

JULY 2009 | VOLUME 15 | ISSUE 7

ProAudio Review

The Review Resource for Sound Professionals

Hot Gear At InfoComm

PAR Product Picks
Innovations For Audio Installations

House-of-Worship Audio

What Is Truly Essential?
Budgeting & Buying In '09

INSIDE:

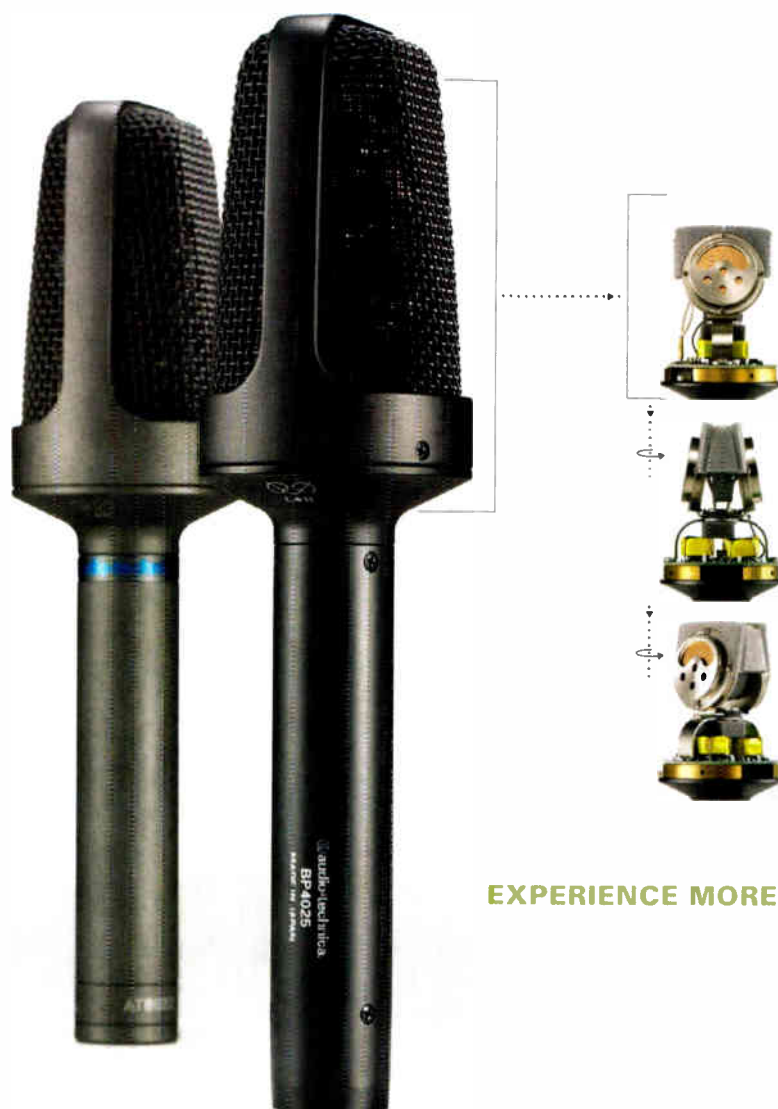
• **IN USE:**
FMR Audio PBC-6A

• **SINGLE SLICE:**
Jenni Muldaur's
"I've Got a Feelin'"



COMPACT STUDIO MONITOR + SUB SYSTEMS

Dynaudio, Focal, Genelec, Klein + Hummel & KRK
Plus *PAR* Bench Tests



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- Innovative coincident capsule configuration for X/Y stereo image in a compact housing
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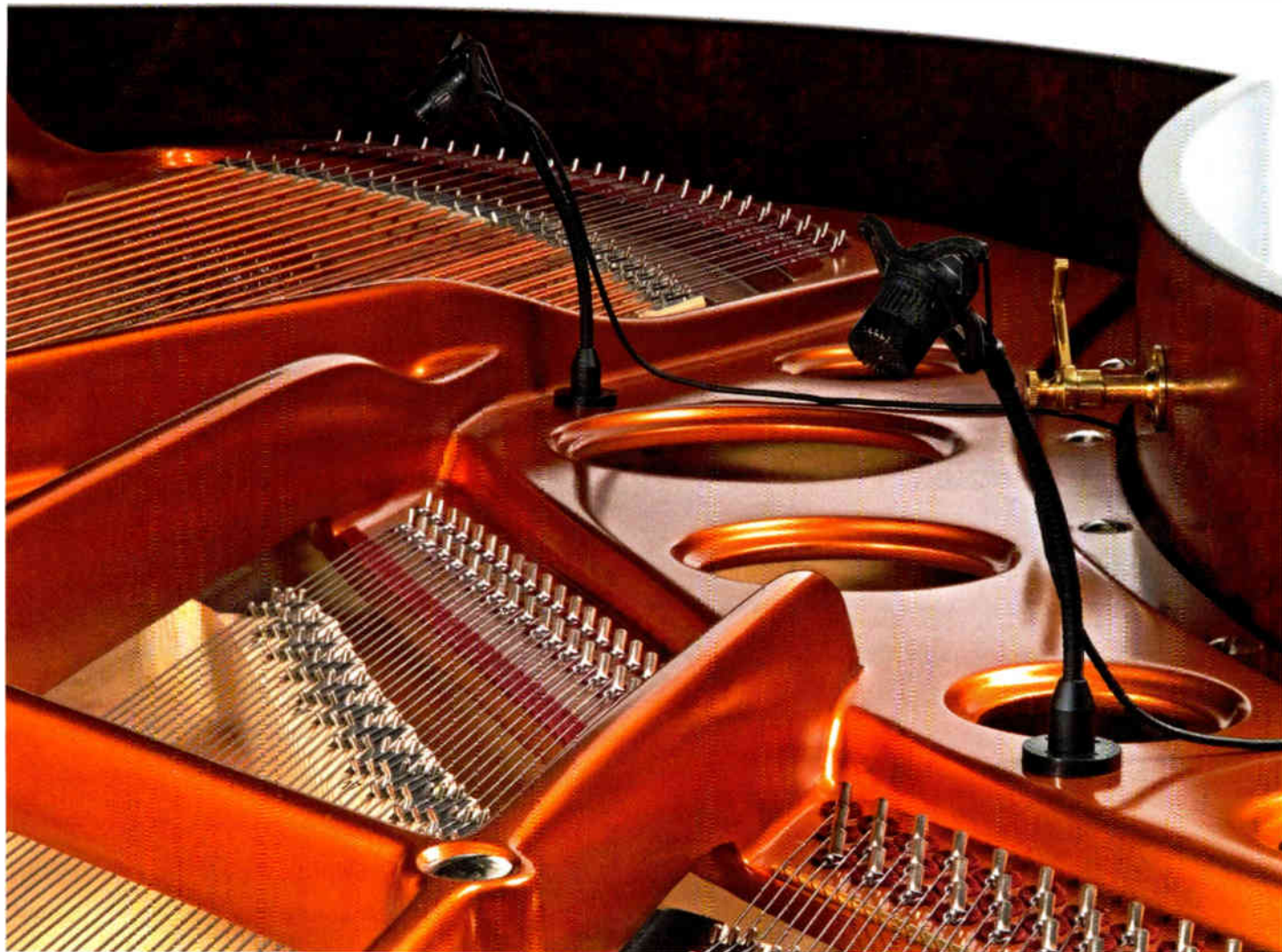
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DPA 3521

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DPA 
M I C R O P H O N E S

Studio

Covering Recording, Broadcast Production, and Post Production

New Studio Products 8

Cover Story 20

PAR Session Trial: Compact Studio Monitor and Subwoofer Systems with Dynaudio, Focal, Genelec, Klein + Hummel, and KRK
by Rob Tavaglione

Bench Test 25

PAR Session Trial nearfield monitors
by Frank Wells

Review 28

KRK ERGO Studio Monitor Room Processor
by Randy Poole with Dustin Lefholz

Review, Second Opinion, & Bench Test 30

Event Opal Bi-Amplified Studio Monitor
by Ty Ford and Frank Wells

Review 32

FMR Audio PBC-6A Non-Linear Compression Amplifier
by Strother Bullins

Sound Reinforcement

Covering Live Sound, Contracting, and Installed Sound

Hot Gear from InfoComm 34

Review 40

Bose L1 Model II Portable PA System
by Rich Tozzoli

34



Departments

Technically Speaking 6

The Objective vs. the Subjective
by Frank Wells

Opinion: Studio Sense 18

Online Pro Audio References
by Lynn Fuston

Opinion: Worship Audio 38

What Is Truly Essential?
by Dan Wothke

PAR Contributor Of The Month 29

Randy Poole
by the *PAR* Editorial Staff

Single Slice 42

Jenni Muldaur's "I've Got A Feelin'"
by Christopher Walsh

28



14



30



34



8



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The Objective vs. The Subjective



Starting with the second-ever issue of *Pro Audio Review*, I contributed reviews and bench tests to the magazine before taking a different path for over a decade; now I've come full circle. I've maintained access to sophisticated test equipment from Audio Precision and Prism Sound over those years, digging into the performance of gear through the capabilities of these diagnostic tools, charting the performance of ever more neutral gear as well as learning to quantify the traits of "gear of character" to develop some sense of the aspects of sonic performance that

engineers describe in terms of tone and color. Analyzing the performance of, say, a microphone preamplifier or an A/D converter is relatively straightforward; a battery of standard tests quantify distortion, linearity, frequency response, and other behavior to yield a objective picture of performance.

Measuring and analyzing the performance of loudspeakers is a whole different game. In general, loudspeaker behavior can't be considered in isolation, as transducers interact with their environment, that environment affecting the results yielded when applying the same tests to loudspeakers as used for devices that have electrical inputs and outputs. After Rob Tavaglione performed his one-engineer's-application evaluations of the speaker systems in this month's Session Trial, I received one each of the monitors in the trial while their mates went off for photography.

The measurements done for the bench test accompanying Rob's evaluation included a range of tests (conventional distortion, tone sweeps, multi-tone, and noise analysis) that can all be affected by the monitoring environment. The test microphone and pre-amplifier become a part of the test results. Without the benefit of one of the most expensive tools in loudspeaker testing — an anechoic chamber — these tests do not remove the environment from the testing, but can still provide a measure for relative analysis, letting us discuss how the loudspeakers perform compared to one another in a similar environment.

Technological advancement has helped in one significant way that does minimize the effect of the loudspeaker's environment when testing transducers. By using FFT analysis, and windowing the results of a fast stimulus/measurement procedure in time, the test can look at just the primary stimulus/response and ignore the portions of the response that come from the listening environment (room reflections). Proven mathematical algorithms built into the test software — in this case, Prism's dScope III — are then used to derive the frequency response yielding, in effect, an impulse response derived measurement without the difficulty of performing classic impulse response testing.

While, if I were a loudspeaker manufacturer, I'd still want lab conditions and an anechoic chamber to develop the data for published specifications, this exercise in relative measurement did provide a basis for comparison that is complementary to the purely subjective listening tests. We at *PAR* will be interested in hearing your subjective responses to our efforts in objective as well as subjective gear evaluation.

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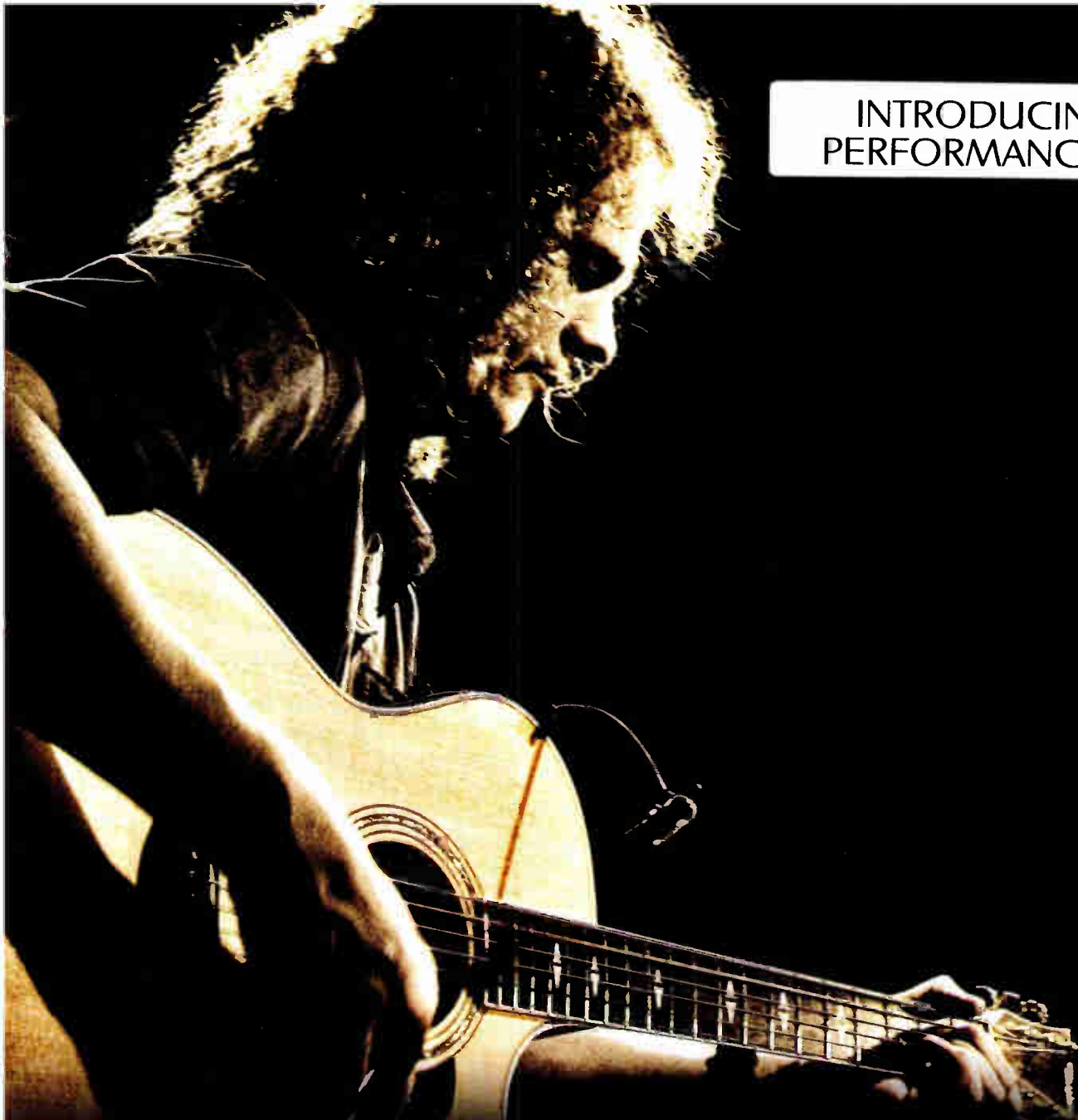
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World Radio History

new studio products



Apogee ONE USB Interface/Mic

Apogee Electronics has introduced ONE a pocket sized portable music interface and microphone for Mac. ONE is a single-input, stereo output USB music interface designed to work with Apple's iTunes, GarageBand, Logic, Final Cut or any Core Audio-compliant application on a Mac.

ONE features an internal reference condenser microphone and also includes a microphone preamp with XLR input and software-selectable 48V phantom power; an instrument input for guitar, bass, and keyboards (1/4-inch high-impedance input); line-level stereo output (1/8-inch jack) for headphones or unbalanced powered monitors; 24-bit, 44.1/48 kHz A/D and D/A conversion; and Apogee Maestro software.

Price: \$249

Contact: Apogee Electronics | www.apogeedigital.com/one



Euphonix EuCon for MOTU DP

Euphonix offers a new release of software Version 1.4.1 for the MC Pro and System 5-MC DAW controllers, adding new features and including support for MOTU's Digital Performer 6, the latest DAW software application to include full EuCon protocol for integration with Euphonix controllers.

The software also includes Vista operating system compatibility together with updated support for Pro Tools 8 and Pyramix version 6.1.3 via EuCon. This high-speed Ethernet control protocol directly connects Euphonix professional control surfaces to EuCon-enabled Mac OSX and Windows/Vista applications. EuCon also transports a high-speed version of HUI and Mackie Control protocol for connectivity to applications such as Pro Tools and Final Cut Pro.

Price: Free Upgrade

Contact: Euphonix | www.euphonix.com

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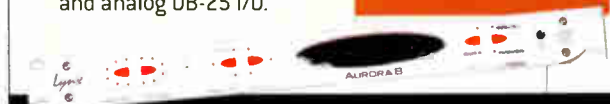
GODR

Lynx Aurora LT-FW 8 Plus Interface Bundle

Lynx is now offering the Aurora 8 plus the LT-FW FireWire interface, a bundled package with a value of \$2,790 for just \$2,295 list (a savings of \$495). Lynx installs and tests the LT-FW in Aurora 8 at its Costa Mesa, CA factory; thus, this product is "a true plug-and-play system for your FireWire 400 or FireWire 800 equipped computer," explains the company.

Features of the Aurora include simultaneous 8-channel analog I/O and 8-channel AES/EBU I/O; 24-bit/192 kHz "Mastering quality" A/D-D/A conversion; 192 kHz AES/EBU I/O, supporting single and dual wire modes; onboard 32-channel digital mixer; word clock I/O with Lynx SynchroLock sample clock technology; and digital and analog DB-25 I/O.

Price: \$2,295 list
Contact: Lynx Studio
Technology |
www.lynxstudio.com



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new studio products



Universal Audio Accelerator Card

UA Universal Audio has expanded its UAD platform to laptop users with the release of the UAD-2 SOLO/Laptop, a compact ExpressCard-based DSP Accelerator. The UAD-2 SOLO/Laptop brings Universal Audio's emulations to laptop users for Cubase, Logic, Digital Performer, or Pro Tools DAWs.

The UAD-2 SOLO/Laptop allows access to the full UAD Powered Plug-Ins library without the need for external cabling or power. Like all UAD-2 hardware, the SOLO/Laptop supports VST, AU, and RTAS plug-in formats on both Mac and PC.

Price: \$499 list

Contact: Universal Audio | www.uaudio.com



Rode Blimp Suspension Windshield

Already an ideal choice for shock mounting and wind protection of location microphones, Rode has made its Blimp even more attractive by announcing its full 10-year warranty. The warranty covers all components of the Blimp, excluding normal wear and tear of the "Dead Wombat" furry windshield or any misuse.

Blimp is a complete windshield and shock-mounting accessory for Rode NTG-1, NTG-2, and NTG-3 microphones as well as any third-party shotgun microphone up to up to 12.75 inches in length. It includes an adjustable dual hoop suspension system and attaches to a boompole via 3/8-inch thread attachment at the base.

Price: \$399 list

Contact: Rode Microphones | www.rodemic.com/blimp



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new studio products

PreSonus 64-bit FireStudio Drivers

PreSonus has released new Universal Control Version 1.11 software. The installer for this release includes three major components; the first component consists of new 32- and 64-bit drivers for all PreSonus FireStudio-series audio interfaces and the StudioLive 16.4.2 digital mixer. With the new drivers installed, these interfaces now reportedly work correctly under 64-bit Windows XP and Vista and will support 64-bit operation in Mac OS X 10.5 and later.

The second component of the installer is the new Universal Control software, replacing older FireStudio control panels to provide access to the internal features of all FireStudio-family interfaces and the StudioLive 16.4.2 digital mixer. Universal Control consists of two windows: the Launch window and the Device window. In the Launch window, users can set the sample rate, clock source, safe mode, buffer size (PC only), and WDM routing (PC only) for all connected FireStudio-series interfaces. The Device window provides level and routing controls for each FireStudio series interface's internal mixer, enabling configuration of zero-latency monitor mixes.

Price: Free Download

Contact: PreSonus | www.presonus.com/technical-support/downloads/drivers-software/



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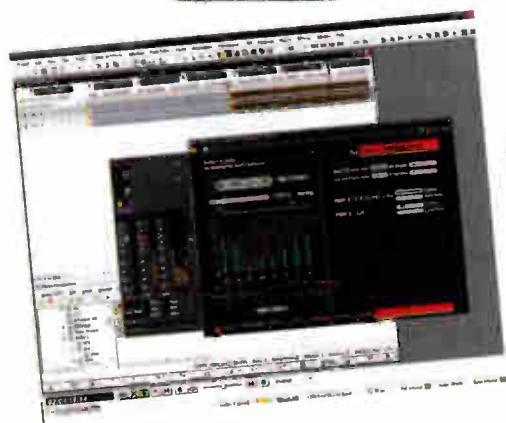


- V 14 4 band VPR format eq
- R 20 2 channel mic pre
- R 24 2 channel 4 band eq

ARSENAL AUDIO
by API

www.arsenalaudio.com

new studio products



McDSP Retro Recorder

This interface was reportedly created to make mobile recording easy on any iPhone. According to McDSP, Retro Recorder's patent-pending Audio Level eXtension (ALX) technology improves recording quality beyond the capability of handheld recorders costing many times more.

Recorded files — mono only, up to 22,050 Hz sample rate — can be exported individually or in batches. Exported files may then be downloaded to a PC or Mac using a Wi-Fi network. Retro Recorder supports iPhone and second-generation iPod Touch.

See *PAR's* upcoming August issue for "Recording on the Go" featuring Apple iPhone and associated applications (such as this one) by Russ Long.

Price: \$2.99 (from iTunes App Store)

Contact: McDSP | www.retrorecorder.com

Merging Pyramix Update for Dolby E

Users of Merging Technologies Pyramix workstation may now work directly with Dolby E-encoded audio files thanks to the release of updated VST plug-in versions of Minnetonka Audio's SurCode for Dolby E encoder and decoder software. Using the VST version, Pyramix owners may now encode Dolby E audio files directly from a multichannel Pyramix session.

Price: \$4,800 (Encoder/Decoder bundle, available for limited time)

Contact: Merging Technologies | www.merging.com

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Justin Smith, Engineer

Queens of the Stone Age, Eagles of Death Metal



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- Ronan Chris Murphy



NEW! Shadow Hills Industries Mono-Optograph

Single-channel "500 Series" discrete optical compressor.

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EXCLUSIVE



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Built from the same SuperAnalogue DNA as the AWS 900+, Duality and Matrix consoles, the X-Desk brings benchmark audio performance to the compact mixer format.

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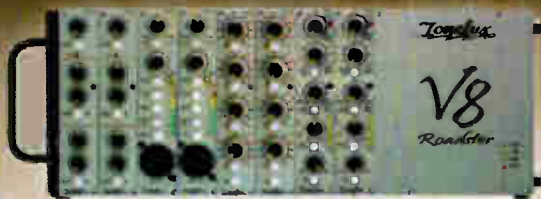
Digidesign ICON D-Command ES

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Millennia HV-3D Mic Preamp

"An excellent value offering impeccable audio specs, first-rate construction, and sonic transparency under any conditions. The Millennia Media HV-3 is...for those who seek absolute purity in reproduction." - George Petersen, Mix Magazine

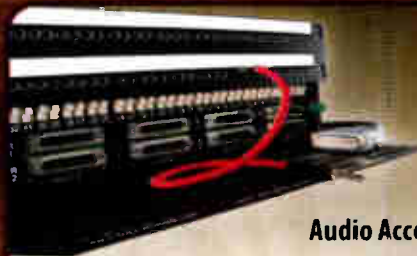


EXCLUSIVE

Tonelux V8 Portable Rack

The V8 can be custom loaded with any one of 20 different Tonelux Custom Console Modules to create any portable rig you can envision. D-sub and XLR ins & outs make this a snap to quickly connect/disconnect in the studio.

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Online Pro Audio References

Years ago, I started a reference library of audio books: big books with authoritative information about acoustics, recording, music, electronics, audio, recording, vacuum tubes, etc. It was how I learned about all those things I didn't understand (bias, RIAA EQ curves, lacquers, cylinder recording, demagnetizing) and I could look up terms that I didn't know. Well, 2009 is a different time with a whole new set of technological terms and things to learn. How do you stay up to date?

Those dusty reference books don't cover dither, jitter, or lots of other things from AAC to digital zero. Can you find great pro audio and recording info on the web? Sure. Here's a list that will get you started.

The Rane Pro Audio Reference

<http://www.rane.com/digi-dic.html>

Rane has done an incredible service to the audio industry by compiling this 21st century audio dictionary, a complete list of terms and names that is updated semi-annually. It is an amazing resource and should be bookmarked by every audio engineer. If you don't know a Helmholtz resonator from a hurdy-gurdy, you need to check it out.

The Rane site also includes a list of timeless reference books (<http://www.rane.com/par-book.html>) that teach concepts that any audio person should know. If you don't know the names Beranek, Davis, Gerzon, or Olson, then you need to check out this list of books.

DPA Microphone University

www.dpamicrophones.com/en/Microphone-University.aspx

If you don't know (or can't reliably remember) the differences between AB, MS, XY, NDS, and DRTF or didn't know

those were stereo miking techniques in the first place, then you need to check out this site: a great source of info about mic techniques, surround setups and miking a grand piano.

Stan Coutant's Microphone Site

www.coutant.org

This site is one of my favorite time wasters ever. I've spent hours with this treasure trove of mic info, especially perusing vintage ribbon mics. Want to know the difference between an RCA 77-A, B, C, D, or DX? (They're less similar than you might think.) There are charts, graphs, and PDFs of original literature for a host of old microphones along with pictures of artists using them. Another amazing source for old mic photos is located at <http://www.k-bay106.com/photos.htm>.

Sound Studio and Audio Calculations

www.sengpielaudio.com/CalculationsD3.htm

Need to convert dBV to dBu or dBm? Or find the wavelength of a certain frequency? You'll find calculators here for that and dozens of other useful things.

Interactive Frequency Chart

www.independentrecording.net/irm/resources/freqchart/main_display.htm

Ever wondered what frequency range a tuba occupies? How about a piccolo? This chart shows instruments on a 20 Hz to 20 kHz diagram with a frequency translator for terms like "honk, whack, and crunch."

RT60 Calculator from WSDG

www.wsdg.com/dynamic.asp?id=resources/technology/rt60

This tool allows you to calculate reverberation time decay by entering room type, dimensions, and wall finishes. It and many other acoustic calculators are available at the WSDG (Walters-Storyk Design Group) website. Room mode and absorption coefficient (including over 450 materials) spreadsheets for Microsoft Excel are also downloadable.

Shure Microphone Techniques: Recording

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Brochures, presentations, white papers
(continued on page 39)

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An aerial view of Reflection Sound's Studio A during 'phase two' of this Session Trial.

ProAudio Review
PAR
Session Trial

Small Monitors and Subwoofer Systems

For this, *Pro Audio Review's* third installment in our Session Trial review series, we examine and employ five active monitoring systems – each with 6-inch or smaller woofers and a complementary subwoofer – in a gamut of mixing and listening tests to find substantive differences in performance for one man's real world, professional application. Already proven performers, each of these five contenders were previously reviewed and notably endorsed by *PAR* reviewers.

by Rob Tavaglione

In "phase one" of our most setup intensive Session Trial to date, each small monitor/subwoofer system was set up for evaluation in my rather large control room (approximately 22-foot deep x 19-foot wide, acoustically treated via absorption, diffusion, and bass trapping), within a 5-foot equilateral triangle from my listening

position at exactly ear height, with Auralex MoPAD Monitor Isolation Pads to provide decoupling from the "meter bridge" shelf, part of a Sound Construction and Supply Custom Console.

Each set of monitors provided different controls for EQ, filtering, sensitivity, etc.; I kept these controls as close to neutral as possible, using them only when deemed absolutely necessary. As a longtime

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subwoofer user, I calibrated the subs and adjusted placement, polarity, phase, and crossover frequency. Once each system was calibrated, I did some intensive listening to a variety of sources, then mixed a pop/rock song with male/female vocals and a dense arrangement — one mix of the same song per each of the five systems.

Below is what I discovered, in order of audition.

KRK Systems VXT4 and KRK10S

The pot-bellied shape and radiused edges of KRK's flagship E8 model are present in the VXT4, mated with a 4-inch woofer and a 1-inch soft dome tweeter. The KRK10S subwoofer has a 10-inch driver and is absolutely necessary to get full bandwidth response from the system (just like all the systems tested here).

My first impression upon mixing was that the VXT4s have a nicely balanced sound, complemented by a rather thumpy sub with plenty of punch and output. The VXT4s employ both a clip indicator and a limiter; I engaged both and cranked up the volume, finding reasonable SPL before the limiter kicked in. No bass or treble adjustments are offered, so it was fortunate that the system naturally has a usable balance. Not so fortunate was the absence of phase adjustment on the sub; 180-degree polarity reversal was offered, but often a fine tweaking of phase allows for a smoother transition between the 2-channel monitors and the sub, particularly across the crossover region.

My mix translated quite well to other environs, with no surprises way down low or up high, although my midrange instruments seemed slightly tucked due to the VXT4's ever-so-slightly forward mids.

Other complaints concerning the VXT4/KRK10S system are minor: no front-panel power indicator on the sub, no rubber feet on the sub (it's easy enough to slide around, and de-coupling may be needed in some apps), and the amps in the VXT4 get pretty hot (external heat sinks would be advisable). All in all, this KRK rig is

a fine monitoring system and this Session Trial's lowest-priced competitor at \$798 per pair, list (the KRK10S is \$599 list).

Focal Professional CMS50 and Sub6

French manufacturer Focal Professional has been making waves lately, and obviously with good reason: this monitoring system simply sounds great. The CMS50 (\$1,300 per pair, list) sported a 5-inch woofer and an inverted tweeter made of aluminum/magnesium, which concerned me at first (as I'm a die-hard proponent of soft-dome tweeters). Well, I now stand corrected, as the highs on the CMS50s were quite trustworthy, seemingly flat, and non-fatiguing. The CMS50's die-cast metal enclosure, rubber footings and front-panel volume control are all nice features, but I particularly like its EQ options; I didn't use the high- or low-frequency shelf, but I did engage its "desktop EQ," which inserts a notch at 160 Hz, compensating for desktop or meter bridge mounting.

Paired with the 11-inch driver of the Sub6 (\$1,795 list), the Focal system is very easy to mix on, with unrestricted dynamics, ample SPL, a wide sweet spot, and a sense of "truthfulness" across the crucial mids. Though ease of mixing doesn't indicate translatability, no problems here: My mix was spot on with nearly perfect balance top to bottom everywhere I double-checked. Thankfully, the subwoofer offered substantial power, continuous phase adjustment and polarity reversal, making it one of the top two subs tested here. Other than some poor English and questionable advice in the owner's manual, this Focal system approaches nearfield perfection (especially after engaging that desktop EQ, which prevented them from being just a tad murky).

Genelec 8020A and 7050B

The Genelec system was one of the smallest tested, with 3.5-inch woofers and an 8-inch subwoofer. Fully featured, the 8020A (\$1,150 per pair, list) offer front-panel volume adjustment, bass



KRK Systems VXT4

Focal Professional CMS50

Genelec 8020A

and treble controls, adjustable bass roll-off for tops and the subs (useful if you're close to a front wall in a small control room) and heavyweight metal enclosures.

Despite these controls, the Genelec system was starved for power compared to the others in my application [Perhaps the larger 8030A, which still meets the test criteria but has twice the power, would have allowed a more even comparison — Ed.]. In the end, neither the tops nor the sub could reach the levels I use for the "check for little details" loud pass that is part of my mix process. The 7050B sub [\$1,395 list] offered great construction and numerous parameters, but those adjustments were found on dip switches, difficult to access and adjust when one is crawling underneath a console.

Despite these drawbacks, I was surprised to find that I did get a solid and well balanced mix from the Genelec system, one that translated nicely elsewhere.

Klein + Hummel O110 and O810

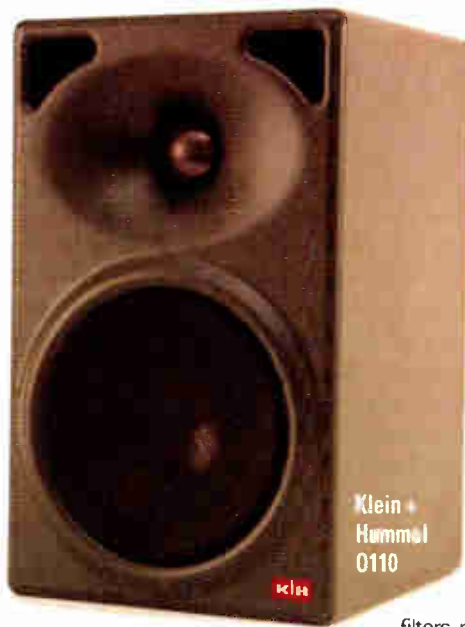
The K + H system immediately got my attention, based on features alone. Yes, the O110 tops are, by

far, the most expensive tested here [\$2,700 per pair, list], but they offer a four-position bass switch, four-position mid switch, a built-in limiter, a 1-inch titanium/fabric dome tweeter, and a 10-inch subwoofer that is over 25 inches deep (!) and loaded with controls.

My first impression when mixing was that the O110 has a slight-

ly "crispy" top end that is absent in the other systems: It sounded very nice, but not necessarily flat. I found the mids to be very pleasant and quite articulated with excellent detail, but possibly slightly colored; again, I thought, "Are they flat?"

It is the O810 sub [\$4,598 list] that excelled and deserves more study. Surely woofer diameter matters, but it appears that cabinet mass and volume do far more to determine depth of frequency response and general "thump-ability" of a subwoofer. No mere brute, the O810 also offers advanced features like 7.1 surround capability, four-position phase adjustment, four



filters, remote control via Cat-5, and remote powering (for systems with staged power switching).

With the K + H system, my mix offered no surprises. I thought my mix was just a touch thin overall, although its accurate frequency response did allow me to fine-tune the bass elements for some fine separation and low-end clarity (and note differentiation).

Dynaudio Acoustics BM5A and BM9S

I have always been a fan of Dynaudio's "smoother than silk" tweeters and their 3-inch domed midrange driver (offering the "truest" mids I've heard), so I relished a chance to try out the BM5A [\$1,250 per pair, list]. Its 5.7-inch woofer is propelled by a hefty 3-inch voice coil and is joined by a 1.1-inch soft-dome tweet (a more modern waveguide would widen the sweet spot). A 10-inch magnesium silicate polymer woofer resides in the BM9S sub [\$1,245 list]. Ample EQ controls (LF shelf, HF shelf, and mid cut), thermal protection, and limiters

▶▶ **Test Equipment**

Small Monitors and Subwoofer Systems in a PAR Session Trial

EQUIPMENT: Soundcraft Ghost console, MOTU Digital Performer 6.02 DAW, Radio Shack digital SPL meter, Mackie 1202 VLZ mixer, Ebtech Swizz Army 6-in-1 cable tester/test tone generator, Philips CD player.

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gave me cause for confidence when using the system, but the overall system didn't perform as well as the tops alone did.

I'm not a loud mixer — I usually hover around 85 to 90 dB at the sweet spot — but I had self-protection circuits going off constantly, with bass coming and going as the subwoofer cut off and turned back on again. This was compounded by the sub's inconsistent response: Some notes boomed (some very low notes, oddly enough) while others ducked out. Flipping polarity didn't help (phase adjustment is not provided) and the sub driver's excessive excursion forced me to back off. Even though the sub lacked power, punch, and clarity, daisy-chaining of multiple BM9s into a larger, scalable system is allowed (with controls on the master governing all slaves); this may be a viable way to get professional output from this system, as the BM5A itself is excellent.

The subsequent mix came out OK, but it didn't sound at all like I remembered it on other systems. Without the familiarity of multiple mix attempts bouncing around my memory, I doubt that I could have achieved useful results with this system.

Phase Two: The Big Room

I carted all five systems over to Studio A at Reflection Sound Studios for some additional testing. I wanted to try these systems



Dynaudio
Acoustics
BM5A

in an environment open and large enough so as to hear them in a space closer to a "free field" — one that minimizes reflections and phase cancellations from nearby boundaries, and with minimal standing waves that can cloud bass response (the room is 30 x 45 feet and about 15 feet in height). With all five systems set up simultaneously, I could make quicker comparisons that didn't rely so much on memory. A great idea, but this method would require *five pairs of identical speaker stands* to be effective. Thankfully, Argosy

Console stepped up and generously offered five sets of its Classic Series speaker stands to facilitate this test.

First, I calibrated each system using pink noise and sine wave test tones. Per speaker set, I created a 6-foot equilateral triangle for each system (including myself as a point, in the center of a large circle of monitors), measured and balanced each pair's output using a Radio Shack digital SPL meter (A-Weighted with slow response). I then tweaked polarity (and phase, when available) of each sub and got each sub's output as closely matched as possible. I played back a number of popular modern CDs as a check for musicality and perceived balance and did some critical listening, resulting in some revealing observations.

The Dynaudio system was humbled by this large, open environment, running out of steam while playing a mastered pop mix. The



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sub sounded more "pillowy" than thumpy, and again, it struggled to stay audible before self-protection kicked in. Overall, the system had a distracting bump at roughly 200 Hz that only benefited productions that were somewhat hollow down there.

The Genelec system was also undersized for such surroundings. A touch of top-end hype was found here, but the subwoofer sounded punchier than in my control room. The sweet spot was a little narrower than the other systems. I concluded that the Genelec system is best suited for much smaller monitoring environments.

The KRK system maxed out at similar levels as the Genelec system. Certain program material revealed a touch of low-mid murki-

ness not revealed at my studio, but the top end proved to be adequate and un-hyped across all sound sources. The subwoofer seemed a little more "woofy" here than I remembered: too much 125 Hz and not enough 60 Hz, in my rough estimation.

The K + H system was the first to excel at Reflection Sound Studios, with another 3 dB or so of output before the clip light engaged. The ultra-deep 0810 sub got to show off its abilities with a perfect combination of punchy top-lows, musical and round mid-lows, and deep-lows that were extended without floppiness or distortion. Other than a little extra emphasis at 250 Hz, the K + H system portrayed a trueness, musicality, and definition in the lower regions that was clearly superior to all systems tested.

The Focal system also seemed to relish this demanding environment, reaching the loudest levels of any of the systems before maxing out. Overall system intelligibility was fantastic, with the flattest mids tested here and the widest sweet spot. I had to turn up the sub for my desired tastes, but the Sub6 met my needs with a sound a little less "poofy" than the K + H 0810, and a little tighter response, with less resonance.

Summary

I'm hard pressed to pick an overall favorite here, as the Focal Professional CMS50 with Sub6 and Klein + Hummel 0110 with 0810 were clearly the top contenders as tested. However, I must give the nod to Focal for linear mids, a nice and non-fatiguing top, and resulting mixes that translated well everywhere. Yes, K + H would easily win a subwoofer award, and the 0110 with 0810 system has a very musical and pleasant sound; I'm just not completely convinced they are truly neutral...and they are, after all, a lot more expensive than the Focal system. The KRK system would surely win a "best value" award; its performance easily clears the bar, and their price is low for such an advanced design. The Genelec system sounded quite nice and created good mixes, but its low output make this particular small model suitable for only the most reserved mix engineers with smaller control rooms. The Dynaudio system had the top end and mids of a serious contender, but its consumer-ish subwoofer and low bass output overall had it struggling to keep up.

Acknowledgements: Thanks to Wayne Jernigan for the generous use of his studio, Reflection Sound Studios in Charlotte, NC (www.reflection-sound.com); Argosy Console (www.argosyconsole.com) for providing five sets of speaker stands; and Phillip Morgan for helping me move around a small mountain of monitoring.

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WORLDWIDE HISTORY

▶ On the Bench

All tests were performed on a mono speaker with Prism Sound's dScope Series III test set [as noted on page 6, we'll have more on the latest dScope software in an upcoming issue — Ed.]. The same stimulus levels were used in each instance, with the test microphone 1M from the monitor under test, monitors set for flat with no filters engaged and gain set for the speakers most sensitive/full volume setting.

The dB SPL measurements [with A-weighting filters employed] in these tests should be viewed as "relative" readings and not absolute, using the test microphone and an external-to-the-test-set preamp, the readings are affected by preamp gain and mic sensitivity and not calibrated precisely to standards, though preamp gain was adjusted so that dB SPL readings were roughly calibrated to an inexpensive handheld SPL meter. The testing room environment did have an impact on measured response at some frequencies [save for the derived impulse response measurement where reflections could be factored out] though repeating the tests for each speaker under the same conditions does provide a basis for comparative analysis. The background noise in the test space was well above anechoic chamber conditions. Fortunately, the quasi-standard 1 kHz region appeared free of room reflections, so 1 kHz was retained as the stimulus where a single frequency tone was used for testing.

Feeding the speakers a 1 kHz sine wave at -10 dBu, balanced, an FFT analysis of the speaker outputs' harmonic content [unwanted distortion] revealed harmonics rising out of the noise floor on all of the cabinets under test, dominated by 2nd and 3rd order products. The Dynaudio Acoustics BM5A had the best overall distortion performance at this drive level, with the Focal CMS50 and the K + H 0100 following neck and neck. The Genelec 8020A and the KRK VXT4 showed the most harmonic content. The KRK's harmonics were a full 10 dB closer to the 1 kHz level than the Genelec's.

The visible harmonics in the Genelec and KRK tests included artifacts up to 7 kHz, though it's worth noting that each of the monitors varied in sensitivity and maximum output and this drive level puts these two monitors closest to their maximum output level, unlike most purely electronic devices, acoustic transducers tend to produce higher distortion levels near their maximum range. I did find it interesting that the K + H had higher 2nd harmonic content than 3rd, the 2nd being considered a somewhat "euphonic" harmonic, often thought desirable in "gear of character."

With swept-sine, FFT derived impulse response tests for frequency response, nothing terribly surprising was revealed on the high end [Fig.1]. The Genelec measurement showed an elevated-extend-

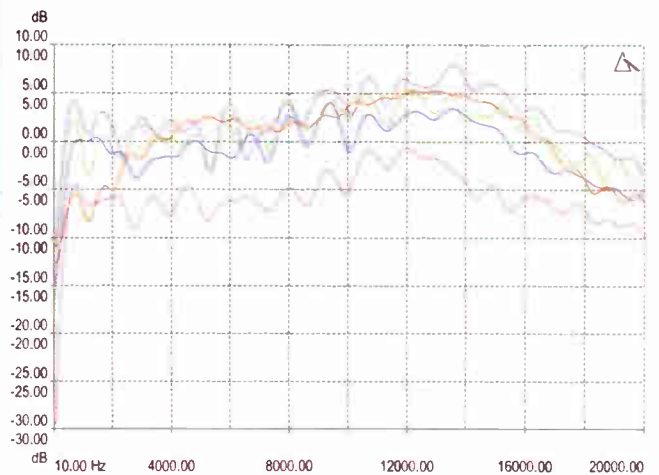


Fig. 1: The derived impulse response-based frequency response plots of each speaker under test. For Fig. 1 and 2, the trace colors are: Dynaudio=red, Focal=blue, Genelec=green, K + H=magenta, KRK=violet.

ed HF response above 20k though some of the other monitors are spec'd for more extended HF performance than are the 8020As. The rest of the loudspeakers follow a similar curve, with the BM5A showing the smoothest response. The Focal and Dynaudio monitors roll off more gradually on the low end in these plots.

Using a multi-tone test, where a number of tones are simultaneously sent to a device and the output can be quickly analyzed for frequency response and distortion, the Focal and the Dynaudio again showed the gentlest LF roll-offs. A pink noise FFT showed generally the same shapes as the other frequency response measurements, as did a stepped sine wave sweep, the latter also revealing the frequencies where the room was affecting results, consistent across all the speakers. The room's effects made a

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Bench Test

sweep of distortion vs. frequency pretty much useless. In all cases, the tested frequency responses were not up to manufacturer specs, and should be considered comparatively and not as invalidating manufacturer data gathered in a laboratory setting.

In the multi-tone distortion numbers, the results mixed things up a bit (room reflections may have played some role here). The K + H had the best overall distortion performance though the Focal bests it at some frequencies, the Genelec and Dynaudio danced around each other in their performance in the middle of the pack, with the KRK still showing the highest THD+N (Total Harmonic Distortion + Noise) levels.

The final test, and I thought quite revealing, was THD vs. Level, sweeping a 1 kHz input from -22 to +18 dBu and measuring dB SPL and THD+N (Fig. 2). These input levels eventually drove all the monitors into clipping, some earlier than others depending on sensitivity and maximum input and output (the Genelec being the most sensitive). The KRK had a lower volume than the Genelec at the top of its linear range, if edging the Genelec out slightly for overall level in the nonlinear portion (near clipping) of its performance.

The Genelec 8020A THD+N spikes at its clip point, then its protection circuits kick in, reducing the amplifier output and THD+N. Later on the plot, the distortion numbers spike again (presumably when I overloaded its inputs), though the output stays fairly constant. The Focal easily gets the nod for loudest output (even edging out the mighty Event Opal slightly [see page 31 for our full

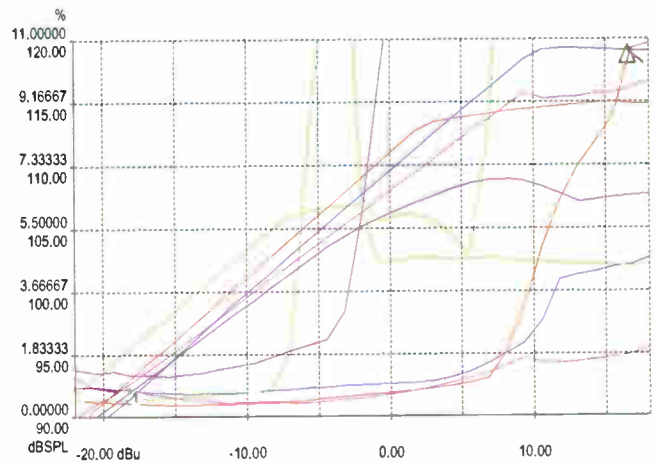


Fig. 2: Two traces per speaker, each plotted against input level: The five traces with the parallel diagonal sections (their range of linear amplification though the KRK linearity is somewhat skewed by its limiter circuit) show output level measured in dB SPL (un-calibrated). The other traces are THD+N.

Opal review and bench test. — Ed.]). The K + H had the next highest output rating, followed by the BM5A. Maximum acceptable input levels follow this pattern.

All in all, the sum of these tests is reflected in and perhaps explains some of our Session Trial subjective findings.

—Frank Wells

Frank Wells, formerly a radio broadcast and recording studio technician, is the editor of *Pro Sound News* and the editorial director of *Pro Audio Review*.

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The Professional's Source

KRK Systems ERGO Studio Monitor Room Processor

KRK Systems' Enhanced Room Geometry Optimization system, a.k.a. ERGO, is a delightful box of improvements for troublesome monitoring environments.

Studio monitor manufacturer KRK Systems has introduced ERGO, a FireWire-based standalone monitor controller/acoustic correction unit.

ERGO utilizes the RoomPerfect acoustics correction system developed by Lyngdorf Audio in Denmark. This software offers a level of room acoustics correction never achieved before in this price range.

Features

ERGO is designed to be placed between your audio outputs and monitor inputs (whether you use active or external amp-powered speakers). The ERGO unit offers an A/B speaker selector, a large illuminated volume knob, Focus/Global button, calibration button, a headphone output, and a FireWire interface.

ERGO accepts three forms of input: analog (which goes in via KRK A/D and back out through AKM AK4396 120 dB SNR D/A), FireWire (streaming from a DAW or audio application), and S/PDIF digital. [According to KRK, "using ERGO with analog or S/PDIF inputs allows for a true 'standalone' mode; once the measurements are taken, no connection to a computer is required." — Ed.]

All processing resides within the ERGO unit; the analysis software is Mac- and PC-compatible. It uses multiple measurements and proprietary algorithms to analyze your room in 3D with an included measurement microphone. ERGO employs 1,024 dynamic filters, with sample rates as high as 96 kHz with an Analog Devices 400 MHz Blackfin digital signal DSP chip, to apply electronic corrections to the speaker output to match your listening environment. "The 3D model preserves the good characteristics of the room, while correcting the bad, thereby creating a more accurate mix position," offers KRK ERGO product documentation.

In Use

Connecting ERGO was fairly easy; first, I installed the software

on my computer and then connected the FireWire and audio cables to ERGO. Next, I connected the included measurement microphone to ERGO and switched the unit to Calibrate mode. Then, I opened up ERGO calibration software, running the process where it asked for just a few (it can ask for more than a few) mic test positions to take room samples; it even tells you where and how to adjust overall room SPL level. Finally, ERGO completed its processing, storing the room analysis within itself automatically. Nice.

I first set up the ERGO in my acoustically treated 15 x 22-foot mix room; I currently use very little corrective EQ on my monitors, mainly just to smooth out the crossover frequency. The calibration process by ERGO only took three test samples of this room in order to achieve a "98 percent room correction" sample. Note that ERGO only works on frequencies between 20 Hz and 500 Hz, deemed the truly problematic frequency range in environments such as my own.

After ERGO had completed its correction, we compared the results with and without correction. With ERGO, my room — with which I was already "truly happy" — immediately became more focused in the stereo image with deeper lows, with a clarity that



▶ Contributor of the Month:

Randy Poole

Engineer/Mixer
Nashville



Randy Poole is an independent engineer who got his start in Detroit in 1985. First working under Gerard Smerek, Bob Seger's engineer, Poole soon landed at Studio A in Dearborn Heights, MI in 1987. There, he worked under owner/producer Eric Morgeson and Grammy-winning engineer John Jaszcz.

In 1995, he moved to Nashville and "really enjoyed the beautiful surroundings, talented musician pool, and great clients," he insists. Poole soon built an impressive client list of his own featuring many great artists from several musical genres, such as Anita Baker, CeCe Winans, Aretha Franklin, Take 6, Backstreet Boys, Toni Braxton, George Clinton, Michael W. Smith, and many others.

In 2001, Poole built his first Pro Tools|HD-based mix room, and over the past few years he has become a regular contributor to *Pro Audio Review* and *Pro Sound News* magazines. He has served on the AES Nashville committee for nine years, and, in the summer of 2008, he opened The Poole Room, his own mixing and tracking facility located in Franklin, TN.

just wasn't there before. The system character did not sound EQ'd comparing ERGO in-line and ERGO bypassed, but overall results were notable and really nice.

For a true test of what the ERGO could improve upon, we moved to my second engineer's mostly untreated 15 x 18-foot

mix room with dreaded low ceilings. After setup and feeding ERGO eight (yes, eight!) different microphone locations, ERGO achieved a "99 percent room correction" sample. This time, the correction results from the ERGO had major differences in low-end EQ in an A/B comparison with the unprocessed signal. The results were nothing short of stunning for such an untreated room with obvious acoustic "issues." ERGO made an almost unusable room into a room that was quite good. With ERGO, this second room's EQ response was drastically better, and the center image was much more focused. We left the ERGO setup in this environment for some time to see if there were any differences in long-term observations, and we remained impressed.

The other unique feature included with ERGO is the Focus/Global button. In Focus mode, it optimizes all settings for the mix position; Global mode widens the sweet spot for more listeners. We tested this feature in both rooms, and while it does what it says, both my assistant and I found it quite subtle.

The notable negative I found in ERGO was a bit of zipper noise while turning its volume knob, but it was only truly discernible when no audio is present.

Summary

I've heard room-correction technologies that were built into brand-name speakers before, and I must say that I was not a fan, except of one quite expensive version. Yet I found ERGO's room-correction technology to be phenomenal. ERGO provides great converters, amazing algorithms, 1,024 dynamic filters, and many useful features. I'm not aware of anything else on the market that can touch it for the price. ERGO's RoomPerfect technology is so good, I would imagine that we will see it in future KRK products.

Fast Facts

Applications

Commercial studio, project studio, location recording

Key Features

Creates a 3D image of room; PC- and Mac-compatible; 1,024 dynamic filters; microphone and software included; headphone output; lighted controls

Price

\$799 list

Contact

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Product Points



- ▶ Awesome room correction
- ▶ Reasonable price point
- ▶ Premium converters
- ▶ Great volume knob
- ▶ Small footprint



- ▶ Slight zipper noise while adjusting volume
- ▶ Correction not user-adjustable
- ▶ No multiple input sources

[According to KRK, "ERGO will auto-switch between analog and S/PDIF inputs. If in standalone mode and no S/PDIF clock is detected, ERGO will use the analog inputs. If sent S/PDIF, it will auto-switch to S/PDIF. Thus, users can have either FireWire or S/PDIF/analog-selectable inputs." — Ed.]

Score ERGO is the best-sounding standalone room-correction technology anywhere near its price range.

Event Opal Bi-Amplified Studio Monitor

Event offers a gem of a speaker in the new Opal, a brand-defining powered monitor for the company.

I've had the pleasure of using some great-sounding monitors over the years, and there is a price/performance ratio. When your stated goal is a synergy of exceptional linearity, low distortion, wide bandwidth, high-frequency dispersion, transient response, and stereo imaging, the bill adds up quickly. None of us can change the laws of physics but, with innovation, there is always room for improvement.

Features

My initial observations of the Event Opal were as follows: The Opal package is heavy, almost 54 pounds, largely due to the large toroidal mains transformer, large aluminum heat-sink back plate, and high-pressure injection-molded aluminum cabinet. They offer clean lines and hidden but accessible front-panel controls. And, importantly, they were well packed for shipping.

The Opal is a bi-amped, two-way monitor with Class AB amplifiers: 140 W peak on top driving Event's ULD1 — a neodymium-magnet, beryllium copper tweeter — and 600W peak on the bottom pushing the 7.1-inch EX8 carbon fiber-reinforced cone. [Event's alternate "long-term power" rating is a more appropriate real-world number and lower than the stated peak power rating as it measures a longer duration with both high and low frequencies simultaneously: 50W for HF and 270W for LF. — Ed.]

Also included in the complete Opal package is a microphone and software kit for room analysis. It was not included in my review kit. [According to Event, the company was still in the process of "final testing" the kit, thus a review-ready version was not available. — Ed.]

In Use

My first listening sessions were done with the speakers positioned nearfield, about four feet from my ears. My initial impression: These are very transparent monitors, nice highs with no edge, and lows that I did not expect from an 8-inch woofer. It offers not just "air-moving" lows, but lows with significant tone. Track 5 on Zachary Richard's *Coeur Fidèle* CD features an Indian drum with a very large fundamental note, down about 40 Hz; the Opals reproduced it very well.



I have a few favorite recordings featuring acoustic bass both plucked and bowed. With the Opals, I heard this source material with a very natural tone and timbre, almost as if I were standing next to the instrument. It is a testament to Event's engineering efforts in time alignment and transient response.

Bloomfield, Cooper, and Stills' *Super Session* album has some nice horns and B3 — albeit recorded some time ago — but, as with the acoustic bass described above, its horns sounded very "real" and the Hammond fat and undulating. I noticed the snare on the elegantly mixed Steely Dan *Aja* album, which highlighted a little "rasp" I don't recall in my other monitors. But we've come a long way in monitor technology since those Dan sessions — the edge was always there in the mix, not a characteristic of these monitors.

To test how well the Opals did when cranked, I spun them around and pointed them down the long end of my room so I could move further back, about six to eight feet. Then I tried the Richard CD again. I raised the gain until one of the warning lights on the Opal began to blink with the beat. I'm not sure what the SPL was, but the Opals were above the "last playback of the night/smoke 'em if you got 'em" level. In about five drum hits, the left monitor safety circuit deployed, and the monitor muted. I reduced the volume and about 10 seconds later, the monitor regained consciousness and was fine: impressive sound and self-preservation features.

Little Feat, the Neville Brothers, Yes, Jennifer Warnes, Kix, the Rolling Stones, Henry Mancini's "Pink Panther," and my own projects: I listened to all for anything I didn't like, including distortion, crossover weirdness, honks, beaming, etc. I even invited a few sharp-eared friends over. Their responses were similar to

mine: the Opals are very clear, very clean, offer good stereo image, and are capable of a curiously impressive low end given the size of its driver.

I spun the tweeter waveguides around 90 degrees and ran the Opals horizontally. The height of the sweet spot got weird, probably due to the highs now bouncing off my console/work surface. Next, I moved the Opals to my second monitoring station, which offers a better horizontal mount. The Opals had a wide sweet spot, and a more narrow point source super sweet spot. As I went back and forth between the Opals and my 3-way JBL L100 pair, the JBLs had a comparatively nasal sound and a smaller stereo spectrum.

Summary

The Opals are not small, but their impressive low end certainly makes them sound bigger than they look. I was very struck by their transparency, their dimensional sound field, and how "live" instruments and voices sounded when using them. Given what they offer, I think the Opals may be under-priced.

▶▶ On the Bench

The Event Opals performed very well in the same battery of tests that were performed on the loudspeakers in this issue's Session Trial. Refer to that text [beginning on page 25] for details of the testing. Suffice it to say that the flatness of the Opal's measured frequency response was in the middle of the pack with an extended low end, and the tested Opal exhibited low distortion across a wide input range. In the 1 kHz FFT there were no discernable harmonics present, though the THD+N vs. Level test suggests that some harmonics might be measurable near the clipping point. The Opal also handled the widest range of input levels before the onset of clipping. And they sounded great.

—Frank Wells

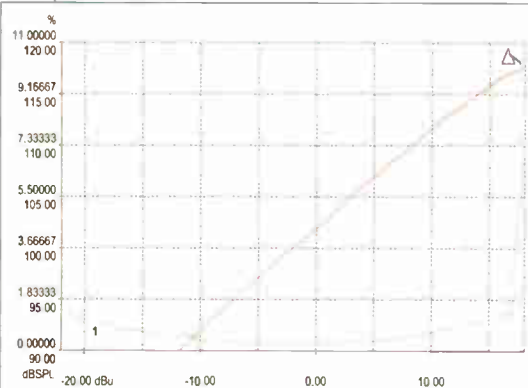


Fig. 2: THD+N (green trace) and output level (red trace) plotted against input level.

Fast Facts

Applications

Applications: Studio, project studio, audio for broadcast, audio post production

Key Features

Two-way powered monitors with Class AB amps; 1-inch Beryllium copper tweeters; EX8 innovative 1-inch throw and carbon fiber composite coned 7.1-inch bass driver; optional D/A converter

Price

\$799 list

Contact

Event Electronics USA | 805-566-7777 | www.event1.com

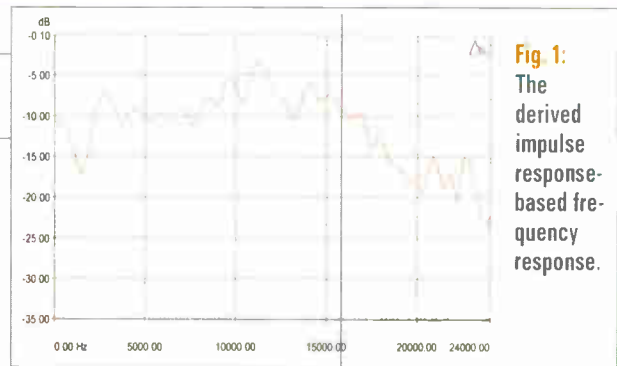


Fig. 1: The derived impulse response-based frequency response.

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FMR Audio PBC-6A

No matter how you decipher its acronym, the PBC-6A is an affordable option in compression when added character is desired, yet pro-grade performance is required.



In its manual, FMR Audio's main man Mark McQuilken refers to the PBC-6A (\$499 list) as "a nonlinear compression amplifier."

I'm not sure what "PBC" stands for, but I'll guess something like "pretty bad.**s" or "pretty b***in" compressor, especially considering this product's distributor and close collaborator in production is Mercenary Audio, a pro audio store generally known for recommending and selling very good stuff while "telling it like it is," I guess you could say.

Features

The PBC-6A must be considered alongside its FMR predecessors, those units that comprise the Really Nice Series — Compressor [RNC1773], Leveling Amplifier [RNLA7239], and Preamp [RNP8380] — which I recently reviewed in full [for *PAR* February 2009 — Ed.]. The PBC-6A is housed in an identically proportioned chassis as every component in the RN Series, but sports "pro-level" I/O; rather than unbalanced 1/4-inch ins and outs [like the two-channel RNC1773 and RNLA7239 units], the single-channel PBC-6A has balanced XLR input and output, a sidechain 1/4-inch jack, and a link 1/4-inch jack on its rear panel. On front, the PBC-6A offers five pots for the adjustment of Drive [compression level and make-up gain in one], Knee, Attack, Release, and Output parameters; one

switch each for FMR's own Thick mode and Bypass [the latter with a single LED indicator]; and an 8-LED Gain Reduction display: five knobs, two buttons and better-than-sufficient metering, just like every other FMR box.

Setting itself further apart from its RN Series brethren is its additional "hidden" mode, Special, gained and exited by pressing both Thick and Bypass simultaneously. You'll know you're there because the Bypass LED and one of the Gain Reduction LEDs blink incessantly while engaged. In Special mode, you may adjust sidechain filter [a lit Gain Reduction LED moves between "3" and "24" to indicate corner frequencies between 30 and 340 Hz] or link two PBC-6As for stereo operation in one of three settings: "master, no hardware link," "master, hardware link," or "slave, hardware link."

In Use

I've now lived with a pair of PBC-6A units for three months, using them on a wide variety of instrument and vocal tracking applications, channel inserts, and the mix bus. Most often, the PBC-6A provided lush and complex interest to source signals, which most listeners in the room,

including me, appreciated.

Using it alone in multiple applications within denser multitrack sessions [alongside other "neutral" compressors] — or, most notably, strapped across the stereo bus — the PBC-6A did sometimes build a stylistically compressed "residue" in, on, and/or around the mix. Considering that our industry regularly produces pop productions featuring squashed mixes, voices, and instruments to the liking of the masses, this may be just what you and your clients actually want. To be fair, what the PBC-6A does, even in signal "obliterating" measures, is more pleasing than you would likely imagine.

My favorite applications of the PBC-6A's seemingly magical qualities include lead vocal and bass guitar DI. Also notable were applications on snare drum, kick drum, stereo drum overheads in spirited/loud performances, etc.

On vocals, the most common word muttered upon track playback amongst my recording cohorts was "finished." To "tape," the PBC-6A brought forward the vocal with notable warmth and, with Drive setting on or past 11 o'clock, a distinguished, subtle edge. If you're tracking with a good idea of what you'll need later, the PBC-6A on lead vocals is an ideal tool, a great time saver, and a real enthusiasm builder: Vocalists generally became more "into" a session after the first playback with the PBC-6A inline. With Thick mode on vocals, it was a toss-up whether it was ultimately preferred or not; I'd describe it as choosing between Navy Blue and Violet Blue from a Crayola

(continued on page 39)

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Yamaha IPA8200 Amplifier



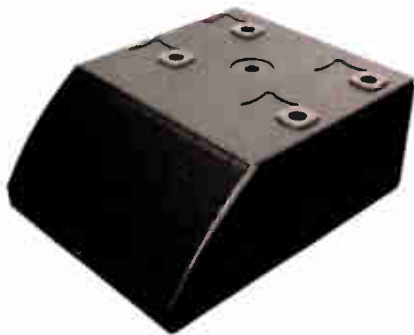
Yamaha Commercial Audio Systems has launched its latest power amplifier, the Yamaha IPA8200, a Class D amplifier that delivers eight channels of 200W each (4 ohms) in a lightweight 2U package. The new amplifier, which coincides with the recent release of the IMX644 rack-mount mixer, is targeted for smaller-scale installations needing the efficiency of Class D amplification.

The IPA8200 features Euroblock inputs and barrier strip outputs, with an internal high-pass filter which may be activated and selected between 20 Hz and 55 Hz. Pairs of channels may be driven in bridged or parallel modes and, to match different gain structures, the amplifier may be set at gain level of +26 dB or +32 dB, or may be used in constant sensitivity.

Price: \$2,199

Contact: Yamaha Commercial Audio Systems | www.yamahaca.com

EAW MicroWedge Series MicroSub



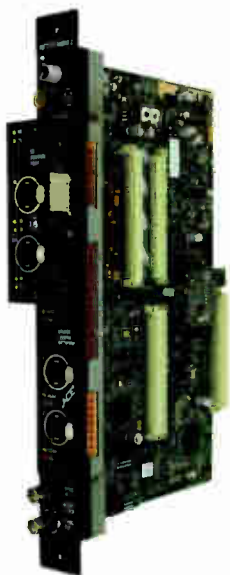
EAW has unveiled its MicroSub stage subwoofer, the latest offering in TS MicroWedge Series of stage monitor products. The single, 15-inch enclosure is a small-venue subwoofer, designed to address onstage low-frequency demands.

The MicroSub can be configured and interlocked in a range of different combinations—by itself, with other MicroSubs or with other MicroWedge units. Small pads and recesses are located on its sides, top and bottom. The loudspeaker is mounted at a 45-degree angle so that the cabinet height is exactly half of the cabinet width when the MicroSub is laid flat. Due to its small profile, it can serve as a side-fill monitor, particularly in a club setting.

Price: TBA

Contact: EAW | www.eaw.com

Allen & Heath iLive Modules



Allen & Heath has introduced two new modules to its iLive digital mixing series to further extend the flexibility and interfacing capabilities of the range: the RAB2 and MADI 64.

The RAB2 (pictured) is a remote audio card, reportedly enabling iLive digital mixing systems to work with a variety of common audio interface and networking standards. The new module has two front-loading slots for plug-in options, which are auto-detected by the system firmware.

The MADI 64 option card offers two 64-channel MADI links, which can be independently routed in blocks of eight connections, or for safety, configured as a primary and redundant pair. Either of the two ports can be set as a sync master. There is bi-directional patchbay routing for the MixRack's 64 inputs and 32 mixes.

To support the RAB2 module and all the iLive audio interface cards, Allen & Heath has released the latest update, Version 1.5, to the iLive and T Series firmware and Editor software.

Price: TBA

Contact: Allen & Heath | www.allen-heath.com

JBL CBT Line-Array Columns

JBL Professional has introduced its CBT Series of passive line-array columns, featuring the company's patent-pending Constant Beamwidth Technology (CBT) circuitry that reportedly provides consistent constant-directivity coverage and audio clarity, even in difficult acoustical environments.

The coverage pattern of the CBT models can be adjusted—with a switch—between Broad Mode (designed for mid-throw situations) and Narrow Mode (for long-throw applications). This allows the CBTs to meet the requirements of a broad range of applications. In addition, the CBT speakers provide Dynamic SonicGuard overload protection circuitry, which reduces distortion at high drive levels, along with user variable voicing, which allows selecting a flat frequency response or a midrange presence peak for speech intelligibility.

Price: TBA

Contact: JBL Professional | www.jblpro.com



QSC Audio Q-Sys Technology

QSC's new Q-Sys system integration technology reportedly provides digital audio signal routing and processing combined with complete system monitoring and control. Using converters and Gigabit Ethernet, the fundamental Q-Sys architecture produces a total system latency of less than 2.5 milliseconds between any input and output, with up to 10 network switch hops and audio-phile-quality processing throughout.

Price: Cores: \$15 - \$50k; I/O Frame: \$3k; 4-CH Cards: \$400 - \$750

Contact: QSC Audio | www.qscaudio.com



Audio-Technica ATCS-60 IR System

Audio-Technica has expanded its Engineered Sound range of meeting/conference room offerings with the ATCS-60 IR (infrared) conference system. The ATCS-60 is a fully self-contained wireless distributed audio system using infrared communications technology, designed for corporate, government and educational applications.

The ATCS-60 IR consists of the following components: ATCS-M60 microphone unit (base unit), ATCS-60MIC dedicated standard-length gooseneck microphone, ATCS-A60 IR transmitter/receiver unit, ATCS-C60 master control unit, ATCS-D60 distributor (splitter), ATCS-B60 battery charger and ATCS-C60MAG software.

Price: \$4,900

Contact: Audio-Technica | www.audio-technica.com



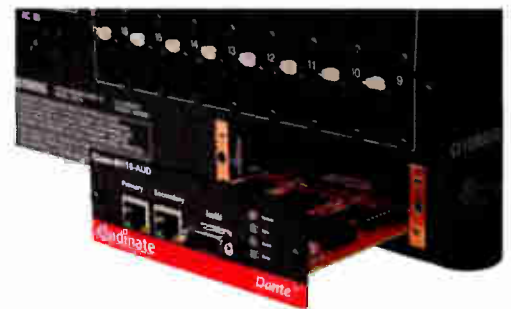
Audinate Dante-MY16-AUD Card

Audinate has released its Dante-MY16-AUD card to be distributed in North America by Yamaha Commercial Audio Systems. The card is fully compatible with Yamaha digital MY16 card slots in consoles, processors and digital power amplifiers. It is targeted for use in live sound, AV sound reinforcement installations, broadcast and recording applications.

Dante reportedly delivers a self-configuring, true plug-and-play digital audio network that uses standard Internet Protocols at 1 Gbps and/or 100 Mbps Ethernet. Dante-enabled devices will self-configure and automatically discover the location and number of channels of other devices on the network, reducing complicated installation requirements.

Price: \$649

Contact: Yamaha Commercial Audio Systems | www.yamahaca.com



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World Radio History



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THREE CONFERENCE TRACKS

THE DIGITAL VIDEO EXPO CONFERENCE PROGRAM

Produced by the editors of *DV* and *Videography* magazines and the Creative Planet Communities Web sites, Digital Video Expo offers a multi-tiered educational program for creative professionals. The three-day Digital Video Expo conference includes tracks on tapeless production, 3D production, career development, "going green" in video production, emerging technologies, content distribution, and Web video, as well educational opportunities such as the digital camera sessions, lighting workshops, and RED Boot Camp. Conference-goers will also have the opportunity for educational sessions with cameras from Panasonic, Sony, JVC, RED, and Canon.

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- Presentation Theater Sessions
- Industry Association Meetings
- Going Green in Video Production

CONFERENCE HIGHLIGHTS

Here are some of the sessions you will find at Digital Video Expo

Your Career v2.0

Challenged by the economy, new competition and the vast array of new creative options offered by production and post suppliers, creative professionals are finding it more difficult than ever to determine how to build — or update — a career.

New Camera Showcase

This year saw the introduction of a variety of amazing new cameras for the video professional. Get the information you need about them before your next purchase with this two-part presentation by *DV* magazine Technical Editor Jay Holben.

Flavors of HD

How "high" a definition do you need for your production? And what will you do with your footage once it's acquired? Experts discuss the diverse capabilities and uses of the available forms of high-def video, offering the information you need to determine and meet the real technical needs of your production.

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World Radio History

What Is Truly Essential?

It was about a year ago when I started to crunch numbers for the 2009 media budget. This included some upgrades, some repairs, and a bit of dreaming. Although the economy was shaky, I (and many others) did not anticipate the economy being in the current state that it is.

Regardless of the size of the congregation, all HOW essentially have the same goals for audio: worship that sounds good, isn't too loud, and supports multiple types of music and intelligible speech. This may vary a bit — depending on the size of worship teams or the need to accommodate theatre and larger productions — but the essentials are similar. The key is to carefully navigate the financial waters of maintaining what is necessary while implementing what seemed like a clear vision just a year ago.

Evaluating Upgrades and Necessities

The question we are facing now is, "What is truly essential?" While some of the "dream" items are out the window, there are many upgrades and necessities that still need to be addressed, even though giving may be down and spending seems to be more scrutinized.

One of the audio-based areas our church was looking to upgrade was in the studio: our control surfaces, preamps, A/D converters, and studio furniture. With each upgrade, the question we had to answer is, "Is this essential?" When I sat down a year ago to map out a plan for 2009, the leadership agreed that we should reach outside the walls of the church and implement web streaming. After researching and viewing many other available streams, it seemed that others' audio feeds were often the weakest link in the chain; it would be counterproductive not to take the necessary steps to make audio a high priority at Belmont. This led us to determine that we must make audio as important as the video, leading us to these upgrades.

Yet, when this plan was viewed through the current economical lens, we obviously had to make adjustments. Still, we did not feel it was time to abandon the vision. If anything, we should be even more available and relevant in such a time as this.

As a result, we have been diligent in perusing eBay, different HOW e-mail lists (on in particular is <http://lists.churchsoundcheck.com/list/listinfo/csc>), Craigslist (www.craigslist.org) and b-stock options from national and local retailers. We became more creative in our furniture decisions, as the originally preferred style would fall off of the "essential list." It may end up that we hire one of the carpenters in our congregation to build the fur-

niture, find one who is willing to volunteer the work, or grab just some folding tables and let those get us by until next year.

Not unlike real estate, if the funds are available, this is a great time to buy. Retailers have considerable motivation to sell and are glad to throw in free shipping, cables, etc., on top of offering good prices. If there was a large-ticket item that was slated for purchase this year due to need and the funds were set aside, then there is not a reason to postpone the purchase unless you can make the current situation work for a bit longer.

I'm Not An Attorney, Nor Do I Play One On TV, But...

One aspect of being a HOW is our 501(c)(3) provisional federal tax status and how that can be used in receiving donations. I am not a nonprofit attorney, but I do know that people will receive a tax donation certificate for any item they donate to a 501(c)(3). A nonprofit cannot determine the value of the equipment donated; that is left up to the donor.

Try reaching out to members of your congregation or local businesses that may have some equipment lying around that would serve your HOW well while giving them a tax write-off. Even if the equipment is broken or is not in the best cosmetic shape, it may very well serve a purpose that would otherwise have to be served by some type of purchase.

The "I" Word

Volunteers are the backbone of every HOW. They donate hours of time and energy while realizing benefits that cannot always be quantified in their checkbook. However, there are instances that we need someone with a particular skill set to help us. Harkening back to my studio days, I was reminded of a vital part of the business: interns. Many colleges require their students to serve in an internship program, which allows them to get experience while the business is able to get free (or significantly discounted) labor.

I have found that the colleges around the Nashville area welcome churches into their internship programs. Interns are great for what many of us consider the mundane, yet required, aspects of our jobs: cable repair, console and amp cleaning, inventory, etc. For the most part, interns are happy to gain experience and build relationships that can become an asset to them upon graduation. All the while, the HOW is investing in an up-and-

comer [a.k.a. discipleship] which is arguably a responsibility of all HOW.

Cleaning Out the Closets

With some success, we have been digging out all of the old, broken, and unused audio/video gear around our church campus. After opening a church eBay and PayPal account, we started listing our “found” items for sale. You know the saying, “One man’s trash is another man’s treasure?” Well, it absolutely transfers to the world of AV: We actually got a few hundred bucks for a broken video switcher that hasn’t seen use for years. The key to eBay listings is to make sure you cover yourself on shipping charges and be willing to accept what it is worth. Granted, we also sold some old patch bays and miscellaneous equipment for 99 cents each, plus shipping, but we did avoid sending it to another landfill. If your area is served by Craigslist, it is also a great option for

selling equipment, especially for the heavy items that would not be good eBay candidates due to pricey shipping charges.

Plans Fail, Plans Succeed

For me — and I’m typically a black-and-white guy — “what is essential?” comes down to either we were right on track with our vision and planning just one year ago and we need to press on, or maybe we just heard wrong and/or got ahead of what ultimately is our calling for the current season.

There is a proverb that reads, “Plans fail for lack of counsel, but with many advisers they succeed.” Seek advice, crunch the numbers, rethink how to implement and cover cost, don’t be afraid to ask for help, and then, crunch the numbers again. With some creative thinking, the plan that seemed crystal-clear just a year ago can still come to fruition while being sensitive to our current financial landscape.

Studio Sense

(continued from page 18)

papers, and archives: There’s enough to keep someone busy for years in this internet cache of audio wisdom from the collected minds of the BBC, the largest broadcasting entity in the world.

Sweetwater Sound’s Music Technology Glossary

www.sweetwater.com/expert-center/glossary/

This is another excellent resource for information that also adds interesting tidbits about guitars and other musical instruments. Also check out the Tech Tip tab on the same page for lots of useful info on everyday topics like DAWs, sequencers, guitar pickups, compression, and more.

Mackie’s Compact Mixer Reference Guide

www.mackie.com/support/compactmixer/index.html

Well, I guess it’s true that Mackie “wrote the book” on compact mixers. Check out this guide to console basics starting with the first chapter, “Mixer Anatomy 101,” especially if you don’t know what all those lines and zigzags and arrows mean on a console block diagram. This will go a long way toward helping you understand basic signal flow in a console. It’s like having a road map for your recording trip. And it’s written in that inimitable and conversational Mackie style.

Armed with this list and the internet, you can spend all your spare time, even your vacation, enriching your audio knowledge. It may not make you the life of the party, but you might become the smartest engineer at the studio.

FMR

(continued from page 32)

64 crayon box: a fun choice, but hardly transforming of the picture at hand.

On bass guitar, I used Thick more often than not. I presume that this is because I tended to lean a bit harder on the PBC-6A in this application; the harder I leaned, the more the bass players liked it. We did have to contain ourselves and back off from time to time, but boy — the PBC-6A is a fun bass-sculpting instrument! Like on vocals, the unit “finishes” the bass track with a proud warmth and edge that still behaves itself in a mix.

Summary

I must note that while the PBC-6A’s chassis, look, and price may keep it from being considered amongst our industry’s “elite” compression/limiting devices, it does its job as any youthful, scrappy, and successful newcomer does: most often blatantly, yet with pro-level results for less money. In my use, the PBC-6A sat in chains following premier front ends (such as a SSL SuperAnalogue mic amp/DI, for example), was paired and linked next to far more costly stereo compressor/limiters, and usually was the most affordable box in the mix. As a result, I gladly bought one of the two review units from Mercenary. If I had found its more “extroverted” characteristics desirable on stereo pairs and mixes, I wouldn’t have hesitated to buy both. So I recommend that you try at least one PBC-6A if you’ve ever used the words “slammin’” or “brutal” — or “bad-**s” or “b****in” if you’re nasty — as a term of aural endearment.

Contact: Mercenary Audio (Distributor) | 866-968-0069 | www.mercenary.com

Bose L1 Model II Portable Line-Array System

As I proved to myself, the L1 is a truly professional-grade portable PA.

OK, I'll admit it; I'm a control freak. Aside from lugging around my Mesa Boogie and a Les Paul, lack of control is what turned me off to live playing and mixing years ago (we won't get into the economics).

But sometimes the artists I work with ask me to help get "the studio sound" during live shows: never an easy task. Recently, I had a few pleasant experiences using Bose's L1 Model II system that I'd like to share with you.

Features

Although Bose has offered the L1 series of portable and amplified line-array systems for a few years now, I had never actually heard one in use. I knew of several artists who swore by them, but they simply were not on my radar. The one reviewed here, a Bose L1 Model II system (\$2,499 street), includes a base unit with integrated power amp, the B1 Bass Module with two 5.25-inch bass drivers, and the T1 Tone Match audio engine for input and control. It has two sections, each with 12 2.25-inch speakers featuring 180 degrees of dispersion with "Cylindrical Radiator and Articulated Array" technology. This basically means you can hear it clearly even when far off-axis.

The T1 audio engine is connected to its base/power stand via standard Ethernet cable, which carries both power and audio. It features three mic/line inputs and two L/R line inputs with trim and volume controls, a small LED screen with three rotary encoders, a Tone Match selector, a master volume knob, and mute buttons. There's a global +48V phantom power switch, and channels 1-3 also feature a 1/4-inch TRS or TS preamp out. Aux output and mono master output (1/4-inch TRS or TS) also reside on the rear panel.

The T1's rotary encoder provides access to built-in features such as a tuner (nice touch), single-band parametric EQ, three-band (low/mid/high) EQ, compressor/gate, modulation effects, delay, reverb, presets of the aforementioned Tone Match feature for mic/instruments, and aux out.

The setup of an entire L1 rig consists of plugging in the top of the cylindrical speaker tower to the bottom stand, attaching the B1 bass module, and plugging in the T1. Done in 15 minutes or less. Seriously.

So it's got ease of use covered, but what about the sound? Damn if this thing doesn't sound like studio monitors, and, in some ways, even better. My first gig with flamenco guitarist Romero (who also toured with this system in Poland/Europe) featured three independent systems set up by Bose's Mid-Atlantic territory manager Denis Andelin: one for his guitar/vocal, a second for bass/overhead drums/kick/snare/hat, and a third for congas/trumpet/vocals.

Using an Earthworks SR 20 on vocals and a Godin nylon/MIDI guitar, his sound was pristine. The bass player abandoned his huge Ampeg and plugged right into the T1 with a six-string. It was a no-brainer on that low end; since the system is expandable by adding more subs, we had two subs connected to his. Also, guest singer/songwriter Suzanne Vega plugged in her Taylor direct and sang into the SR 20; it sounded truly fantastic — crisp highs, warm mids, and punchy lows. I was sold on the spot.

Bose also has the L1 Compact system available. More affordable than the Model II (at \$999 street), it can provide sound for up to 150 people. In the collapsed position, it weighs only 29 pounds and has two channels — a single XLR mic input on Channel 1 and a 1/4-inch instrument input or stereo RCA and 8-inch stereo input. You can also add a T1 to the rig, or plug in your own mixer. The integrated sub is a 6-inch driver running at 130 watts, and there are six speakers with 2-inch drivers up top.

Summary

These Bose systems are different animals. They replace your standard PA, mixer, and monitors with a small, compact, pristine-sounding setup. Sure, the reverb and EQ are basic and they are intended for small to medium audiences, but they deliver some seriously good sound that makes me want to play out live again. And that says a lot.

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“I’ve Got a Feelin’” — Jenni Muldaur

Producer’s Diary:



Steve Rosenthal

“I’ve Got a Feelin’,” from *Dearest Darlin’*, results from a most harmonic convergence — that of Jenni Muldaur, daughter of Geoff and Maria Muldaur; producers Steve Rosenthal and Don Fleming; and a stellar band, all assembled at Rosenthal’s Magic Shop studio in lower Manhattan.

“I had started a project with Jenni where we were doing more [Alan] Lomax material — field hollers and acoustic stuff,” says Fleming. “It was really good, but I had heard her, and she can really belt it out.”

“Her strong point,” Rosenthal agrees, “were these vintage soul and jump blues numbers.”

“I’ve Got a Feelin’” was cut live with all players in the room together, says Rosenthal, “which is the way I like to do stuff. With music like ‘I’ve Got a Feelin’,” it’s really important that the musicians and the singer connect in a ‘momentary’ way, where they’re in the same place at the same time, and feeling something at the same time.”

The song was recorded through the Magic Shop’s Neve 80 Series console and recorded to Pro Tools at 24-bit/96 kHz. In the mixing stage, tracks went back through the Neve, “and I used the Chandler TG-1 stereo compressor,” says Rosenthal.

“We actually recorded everything two different ways,” he adds. “Everybody had a vintage set, and a modern set, of microphones. We recorded it all at the same time into Pro Tools, and would decide as we were working which set of

mics we would use for each song. Jenni had two vocal mics — a [Neumann] U 67 and an RCA 77.”

“We weren’t trying to sound retro,” Fleming recalls, “but at the same time, it’s so much fun!”

“It made sense,” says Rosenthal, “because the whole idea of this record was to explore that time period between blues/jazz and rock.”

Dearest Darlin’ is a poignant record for all participants, as it was the last time they would work with guitarist Sean Costello, a blues phenom who passed away, on the eve of his 29th birthday, in 2008. “That was heartbreaking,” says Rosenthal. “We had a really great time. He’s playing really great on the record, so it has a warm place in my heart for that reason alone.”

The guitarist’s family has created the Sean Costello Memorial Fund for Bipolar Research (www.seanstellofund.org). “It turned out that Sean was bipolar,” Rosenthal explains. “I don’t think anybody knew; he had only been diagnosed a couple of months before he died.”



Song Facts

Single: “I’ve Got a Feelin’”

Album: *Dearest Darlin’*

Date Recorded: May 2007

Producers: Steve Rosenthal, Don Fleming

Mixers: Ted Young, Steve Rosenthal (assisted by Stephen Clemmer)

Mastering Engineer: Warren Russell-Smith (The Blue Room at the Magic Shop)

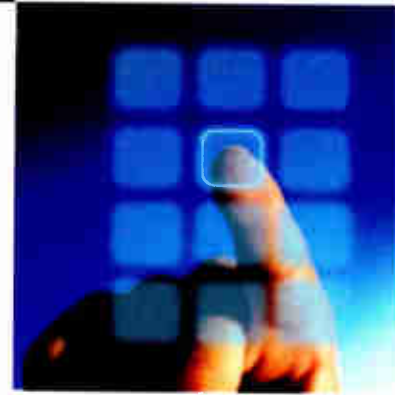
Other Projects: (Fleming) numerous Sonic Youth albums; Teenage Fanclub, *Bandwagonesque*; the Posies, *Frosting on the Beater*; (Rosenthal) archiving and restoration of the Rolling Stones catalog; Ollabelle, *Ollabelle*; Lou Reed, *Set the Twilight Reeling*

Single Songwriter: Sidney Wyche

Mixing Monitors: ATC SCM200 Main Monitors with ATC power amps; ATC SCM20

Mixing DAW: Pro Tools

Tracking Signal Chain (lead vocal): Neumann U 67 and RCA 77; Neve 1073; Universal Audio LA-2A



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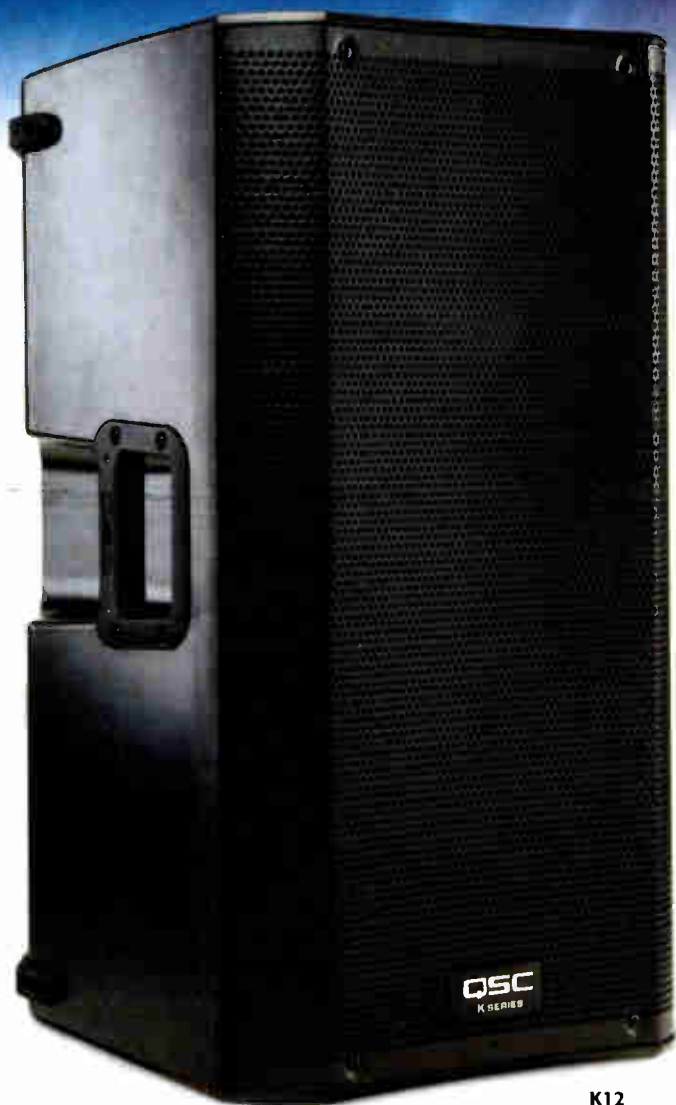
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