec to name but one. Bass is warm

ADAM SAYS:

The arrival of a turntable from a manufacturer whose products I am less than familiar with proved too much of a temptation, so I just had to have a listen when no-one was looking! The Comet really is a rather sweet sounding device, with a more composed and fluid top end than would normally be expected at the price level. Frankly, I think that only the Roksan Radius 5 can better the Comet in these terms, and that's mainly due to the lovely Nima unipivot arm that it carries, however this requires a more lengthy setup procedure than the simple Comet. The SOTA gives good space and intimacy to vocals and it sets up a nicely spacious central image.

Running a Goldring 2500 MM, the low end was good and weighty but seemed to lack a little focus in the listening room at World Towers. Bass lines were confident and pacy but had an occasional tendency to wander backwards into the mix a little, I found. Still, the Comet is certainly no worse than most price rivals in this respect and the sound integrates well across the full frequency range to give a fine result. A well balanced and enjoyably musical player. AS

and enveloping, while the midband is nicely sweet and detailed. In absolute terms, it can sound a little rounded, lacking the Technics SL1200's ability to switch bass notes on and off like a Morse Code transmitter, but it's not an unpleasant effect – 'euphonic' is the word. A welcome new entry to the increasingly crowded sub-£1,000 turntable market then, and one that's well worth auditioning if you like its simple but stylish good looks and 'plug and play' functionality.

MUSIC USED -

- Laura Branigan - 'Self Control'
- Rosie Vela - 'Zazu'
- Dido - 'Life for Rent'
- Sting - 'Nothing Like the Sun'

VERDICT ●●●●

Superbly built, handsome looking and very easy to set up turntable with a pleasantly warm and musical sound.

SOTA COMET SIII/REGA

RB300 £850

RPM Audio

+44 (0)1323 846410

www.sotaturntables.com

FOR

- dynamic sound
- soundstaging
- ease of setup
- build and finish

AGAINST

- stiff competition

MEASURED PERFORMANCE

The Sota Comet turned in a below average wow and flutter figure of 0.103%. However, it was interesting

to see that this result was quite stable whilst being monitored, whereas the figure from many decks can 'leap around' somewhat during measurement. Still, the result lags behind similarly priced competitors. The main component of this is wow, the absence of flutter components suggesting that the bearing is of good quality, but calling into question the motor pulley and also possibly the subplatter. Also notable during measurement was that the deck was running around 0.6% fast, the 3150Hz reference tone coming out as 3170Hz, which is a little high.

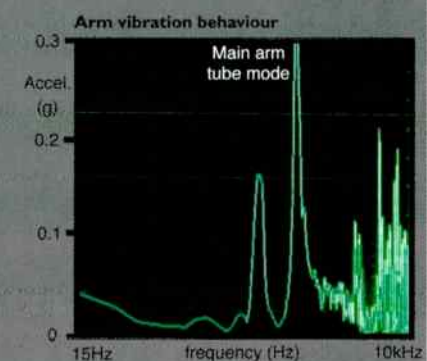
The Rega RB300 is a well known quantity, exhibiting a large resonant peak in the midband but a very clean trace at the low end and relatively few peaks of modest level across the top. As a result, the RB300 has fine bass and a crisp top end, but can impart a certain sonic character

across the midrange. All in all, it should prove a good partner to the Comet. AS

WOW AND FLUTTER



ARM VIBRATION





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Diamonds in the Ring

The high end moving coil cartridge market is a hotly contested one, with some big hitters ruling the roost. Tony Bolton pitted three such fighters together – Clearaudio's Concerto, Ortofon's Jubilee and Transfiguration's Phoenix. Seconds out...



If ever we needed proof that hi-fi was an esoteric hobby, it is the wide availability of high end moving coil cartridges. Most human beings regard spending a few hundred pounds on hi-fi to be excessive in itself, let alone five times that for (seemingly) one small part of it. But such are the levels of analogue addiction in the UK hi-fi market at least, that there's plenty of demand for such things.

At this level, you should expect superb design, build and manufacture. Given that there are excellent moving coils around for £500, there's really no excuse for anything less. And so it was with this little threesome – they're all highly desirable examples of the breed. But with differing philosophies (and indeed engineering detail), you're going to get noticeably different sonic characters – so we thought it was time listen carefully...

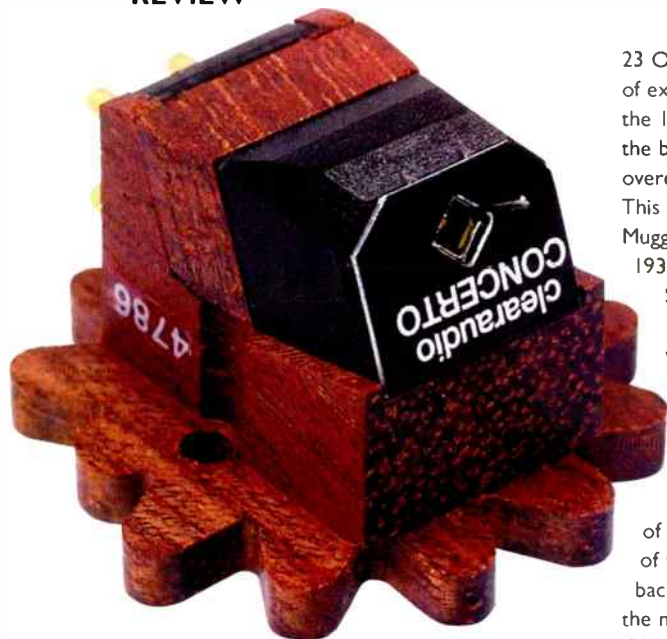
Let's kick off with Clearaudio's Concerto, the most expensive of the three here at £1,400 and also the

scariest to handle. This was because of the exposed solid boron cantilever, tipped with the Clearaudio designed Micro-HD shape stylus jutting out of the front. Inside it was connected to two gold coils that generate the signal by moving within the magnetic field generated by the surrounding eight magnets. The body is made of satine wood, and the rather unusual 'crown of fingers' is described in the instructions as a "resonance optimised shape".

The £1,300 Ortofon MC Jubilee was introduced to celebrate Ortofon's 80th Anniversary back in 1998, and was the original user of the body shape now familiar from both the Kontrapunkt range and the recently reviewed MC Windfeld. Until the latter's arrival, the MC Jubilee topped the range, but has had to pass that title on. The body is made from stainless steel and aluminium, with the characteristic side panels extending slightly forward to provide a shroud around the boron cantilever, with

its Nude Shibata stylus. Optimum tracking force is specified as 2.3 grams, half a gram less than the Clearaudio.

Falling neatly between the last two price points is the £1,350 Transfiguration Phoenix, from Imutable Music Inc. of Japan. This unit was first introduced approximately two years ago, but has been quietly modified by replacing the internal silver wire with a purer and thicker version (now 5N). This has had the effect of lowering the internal impedance from 7 to 4 Ohms which, it's claimed, improves transparency. Both front and rear double ring magnets are now Neodymium (previously the front one was Samarium Cobalt). There is a proprietary Ogura PA stylus tip attached to a boron cantilever, suspended in a fairly hidden position under the "resonance controlled aluminium body". A vertical line is indented into the front of the body to aid cueing.



ROUND ONE

Getting the needle into the correct position over a record presented no problems with the Clearaudio, courtesy of the aforementioned prominent cantilever, which also made alignment very easy. The first record on was Hardwire's 1999 breakbeat influenced album 'Fused'. This album has deep, seismic bass accompanying a mixture of real instruments, synthetic ones and samples, over seventeen tracks. The Concerto revelled in it, producing a precise sound with a very open midrange which made exploring the different sounds used to create the music an easy task. The rhythm was carried with a good deal of bottom end punch that stopped and started very precisely producing the effect of a tight, deep but well controlled bass.

Moving back in time a little, to Nancy Sinatra's mid sixties LP 'Boots', the opening track was a cover of Marianne Faithful's 'As Tears Go By'. It starts with a bowed double bass acting as counterpoint to Nancy's first lines, before settling into a slow Latin rhythm which suits both the song and this performance of it. Although it bears a few surface marks, and has obviously been played a fair bit over the forty plus years of its existence, the groove walls seem to be reasonably unscathed. Certainly the Concerto made little fuss over surface noise, even when playing this mono LP in stereo mode through the GSP Audio Revelation phono stage and accompanying Elevator EXP (MC step up device). I was aware of it but it wasn't intrusive.

Clearaudio recommend impedance loading of 47kOhms for valve and some solid-state phonostages. The Elevator EXP has the option of seven different impedance settings ranging from

23 Ohms to 47kOhms. After a bit of experimentation I settled on the 1kOhm setting as providing the best balance of air without overemphasising the top end. This was confirmed when playing Muggsy Spanier's Ragtime Band's 1939 recording of 'I Wish I Could Shimmy Like My Sister Kate' on a 1976 RCA Victor reissue. By virtue of its age the recording was taken from an original 78rpm recording and has a somewhat limited bandwidth compared to more recent material. I was left aware of the very muted surface noise of the original shellac disc in the background, but the focus was on the music, and again on the rhythm driving it along.

Changing musical gear entirely, I dug out a much loved copy of Van Cliburn, along with Eugene Ormandy conducting the Philadelphia Orchestra performing Greig's 'Piano Concerto in A Minor'. This performance was recorded live at the open air amphitheatre at Saratoga Performing Arts Centre. Here I felt that some of the background and audience noise that accompanies this performance was a little more muted than I have heard it using other cartridges. This is the sort of micro information that helps build the sonic picture of the recording event in the mind's eye.

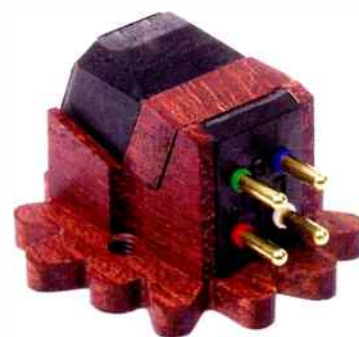
ROUND TWO

Staying with the Greig, but changing cartridges to the Ortofon Jubilee, and the presentation was obviously different. I felt that there was more air and space available at the frequency extremes, leaving more of a sensation of the outdoor location. Imaging was excellent with instruments precisely placed on a deep yet very wide soundstage. This seemed to extend a couple of feet beyond the speakers to either side, giving a pleasantly full and expansive listening experience. Surface noise was well subdued (I have always marked the Kontrapunkt a and b well in this area) but there was enough high end detail that I was aware of the odd bird flying past the stage. These ambient sounds were there with the Clearaudio, but seemed to be buried a bit deeper in the mix.

Ortofon recommend an impedance loading of greater than 10 Ohms. I finally settled on a setting of 840 Ohms, which my ears told me appeared to give the flattest frequency response when attached to either the

Clearaudio Satisfy Carbon tonearm (gimbal bearing), or the Hadcock 242 Cryo unipivot arm. (Both of these were attached to my Clearaudio Master Solution turntable, exploiting its ability to accommodate up to three arms, each being independently mounted on the extended legs of the chassis).

Its exemplary tracking ability was demonstrated when playing the Muggsy Spanier record. Any surface noise due to wear on this particular record seemed to be ignored, but the background recorded surface noise transferred from the original 78 had a little more prominence than with the Concerto, which was a little less explicit in this area. The Jubilee carried the foot-tapping beat of the piece with vigour, but did not



try to hurry it along, or force the pace. 'Even-handed' is the phrase that springs to mind when describing the sound of this cartridge.

The Nancy Sinatra recording was replayed in just such a way. I was aware of the fact that this was not a new record, but little fuss was made about its condition, rather the focus was on Nancy's voice and the instruments slinking their way through the slow Latin beat. Being a mono recording obviously the sound was focused in the centre of the soundstage, but had a great deal of depth so that there was no sensation of crowding of the performers, a





problem which can afflict lesser transducers when taken out of the stereo environment.

Returning to the electronic noises and super deep bass of *Hardwired*, I felt that there was a little fullness at the lower frequencies. Not enough to be offensive, but the ample power reserves of the Leema Acoustics Tucana amplifier and the twin subwoofers mounted in each cabinet of the Chario Ursa Major speakers needed little help in delivering their message, and here I felt that the Clearaudio gave a more realistic rendition of the deep bass activity.

ROUND THREE

Last but not least in to the fray was the Transfiguration Phoenix. This had a very low output, so necessitated increasing the amplifier volume by a noticeable margin over that required for the Jubilee. A very quiet MC stage would be required for this unit otherwise the listener may notice rather more background hiss than with the other two cartridges on test here. The Concerto, by contrast, had a very high output, possibly making it a little overpowering for some highly sensitive phonostages, but ensuring a very good signal to noise ratio.

The presentation of the *Hardwire* album seemed better lit in the higher frequencies, making for a very engaging listen. The detailing was such that I became aware of previously unobtrusive joins between samples. Bass output was not quite as prodigious as the Jubilee, being closer to that of the Concerto, however, where the latter was courteous in its treatment of the upper mid and top end, the Phoenix seemed to revel in exploring high frequency detail. Perhaps because of this, the imaging was obvious and precisely positioned with the widest soundstage of the three, although none were shy in this area anyway. Stage depth was somewhere between that of the Jubilee and the Concerto, far enough back to create a sense of space but not so big that everything seemed to

come from the back of a cavern.

'As Tears Go By' proved less smoothly played. I was a little more conscious of the age and condition of the record, but most of this took the form of near ambient information. A casual listener would be aware of the fact that this was not a new record, but this would merely be a passing thought when the needle hit the first grooves, rather than a constant preoccupation, because the Phoenix seemed to track very well. Whether this could be regarded as a greater level of honesty in the high frequencies, or whether it could be claimed that there was just a little too much information being dispersed, would come down to a matter of personal taste and the overall condition and cleanliness of your record collection.

However, this 'honesty' did not interfere with the important task of enjoying the music, it just provided a different vantage point from which to enjoy it. I noticed smaller noises, such as the shakers gently 'shooshing' away completing the cycle of beats started by the bass, the vocal inflections of the singer were clearer, and there was possibly a sense of a little more definable space between the performers. The mono image itself was of similar size to the others, occupying about two thirds of the perceived stage area between the speakers, uncramped, but not overblown.

As I suspected, this openness at the higher frequencies showed up the limitations of pre-war recording when 'Sister Kate' 'shimmied' out of the speakers. It was still highly enjoyable, but it was a little more apparent than with the other cartridges that this had been remastered from an aged disc. Do understand that outside of this test environment, I probably wouldn't give this a second thought, but at least it told me what was going on in the recording. Such fine detail came into its own when playing the Greig. The outdoor location was obvious and the separation of the different strands of sound from a full orchestra was a delight.

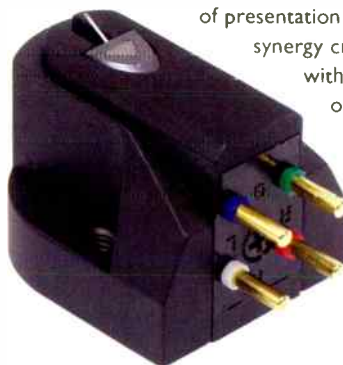
THE DECISION

So, assuming that the £100 difference in price between the cheapest and most expensive cartridge here would not be a problem, where would I suggest spending your money? If you have a record collection that's in less than perfect condition and you find surface noise intrusive then either the

Clearaudio or the Ortofon cartridges would be the obvious choice. Both tend to regard surface noise as an irrelevance. The decision could be influenced by the bass response of your system - if it's on the generous side then I would look towards the Clearaudio to balance it up, if the converse is true then the slight bottom end richness of the Ortofon may be just what was needed to provide a more substantial foundation for the other frequencies to rise up from. The Clearaudio midrange was a little more obvious than that of the Ortofon, again providing a level of insight which some will prefer.

For those who want to be aware of everything in the groove, including a forgiving but conscientious description of any failings, then the Phoenix would be the best buy. I enjoyed its openness, without feeling that it was being over-analytical. My record collection varies in condition from records that have been bought new and looked after to some that can best be described as 'cream cracked'. The Phoenix will casually mention this fact in the course of playing but the focus remains, at all times, on the music, and musicality is something it has by the bucket load.

As do the Concerto and the Jubilee. All three focus on their *raison d'etre* which is replaying music in a very accomplished manner. The final decision comes down to the minutiae of how you like that music to be delivered. For open-book analysis buy the Transfiguration. If you want imperturbable good manners then look at the Ortofon, and if you prefer easy flowing smoothness then try the Clearaudio. All three do an excellent job, and as is so often the case when dealing with mid to high-end equipment, the final choice comes down to the subtleties of presentation and the synergy created with your own system.



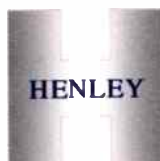
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Unilet Sound & Vision, *New Malden* • Videotech, *Huddersfield* • Zouch Audio, *Asby-De-La-Zouch*

MEASURED PERFORMANCE

The Clearaudio Concerto has a strong and prominent rise in output towards 10kHz which then drops rapidly off to finish around 3dB down from the 1kHz reference level at 20kHz. This will add presence to the sound but is likely to rob top end crispness and may well add in a hardness to the upper frequency ranges. Clearaudio recommend loading of over 400 Ohms up to 47kOhms but checking the response at several points over this range made very little difference to the result. Inner groove losses were minimal, thanks to the stylus profile, so the Concerto's performance will at least be consistent right across the record.

Tracking ability of the Concerto was fine at 300Hz, the cartridge only baulking slightly at the most difficult test track, but was less secure in the midband, managing only around 18cm/sec.

Vertical tracking angle was high at over 30 degrees, resulting in a higher than normal value for vertical distortion of 5.6%. Lateral distortion, however, was low, measuring 0.55%.

The Clearaudio's output level of 0.56mV was fine, meaning the Concerto will be compatible with a wide range of phono stages. Overall it should sound detailed but may well lack the top end incision and crispness of better designs. AS

The Ortofon MC Jubilee has a fine, flat frequency response across the audio bandwidth, with just slight lifts at both ends of the spectrum. This will give an even tonality, with a nice level of extra detail thanks to the 2.5dB top end lift, but without any of the associated problems that can arise from more extreme rises. Inner groove losses are very good, with the frequency response here staying flat to 20kHz, so the MC Jubilee will turn in a good performance across a record.

Tracking ability of the Ortofon was excellent; it sailed through the 300Hz tracks and only offered the slightest unevenness on the hardest 1kHz track. Vertical tracking angle was spot on at 22 degrees, meaning that vertical distortion was very low, at 2%. Lateral distortion was a little higher than some, at 0.9%, but this is still a fine result.

Channel separation was excellent, at 35dB, and consistent across both channels. Usually one is higher than the other due to slight generator misalignment, but the MC Jubilee was spot on, showing it has been carefully assembled. This will bode well for stereo imagery. Output level is on the lowish side, at 0.43mV, so a quiet MC stage will be needed for optimum results.

Overall, the MC Jubilee turns in a very fine performance. It should offer an even, detailed and clean sound. AS

Most notable about the Transfiguration Phoenix is its huge rise in output towards 20kHz, peaking at around 8.5dB above the 1kHz reference level. This will be noticeable, adding detail and incision to the treble, but may add some hissiness and spittiness to poorer recordings. Fortunately, the Phoenix's tracking abilities are very good; it completed the 300Hz tests without any difficulty and only became a little unsettled on the most challenging 1kHz track, which is a good result. Poor tracking can exacerbate a rise in high frequency output to give an uncomfortable result, so the Phoenix is well balanced in this respect. Inner groove losses were also not too high, which will offer consistent performance across an LP side.

As is relatively common these days, vertical tracking angle was rather high at over 30degrees, meaning that vertical distortion levels were higher than some competitors, such as the Ortofon, measuring 5.6%. The lateral figure, however, was fine at 0.65%.

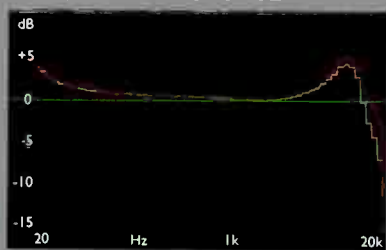
Output from the Phoenix was on the low side, measuring 0.27mV, meaning a high gain MC stage with low noise will be required for best results. That done, the Transfiguration should offer a brightly lit and detailed performance which may not flatter poor recordings. AS

| | |
|--------------------------|-------------|
| Tracking force | 2.8gms |
| Weight | 4.4gms |
| Vertical tracking angle | > 30degrees |
| Frequency response | 20Hz - 8kHz |
| Channel separation | 22.5dB |
| Tracking ability (300Hz) | |
| lateral | 65µm |
| vertical | 45µm |
| lateral (1kHz) | 18cms/sec. |
| Distortion (45µm) | |
| lateral | 0.55% |
| vertical | 5.6% |
| Output (5cms/sec rms) | 0.56mV |

| | |
|--------------------------|---------------|
| Tracking force | 2gms - 2.5gms |
| Weight | 10.5gms |
| Vertical tracking angle | 22degrees |
| Frequency response | 20Hz - 20kHz |
| Channel separation | 35dB |
| Tracking ability (300Hz) | |
| lateral | 90µm |
| vertical | 45µm |
| lateral (1kHz) | 24cms/sec. |
| Distortion (45µm) | |
| lateral | 0.9% |
| vertical | 2% |
| Output (5cms/sec rms) | 0.43mV |

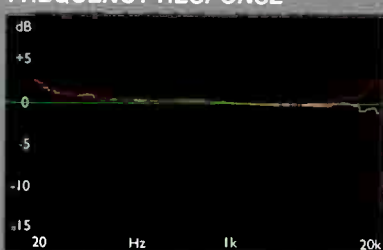
| | |
|--------------------------|-----------------|
| Tracking force | 1.7gms - 2.2gms |
| Weight | 7.8gms |
| Vertical tracking angle | > 30degrees |
| Frequency response | 20Hz - 12kHz |
| Channel separation | 22.5dB |
| Tracking ability (300Hz) | |
| lateral | 90µm |
| vertical | 45µm |
| lateral (1kHz) | 22cms/sec. |
| Distortion (45µm) | |
| lateral | 0.65% |
| vertical | 5.6% |
| Output (5cms/sec rms) | 0.27mV |

FREQUENCY RESPONSE



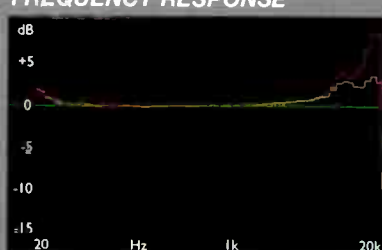
Red - Outer grooves
White - Inner grooves

FREQUENCY RESPONSE



Red - Outer grooves
White - Inner grooves

FREQUENCY RESPONSE



Red - Outer grooves
White - Inner grooves

VERDICT ●●●●●
Smooth, rhythmic and precise nature with a solid low end makes for an engaging listen.

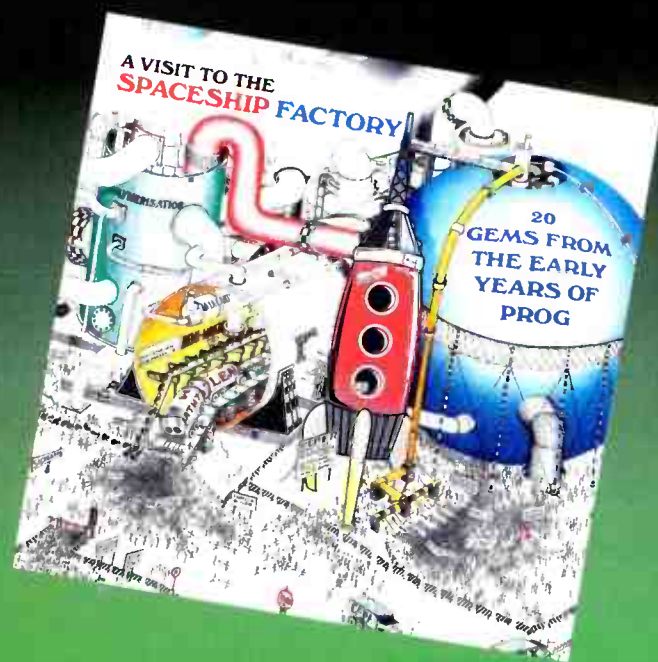
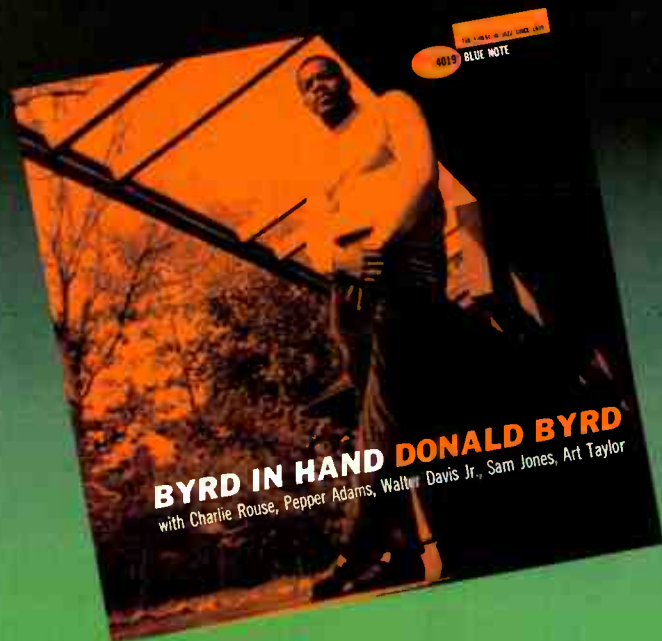
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VERDICT ●●●●●
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DONALD BYRD
Byrd In Hand
Classic/Blue Note

A clean, melodic trumpet player, Byrd was one of the best hard bop players of all time with his band work during the nineteen fifties and sixties. For example, during the mid-fifties, he was invited to sit in for his hero, the legendary Clifford Brown, in Art Blakey's successful band project, the Jazz Messengers. This is when Byrd also began his recording career leading sessions for the Savoy label, but also working on the Prestige label as a part of other groups as a sort of 'trumpet for hire'. From there, Byrd left the Jazz Messengers in 1956, and went on to gain further experience working with sax greats such as Sonny Rollins and John Coltrane. Byrd also went on to found the Jazz Lab Quintet in 1957. During the seventies he launched himself into fusion, a fashionable pathway for many artists at the time including Miles Davis. However, Byrd is rightfully hailed for his time with the Blue Note label where he maintained the label's reputation for quality music and performed at the top of his form.

This album was released a year after his Blue Note debut, the very strong 'Off To The Races' in 1958, and was the second in a successful series of releases that saw Byrd team up with Pepper Adams (baritone sax). Others appearing on this recording

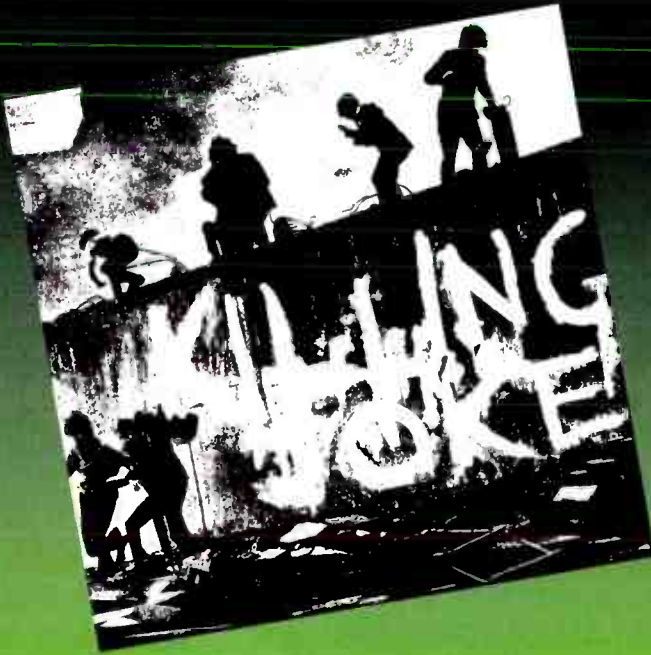
include Charlie Rouse (tenor sax), Walter Davis Jr (piano), Sam Jones (bass) and Art Taylor (drums). A wonderfully consistent album that maintains both a high quality of musicianship and some sparkling solo work, 'Byrd In Hand' also exhibits an array of writing talent. Of the six tracks on the record, the album only featured one standard, 'Witchcraft', which gets the show on the road. The writing is then split between Byrd ('Here Am I', 'Devil Whip' and 'The Injuns') and Davis (Bronze Dance and Clarion Calls). The recording shows how much Byrd has matured as a trumpet player both in the aforementioned consistency but also in how confident he is in tackling varying styles in his work.

VARIOUS
A Visit To The Spaceship Factory
Psychic Circle

Subtitled '20 Gems From The Early Years Of Prog', this double album compilation focuses on a brief moment in time when psychedelic and hard blues/rock bands were looking to progress from that relatively simple structural form of music to something more exploratory. Both classical music and contemporary jazz formed the inspiration. You can see how the likes of Beggars Opera ('Sarabande') and Kingdom Come ('Spirit Of Joy'), both featured here, were already

starting to play with new time signatures and layering their music to make it more interesting. Some groups enjoyed the patronage of prog stalwarts such as Spontaneous Combustion ('Spaceship' who were produced by Greg Lake of ELP. Other groups would examine the early prog scene but would splinter off into heavy metal genres such as UFO (here with a track called 'Evil') whilst others enjoyed the support of legendary figures such as Pussy's 'Ska Child' which was produced by Deep Purple's Ian Gillan.

Sound quality is understandably variable. That the sources for the LP have been taken from vinyl singles, so the final LP has thus been at the mercy of the original mastering. However, you have to factor in the rarity value of the tracks enclosed and the impossible task of sourcing original master tapes which will likely have been discarded or lost. Even if master tapes do exist for some, the cost of licensing a copy of an original master from major record labels would probably mean that this record would no longer be financially viable and so would not exist in the first place. Thus we are left with a welcome and sometimes remarkable compilation of historically interesting tracks, from a genre of music on the cusp of losing its overtly blues oriented licks to a style that would include more complex rhythms and harmonies



KILLING JOKE
Killing Joke
Let them Eat Vinyl/EC

The band's debut album from 1980 blends a powerful, sometimes frenzied sound with manic guitar and synth noises that fans of their late-eighties work might find a little shocking but would be later copied by other artists. Steve Beatty, MD for Let Them Eat Vinyl, has released a series of the band's albums. Beautifully produced, within gatefold covers, the other Killing Joke releases include 'Democracy', 'Revelations', 'What's THIS for...!', 'Fire Dances' and 'Pandemonium'. He told *Hi-Fi World* that, "my band, October File, toured with Killing Joke. Through that relationship, I sorted the deal with EMI. The sources we used were DAT tapes that were ultimately utilised for the CD reissues. Compared to the CD version, the vinyl actually does push the bass frequencies up a bit. We felt that the music needed to be rebalanced from the CD version when we mastered the vinyl."

Tim Turen mastered the series. "Tim's a musician, we've known him for years and he's worked for the major labels too – his stuff always sounds great." Just as important is the cutting engineer. And here, it seems, British is not always best. Prior to the vinyl launch, "we did get some test pressings back via one unmentionable British pressing plant and it was perfectly obvious that

their cutting engineer couldn't give a s**t about what he was doing." A criticism, coincidentally, similarly levelled by the MD of Psychic Circle, an unrelated label, who's 'Spaceship Factory' is reviewed here too. "We moved the cutting to GZ, in the Czech Republic," continued Beatty, "and the results were night and day. Their quality is outstanding and reasonably priced too." The mix of 'Killing Joke' is dynamic to say the least with absolutely thunderous bass – there's power in those grooves!

THE SOFT MACHINE
The Soft Machine
Universal Japan/Command/Probe

1968's 'The Soft Machine', often suffixed with 'Volume One', was the band's debut. Featuring Robert Wyatt, Kevin Ayres and Kevin Rutledge, the band addressed jazz-rock and psychedelia in such a unique manner that they almost dug out a mini-genre of music all of their own. Notable, was the lead vocals of Wyatt who, whilst not a magnificent singer had (and has) a beautiful interpretive ability. He's the Fred Astaire of rock, in many respects. Imported via Stamford Audio, director, Gordon Baldwin, has always been a fan. "I just think the Japanese pressings show more care and attention than most. But they've always been expensive. Jazz has always been a big seller but releases

are interspersed with interesting issues such as The Soft Machine." Baldwin has got a lot to live up to because he did reveal that Stamford itself is about to launch as a record label. The first release will feature a well known English male folk singer with an option on a second album via the same artist. But that's as much as Baldwin would say – except that the pressing would be completed by the respected German outfit, Palace, who handle Pure Pleasure and Speakers Corner.

'The Soft Machine' oozes quality of its own. The sleeve is beautifully produced. A gatefold, the front portion of it contains the posed cover art of the band masked by a machine-like overlay with cut-outs that can be rotated, in a wheel fashion, to display the band members as the cut-outs rotate past them. The inner gatefold features band line-up information plus a track listing. Inserts include a full lyric sheet, in English and Japanese, plus a flyer advertising some rather nice kit from Denon including three presentable turntables plus the record in a plastic sleeve. While the quality of the vinyl mix is not quite up to the 'quiet' levels of some of the top American and European examples it is still very good. The quality of the mastering, on 200gm vinyl, is high because you don't really notice it's there. The music just shines through and does its job well.

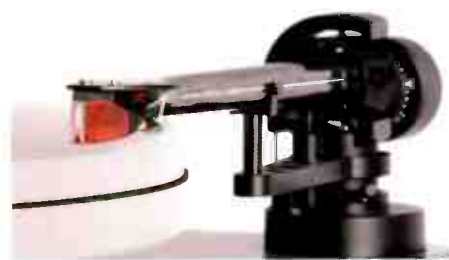


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SUCKING A LEMON

David Price's column in the March issue of Hi-Fi World will no doubt strike a chord with many of your readers. Just to recap (and you may need to correct me if I am wrong) you said that equipment that is reviewed by World does not receive a bad review because as you say you get all manner of stinkers for testing which have to be politely returned to the manufacturer or distributor because they are not up to scratch. As you put it, the product could be a lemon sonically or in build terms. This is what causes me and no doubt many other readers of your esteemed mag cause for concern. I will tell you why...

If you only review equipment that you consider to be good then how do we, the buying hi-fi public, know which equipment is bad because as you say you do not review it, you simply send it back? In days gone by the British hi-fi press took a much harder-hitting line and if a product was a duffer then generally the hack reviewing the kit would have his review published and would say so. A spade was then called a spade. Maybe I am wrong but it now appears that bearing in mind advertising revenue, magazines do not wish to upset their advertisers. All the titles except World and also Hi-Fi Critic tend to gloss over inadequacies of equipment in reviews and everything seems to have a gold star. This is why I do not particularly like the star/percentage/globe ratings. However, I would guess that this is something that the majority of your readers would like to see.

The reason why I think World should print reviews of duffers as I call them is because, and no doubt you will agree, if a product is bad then your loyal readership should be told so. I have bought every issue of Hi-Fi World since its inception in 1991 (and the anorak I am I have kept every copy) after the demise of Hi-Fi Review. The

over riding reason why I believe that if you get a product in for review, if it does not come up to scratch you should still review it, is because without a review it is all too easy to go down to your local hi-fi emporium and to be told by the salesman what a wonderful piece of new kit is available and subsequently buy that piece of equipment which World may well have thought was a duffer.

I can hear you say well if you thought the product was a good product when you auditioned it in the shop then let your ears decide. Unfortunately, that is not so easy. Quite rightly you keep using the phrase "synergy" and quite often a particular piece of equipment can give its best in a particular system but not another system. It is difficult in a hi-fi shop to replicate everyone's own exact system. Furthermore, and I found this on many occasions in the past, something sounds wonderful in the shop, you get home and you set it up and you tell yourself it must be wonderful. For a while it sounds good but then maybe a few weeks down the line the product that sounded so good in the shop (maybe it was voiced to sound impressive) gets somewhat tiring once you live with it.

A year or so ago I purchased a pair of Martin Logan Vistas and I think they are a wonderful speaker. Also about a year ago I remember looking at the page at the very back of the mag to say what you were going to have included in the following month's magazine. You were going to be reviewing the Martin Logan Vantages (these are almost identical to my Vistas save the bass used is active rather than passive). Lo and behold when the postman delivered World to me I could not find any mention being made of those Martin Logan speakers you were going to review. This therefore indicated to me that either you were having problems obtaining a pair from the distributor to review or you had



Martin Logan Vista - do we think they are a "serious load of rubbish"? Er-no!

them in and you felt they were such a load of rubbish that you decided not to review them. This therefore puts your readership and the buying public who read hi-fi magazines in a bit of a quandary. Should it mean that they only buy equipment that has been reviewed by World and equipment that you have not reviewed they should steer clear of

just in case it is a duffer?

I live in the real world and obviously I understand the immense pressures that publishers must be under by advertisers. Maybe if you feel you cannot review something that is a lemon then it is best not to review it all because obviously quite a large chunk of your publications revenue comes from advertisers. That is why Hi-Fi Critic is £8 a shot. Maybe this is something that you, Noel and Adam should think about. I think your readership would prefer to see you reviewing products even if they do not come up to scratch and call a spade a spade rather than just reviewing the decent kit. Sorry, if this letter implies any criticism as yours is the only mag I would never miss a copy of.

Jonathan Diamond

The great John Keats came immediately to mind when I read this. As he so beautifully wrote in 'Ode to a Nightingale', "my heart aches, and a drowsy numbness pains my sense, as though of hemlock I had drunk"... Jonathan, that's precisely how I feel when "advertising" is invoked as an explanation for apparently unfathomable Hi-Fi World editorial decisions. Just as with 9/11, the moon landing and the death of Diana, Princess of Wales, there are those who really don't want to let the truth get in the way of a good conspiracy. To borrow another lovely phrase, this time from London's new mayor Boris Johnson, the assertion is "an inverted pyramid of piffle".

Okay, I'll start with the Martin Logans. As the review was being written, the UK distributor Absolute Sounds had to 'call back' the review speakers because they had a customer for them who couldn't wait. Because of this, we didn't get the time to measure them, and because of that, we didn't print the review because we absolutely insist that all products reviewed here at Hi-Fi World are subject to (our own) independent measurements - we don't just reiterate the manufacturer's own specification (not least because it's often wrong!). So - the Vantages didn't appear, but not as you suggest because of the power of Absolute Sounds' ad budget, but because of our own editorial stipulation that products must be measured. Absolute Sounds were offered the chance to send us another pair, but declined - presumably because they were selling every pair they could get!

Right, so that's that one dealt with! Next, Hi-Fi World - as you may have noticed - is published by Audio Publishing Ltd. - an independent publishing company that does not

publish car magazines, lads mags, or mobile phone buying guides. Our commercial rivals see that as our weakness (after all, we're just a small independent), but we see that as our strength. We don't have sharp-suited publishing directors (sorry Noel, I wasn't being rude about your sports jacket!) with Filofaxes, big shoulder pads and red braces, swanning around London Town buying potential advertisers slap-up nosebag. We often meet manufacturers, but that's invariably to talk about new products and/or when we can get them in for review. We do have an ad sales manager, but she (the lovely Ms Nik Marina) and I are not in regular contact about advertising matters, and she doesn't routinely tell me who is or is not advertising this or any other month. Hence my feeling of nausea when I get letters like this!

Jonathan, what really makes me cringe about your letter is the way you wheel out the old chestnut of advertising politics in blissful ignorance of other factors that have a far more profound and fundamental effect on the magazine. What really ties my hands is the fact that I have to come up with a 130 page (including advertisements) magazine every thirty days - in other words, time and space are my key limiting factors. Time to make the mag (including all that review work) and also space to put reviews in. If I spend all my time reviewing "duffers", going in to painstaking detail telling readers why they should turn over the page to the next review, how am I (or Noel or Adam or anybody else for that matter) going to find products worth auditioning? Likewise, if I devote page after page to lemons, where I am going to put the reviews of the good kit? As such, we have taken a decision not to dwell on the less salubrious side of hi-fi; I don't want to clog up these pages with negativity and despair.

Furthermore, I spend enough of my time being brow-beaten by manufacturers for having the temerity to give them a mere four globes. How dare I! After all, everything

they make is perfect and the best on the market of course (until its replacement, when suddenly it is not half as good as the new one!). Frankly, I don't want to spend even more of my time sending them measured performance plots that show vast amounts of distortion and/or odd frequency responses (effectively



Advertising in Hi-Fi World is handled by Nik Marina, who uses charm. Experience with EMI Malaysia and ability to speak Chinese also help.

becoming an unpaid quality control operative for them) when I could be finding good hi-fi for people to buy. Hi-Fi World exists first and foremost to find great new kit, and not to debug the dodgy stuff. And of course, you can bet that if we did, they'd tweak the product to address the fault (with varying degrees of success) and then demand that we review the product again!

Jonathan, I thank you for your letter - you obviously care about the magazine as much as we do. But please don't go putting two and two together and making six and a half. Advertising may call the shots on other magazines (or may not, I don't know so cannot say), but here we have to focus our resources on making as diverse, informative and eclectic a magazine as we can with the time and space resources we have. If you ever have a query then just write in to us and we'll tell you what we think about specific bits of kit (if we've tried them). We publish around ten pages of letters every month precisely for this purpose - rather more than our rivals, it must be said. I think that's fair. **DP**

Believe me, Jonathan, on more than one occasion we have considered printing a list of 'This month's duffers' after something fails to turn up/ explodes on the test bench/ sounds like a bag of nails. However, I'm pretty sure that within a few months there would be no magazine left to read as no-one would be sending us any product just in case we 'exposed' it, or them! Unfortunately, things do get damaged in transit and so sometimes something may not perform to its proper specification through no fault of designer, manufacturer or distributor and, in a case like this, to start crying "Duffer!" would be self-defeating.

I have been asked the same question before regarding the lack of one and two globe products in the magazine and I always give a twofold reply. Firstly, it's 2008; there really is no excuse for anyone making anything so dreadful as to be awarded such a low rating (although there are still one or two out there...). Secondly, can you really tell me, hand on heart, that you would enjoy reading two pages telling you that something is rubbish and not to buy it? That seems a little perverse to me. **AS**

Products are rejected by us for a variety of reasons, not simply because they are duffers in the sense of being fully operational but of poor performance. Commonly they are faulty, with one channel down or such like. In this case we return the sample. Manufacturers commonly claim courier damage and we cannot validly challenge this, even if we are sceptical at times. It is true that goods are thrown around by couriers and sometimes, especially with old products not in original packing, severe damage results. It would be both unfair and misleading to criticise items that fall into this category.

Of the products that are tested and then considered substandard, we then have to decide whether they merit valuable space, when there are so many other good products vying for it. We are swamped by good kit and are reluctant to waste valuable space (and time) on duff designs. This has nothing to do with advertising, but identifying the good. **NK**

HIGH END DEAD END?

I am looking to achieve a system with synergy, and I have read all the advice and know that the only way to do this is to trust my own ears. However, my ears have recently informed me that CD is a high end dead end (at least, within my budget). I find CD replay too thin, starkly etched and lacking in dynamics.

Vinyl is the way for me (despite owning more than 400 CDs and less than 50 vinyl albums) and I am therefore in the process of building a vinyl front end to serve my existing system. This comprises a Musical Fidelity Trivista 300 integrated amplifier, B&W 804 loudspeakers (latest version), Musical Fidelity X Ray v3 CD player and Trivista 21 DAC. These are connected using Chord Odyssey loudspeaker cable, Chord Signature digital link and Chord Chorus from DAC to amp. My room size is 3.5m x 6m.

I have recently purchased a Michell Tecnoarm a and Ortofon Kontrapunkt b to fit a Linn LP12 that was a gift (this has been Cirkus'd and has the original Valhalla Power Supply). My goal is to replace the LP12 with a Michell Orbe or SME Model 10 at some point (hence the Tecnoarm). I like the amplifier and speakers, and feel that it would require a considerable outlay of funds to replace them. My question then is which phonostage to use?

This is nearly impossible to do using my own ears as there are no local dealers with any choice of units and I cannot hoik my system around the county to do a proper audition. I feel the amp and speakers offer a fairly neutral and uncoloured view of things but that they could be pushed towards becoming sterile with the wrong partnering components. So I am looking

you rate both of these manufacturers highly and am not aware of any other serious contenders at their price point. I would like the phono stage to realise the full potential of my front end and so would not be looking to upgrade in the future. Any advice on bringing a sense of cohesion to my system would be greatly appreciated; I listen to all classical, rock jazz folk and blues - loudly!

Incidentally, upgrading the Linn with their recent mods seems crazy to me - it would cost more for a Lingo and Keel (fitted to an old and cosmetically poor LP12) than a brand spanking new Orbe or many other worthy candidates. I may consider 'Funking' it but this smacks of mutton dressed as lamb and leaves me with the 'characterful' suspension of the LP12!

Paul Baldry.

Frankly, Paul, you have already settled on two of the four candidates I would recommend at the price point. Normally, my firm first choice would be the Anatek Acoustics MC1, our phono stage of the year 2007 and an item that I use myself, with superb results. However, although it is far from being harsh or hard, it is a dynamic and exciting performer and you may well be better off with something a little smoother in the context of your amplifier and



Is the Michell Orbe an upgrade on a Linn?

for a phono stage to ultimately partner an Orbe/SME, Tecnoarm, Kontrapunkt b front end with my existing amplifier and loudspeakers. My budget is around £1,000 which puts me in the territory of the Whest Two and the Eastern Electric MiniMax.

The advice on synergy I'm looking for is, basically, do I need valves to avoid the sterility of an overtly neutral and clinical system? I am aware that

loudspeakers, in which case both the Whest and the Eastern Electric would fit the bill perfectly. The only thing to be aware of is that the MiniMax is a little lighter at the very low end than the Whest although not obviously so - it only really becomes apparent in an A/B comparison, when you'll notice that it lacks the last ounce of low end solidity. Given its sweetly emotive nature, I suspect the

MiniMax would fit your requirements nicely.

However, if I may offer you a fourth choice, around £750 will buy you a fully built and tested World Designs Phono3 phono preamplifier with MC input transformers (£445) plus a fully built and tested PSU3 Power supply unit (£299). You can even save yourself around £250 if you're handy with a soldering iron and don't mind building them yourself, but, either way, the WD units really are superb and will make you wonder why you ever bought those 400 CDs!

Incidentally, regarding your CD collection, it seems a shame to have it go to waste, and so at some point it might be worth considering a smoother, less incisive and, dare I say it, more vinyl-like player. If you fancy trying this at some point, give the non-oversampling £995 Consonance Forbidden City Orfeo a spin - you might be pleasantly surprised.

As to the LP12, you have inadvertently stumbled upon one of the hi-fi industry's most polarising products. Some people will buy whatever new upgrade becomes available, as soon

cash and it would also buy you a GyroDec or second hand Orbe. Or five Technics SL1200s, or sixteen Pro-Ject Genies or... well, you get the point! As to the Funk Firm, Arthur Khoubesserian has forgotten more about suspended subchassis, belt drive turntables than most of us will ever know, and his range of upgrades really do breathe a new lease of

the funds, I'd be near the front of the queue. Many people feel the same way about the LP12. **AS**

Hi Paul - I think you're right to change your ageing LP12 for a Michell Orbe. As I found last summer, a brand new LP12 with a Keel is a wondrous thing indeed, but as you rightly say, on a budget as a retrofit



Consonance Forbidden City Orfeo CD player - give it a spin says Adam.

life into an old LP12, coming in at a much lower price than the official Linn upgrades - I would be wary of dismissing any of these until you've had a chance to hear them - maybe they aren't for everyone, but they're

upgrade it is not for everyone - in terms of sound per pound, a new Orbe is considerably more convincing. Fit the TecnoArm, and go for an Ortofon Kontrapunkt b, and match it to an Icon Audio PS1 phono stage (£450) for a high performance, low(er) cost combination if you're not into taking the DIY route. The Icon is an extremely good performer - as are many - but being a warm(er) tube design it should match the rest of your system better than solid-state products.

Your existing CD player/DAC combination is a fine one, the DAC being a particular classic favourite of mine, and should outperform almost anything under £2,000 - so I'd save your money for better interconnects (start with Black Rhodium Tango loudspeaker cables, a fine match for the rather 'dry' sounding B&W speakers) and then start saving for a serious tonearm. Origin Live's Encounter (£970) works superbly on an Orbe (being a better synergistic match than an SMEV), so that's where I'd go next. **DP**



Icon Audio PS1.2 phono stage - a great sound.

as it hits the shops, purely because it's for an LP12 whilst, equally, some people will instantly denounce it as a waste of money and a con, purely because it's for an LP12! Being a more level-headed type, I tend to hold the opinion that the LP12 has some qualities that few turntables can match and I always find myself enjoying one when I listen to it. The Keel has caused possibly more controversy than most items but it really does work, bringing the deck right up to modern standards where, for the past few years, I felt it has been lagging behind.

However, as you rightly say, £2,000 is a heck of a big wad of

still very impressive.

At this point, I can't help but feel my monthly car analogy rearing its ugly head, especially as I was recently reading about V Eight Ltd., who have bought up fifty original Jensen Interceptors and kitted each one out with a new six litre Chrysler V8, five speed autoboxes, independent rear suspension, six-pot AP disc brakes and 17in wheels with low-profile tyres, subsequently offering them for sale as the Interceptor S for £75,000. Now, seventy five big ones will buy you a heck of a lot of modern grand tourer and I suppose you could definitely accuse the new S of being 'mutton dressed as lamb' but if I had

PHILIPS REVISITED

I thought I would write as I have had some interesting results after a fault occurred in my CD player. As many readers, my current assembled range of hi-fi kit has evolved over many years, improving each time I replace a component. A few months ago my Musical Fidelity X-Ray (original oval shaped version) started skipping on the first track of some CDs. This I put up with as it was only a few CDs, but at the beginning of January 08 it started getting worse. So I took it to a local hi-fi dealer to get it repaired.

This CD player was, as I thought, an

improvement over the Marantz CD63 I had prior to it and the NAD prior to that. But my very first CD player was a Philips CD104 which, after I upgraded to the NAD, went to my mother's house to work for its living. Six months ago I changed my mother over to a DVD player for her music and films as the Philips was having trouble closing its loading tray and I thought my mother would enjoy DVDs...

After my X Ray died I went up in the loft to clean and sort out the CD104 as this could fill in for my Musical Fidelity while it was getting fixed. After removing the cover, vacuuming the inside and adding a bit of '3 in 1' to the drive tray, the moving parts all worked okay. So I, being lazy, just attached some female to female phono bits to my vdH The First interconnect and plugged in the captive cables of the Philips.

After a bit of a run in session repeating the same CD a few times with the rest of the hi-fi powered off (definite smell of burning dust!) I stuck on a CD, sat down and listened. It was not bad, in fact it was very good, considering it was at least fifteen years old and had sat in a loft for the last six months! I stopped using it because the NAD sounded better on the system I was running at the time, but as I have upgraded those components to my current assembly I realise the original CD player was really very good. It also speaks volumes for how well it was built, even though the Musical Fidelity is no slouch in this department.

So if your readers want to experiment a bit and have some old hi-fi kit in their loft, I would advise them to try it on their current system, they may be surprised!

Andrew Burtchaell

I have to say Andrew that I find your tale absolutely astounding. You see, as I have expounded my love of searching out old delights at car boot sales, dumps, audio fairs and the like, I have naturally crossed paths with many a Philips CD player. At one time or another, I have bought a CD371, a CD100, a CD202 and two CD104s, and promptly thrown them away again, as none of the damn things worked! The Marantz CD94 I currently use is the only Philips-based player I have ever owned that firstly, works, and secondly, doesn't throw a hissy fit at the slightest spec of dust. Up to the point of owning this machine, my opinion of Philips-based players was that they were unreliable, temperamental and, judging by the few hours of music that the CD371 managed before conking out, sounded pretty poor. As a result, I have always generally stuck to players with Japanese internals. However, if



Philips CD104 - a golden oldie, according to Andrew Burtchaell.

I can find space in between buying, repairing and generally faffing about with all the turntables I have (and I added three more to the collection last weekend), perhaps I should give them another chance. **AS**

Indeed! The CD104 was the last '14bit' (TDA1540) Philips machine before the move to 16bit, and was a fine sounding design - so much so that it was the basis for the mighty Cambridge Audio CD1. The problem is of course that they don't last forever - the lasers are actually pretty long lived, but the spindle motors conk out and aren't exactly available over the counter from your local Currys Digital. I've had several of those first generation of machines die on me, but they do sound nice and smooth - Mr. Ishiwata attributes this to their BIMOS design and nice filtering. **DP**

SHANLING SUITABLE?

I am currently in the position that I can make a modest update to my system. The main element I'd like to replace is the CD player, which is an Arcam Alpha Plus via an Arcam Black Box. I was thinking about a good second hand unit, either a player or transport using my Black Box. If I were to go that route, what do you think would be significantly

better for up to, say, £300?

The other possibility would be to spend a little more on a Shanling MC-30. From there a few more questions arise: would the MC-30 drive my MS 208's (I don't know their spec, but believe them to be quite efficient). Could I use the power amp section of my Audiolab 8000A and run my Rega Planar 3 through it as well?

My current system is a Rega 3/RB300/TecnoWeight/Entre MCC, Audiolab 8000A, Mordaunt Short 208s, A&R T21 tuner, Arcam Alpha Plus CD player, Arcam Black Box DAC, VDH the Clearwater Cable. I also have a second system consisting of a Marantz CD63, Creek 4040, NAD 4020 tuner and ARI 8s 'speakers (refoamed) with Maplin's Cable.

Terry Symonds

If memory serves me correctly, the MS208s were 'officially' rated at around 91dB, which in realistic terms probably translates to around 89dB, so the Shanling will drive them but don't expect headbanging levels of sound output. For more volume, you can indeed take the preamp outputs from the MC30 and use your Audiolab as a power amp. Alternatively, why not consider the MC30's bigger brother, the MC3000 (reviewed last month) as it addresses



If you need a bit of volume, the power of Shanling's MC3000 might be a good choice

the MC30s main drawbacks, one of them being lack of power. It's still a very fine machine, however, and so would be well worth considering.

AS

STAGE TWO OR 3?

I'm a subscriber to Hi-Fi World and read your article about the WD Phono3. I was wondering if you could tell me the difference in sound between the Whest Two and the WD. My cartridge is a Benz Wood L2 and I am thinking of upgrading to a Ruby.

Charles

Both are fine phono stages and, to be honest, the Whest is quite valve-like in that it does not have the hardness of some similar solid state designs. The Whest is quite handy in that it has switchable cartridge loading and gain options (even though you have to poke around inside the case to get at them!) and it will suit a wide variety of cartridges. It also gets my vote in terms of longevity and consistency, as it does not use valves; our Eastern Electric MiniMax is starting to go off-tune after eighteen months of hard use and so some replacement valves are in order. Not a big deal, and not a huge cost either, but the Whest will need no fettle to stay in top form.

However, in pure sound quality terms I would say that the WD just about has the edge - it is a vivid and fluid performer and, if you don't mind occasionally replacing the valves as and when they need it, it is a stunning performer. You can even save money by building it yourself. **AS**

ARRO FIRED?

Thanks for producing a great magazine. It is the only hi-fi rag I regularly buy

(along with an online subscription).

Great reviews and comments pages, the vinyl section is terrific. I particularly enjoy the letters pages and the no nonsense advice you give to your readers.

With this in mind, I now find myself in the need of some advice, as I have got myself into a predicament. My girlfriend has just bought a second-hand CD player and amp and at some point, probably under the influence of alcohol, I promised that I would give her my speakers (it never ceases to amaze me how women have a great memory for such things - date, time, location!). The speakers are Totem Arros which are very musical, but as you pointed out in your review a few months ago, they are difficult to get moving and at low volumes they are not brilliant. I have also thought that at some point in the distant future that I would like to go the valve amp route meaning that the Totems would probably have to go. I think that I must have said this



If you've had a drink and she hasn't - you may just lose your hi-fi!

to someone else before... it's all coming back to me now!

My system comprises a Michell GyroDec (with Orbe upgrade kit) SME

IV/Ortofon Rondo Bronze, Eastern Electric Minimax phono stage into Naim NAC112/NAP150 and Flat-Cap. Oh and I also have a Naim CD5x. I have been looking at making a shortlist of speakers to review, but don't know where to start. I have a maximum budget of £2,000, but would like to come well within that. I like the idea of the Yamaha Soavo 2s and you have mentioned before that Revolver work well with Naim amps, but your review of the new Music 5s speakers wasn't overly positive. I live in a small semi-detached house and sometimes need to listen to music at low volumes and my sitting room is 4m(l) x 3m(w). The speakers need to be reasonably compact and sit not much more than a foot from the rear wall. The proximity of furniture would obscure the bass units of some floorstanders, so I have been erring towards stand mounts. I listen to rock/pop and classical music. If I change speakers should I change the Naim speaker cable I am currently using?

Alternatively I could try fobbing her off with some gobbledegook techno speak saying that the Arros wouldn't be suitable for her, but I think that she will simply give me some truth serum (red wine) and then I will seriously be in the dog house. Help!

David Welbourne

Hmm, alcohol and a woman's memory - truly a dangerous combination if ever there was one! Still, look on the bright side, you can give your good lady the Arros with a clear conscience as this will make her happy, leave you secure in the knowledge that you have given her a very fine pair of loudspeakers and give you the opportunity to upgrade - a win-win situation if ever there was one!

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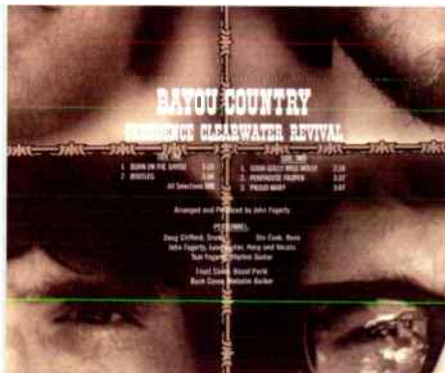
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Room: **artikulat**

As to the newbies, I am assuming you like the Naim/Totem sound which is quite a bright, dynamic and detailed one, so on this occasion the otherwise very fine Revolver Music series units might be a little too smooth for your liking. If you want to stay with floorstanders, I would straightaway recommend the Kudos Caridea C2s at £1,950. One of my favourite loudspeakers from last year, these are dynamic, detailed and punchy but should be a great deal happier at low volumes than your Arros and they are known to work very well with Naim equipment. Both drivers are near the top of the 925mm tall cabinets and so this should not give you any furniture-obfuscation issues but if you still feel this is a problem, you could always try the standmounting £1,450 C1s atop some stands of 70cm high or greater. The Naim speaker cable is a fine performer so there's no need to change it unless you particularly fancy fiddling in this area. **AS**

JF UK!

This letter concerns a favourite artist of mine who very rarely gets mentioned in the press, yet the bold Mr. Noel Keywood has mentioned him more than once since the beginning of *Hi-Fi World*. In fact, the first time he mentioned him,



The recent 45rpm re-cut of Creedenace Clearwater Revival's *Born on the Bayou*.

he was reviewing the Audio Innovations phono stage (the P2, I think). So who is this person and why am I so interested?

I'm sure Noel has copped on who this person is and, of course, it's John Cameron Fogerty and his seminal combo *Creedenace Clearwater Revival*. And the question? Well, it's really a question and a request; it concerns the remastered LPs done by Kevin Grey and Steve Hoffman for AcousTech including the box set. I was a bit underwhelmed when I bought 'Bayou Country'; okay, the sound was squeaky clean and John's vocals were excellently done but when I heard the low end on 'Graveyard Train' I was so disappointed. Where was the big fat Stu Cook bass gone? I just couldn't believe it but still I still went

out and bought four more CCR titles and they weren't cheap (nearly £30 Sterling each). I've often dreamed and wondered about the box set... Over to you Noel, can you throw some light on my observations? Is there any possible way you could do an article on the great man, his life and music - remastered or otherwise? Go on Noel, you know it makes sense!

Dermot Bell (Ireland)

P.S. - My system is turntable and valve based - specifically Notts Analogue/Craft (the new amazing hybrid stuff) and Castle Howards.

Ah, you've got me there Dermot. I have the 45rpm discs which, because of their shorter run time, are missing tracks, the mournful 'Graveyard Train' being one of them. It's an unfortunate omission because this is the sort of thing CCR did so uniquely well and is one of their most moving songs. However, I span 'Born on the Bayou' on original 33rpm LP and the recent 45rpm reissue to make a check and Stu Cook was alive, well and playing strongly on both; there was no great difference between them I felt, at least not an obvious or upsetting one. Modern re-cuts are sometimes rebalanced too, Cat Stevens 'Teaser and the Firecat' being one example, but whereas I rushed for the original to ensure I wasn't deluded, or should I say befuddled by the passing of time (I wasn't - my ears and spectrum analyser showed that studio monkeys had done some control twiddling!) the CCR recuts seem true to the originals, just a lot cleaner. Sorry I cannot shed light here.

You will find interviews, tour dates and much more at www.johnfogerty.com and Wikipedia has a long, detailed entry about him. His DVD, 'The Long Road Home' is worth buying too. I'm not sure we could improve on this material. **NK**

DYNACOS DUE?

I need a little advice, please. I have recently upgraded my system and it now consists of the following: Rega P3/RB300 with Linn K9 cartridge, Naim Stageline phono stage, Naim Nait 5i amplifier, Naim CDSi CD player and Dynaco A25 Loudspeakers on Linn Index stands.

I am very satisfied with the sound but am unsure if a speaker upgrade would make it even better. I have had the Dynacos for many years, was using them with a Nait 2 up to this and find the sound much improved with the 5i. From what I have read about the Dynacos, finding a better speaker might prove very costly. I'd be interested in hearing your views.

John Lee



Dynaco A25 loudspeakers are still good. So much so, that they formed the basis for the World Designs WD25A (pictured).

Well, changing the Dynacos will undoubtedly change your sound, but whether it will improve it, only your ears can decide! Interestingly, if you really feel the need to upgrade, World Designs' WD25A standmounters are based on none other than the old Dynacos so these are highly likely to give you a more modern take on the sound you like. These are around £600 fully built and finished or can be bought as a kit for £170 less. Contact World Designs on 01832 293320 or at www.world-designs.co.uk and if you have back issues, their design and construction was featured in the February, March and April 2006 issues of *Hi-Fi World*.

Personally, if you like the speakers, I would say the weak link in your system at the moment is the cartridge and I would put this next for upgrade. A £120 Goldring 1012GX will make a big difference, and if you can stretch to £350 for an Ortofon 2M Black, this will take your vinyl to a whole new level. **AS**

Yes, the K9 is P. **NK**

Hi John, to me your system seems a little rear heavy. The Dynacos are still impressive by today's standards, as is your amplification and phono stage. However, I'm not sure your Rega 3 is quite up to the job in hand - excellent as it is at the price, I fear it's a little out of its depth. I remember a friend of mine running one into a Nait and finding it a little thin and undynamic, albeit very detailed. My advice, as with Adam, would be to ditch the K9 first - I'd



Denon DP-100M turntable, their best ever studio standard turntable, 1981-85.

go straight for the Goldring G1042 - and then go for a Michell GyroDec SE (£970) as soon as you can afford it, retaining your Rega arm. This will dramatically increase the scale and depth of the sound, as well as filling out the low end and bringing dynamic contrasts to life. It's a great platform for future upgrades - so much so that I still think it's the best £1,000 deck around in terms of both what it does and can do in future. You'll then find out just how good your Dynacos can sound. **DP**

TURNTABLE TALES!

Hey Noel, Dave and little Adam, my favourite music loving munchkins, could this be the turntable to put my Linny in a cupboard for a while? See picture...

On a different topic, some time ago you took a financial and plausibility risk and printed a letter of mine regarding a Heybrook TT. Well, the outfit up North I contacted never bothered to contact me on the deck they had for sale.

This was a blessing from the gods of vinyl as I bought a brand new Technics SL1210Mk2, sat it on a home made wall support made of Ikea oak brackets, a cannibalised office desk (errmm, the girl at the office now works off the window ledge) and five squash balls plus wood curtain rings to stop the balls juggling around, for suspension purposes. I chucked out the rubber mat and replaced same with a Sound Dead Steel Isoplatmat and a Funk firm white mat twixt LP and the SDS. The existing feet of the deck sit upon four SDS 3" square Isofeet. Finally, I took out the grommet between the headshell and tonearm and, for good measure, chucked in a Goldring 1012GX cartridge.

The rest is now good times and musical enjoyment in my home office set up. Future plans are to sensibly improve

the deck further, as in my thinking the motor unit is all important, then a search for an arm replacement or the fixing of KABUSA's damping trough to the existing arm. Last will be a 1042 stylus replacement, you little beauty. Question: do you think that you have opened up the proverbial can of wiggly things with the Tek 1210?

Ron Edley

Nope, you did that yourself when you bought it! As to that turntable in your picture (Denon DP-100M for all the non vinyl anoraks out there!). I think that would relegate pretty much any other turntable to the cupboard. Now if you'll excuse me, I'm going to print it off in A3 size and stick it above my desk... **AS**

Good going Ron - but you've just got to whip that stock stainless steel arm out and stick in something tasty, haven't you now? **DP**

GLOW

Many years ago, I fell into the whole Linn/Naim thing and thought that this was pretty much all a man could want in the modern world. I was lucky enough in the past to do a bit of work on a Townshend prototype on a Post Graduate course with Prof Jack Dinsdale. On this course, the joys of a Townshend were unleashed and I was converted.

I am currently in the process of dismantling all my Linn/Naim stuff and hurtling toward the Townshend Rock/Excalibur (with a Dynavector DV20, but I may get my Ortofon MC2000 rebuilt by an expert). I have managed to get my hands on a substantial pair of Quicksilver KT88 Monoblocks.

So what preamplifier should I be looking for, and what phono stage for the MCs? I currently have a rather

fetching Project Valve Phono Box, but I am informed that it won't really do the turntable combination the justice it deserves.

Due to my engineering background and the avoidance of tracking error, I also believe that a linear tracker could also be a possibility. Is this folly or can these be had for a reasonable sum nowadays?

What kind of 'speakers would you suggest would be suitable. I have always had a hankering for Quad ESL 63s, having liked the older 57s. Would this be a useful combination? I would also be looking to get rid of my Naim CD3, any suggestions for replacement?

Budget wise, I've not really thought too much about it, but I recall linear tracking arms were frighteningly expensive. So for the short term I'd be looking for a pre amp and phono stage say up to about £1,500. Any advice would be greatly appreciated and she who must be obeyed will be extremely happy. Quite frankly she finds the look of a Naim set up a little on the austere side but finds the glow of a valve rather fetching.

Ewan Scott
Project Engineer

Hmm. I sense a need for caution here Ewan. There's little wrong with Linn or Naim products, but they are currently being branded negatively as a combo from darker, less enlightened times. Assistant Editor Adam Smith is in love with Naim's Supernait and we all regard Linn turntables highly. I suspect our esteemed Editor, David Price will have something to say about chucking out that which happens not to be the latest fashion. Okay, I've always used valve amps, but I'm slightly taken aback about their new popularity. Also slightly worried about it, as valves aren't an easy fashion fad. Yes, they look nice, but many are mediocre and all valve amps need maintenance, which needs to be factored in from the outset. No different from running a modern car, granted, and if you buy an Ongaku, more expensive. But don't get carried away with romantic engineering, the truth can be a little more prosaic.

You don't say whether the Quicksilvers are in use and you like them, or not. Nor do you mention your loudspeakers. I'll assume you have heard them and they're what you want. My simple suggestion for a phono preamp is the Icon Audio PS 1.2 phono stage. It has displaced the much loved Eastern Electric Minimax in my system, having a darker but more dynamic sound. I suspect the Minimax needs new valves though; it just seems a little off-colour these

days, but we use products like this very hard. Sub-text: watch out for the reality of running valve hi-fi, it goes off tune quite quickly. Corollary: when on-song it flies like nothing else.

Parallel tracker huh? They do eliminate tracing distortion, but this has less impact on the sound than the structure of the arm and its vibrational behaviour. All that complexity is of little consequence when the arm is poor. I use an SME 312 12in arm to achieve the same end and it does give measurably lower distortion, typically from 0.8% down to 0.5%, but since this is all second and third harmonic improvement in sound quality isn't particularly obvious. Modern designs are sounding good though. I will leave Adam to suggest models as he is our turntable meister. **NK**

It is interesting that you mention a parallel tracker in the same letter as a Townshend Rock. I had a long chat with Max Townshend last week when he dropped off the new Rock V (review coming soon!) and, as you have been 'converted' to his way of thinking about turntable design, you might be interested to know about his distrust of parallel trackers. Basically, he was explaining that, whereas a conventional pivoted design exploits the natural inward pull of the spinning groove as a result of the offset of the headshell, a parallel tracker relies on the stylus dragging the arm tube across the record, whether the arm in question is motorised or on an air bearing.

Max feels that this stresses the cantilever unnecessarily and results in an increase in effective mass on it laterally, pushing its resonance down below the 2Hz region, where the concentricity of LPs becomes an issue. At the same time the light arm lifts the vertical resonance up into the bottom of the audible frequency range, above 20Hz, moving the arm/cartridge resonance out of the desired region between these frequencies and meaning that there are two distinct resonances, only one of which can be damped out - not both at the same time. Just a little food for thought!

That said, though, our experience is that parallel tracking arms can perform very well, but as you rightly say, they tend to be expensive as a result of the engineering that goes into them. I keep lusting after the Kuzma Air Line but its price of £6,000 is rather deeper than my pockets. Fortunately, things are becoming cheaper thanks to a couple of fine gentlemen in the UK

- firstly Len Gregory, whose fabulous Conductor air-bearing parallel tracker costs £1,500 and Victor Pattachiola, whose quaint £500 'Evolution' arm that I reviewed back in the June 2007 issue has...er...evolved into the 'Terminator'. This looks mightily impressive and the price is still £500 - again, watch this space for a review. **AS**

I can certainly vouch for the Cartridgeman Conductor; it is a superb parallel tracking pick up arm. A couple of years back I reviewed a very early sample with a few gremlins which have now been banished, making it far more user-friendly. It has an extremely expansive, neutral and powerful sound, which makes even the likes of an SME Series V seem rather coloured by comparison. A good parallel tracking arm is a special experience; it reminds me most of best quality analogue open reel tape running at 15ips. **DP**

BLU IN THE FACE

It has been a long time since I wrote to any magazine, but your otherwise excellent June issue has finally prompted me to say something, and I'm afraid it concerns Hi-Fi World's figurehead, Mr. Keyword!

I have been a follower of Noel's

terms, whether people like it or not. As a result, I have read some of the recent A/V receiver and DVD player tests with interest and I do take enjoyment from the surround-sound element of my own system, whenever I can sneak in when the kids are in bed and the Xbox is put away!

As a result of this, I was intrigued at the prospect of reading about the Sony BDP-S500 Blu ray player's sonic abilities and how it could improve my surround-sound experience but, frankly having read the review I am none the wiser.

I nearly fell asleep trawling through all the stuff about its wonderful picture quality, expecting to turn a page and read all about the sound, when the review abruptly ended. I gather that, as a standalone machine, it's not much good and that it is best to use an A/V receiver as the sound processor, but I still haven't a clue what the thing sounds like.

If that wasn't bad enough, I re-read the article, wondering if I'd missed something, only to read in the introduction that the intention of the review was to review it "from an audio perspective as much as video" - sorry Noel, you really didn't!

So my ire was raised slightly anyway and then what do I see - a page devoted to flippin' video test discs! Noel, turn to the front cover and remind yourself of the name of the magazine



Cartridge Man Conductor parallel tracking arm floats on a bed of air to eliminate friction.

since the 1970s and while not always agreeing with everything he has said in the past, I generally feel that his observations are well worth paying attention to. However I am becoming concerned about aspects of the magazine, namely the dreaded A/V! Now, I have read some of the outraged spluttering regarding some previous A/V material in the magazine with amusement as I thoroughly agree with the Hi-Fi World team's responses that A/V has a place in good quality sound

- "Hi-Fi" World. Why on earth would we want to worry about video test discs? As far as I understand it there aren't many adjustments that can be made to a modern television (well, there aren't on my high tech HD-ready plasma thing) and so all this achieves is to make you squint at your picture and convince yourself you're dissatisfied with it, when you've been using the damn thing for months quite happily. Will you now be following this with another article on test LPs and CDs and telling readers to

buy them, use them and stick their ears close to their loudspeakers to listen for any tiny distortions? Somehow I doubt it but on the other hand, it wouldn't surprise me.

In fact, the testing aspect of the mag is something else that has been nagging at the back of my mind for a while too. I appreciate why you do it, and as an electrical engineer, it's even quite interesting to read. However, the great conundrum that was inevitable reared

thoughts. I intended to add this, but Sony wanted the player back pronto...

With regard to the Sony, as you gathered from the Measured Performance, its analogue outputs were an afterthought, CD reaching 16kHz and 24/96 audio 24kHz, suggesting CD had been processed down to 32kHz sample rate and DVD audio down to 48kHz sample rate for cheap DACs - hardly in keeping with any notion of quality.

baffling array of setup options Jason (noise reduction, sharpness, contrast, brightness, colour tint, gamma, cinema/natural/dynamic modes, etc.) and my experience here is that setup is everything. Just look at the A/V Forums to see how confusing all this is for people. Look again at your plasma manual I suggest! Generally, acknowledging we are a hi-fi magazine, we restrict such A/V coverage to one or two pages, but at the same time Blu-ray players are a large part of the future of digital audio.

At the end of the day, because we possess very sophisticated test equipment and test discs in-house, we are able to identify performance issues others miss with complex products like Blu-ray players and A/V receivers. I am keen that Hi-Fi World is able to review today's products with a depth that eludes the many free reviews available on the internet, and in many magazines, that are superficial to the point of misleading.

Contradictory results in the Music Maker cartridge review occurred because it breached our rigid rule that everything must be measured first. Tony Bolton liked it, but measurement revealed questionable behaviour (reminds me of the Decca London saga). This break in procedure will not happen again.

Andrew Harrison first worked at Hi-Fi World many moons ago and we are happy to have him back writing for us. Like us he is more interested in vinyl than projectors. **NK**

Hi Jason - thanks for your comments. I have to say that Noel's mini-review of video test discs isn't exactly core Hi-Fi World territory, but we do sometimes wander 'off-topic' (car audio, vintage audio, AV, etc.) so I thought this was fair enough in the great scheme of the magazine's eclectic editorial mix. Rest assured though, that we're not going to ask Paul Rigby to do a two-page round-up of them every month! The Sony Blu-ray player could have had more on its sonics, but we didn't have it for long. I was going to say watch out for a group test of Blu-ray machines at a later date, where Noel can go deeper into their respective sonics, but perhaps this would go down with you about as well as a fifteen page HDMI cable supplement! Don't worry readers, normal service will be resumed next issue, with the usual mix of obscure two channel and thirty year old anachronisms... **DP**

Does that mean my in-car 8-track player group test can finally go in? **AS**



For good CD sound quality, use a Samsung BD-P1400 Blu-ray player connected digitally via SP/DIF, says Noel.

its ugly head in the May issue with the Cartridge Man Music Maker cartridge - a glowing review from Tony Bolton, poor test results from Noel and the result - three globes. Frankly, it looked like the verdict had been transplanted from something else and was completely at odds with the review text. I wonder who had the final say on that, then?

Please, chaps, take this as constructive criticism as I've been an avid reader of the magazine since the early days and its still far, far better than anything else out there. I have dipped into Hi-Fi News occasionally but that has become ridiculous now, with more and more spelling mistakes and factual errors creeping in, and dull tests of projectors and the like filling the pages (I was amused to see Andrew Harrison has jumped ship in your direction - wonder who's next?!)

Mind you, their lab reports on the projectors are very entertaining, in a completely indecipherable way - does anyone actually understand them?! Please remember, though - the video stuff may be nice, but you're a hi-fi magazine and so sound should be your first priority, as it is mine and I suspect, most other readers. If you must keep testing Blu ray players, at least tell us how the darn things sound!

Jason Bateman

Thanks for that Jason. There's nothing quite like being reviewed by our readers; it keeps us (me?) on the straight and narrow! Your criticisms are valid I feel; my review of the Sony BDP-S500 didn't adequately cover sound quality, so please accept my apologies. It's a criticism Adam made in the office, that I accepted at the time, so you've echoed our own

I listened to both via the analogue outputs and found them somewhat flat and lifeless - very unengaging, as poor digital can be. I should have said this - and more - but admit to being underwhelmed to the point of somnambulism. It's a bit like listening to a DAB radio and then being asked to comment on its sound quality. Suddenly, watching paint dry becomes interesting.

I have since tested my own Samsung BD-P1400, found its analogue audio meets expected standards (e.g. 96kHz sample rate digital gives audio to 48kHz, CD reaches 21kHz), and there is no jitter, so I will use it as a benchmark in analogue audio listening tests in future. It's hardly fair to use a dedicated CD player, as a Blu-ray player costs the same but offers broader ability; its analogue audio quality will always be secondary to getting video and sound off disc and out through the HDMI output. Sound quality is then determined by the receiver.

Blu-ray players are complex and a comprehensive review must cover video as well as audio. Whilst we are a hi-fi magazine and focus on sound quality, getting the best from a Blu-ray or DVD player also involves getting video setup right, and in the case of the Sony, output was best set to interlaced, as de-interlacing was poorer than that of the Samsung M8 TV I used. Video test discs are the best way of assessing this and the Silicon Optix discs are a cheap and unique way owners can do this at home (or go to the Burosch website and download test patterns). Modern players and TVs possess a large, often



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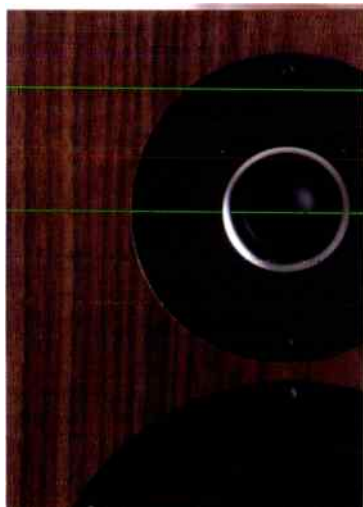
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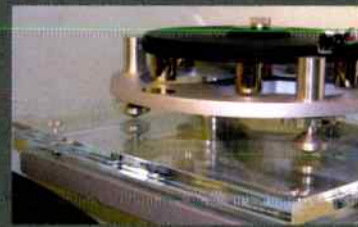
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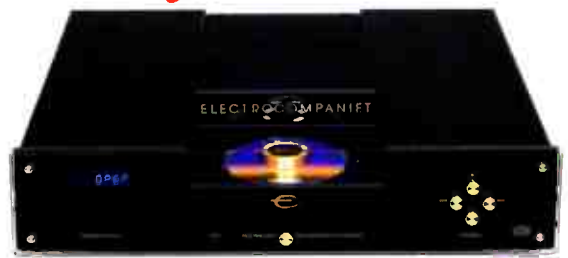
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Vinyl and CD



I have recently been referring to the excellent value AVI ADM19 active speakers (Feb. Issue, Page 122), and they are great value.

At the other extreme however I must refer to the most superb sound I have heard for some time off vinyl, using the SME 10A + Ortofon Rondo Bronze through the Graham Slee Elevator EXP/Gram Amp-1 Bridge, the Electrocompaniet 4.8 pre-amp/ 220

Power Amp via Abbey Road cables into the superb Nola Viper Reference Speakers. The record was a Teldec disc of 'Big Band' music, and having just been to see the 'Nelson Riddle Orchestra' live, it was clear just how 'live' the system sounded. Alright, it's not a cheap system, but it is considerably cheaper than a number of systems recently heard at the 'Bristol Show', which sounded awful.

I constantly wonder what's going on when exhibitors seem incapable of producing a half decent sound using great music. If you really want to hear what can be achieved just give us a call, and come and listen. (I've used a photo of the Electrocompaniet

EMC-1UP CD player, as the amplification doesn't photo as well, but again well worth hearing if CD is your thing!)

V'audio HiFi Consultants

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| Arcam FMJ C31 Pre Amplifier..... | £899.00 |
| Arcam DiVA AVR250 AV Receiver..... | £399.00 |

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| Meridian G51 Receiver..... | £1,299.00 |
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| Denon SCM201 Speakers..... | £39.00 |
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| Primare CD21 CD Player..... | £639.00 |
| Primare I21 Amplifier..... | £599.00 |
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| Yamaha YSP900 Sound Projector..... | £299.00 |

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| Arcam DiVA A90 Amplifier..... | £749.00 |
| Arcam DiVA CD192 CD Player..... | £699.00 |
| Audica CS-Sub 8 Sub Woofer..... | £115.00 |
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| Yamaha DVDS2500 DVD Player..... | £399.00 |
| Rel R505 Sub Woofer..... | £849.00 |
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| Arcam DiVA AVR280 AV Receiver..... | £584.00 |
| Cyrus BV52 Amplifier..... | £549.00 |
| Cyrus CD8X CD Player..... | £649.00 |
| Denon AVR3806 AV Receiver..... | £499.00 |
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| Yamaha RXN600D AV Receiver..... | £299.00 |

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| Arcam Allo Speakers..... | £196.00 |
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| Pioneer DV989 DVD Player..... | £499.00 |
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| Yamaha MCXA10 MusicCAST Client..... | £389.00 |
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| Arcam DiVA CD192 CD Player..... | £584.00 |
| Arcam DiVA DV135 Amplifier..... | £454.00 |
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| M&K Xenon LCR36 Surround Speakers..... | £619.00 |
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| Yamaha DVDS2700 DVD Player..... | £399.00 |
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| Arcam FMJ A32 Amplifier..... | £909.00 |
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| Arcam DiVA AVP700 AV Processor..... | £724.00 |
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| Musical Fidelity X-Flora V8 DAB Tuner..... | £399.00 |
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| Revel S12 Surround Speakers..... | £215.00 |

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| Arcam DiVA A70 Amplifier..... | £344.00 |
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| Arcam DiVA DT91 Tuner..... | £325.00 |
| Arcam DiVA T61 Tuner..... | £159.00 |
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| Spendor S8e Speakers..... | £1,429.00 |
| Spendor C5e Centre Speaker..... | £419.00 |
| Yamaha DVDS2700 DVD Player..... | £499.00 |
| Yamaha MCX1000 MusicCAST Server..... | £1,165.00 |
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| Harman Kardon DVD47 DVD Player..... | £174.00 |
| Harman Kardon HSS500 AV Speaker Package..... | £499.00 |
| KEF KHT Five 2 Model 7 Speakers..... | £399.00 |
| KEF KIT100 System (Inc Stands)..... | £325.00 |
| Lyngdorf CD1 CD Player..... | £974.00 |
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| Arcam DiVA AVR280 AV Receiver..... | £585.00 |
| Arcam DiVA DV135 DVD Player..... | £455.00 |
| Arcam DiVA DV137 DVD Player..... | £585.00 |
| Arcam Solo Movie 5.1 DVD System..... | £1,299.00 |
| Harman Kardon AVR745 AV Receiver..... | £849.00 |
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| Arcam DiVA DV137 DVD Player..... | £899.00 |
| B&W DS7 Surround Speaker..... | £749.00 |
| Denon DVDS770 DVD Player..... | £399.00 |
| Fujitsu P50XTA51EB..... | £1,999.00 |
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| Arcam DiVA AVR300 AV Receiver..... | £665.00 |
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| Acoustic Energy Evo Centre Speaker..... | £74.00 |
| Arcam DiVA A70 Amplifier..... | £264.00 |
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| Meridian G68 Surround Controller..... | £3,249.00 |
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| Spectral PL115 Plasma / LCD TV Stand..... | £324.00 |
| Wharfedale Diamond 9 Centre Speaker..... | £49.00 |

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| Cyberscreen 8ft Motorised Screen..... | £389.00 |
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| Musical Fidelity X-T100 Amplifier..... | £449.00 |
| Onkyo TXSR605 AV Receiver..... | £259.00 |
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| Pioneer DVLX50 DVD Player..... | £325.00 |
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10 AUDIO REVIEW

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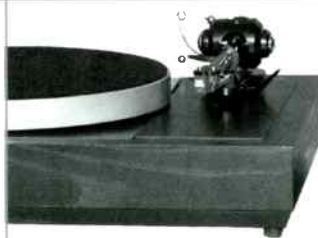
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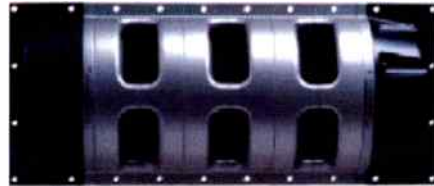
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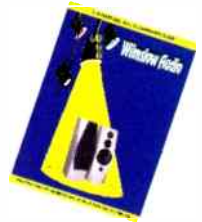


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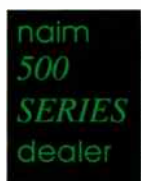
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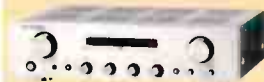
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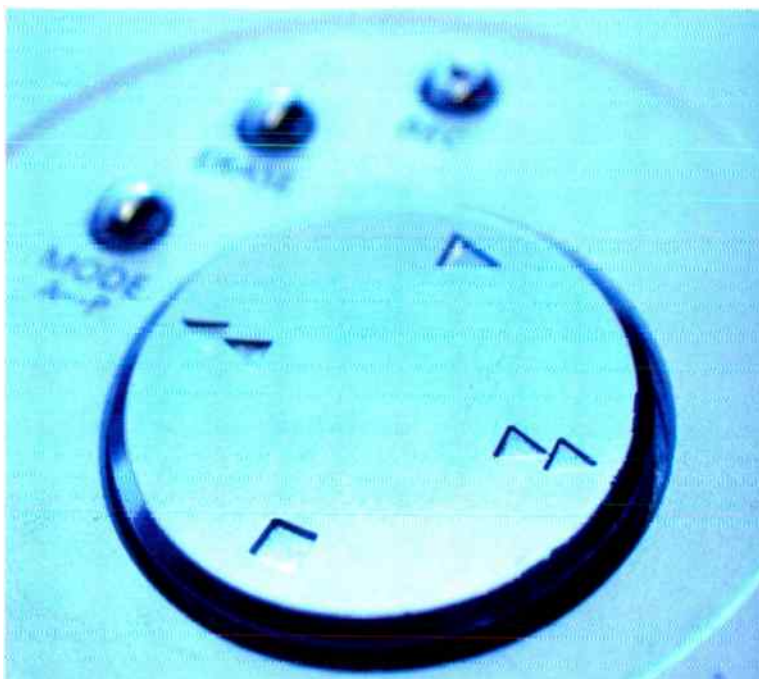
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WANTED: AUDIOLAB 8000 power amp, Serial Number E or F only. Manual, boxed, in excellent condition. Wanted: Chord Odyssey 2 speaker cable, 2x3 metre, silicon outer jacket. Wanted: PMC DBI speaker wallbrackets. Tel: 01234 302 769 or 07840 428 253

47 LABORATORY Gaincard amplifier, 2x25w, excellent condition, sparingly used, £1500. JT Horn loudspeaker cabinets. 120cm, 28.5, 51, height, W, D, light oak, very good condition, £400. Ideal with Lowther DX3/EX3. Tel: 01373 301 423

HUGE SPEAKERS, RRR FS100, 1,230mm tall, 43.5 Kg, three months old, boxed, £750. See Hi-Fi World review November 2007. Tel: 01962 713 517 (Winchester)

CAMBRIDGE AZUR v2 640T DAB/FM tuner with remote, as new, £75. NAD 116 full feature preamp with MM/MC and remote £100. NAD 910 surround preamp with remote £75. Tel: 01344 454 504 (Bracknell)

RUARK SABRE III loudspeakers. Rich walnut veneer. Superb condition. Boxed as new. Lively and detailed. HFC and WHF best buy. Can demonstrate. £500. 01970 615 386 (Wales) Please leave message.

CLASSE CAPI 51 220wrms (£2100) £650. Kef Cherry floorstanders £150. NAD 3020/4020A £100. Denon TU260L II £40. Pioneer A110 amp £50. DV565A £50. Rotel RT950BX AM/FM £75. Quad 99 pre/ESL63s POA. Wanted IMF. Tel: Jim 01206 510 392 or 07880 983 630

SLATE AUDIO Garrard 401 marble plinth, SME IV, glass mat. Bought direct from Slate Audio. Pristine, immaculate. True classic. Superb for serious vinyl audiophile. £1500. Tel: 020 7263 5702 after 7pm

AUDION SILVER Night 300B monoblock. One owner. One line input volume control. Cost £1995. £900 or nearest offer. Tel: 020 7263 5702 after 7pm

CAMBRIDGE DVD79 DVD player, Cambridge Azur 540R-S AV Receiver, Gale 3050 mid speaker, Gale Active sub woofer Storm 10, Assorted cables £250 the lot. Exeter area. slest@glamchick.eclipse.co.uk

VINYL LP's Wanted: Rock: Folk : Jazz : Soul : Reggae : Blues: Classical : Memorabilia. Must be in Excellent condition. www.tantrel.com tantrel@bigfoot.com 0845 0941997

KIMBER 4 T.C. speaker cable, 2 lengths 7mtr's & 4 mtr's terminated. £100-00. 2 Busch horn speakers + fostex f.e.103e drivers, stunning sound. Pro build £450. phone 01902 764747

ROKSAN KANDY MK111 CD Player (black) boxed, mint. Approx three and a half years old. £350 Including shipping. With chord silver interconnects. cmillward@toucansurf.com/01215202029.

ORACLE CD 1500 CD player, excellent condition (two small marks on lacquer), very rare, see review at sixmoons.com, gorgeous looks and sound, boxed, (£5000) will accept £2275. tele-01604 584630.

TEAC AL700P Tripath power amp. Contains 2 x 30w stereo boards £135 tel:07990954304 spharrison@lineone.net

I'M LOOKING for one B&W DW200/4 8" bextrene woofer for my DM4 speaker. If somebody has one, please call me on 0208773111, afternoon, or email me on zlatzky@freemail.hu, thanks, Tamas Zlatzky

LINN KINOS/DSP AV processor £3,750; Linn Unidisk 2.1 £2,750; Linn AV5125 amp £975, ALL in black/mint condition & boxed e.mail for photos & details: phull_j@sky.com

B&W DM2a loudspeakers, good condition and fully working £45 ono. Spare drive units for above, plenty available, offers. Musical fidelity Electra E50 tuner, great condition boxed with manual £40 ono. Denon TU600L tuner good condition boxed with manual £15. Townshend Avalon turn table, no arm fair condition, £45. contact Nigel on 0777 3034245 (Wiltshire)

AVI NEUTRON speakers, Rosewood finish, brand new boxed £350, Musical Fidelity KW250S brand new boxed £1500 Tel 01355 264586 e mail robct@blueyonder.co.uk

KELLY KT3 Floorstanding speakers. Manufactured by Musical Fidelity. Good condition. Some minor scratches. Book & accessories. (£1200 new). £250 ono. Tel: 07775 903192. (Putney)

HAFNER FIVE hundred Power Amplifier (\$750 Negotiable) & pure Class A Series 915 Pre-Amp (\$300 Negotiable). For both , the price is \$1000. (Used) Location : Johor, Malaysia. Condition : Good. For More Info : Pls Contact +6012-7366536 (Azwan) Or email at kurosaki_sena@hotmail.com

CREEK A50i Integrated Amp, silver, near mint, 50watt, £275 ono. Monitor Audio RS1 speakers in rosenut, mint, £250 ono. Can demo, call Geoff: 0161 6102874, Manchester.

EPOS ES14s Original Speakers on Heybrook Stands (£160). Sony TCK 520 Cassette Deck (£25). Both Items Mint Condition. Tel 07876-597406

MUSICAL FIDELITY MVT + P170 pre/power amps c/w power supply £349. Celestion SL.600 speakers £299. Atacama R724 megastands £99. All boxed, excellent condition. Various Chord, NACA4 interconnects/cables offers. Tel: Martin on 01984 640588 (Somerset)

LOWTHER DX2 speakers with new phase plug, mint condition, £200-00. Tel: 01439771771 (York)

WANTED: AUDIOLAB 8000p or px power amp E.or.F serial number only manual boxed. Wanted Chord Odyssey 2. speaker cable 2x3mt with silicon outer jacket chord plugs. Wanted PMC DBI speaker wallbrackets. Phone Paul on 01234 302769 or 07840 428253

MERIDIAN GO8 CD player, silver, perfect sound & condition. Will audition. £1195, Tony 07831 500338. West Sussex

NAIM AUDIO 72 preamp with 323phono boards £275 immaculate/boxed(olive). SBL speakers, black with passive crossovers £450. Excellent condition /boxed. Upgrade forces sale. Tel. Andrew 07970078653 (Worksop).

PIONEER SX-1250 Receiver vgc. Best offer from £250, <http://www.silverpioneer.netfirms.com/SX-1250.htm>, 02476 276666; Coventry; or P6Blueslover@aol.com

WANTED: Top quality Hi Fi separates and complete systems, Naim, Linn, Cyrus, Meridian, Arcam etc, fast, friendly response and willing to travel/pay cash. Please call me on 0781 5892458

KRELL FPB60 power amp £4000. Audiomeca Mephisto Mk1 CD transport £999. Jeff Rowland Model 5 power amp £1500. Audiosynthesis DAX Decade DA Converter £1500 -mint/new. Prana Cosmos balanced interconnects 2 metre £1895 - mint/new. Tel Bob 01386 446134

SUGDEN A21aL class A Amp, excellent condition, factory serviced, original packing, £525 , tel: (01403) 255153 (West Sussex) or email: richermail@aol.com

QUICKSILVER MONOBLOCKS for Sale. 60W / ch. Battleship Build, Hard Wired, Outputs for 4,8,16 Ohm. £700 ono. Contact: ewancameronscott@hotmail.co.uk or phone 07739529287.

ELECTRONICS HOBBYIST requires for project a faulty or non working Quad 34 or 44 preamp. Also required a stereo decoder board for a Quad FM2 tuner or scrap tuner. Contact Mike on 01758 613790 with price.

LEAK 2075 transmission-line speakers for sale, big 4 way design, 50kg each, very detailed sound, vgc for year £425 ono, 01903 231172, Worthing, West Sussex

ROGERS LS5/8. Pair in satin black. Currently used with Beringer crossover and Amcron amps. £1,500.00. without amps £750.00. Can demo, pictures to email Tel Julian 01246 275479

EASTERN ELECTRIC Minimax phono new (£1200) £795, Hyperion HPS 938UK (£4000) £2495 as new, Almarro A318B Japanese SET with optional cage (£2300) £1650, Trichord 3 box CD VGC (£2700) £1350, Gamma Epoch RefV (£4000) £1200. Sonus Faber Electa +stands £1350 mint, lan 07790 492241, 01629 485328, ian@escrader.com

HOME CINEMA system. Denon 2803 amp. Kef 2005.2 speaker system on stands. All leads included. Hardly used. Can be heard working. £400. Tel: 01754 871682. (linc

BANG AND OLUFSEN P30 speakers, £50. Mordaunt Short MS235 speakers £50. Both can be demonstrated. Photographs and serial numbers available. Mr Petch 01302 772495 or e-mail a.petch@kostal.com

FOR SALE: 2x Axis 9 Numark CD decks, 1x Numark Matrix 3 mixer, 2x Numark M80 speakers, 1x semi-hard equipment case, Cables/instruction manual included. Perfect condition. Virtually unused. Can be sold separately. More information/Pictures Call 07841663001

TRANSPARENT REFERENCE Digital cable (AES/EBU) balanced. One metre long, boxed, mint. Cost £1100, will accept £399 - no offer. Only few months old, surplus to requirements. Please call Bob 01386 446134

WANTED: JVC 4-CH Memory Level Meter MM-4 www.quadmastersound@yahoo.de

ROGERS RD Cadet 2 stereo control unit with valve power amplifier. Spare valves vgc. Rogers Ravenbrook stereo tuner, vgc. Manchester area. £180 ono. Tel 0161 728 1309

MUSICAL FIDELITY XDac V3 with PSU v3 also Cyrus CDX Transport just 12 months old boxed and in excellent condition very little use nine hundred pounds tel 07967122765

GARRARD 401 Transcription Turntable; 1970's, serial No 07108. Excellent condition and working order, completely original with manual and inspection report. Stored since 1986, so low 'mileage'. £300 ono Bedfordshire 01525405290

ARCAM 9P poweramp ,good condition, boxed £225.00 ono Tel: Cleethorpes 01472 603399 and ask for Paul

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VRR ADUR valve monoblocks choke smoothed 20w x2 spare valves (5b255m) £300 Pioneer DV09 region 1 £250 SME 3009 S2 imp £130 West Sussex 07999784728

NAIM HI-CAP 2, latest spec. £550. Tel: 07530 581 717

KIMBER KABLE 8TC 4.5 metre pair for sale. £250. Tel: Steve 07745 450 581

GUIDELINES FOR BUYING AND SELLING SECOND-HAND EQUIPMENT

FOR THE BUYER

1. Not everyone is honest - Buyer Beware!
2. Don't send cash!
3. Accept no verbal guarantees.
4. Have you heard the item or something similar? If not, why do you want it?
5. Don't pretend to have knowledge - it's your fingers that will get burnt!
6. Is it working? If not, why not? Can it be repaired and if so is it worth it?
7. Has it been modified and, if so, have notes been kept?
8. Was it any good in the first place?
9. Don't send cash!
10. If you are in the slightest doubt, arrange an audition (see point 5) If it's too far, wait for another time.
11. Either buy it or don't: vendors are excusably impatient with 'consultation' exercises.
12. Don't send cash!

FOR THE SELLER

1. Not everyone is honest - Seller Beware!
2. Make no verbal guarantees.
3. Even 'nearly new' is still second-hand. If the manufacturer's guarantee is no longer in force, your price should reflect this.
4. There is very little intrinsic value in second-hand hi-fi; it's only worth what someone will pay for it.
5. The best guide to pricing is last month's Classifieds: that a 'classic' was worth £xxx a year or two ago is no guide. Values fall as well as rise.
6. Amateur second-hand dealing is not a big money game: you win some, you lose some.
7. Be prompt with despatch. If in doubt about buyer's bona-fides, either wash out the deal or send C.O.D.
8. There will always be time-wasters; be tolerant within reason!



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WDKEL84 Valve Amplifier Kit

"The quality that can be gleaned from this amp is a fine introduction to the joys of the valve sound"

The WDKEL84 features a pair of EL84 valves in Push Pull configuration per channel, providing two channels each 18 Watts into an 8 Ohm load. Described by users as a 'Giant Killer' this kit is available as a 5 input integrated amplifier with ALPS volume control.

WDKEL84 kit £449

WDKEL84 built & tested £599



WD88VA Valve Amplifier Kit

"It proved itself to be an engaging valve amplifier that measured well and sounded superb. Quite simply it plays music, and plays it extremely well."

Adam Smith, Hi-Fi World Dec 06

Often described as a 'sweet sounding' valve, our implementation of the KT88 makes sure that it is driven to its ultimate performance. Available as a 35W stereo power amplifier with single input volume control, or as a relay switched integrated with five inputs.

WD88VA Integrated Amp kit £949

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WDHD3 Headphone Valve Amplifier Kit

"Headphone 3 is a single-ended design with the power pentode wired up in triode configuration for added purity and is as quiet as a mouse"

A beautifully simple stereo headphone amplifier design using Mullard ECL83 valves. It works directly from any source. The circuit uses twin high specification E/1 output transformers that can be wired to drive any headphones between 16 to 300 Ohms.

WDHD3S kit £349

WDHD3S built & tested £479



WDPre3 Modular Preamplifier System

"So there we have it, a pre-amplifier capable of driving any load and maintaining its linearity no matter what cables or partnering equipment you prefer to use."

This 5 input line level preamp is essentially an SE triode power amplifier in concept. WDPre3 uses an ECC82 double triode arranged as input voltage amplifier and power output amplifier stages, the latter driving oversized 20:1 output transformers.

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CHAPTER TWO plus power amp. Worlds best. Boxed and manuals. (£5500) £2295. Densen B100 integrated amp. £350. Densen B300 power amp. £550. Atlas Elektra interconnects. Target R2 speaker stands. Tel: 07973 189 538 (London)

SPARE QUAD 99 remote control, £25. Spare Primare CD110 remote control, £25. Both in mint condition. Tel: 023 8073 8935

E.A.R. 869 single ended 15 watt valve amp. Very good condition. £800 ono. Tel: 01903 506 479

MISSION 700s speakers, teak finish. 100w handling. Very good condition. £25. Also many Decca Phase Four records from the Seventies. Mostly classical. All excellent. Phone for list. Tel: 0208 505 5311

B&W DM7 Mk1 loudspeakers £75. Lumley Reference LV1 pre-amp £250. Mullards just fitted. Both in good condition. Phone 0191 417 1669 after 6pm or 07956 236 764

WM-D6C PROFESSIONAL Sony Walkman Cassette, original operating instructions and leather case, little used but battery compartment corrosion may explain why not working and just £50 ono rob@aldermanassociates.com (NW London)

MUSICAL FIDELITY A5 CD player as new not yet run in. Going over to vinyl. £900 no offers. Tel: Ken Coffey 01268 415 017 (Basildon)

GOOD CONDITION Sony tuner ST9267 £70. DVD Sony CDP313 £60. Sony amplifier TAF246 £89. B&W speakers DM602 £180. Tel: 01753 825 424

M & K V-125 12" Sub £300. Rotel 965 BX Discrete CD player £75. Leak Stereo 30+ amp £50. Rose RV23s valve pre-amp, MM-MC phono £425. Quad FM4, grey, phono, boxed £200. Tel: 01722 334 691 (Salisbury)

CYRUS PRE X £400. Cyrus CD7Q £400. Cyrus PSX-R £230. Epos ES22 speakers £300. Musical Fidelity A3.2CR power amp £425. Tel: 01977 609 839 (Pontefract area)

AIWA AD150 'Ski Slope' cassette recorder. Dolby system. Requires belts, otherwise good. £30 + postage. Foundation stands, black with a set of eight perfect feet, £40. Buyer collects. Tel: 01453 546 191 (Gloucs)

KT88 SINGLE Ended valve integrated amplifier, boxed, still under guarantee, £575. Quicksilver valve monoblocks, new Mullard EL34's, Croft upgraded, £850. Conrad Johnson PV12 preamp, immaculate, boxed, £750. Tel: Stanley 07951 553 091 (London)

MUSICAL FIDELITY A1 mint, manual, can demo, £210 ono. Technics SL1210 Mk2, Linn LVX, professionally installed, mint, £210 ono. DBX IBX as new, £50. Tel: 01782 205 922 or 07794 732 840 (Cash on collection - Staffordshire)

CAMBRIDGE AZUR 640 V2 CD player £125. Cambridge Azur 640 amp £125. Both v.g.c. Would P/X for Quad 405 or Musical Fidelity 3.2CR power amp. Tel: 01277 219 639 (Essex)

THORENS TD160 BC Super SME 3009 Shure V15, mint condition, original box and manual. Any trial. £250. Tel: 01455 220 214 (Coventry)

DNM RESON Mica MM cartridge, worn stylus, offers please. Tel: 01904 422 127

E.A.R. HP4 headphone amplifier, magnificent. (£2500) £1100. Tel: 01752 773 369

THIRTY TWO Hi-Fi current magazines for sale. Buyer collects. £20. No offers. Ring after 6pm. Bill 01268 767 841 (Wickford, Essex)

WANTED: SPENDOR SP2 Mk1 or Mk2. Tel: Toni 07971 953 628

MERIDIAN GO8 CD player, silver, perfect sound & condition. Will audition. £1195, Tony 07831 500338. West Sussex

CLASSIC CONTACTS

When a classic goes 'poof' your troubles have just started, but there may be a good ending. Replacing failing parts can improve the sound, so here is a short listing of all those companies who specialise in getting a classic up and running again after its deposited a small ring of soot on your ceiling!

CLASSIQUE SOUNDS
(Paul Greenfield, Leicester)
ESL-57s restored, rebuilt, fully renovated or improved. Leak. Quad valves amps etc.
Tel: 0845 123 5137 / Mob: 0116 2835821 Email: classique_sounds@yahoo.co.uk www.flashbacksales.co.uk/classique

GT AUDIO
(Graham Tricker, Bucks)
Leak Troughline specialists. Also Quad and most classic tuners, radios and amplifiers restored, repaired.
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TECHNICAL AND GENERAL
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AUDIOLAB
(Phil Pimblott, Leeds)
Renovation, repair and restoration. Specialist in valve hi-fi, radio transmitters, cinema amps, kit building.
Tel: 0113 244 0378 www.audio_labs.co.uk

QUAD ELECTROACOUSTICS
(Cambs)
Quad's service department. able to repair almost all Quad products, from the very first.
Tel: 0845 4580011 www.quad-hifi.co.uk

ARKLESS ELECTRONICS
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SOWTER TRANSFORMERS
(Brian Sowter, Ipswich)
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EXPERT STYLUS COMPANY
(Wyndham Hodgson, Surrey)
Stylus replacement service for all types of cartridge, including precise profiling for 78s
Tel: 01372 276604 Email: w.hodgson@btclick.com

Dr MARTIN BASTIN
(Shropshire)
Garrard 301/401 restoration, renovation and service. Special plinths; rumble cures, etc.
Tel: 01584 823446

ONE THING
(Coventry)
Specialist in electrostatic panel manufacture and repair. Can refurbish ESL 57s and 63s as well as Leak Troughlines and Quad IIs.
Email: one.thing@ntlworld.com www.onethingaudio.com

DK LOUDSPEAKER SERVICE
(Dave Smith, Hornchurch, Essex)
Re-cone of hi-fi loudspeakers, high quality loudspeaker systems, PA., power loudspeakers.
Tel/Fax: 01708 447 344

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Tel: 0117 925 6015 www.octave-aw.co.uk

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NEXT MONTH

August's Hi-Fi World is a sweltering mix of red hot hi-fi! Along with great new products (including Naim's Superline phono stage, Townshend's Rock V and Avid Diva turntables, and Arcam's A38 amplifier), we're running something of a radio theme. We test all the latest tuners of both analogue and digital varieties, take an in-depth look at internet radio and examine the prospect of HD radio via the new Freesat system. Then, to help you while away those hours on the beach, there's a light hearted look at the weirdest things we've seen in past year – in the shape of our annual Golden Globie Awards. Here's just some of what we hope to bring you...



AVID DIVA TURNTABLE
PIONEER PD-D9 CD PLAYER
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NAIM SUPERLINE PHONO STAGE
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EMILLE LABS KPE-2AS PHONOSTAGE
ARCAM A-38 INTEGRATED AMPLIFIER
YAMAHA DSP-AX863SE A/V AMPLIFIER
MORDAUNT SHORT MEZZO 2 LOUDSPEAKERS
LEEMA PULSE & MOON EQUINOX CD PLAYERS
AMPHION ION & ROGERS LS3/5a MINI MONITORS
OLDE WORLDE: FIDELITY RESEARCH FR64fx TONEARM
THE GLOBIES – THE ALTERNATIVE *HI-FI WORLD* AWARDS

SUPERTEST: AUDIO ANALOGUE PRIMO VT, CREEK EVOLUTION,
PIONEER F-F6-J, ROKSAN KANDY 3 & ROTEL RT-06 TUNERS

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THE RUBBLE COLLECTION

VOLUMES 1-10 AND 11-20

2008

A conglomeration of rare psych and freakbeat records from the nineteen sixties, featuring often obscure bands such as The Mirror, The Orange Seaweed and The Kytes, this interesting new release also includes names who would move to stardom such as The Pretty Things and the Spencer Davis Group. The series was originally conceived and compiled by Phil Smee, who sold the titles under his own Bam Caruso record label, from 1984 to 2002. Its Rubble moniker follows a proud mineral aggregate series of unrelated titles whose only theme was the type of music they contained. 'Rubble' was influenced by the famous 'Nuggets' album of yore and Rubble itself, then influenced other independent collections under names such as 'Pebbles' and 'Boulders'!

Bam Caruso was eventually wound down and sold to UK record label Cherry Red. The 'Rubble' masters were separately sold to another label called Past & Present. "They then sold the Rubble collection, along with many other titles on their catalogue to a company called Alchemy, who got into financial difficulty," explained Fallout MD, Steven Carr. "I knew the owner. He literally just rang me up and said, 'Do you want to buy them?' My former partner and I bought the collection in around 2005."

Why wait so long until the current release? "Well, I suppose it was just a case of getting around to it, really. Apart from that, we wanted to make sure that there was some pent-up demand. We're also looking to publish the entire set on vinyl.

In fact, we've got the first two albums in production right now. We will be producing each album, which will be self-contained, as a gatefold and putting liner notes inside. They will be published as numbered limited editions of 1,000 on 180gm vinyl," said Carr.

"We completely rewrote the liners for those volumes. I commissioned the author (and curator of the Sunbeam record label), Richard Morton Jack. He went back to basics. The original liner notes, written by Phil Smee, were terse or factually inaccurate. So, we took a view on that. We didn't just want to do it again, as it was before, because technology has moved on. Richard took on the job and painstakingly researched every single band. He also has a huge collection of 1960s record papers such as the NME, Record Mirror and so on. Running through those, he found some rare band pictures, hence the accompanying information is bang up to date."

How about the music itself? Well, to begin with, dispel any thoughts you might have that all of this music (well over 300 tracks in total, on twenty CDs) was originally sourced from master tape. The records featured on these tapes are rare examples of psych/freakbeat and, as such, were often produced in very limited numbers via obscure record labels. Labels who sometimes arrived on the scene in a flash and left just as quickly with absolutely no consideration for the potential tape-based treasure they held. Hence, the original sources for these tracks,

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obtained by Bam Caruso, have been taken from rare and often very expensive 7" singles from nervous collectors via a flat transfer, posted from the same.

Fallout, therefore, received the resultant masters as digital transfers. They were then passed, for final mastering, by Dave Blackman, in London. "He does all our mastering," explained Carr. "He took the originals and tweaked the EQ a little. You will find however, that the vinyl editions will produce a natural warming of the sound."

Inserting a series of CDs, from the box sets, for a listen was initially accompanied with trepidation. I wasn't sure what to expect. While I was not faced with an audiophile signal I was pleasantly surprised because the final production wasn't half bad. Yes, some of the tracks were strangled by compression but so would the original source have been, some appeared to have been created while the engineer was reading the newspaper and drinking a coffee but again, that was due to the original recording techniques and then there's the inherent distortion created by the 7" format itself. However, as far as the CD transfer is concerned, Fallout has done a good job. The recordings are clean and eminently listenable – and what's most important is that this music exists at all. As a historical record, the Rubble sets are invaluable and, for anyone even slightly interested in this genre, are highly recommended. **PR**

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