New Products, P. 8, 30

NewBay

JUNE 2009 | VOLUME 15 | ISSUE 6

ProAudio Review

The Review Resource for Sound Professionals

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STUDIO HEADPHONES
Pro-Grade Choices & Applications

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reviews | Grace Design m902B • Abbey Road Brilliance Pack
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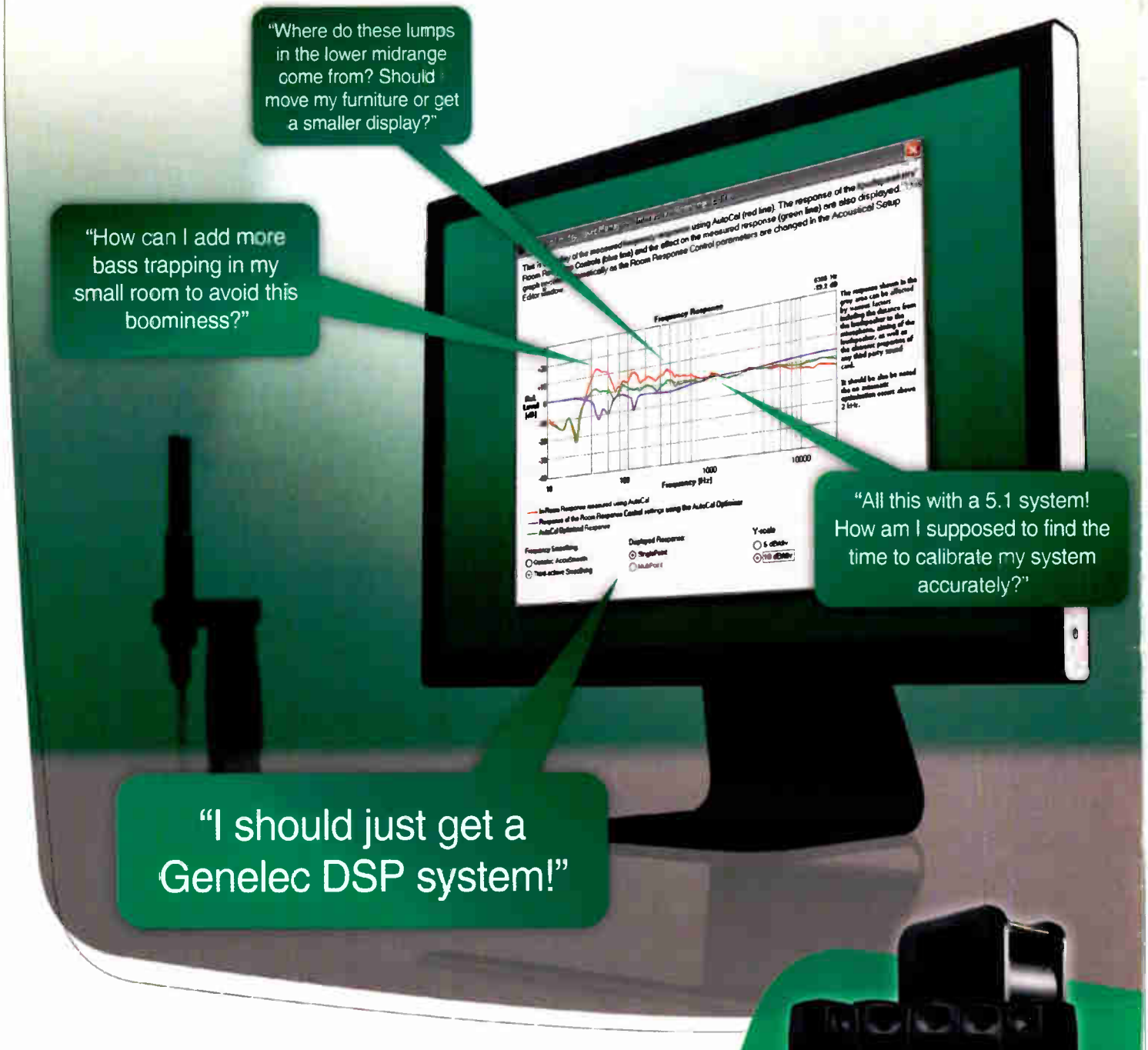
Some Questions are Easy to Answer



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What A Long, Strange (Sonic) Trip It's Been

In a high school electronics class, we built our "7-transistor, super-heterodyne, pocket AM radios" from a kit. The built-in speaker (about two inches in diameter) was poor, the hard plastic earpiece for "personal listening" was even more inferior. But, dating myself again, the good music was still on AM and we had little frame of reference for quality.

A very short time later, I had what I considered a "great" set of Sonic (a brand you probably never heard of) three-way monitors, but also a set of Pioneer open-ear headphones that actually sounded better than the speakers. I cannibalized an old all-in-one turntable/AM/FM console of my Dad's to build my next set of speakers, scaling up the dimensions of the Sonics for a home-built cabinet to house the larger components. They sounded a lot better once I realized I needed to install a crossover, I quit over-tasking my 40W X 2 JVC receiver with the parallel speaker load, and I updated the woofers. That set of speakers (once suspended from the ceiling in a homemade macramé hanger — it was a different time) was foisted off on a mover some time ago.

After my Pioneer headphones died, it was some time before I actually thought of headphones as musical once again. That didn't start in my early years in broadcast; I inherited a drawer full of DJ-abused Koss 4A phones and I continued to repair them (replacing blown drivers, ripped wires, earpads stiffened rock-hard and so on) for the next six years. I won a set of pro open-ear phones in a contest, but the rigid head piece made me feel like my ear drums were touching, even though they sounded pretty good till the pain set in. A set of AKG K240s was the first of my second generation of positive experiences with headphones, prolonged and continually improved to the present by a parade of Fostex, beyer, Sony, Sennheiser, more AKG, Ultrasone and Audio-Technica models.

I didn't consider in-ears viable (I tried various ear buds that came with portable electronic devices till I eventually quit even unwrapping them) until my first set of Shure universal earpieces, followed by other Shure models, Future Sonics EM3s then Atrios and, most recently, a set of custom-molded Sensaphonics in-ears. After a set of Genelec S30Cs became my shop speakers in my studio days, there was no going back to consumer models, and I currently have monitors from Tannoy, Genelec, Alesis, and JBL at my disposal, along with a string of review monitors that come and go.

If there's actually a message to be found in these reminisces, it's simply this: Life's too short for bad monitoring. Don't wait, don't compromise; investigate and invest. Everything you do as an engineer depends on what you hear.

ProAudio Review
The Review Resource for Sound Professionals

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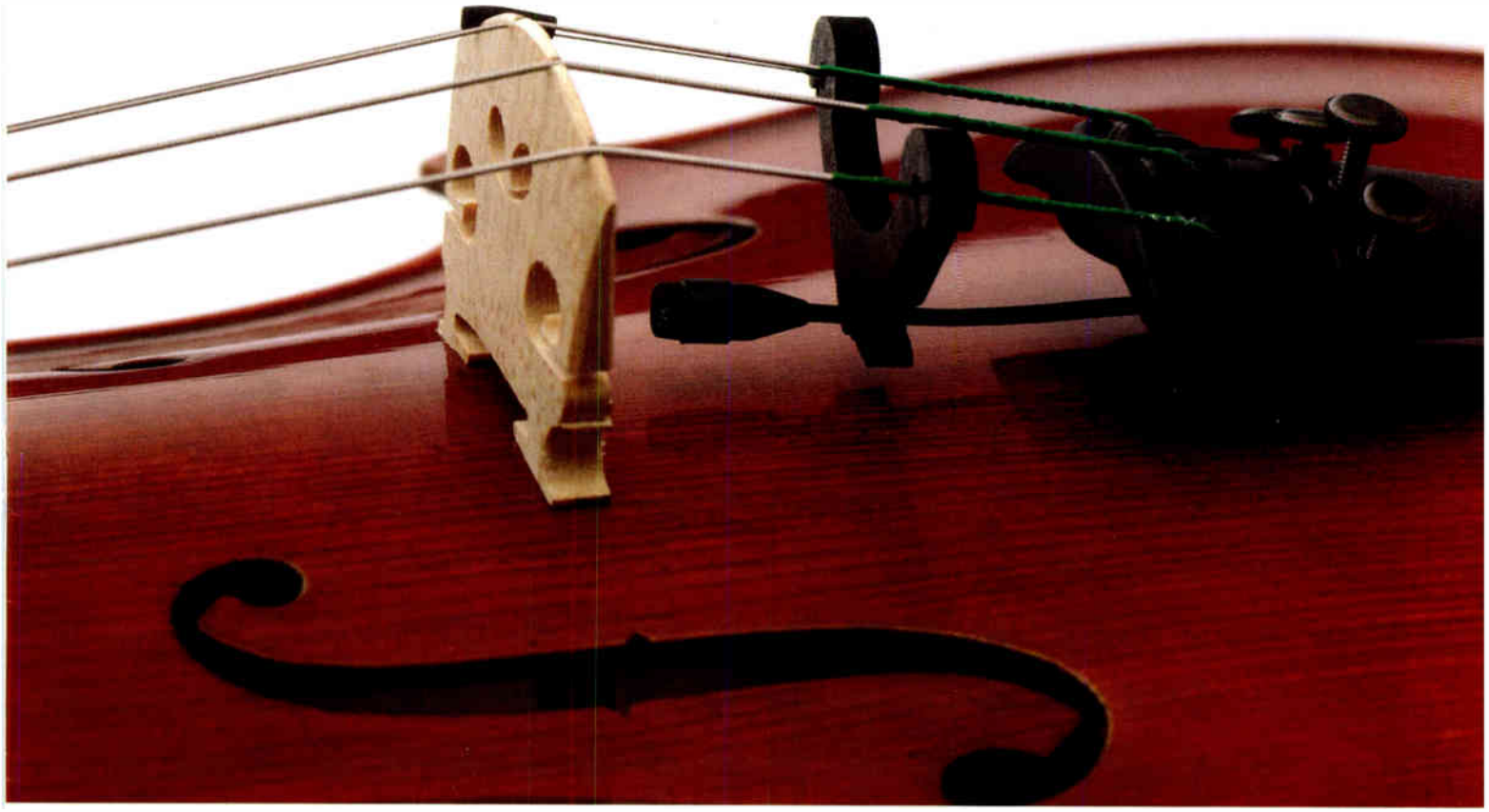

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new studio products

Shure SRH Series Headphones

At this year's NAB Show in Las Vegas, Shure unveiled over-the-ear headphones, a first in its 84-year history. The line consists of three models designed for critical audio monitoring applications. The SRH240, SRH440 (pictured), and SRH840 are aimed at studio recording engineers and home recordists.

"People who are producing music, editing video projects, or creating podcasts need accurate sound reproduction to create the right blend of vocals and instruments, dialogue and sound effects, or different speaking voices," said Scott Sullivan, Shure's senior director of global product management. "The SRH240, SRH440, and SRH840 have excellent balance among the low-, mid-, and high-frequency ranges, so that one range doesn't overshadow another. Bass is rich and full, vocals cut through clearly, and the highs are crisp without being harsh." The SRH Series is expected to ship later in Summer 2009.

Prices: $75, $125, and $250 (SRH240, SRH440, and SRH840 list prices, respectively)

Contact: Shure | www.shure.com

Cakewalk Cable-Based Interface Products

Cakewalk has debuted its UA-1G USB audio interface, plus and UM-1G, UM-2G and UM-3G MIDI interfaces. These cable-interface products are designed to connect musical instruments and other components to a computer. All interfaces are USB-bus-powered, requiring no AC adaptor, thus affording end-users mobility for recording on the go.

Price: $59, $89, $99 (UM-2G, UM-3G, and UM-1G street prices, respectively)
Contact: Cakewalk | www.cakewalk.com

The UA-1G is a 1 stereo in/1 stereo out USB audio interface that is targeted for use with a laptop in mobile or portable environments. Highlights include 24-bit/96 kHz audio quality; ASIO 2.0 performance (PC); large input-level knob for easy control while recording; high-end A/D and D/A converters for recording and playback.

The UM-1G, UM-2G and UM-3G (pictured) MIDI interfaces all feature Mac and PC compatibility, independent MIDI OUT/THRU hardware selection switch for each output, FPT (Fast Processing Technology) for MIDI data transmission, as well as lower latency through FPT's Advance Driver mode.

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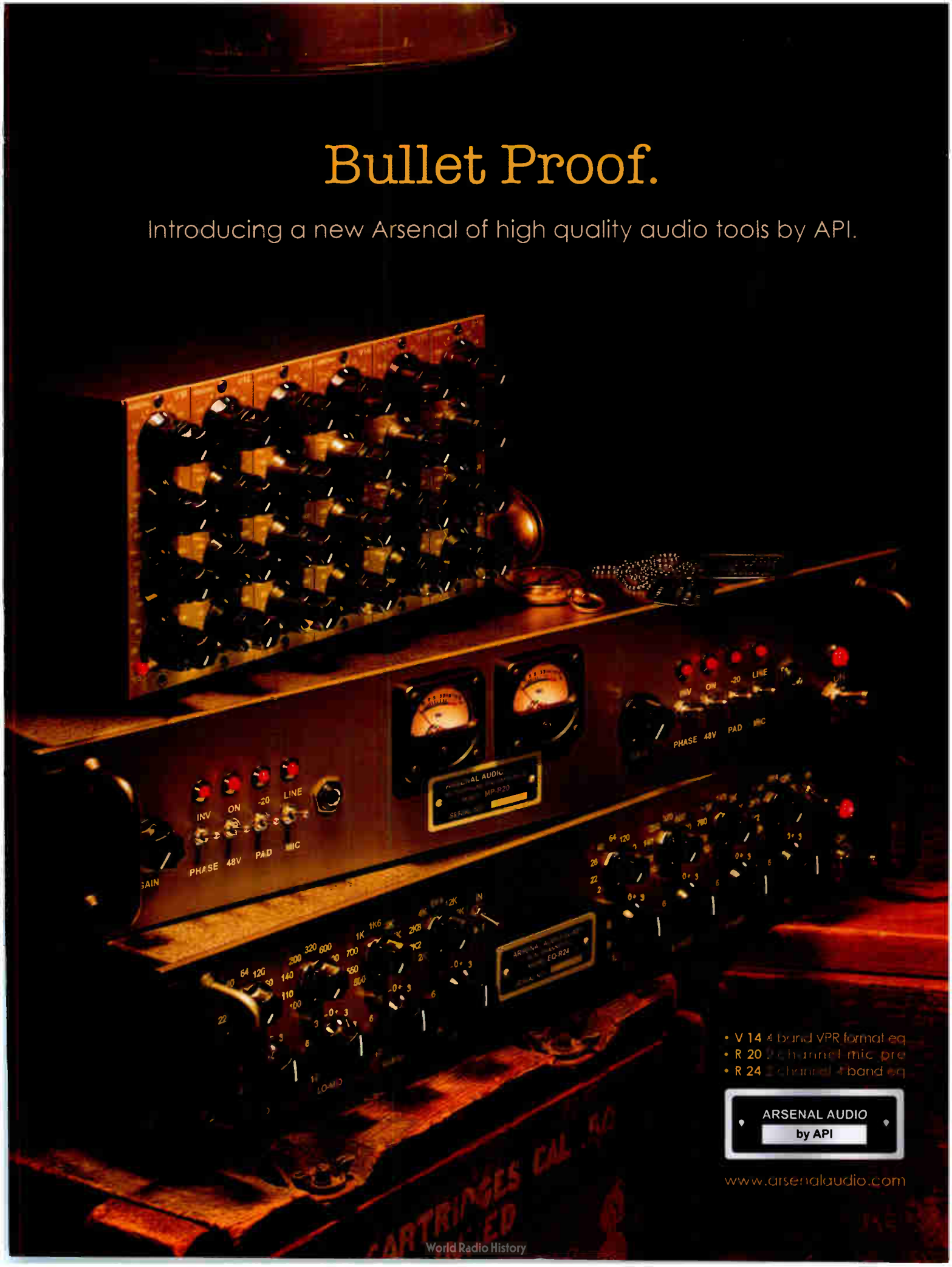

- V 14 4 band VPR format eq
- R 20 2 channel mic pre
- R 24 2 channel 4 band eq

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new studio products

Genelec 8020B Active Monitor

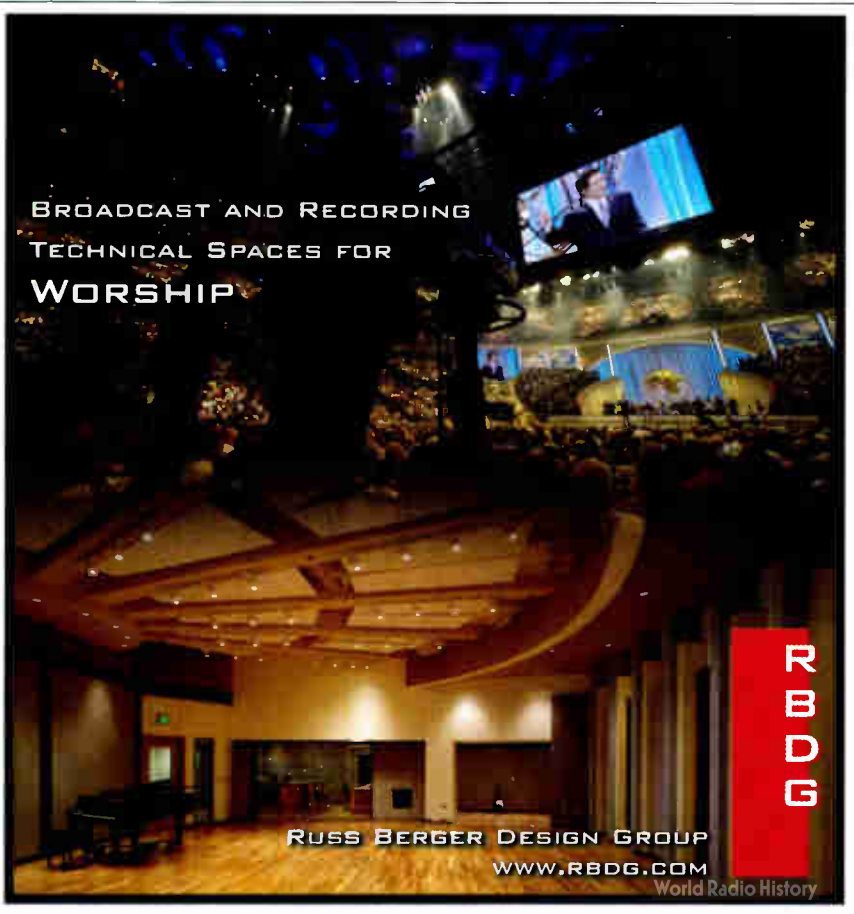
Genelec's 8020A two-way active monitor system has been updated to become the 8020B. The basic change in the B model is the addition of a mains power switch now located on the enclosure's rear panel. The rotary front-panel control is used for sound level adjustment only. The audio signal can still be muted (the front LED stays on) in turning the front-panel volume knob fully anti-clockwise, but actual mains power is only switched off using the rear-panel on/off power switch, which allows the user to retain level settings on power-up/down. Stay tuned for next month's "*PAR* Session Trial," which features the 8020B alongside four other top performers in the "small powered monitor" product category.

Price: $575 each (list)
Contact: Genelec | www.genelec.com

Primacoustic Absorber/Bass Trap

The G Trap is a standalone combination broadband absorber and bass trap that helps control excessive bass in a room while it acts as a gobo (go-between) for studio use. Its sound absorption is achieved by combining three acoustic principles into a single device: two 2-inch-thick absorptive panels of high-density fiberglass are mounted on front and back; a central rigid membrane acting as a soundblock for high frequencies and "impedance barrier" for low frequencies; and an air cavity inside the G-Trap's Baltic birch plywood enclosure. Primacoustic reports that the air cavity goes a long way to attenuate bass in the 100 Hz range. Shipped flat, the G-Trap can be assembled in less than 20 minutes. Its fiberglass panels come covered in black, beige, or gray fabric.

Price: $369
Contact: Primacoustic | www.primacoustic.com



Heil PR 20 UT Mic

The buzzed-about PR 20 — a proven workhorse of a dynamic mic as lauded by our own Contributors in the pages of *Pro Audio Review* — has become more affordable thanks to Heil Sound's new Utility (UT) product configuration. The PR 20 UT package comes with a stainless mesh grille, foam windscreen, and mic clip in a vinyl zipper bag, rather than the larger kit that comes with the standard PR 20 package.

Price: $115 list
Contact: Heil Sound | www.heilsound.com

Heil Sound founder Bob Heil explains, "By streamlining the packaging, we can dramatically lower the price without one single alteration to the microphone itself. Think of it as a PR 20 without the 'bling!'"

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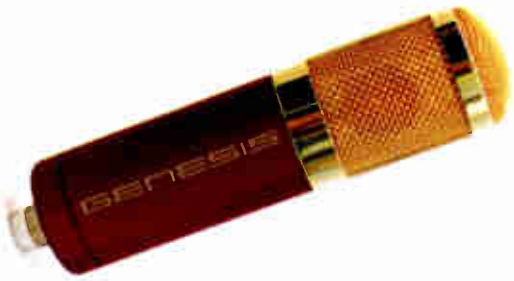
new studio products

Microphome Mic Disinfectant

Microphome LLC has unveiled its namesake product, Microphome, a disinfectant/deodorizer for microphones. Available in individual 50 ml bottles and in a complete cleaning kit, this cleaning foam reportedly takes only two minutes to use and kills 99.9 percent of all germs. The cleaning fluid is pumped in a measured dose of aerated foam that clings to the external microphone surface, never touching the internal electronics, then completely dissipates within two minutes.

Prices: $26, $9 (cleaning kit and refill street prices, respectively)

Contact: Microphome | www.microphome.org



MXL Genesis $100 Mail-In Rebate

The Genesis — MXL's flagship product and 2009 PAR Excellence Award-winning tube microphone — is now a better deal than ever before. MXL is offering a $100 rebate for those customers who purchase the Genesis within the month of June 2009. For more information and a downloadable mail-in rebate form, visit MXL's website. The glossy red Genesis features a hand-selected Mullard 12AT7 tube, -10 dB pad, and 150 Hz 6 dB per octave roll-off; its complete package comes with a pop filter, shockmount, power supply, and cabling.

Price: $599 street (before $100 rebate for the month of June 2009 only)

Contact: MXL Microphones | www.mxlmics.com

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Studio Headphone Selection

by Christopher Walsh

It's not the sexiest piece of gear, but a reliable pair of headphones is essential. In the studio, on location or on the road, good, accurate, and durable headphones are useful in a multitude of applications.

Just as audio professionals have diverse responsibilities and work environments, they enjoy a wide range of styles and prices. Listening is subjective, after all, and one engineer's perfection is another's ordinary. Fortunately, choices are many, and for a relatively small investment, recordists can — and definitely should — own a few pairs of quality phones.

"My first responsibility, and the first thing I want to do when I'm tracking, is I want the guys in the studio to have a great headphone balance," says producer/engineer Ed Cherney, who brings six pairs of Audio-Technica ATH-M50s to tracking dates. "Especially, I want the drummer to be able to hear the kick drum, I want him to be able to hear the bass, and I want them to be able to turn the volume up without it getting fuzzy and without it breaking up. If I can keep them happy in the studio, it makes them better musicians, and it gets me invited back to another gig."

"I had been using standard headphones that we've used in the studio for years, and then someone turned me on to the Sony 7509HD," says Brian Mackewich, co-founder of New York-based post-production/media production studio Gizmo Enterprises. "First of all, they're full-ear: You put them on and cut out all the noise, and can hear the audio great. But I really like the response. It's not quite like listening to a speaker, but it's the best headphone I've ever put on. And the *best* thing

Pictured above: Four top options in pro-grade studio headphones: (top, L to R) Ultrasone PRO 900, Sony 7509HD, AKG K 271 mk II, (bottom, L to R) Audio-Technica ATH-M50, and the high-quality Aphex HeadPod 454 (the latter reviewed with great results in the November 2007 issue of *Pro Audio Review*).

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AKG's K 702

> "If I can keep them happy in the studio, it makes them better musicians, and it gets me invited back to another gig."
>
> —Ed Cherney

about them is, they don't break! We were buying five, six pairs of headphones every six months, because they were just pieces of junk. It's not like it's a huge expense, but it's a pain in the butt. These [7509HDs] are really built tough. I have yet to repair one, and I've had them for 18 months to two years."

For Gizmo personnel, the Sony 7509HDs see action in multiple applications. "Obviously, we check some mixes on them," says Mackewich. "A lot of times for dialog editing you use them to make sure your edits are good, when you don't feel like monitoring at monster volumes. For voice recording they're fantastic, because you don't get bleed as much as with semi-open-ear headphones.

"I use them a lot," Mackewich continues, "mostly in the machine room, for a lot of digital delivery encoding — Flash files, video on demand files, things like that. As a matter of fact, I went on vacation and took an Mbox with me. My wife and I did some recording — I had my portable laptop studio with Pro Tools 8. When I put them back on at my home studio — my full rig — and heard the recordings, I was pleasantly surprised with what we got."

Michael Klvana took to Ultrasone PRO 550 headphones, in part, for their sound isolation. Recording Crosby, Stills & Nash with a 48-track DAW situated on the side of the stage — just feet from Stills' amplifiers — isolation was essential, he explains.

"I'm recording 48 tracks at high resolution," explains Klvana. "I take two channels out of there to make quick MP3s. It's an on-the-fly kind of thing — I need really quick reference, and something that I can hear the details [with] and be able to get a quick sound. I've been using the Ultrasone PRO 550s onstage because I can get a little bit more level out of them — sometimes that extra volume makes or breaks what I'm doing onstage. When I need a little more detail, I go with the [Ultrasone PRO] 750, like when I'm doing an edit in my hotel room, or setting up.

"I do a lot of playback, also, for different groups — TV shows, live performances and things like that," Klvana continues. "A lot of times, there are different configurations as far as their mixing capabilities, so I have to be ready to take 16 channels and slam them down to 2, or 4, or 6, depending on what they're capable of. I have to walk in and have a mix ready. The thing I like about the Ultrasones is that sometimes I need to have them on for long periods of time, like two hours straight. My ears don't fatigue as quickly as [with] headphones that have the drivers shooting straight into your ears, or in-ears where the drivers are right up against your eardrum. The driver shoots more toward the top of your ear and the back, not straight into the canal. It gives the sound a little chance to move around. It's amazing: I've been wearing different brands and in-ears, but when I put on the Ultrasones, I can really hear a big definition difference. A lot of the musicians that I'm working with put them on in the studio and are like, 'I want a pair of those.' Whatever the studio cans are, they hear the difference right away."

A lesser-known, high-end manufacturer, Grado Labs, is a favorite of some of the audio industry's top practitioners. Tom Jung, president/engineer of DMP Records and technical consultant to this magazine, considers the headphones developed by Joe Grado to be the best he has ever heard. "When the Grados came along," says Jung, "I just fell in love with them, as did Bob Ludwig, and have used them religiously over the past 15 years.

"Joe is a master at resonances," Jung explains. "When I visited his lab when he was starting to build these things, he had a whole wall of chemicals, different viscosity materials. He bought drivers, and they had all kinds of mechanical resonances. He would dampen those resonances, and finally he came up with a formula. The ones Grado built for Bob and I were machined aluminum. He just really, *really* has an understanding of resonance. Drivers, speakers, headphone components, phono cartridges — he just built with resonances at almost a molecular level. What he ends up with, after endless tweaking, is very, very musical."

Jung's Grado Labs HP1 headphones are no longer made; presently, the manufacturer offers 10 headphones models, spanning the Professional, Statement, Reference, and Prestige series and ranging from the iGrado (designed for portable use) to the metal/wooden PS1000.

"I used them in the studio religiously," says Jung, "and now that I'm not making records for DMP anymore, I'm doing more pro bono kind of stuff with bands in the area — concerts and recitals and things like that. I still use them there, but it's an open headphone, so when you get into the room where the music is performed and that's your monitoring, you would like a little more isolation. That's where I got into the Audio-Technica [ATH-M]50s. They're

Sony's MDR-7509HD

World Radio History

WAITING FOR ECONOMIC RECOVERY?

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"I don't use headphones as a critical element in mixing — just a quick check to examine imaging and overall translation."

—Hal Winer

Audio-Technica's ATH-M50

pretty respectable. For a closed headphone, I'm reasonably happy with them."

Hal Winer, owner of BiCoastal Music in Ossining, New York, also likes the ATH-M50, but stocks his studio with a variety of phones for clients with varying preferences. "For a mix reference, I like the AKG K 271 mk II," says Winer. "They're reasonably priced and very accurate. I don't use headphones as a critical element in mixing — just a quick check to examine imaging and overall translation.

"For all-around use," Winer adds, "especially tracking ensembles, I like the Audio-Technica ATH-M50s. They're a bit hyped in a few places, but they handle uncompressed transients very well. The players like that because they get impact and volume without distortion, especially with kick drum and bass. I also own Sony MDR-V6s and Ultrasone PRO 550s so that clients have some choice if they want it."

Like Klvana, Marty Strayer does extensive work in performance contexts — handling front-of-house and monitor engineering — as well as in studio settings. "I like the AKG K 702s, because they sound awesome, are light, and unobtrusive," he reports. "I use them to reference inputs and mixes. They are truly great-sounding headphones."

On the road, Strayer also uses his K 702 headphones with a laptop-based remote recording rig, "and find them to be very handy on the tour bus, in hotels, etc. I love 'em. Also, I turned on some friends in the movie business, and they love 'em, too. They like the light weight [and] great sound, as they use them on location, and they like that they don't feel isolated, as they are not 'deadphones.'"

Ultrasone's PRO 550

Mastering engineer Gavin Lurssen, of Lurssen Mastering in Hollywood, notes that "often, clients will bring a laptop and their phones to do a test listen before we continue in the morning, to make sure we get off on the right track and the songs are going to sound good in a way many consumers listen."

Lurssen equips his studio with Sennheiser HD-590s. "A little bright," he offers, "but serves the purpose for quality screening, especially for tics and glitches on a mix."

Not the sexiest piece in your arsenal, but pretty darn important, as these professionals attest. "It's just one thing I don't have to think of," Cherney observes. "I know that when I have [Audio-Technica ATH-M50s] out there, I don't have to worry about 'I can't hear the kick drum,' and the bass isn't getting fuzzy or breaking up.

"The hardest part is being able to take them home," he concludes. "If I come with six headphones, invariably I'm leaving with four."

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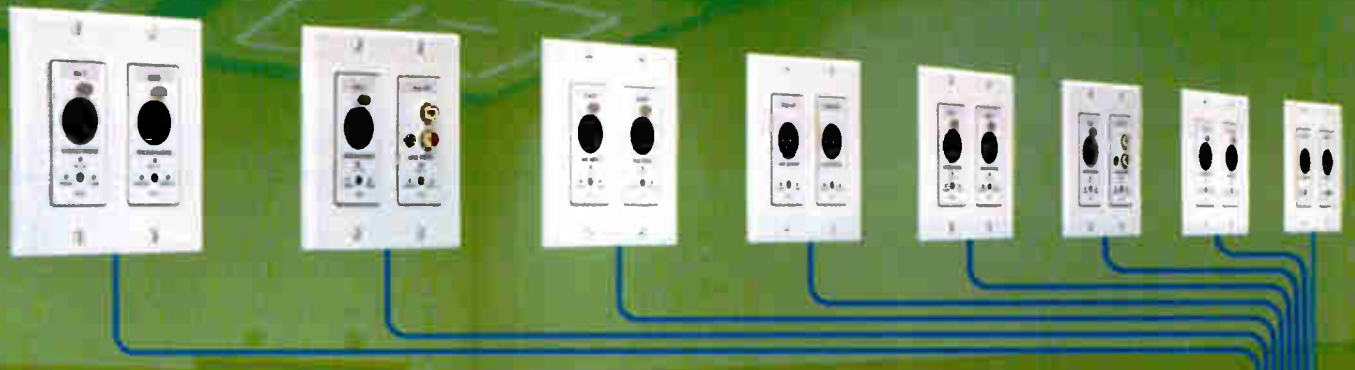

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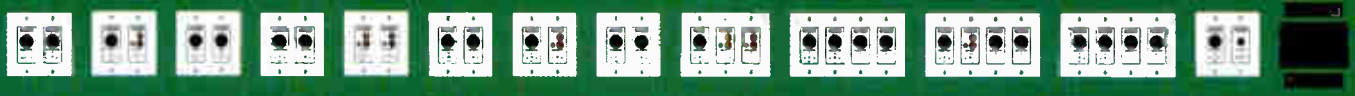

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Grace Design m902B Reference Headphone Amplifier

Front and rear panel views of the m902B.

Michael Grace of Grace Design comes from a background of high-end consumer audio, which has traditionally paid more attention to build quality than the pro audio manufacturers do. Such is the case here with his m902B Reference Headphone Amplifier ($1,850 list); at first glance, it says "quality."

Features

The m902 is a real "fit the need" kind of product, one which functions as a headphone amp, a preamp, and a D/A converter in one neat, compact package; it's a perfect match for today's workstations. Both balanced and unbalanced analog inputs are supported as well as AES, TOSLINK, S/PDIF, and USB digital. Balanced or unbalanced line output versions are available for feeding power amplifiers or powered speakers. [The "B" in Jung's own m902B stands for "balanced," as the unit retains all features of the standard Grace Design m902, yet is augmented with fully balanced line outputs in place of the standard m902's unbalanced outputs. — Ed.]

A simple push of the large rotary encoder volume knob switches control between line and dual headphone outputs in half-dB steps displayed on a nice, big, blue LED readout. Press and hold the same knob, and you enter the submenu where additional modes can be accessed such as Balance, Crossfeed, Exclusive Output, Output Toggle Lock Out, Gain Set, Power Up Level, and IR Remote Control Enable.

All of m902's digital inputs are re-clocked with s-Lock, a crystal-based PLL (phase-locked loop) used for regenerating the incoming digital clock and providing an extremely stable, ultra-low jitter clock to run the DACs. The s-Lock system can lock to input sample rates of 44.1 kHz or 48 kHz +/- 10 Hz, 88.2 or 96 kHz +/- 20 Hz, and 176.4 kHz or 192 kHz +/- 40 Hz. If the incoming signal clock frequency is outside of these tolerances, the s-Lock circuit will not lock and the s-Lock indicator will shut off. Even if the s-Lock does not achieve lock, the digital audio receiver circuits still achieve decent jitter performance.

In Use

I set up the m902B at my workstation with its balanced line outputs into my Bel Canto stereo amplifier driving a pair of SLS ribbon monitors. I listened to several digital sources as well as balanced and unbalanced analog inputs, and all sounded just the way I would expect: clean and quiet with solid imaging and easy on the ears, meaning no harshness. The low end was nice and solid with good bass extension.

Headphone listening was with my reference Grado open-air HP1, as well as the Audio-Technica closed-back studio monitor, ATH-M50. The m902's 1-ohm output impedance has excellent control of the lower frequencies, which provided nice and tight yet full bass on both sets of phones.

The X-Feed Mode in the m902B contains circuitry that electronically simulates the acoustic experience that occurs when listening to speakers. What is really amazing about this feature is that the ear/brain mechanism seems to accept this as sort of a binaural experience, thus reducing listening fatigue. The best part is that it does not mess with the tonal balance like many such circuits do.

I love my Grado headphones, and the Grace m902B makes them sound better than any headphone amp I have tried to date — so much so I had to buy it. I'm not nearly as familiar with the Audio-Technica ATH-M50, but they also sound good with the

Tom Jung is the founder of Digital Music Products (DMP), a Grammy winning engineer, and a technical advisor to *Pro Audio Review*.

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Grace amp; the A-Ts definitely have the isolation advantage over my Grado phones, making them perfect for studio use or location recording.

Equally comfortable when controlling speakers or driving headphones with excellent DA conversion and build quality, the Grace m902B is the perfect professional workstation monitor solution at around $1,750 street.

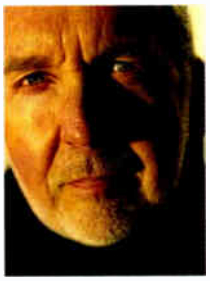
Contact: Grace Design | www.gracedesign.com

Contributor of the Month:

Tom Jung

Recording and Mastering Engineer/Digital Audio Pioneer

Coastal North Carolina



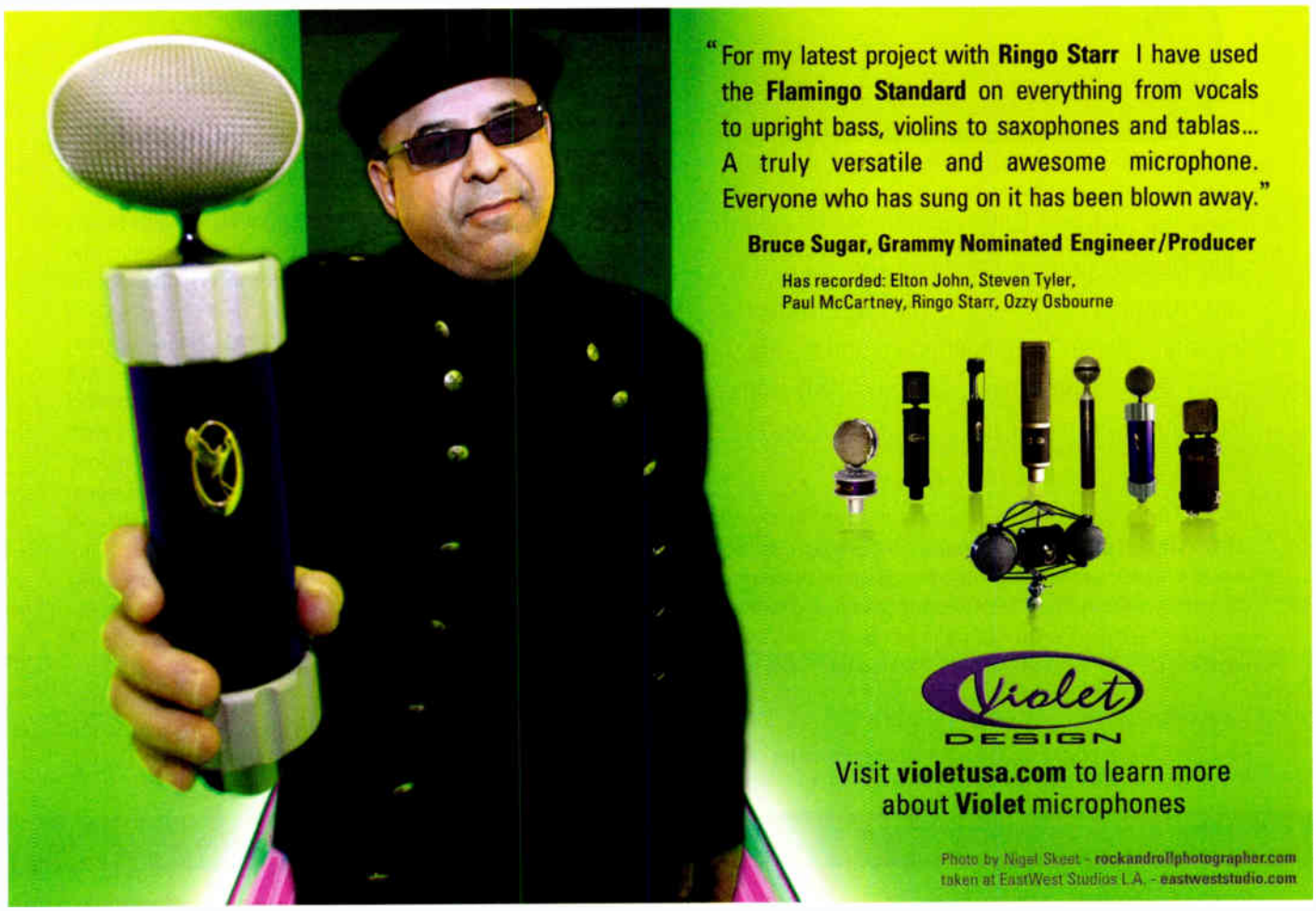
In the early 1960s, Tom Jung (or TJ) began his recording career at Kay Bank Recording Corp. in Minneapolis doing remote recording and disc mastering in addition to studio recording; this is how he would spend the next 40+ years.

In 1969, TJ co-founded and built (from the ground up, no less) Sound 80 Inc., a five-room, world-class recording studio to host and work with artists including Bob Dylan, Cat Stevens, Leo Kottke, the Minnesota Orchestra, and St. Paul Chamber Orchestra; the latter of which won a Grammy for its work with TJ and Sound 80 Inc. Now a historical landmark, the Sound 80 Inc. building is considered the birthplace of digital recording due to pioneering involvement with 3M and its digital audio recorder project.

In 1979, TJ moved to New York City, where he worked as a freelance engineer recording movie scores such as *Dressed to Kill*, *The Cotton Club*, *Star 80*, *Annie*, and *The Muppet Movie*, to name a few, as well as countless jazz records.

While working with some of the best musicians in New York, TJ got the idea to start a small audiophile jazz label called Digital Music Products (DMP). In 1983, DMP released the first jazz CDs in the world and, in 2001, won a Grammy for *Bob Mintzer Big Band's Homage to Count Basie*.

Continuing to push the digital envelope by upgrading from 16-bit to 20-bit and, ultimately, 24-bit, TJ was introduced to DSD in the late 1990s, and he hasn't made another PCM recording since.



World Radio History

by Randy Poole with Dustin Lefholz

Mackie Control Universal Pro

The MCU Pro is a delightful control surface in design, function, feel, and footprint.

From the realm of DAW controllers, Mackie brings us its expandable Mackie Control Universal Pro (MCU Pro) along with the 8-fader Control Extender Pro (EXT Pro) and the C4 Controller Pro. Together, these components comprise the next-generation controller series from Mackie utilizing USB from the computer to the MCU Pro, with the EXT Pro and the C4 operating through the MCU Pro via standard MIDI cabling.

The MCU Pro provides all the functions you need to control your DAW software, minus the monitor/speaker section of the previous HUI model, since many engineers have dedicated monitor controllers already. The C4 Pro is made specifically for tweaking plug-ins or virtual instruments and integrates with Logic Pro, Logic Express, Reason, SONAR and Mackie's own DAW, Tracktion.

Features

For the MCU Pro, Mackie opted for a smaller footprint (about 16 inches square, and eight inches wide for the Extender Pro) for this model, targeting the portable market as well as desktop applications. Mackie included nine Penny + Giles 100mm motorized faders (eight plus a master) on the MCU Pro, and eight on the Extender Pro. Directly above each channel path is a Select, Mute and Solo button, each backlit in bright white when operational. Above those is a small, multi-colored signal LED followed by the REC button. Then, topping off each channel strip is the venerable Mackie V-Pot with push-button capability. The meter bridge extends a little over two inches from the desktop, keeping things low profile, while including a two-line, 55-character backlit LCD display that shows track names and parameter settings.

Above the Master Fader section of the MCU Pro are dedicated fader bank, channel, flip and global view buttons. Up top are the V-Pot assignment buttons, offering six choices to assign to the

Randy Poole is a Nashville-based engineer/mixer and owner of the Poole Room studio in Franklin, TN. www.thepooleroom.com

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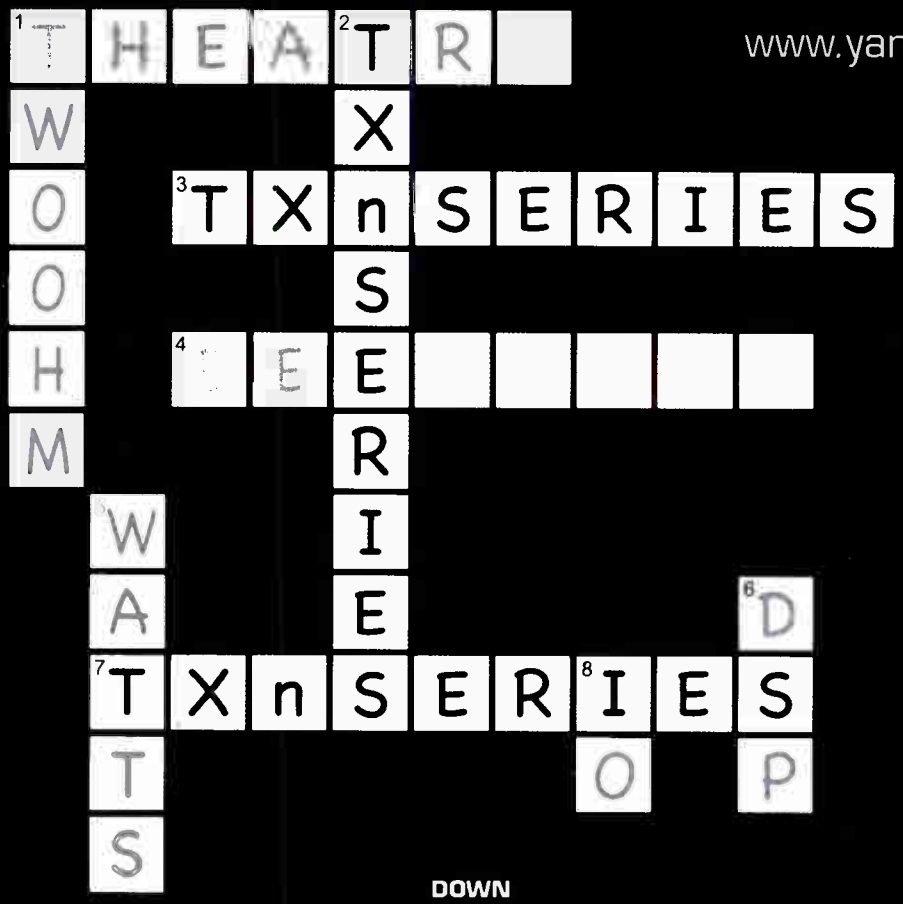

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V-Pot. On the top right-hand side of the MCU Pro, 39 buttons address different functions for individual DAW software platforms; Mackie includes five different Lexan overlay templates — for Digidesign Pro Tools, Steinberg Cubase and Nuendo, MOTU Digital Performer, Cakewalk SONAR, and Mackie Tracktion — made to label specific parameters depending on your DAW of choice. [Additionally, Syntrillium CoolEdit Pro, RML SAWStudio, and Sony Vegas overlays are available direct from Mackie for $10 each, plus $10 or $15 for domestic or international shipping, respectively. — Ed.]

A USB MIDI interface is also included on the back panel for direct connection to a Mac or PC and up to three additional pieces of external MIDI gear, such as more Mackie controllers. On the bottom right-hand side is the zoom control, a scrub wheel, and dedicated "tape-like" transport controls. The Extender Pro features eight channels with all the channel-strip controls but without the MCU Pro's master section.

The C4 Pro is the MIDI controller portion that has four 55 x 2 backlit LCD display screens and 32 dual-function V-Pots with integrated push buttons, arranged in four rows of eight. Each V-Pot is surrounded by LED indicators that display current knob positions. This allows the C4 Pro to simultaneously display and access up to 32 plug-in parameters without switching banks. Another feature provided is a split section, allowing for multiple plug-ins to be mapped at the same time. The C4 Pro can be integrated with the MCU Pro or used as a standalone MIDI controller for mapping plug-ins or controlling instruments and other devices.

In Use

My first use of the MCU Pro and EXT Pro was with my Pro Tools mix rig, utilizing a Mac G5 via the USB connection. Holding down the select buttons on Channels 1 and 2 while powering up the units enters a setup mode where you can choose HUI (Mackie's Human User Interface protocol) emulation. Once we entered the HUI mode, everything mapped accordingly and we threw on the provided Pro Tools overlay template. A reminder: Don't forget to select the HUI controller settings in Pro Tools, too.

First impressions were quite good, partly due to the easy-to-read displays. Even though the layout was fairly different from my well-used Digidesign Control 24, it didn't take long to get used to the MCU Pro's layout. The backlit buttons were easy to see and use, and the extra characters of the LED display were a welcomed sight — track names were easy to read. One item that gave me pause was the noisy faders; they tracked well enough, but any low-level monitoring is interrupted with motor noise. With the MCU Pro's limited surface space, accessing certain modes, such as Automation or V-Pot Assignment, requires a few button pushes. However, with a little practice, this soon becomes second nature and a reasonable tradeoff for the benefits of a reduced footprint.

The select buttons for the MCU Pro work differently than those on my Control 24; they are additive (latching) on the 24, canceling (alternately "overriding") on the MCU Pro. Maybe there is a way to change it, but I didn't discover a way to select more than one channel at a time. [According to Mackie, there are ways to select more than one channel at a time. "To select multiple channels while pressing a channel's Select switch, press Select switches on additional channels. To de-select a single channel, press Shift/Add + Select switch on the channel. To select or de-select multiple channels, press Shift/Add + Select switches on additional channels. To select or de-select all channels, press Option/All + any Select switch. To change the Select state of a channel, and change all other channels to the opposite state, press Alt/Fine + any lit Select switch." — Ed.]

The V-Pots are similar to the ones first used on the Mackie d8b digital console, but these have a better feel with a smoother readout on the LED collar, plus the advantages of an integrated push button. I liked the full-sized transport control buttons, but I'm not sure why Mackie chose to put the scrub wheel in the way of your hand reaching them. I did find that you could rest the palm of your hand on the scrub wheel to access the buttons with little trouble.

The C4 Pro is not compatible with Pro Tools, so I enlisted the expertise of Dustin Lefholz, my second engineer/audio guru who connected it to his Apple Logic rig, which also runs on a Mac G5. Getting rolling was no problem; we hooked up the C4 Pro via MIDI thru the MCU Pro with USB, opened Logic 8, and it was up and running. We pulled up a few of my favorite plug-ins that come with Logic, such as the EXS-24 software sampler and Sculpture modeling software.

Fast Facts

Applications
Project and commercial studio, mobile recording

Key Features
USB MIDI controller; Eight Faders plus a Master; lots of dedicated buttons; Lexan templates for many applications.

Price
$1,689 list (MCU Pro), $999 list (XT Pro), $1,099 list (C4 Pro)

Contact
Contact: Mackie Designs | 425-892-6500 | www.mackie.com

Product Points

- Modest footprint
- Integrates well with many DAWs; Easy setup

- Faders are noisy
- Some functions require several button presses

The Score: The Mackie Control is an attractive series of integrated controllers made to fit your desktop with a little room left over. The C4 is a MIDI or plug-in tweaker's dream come true.

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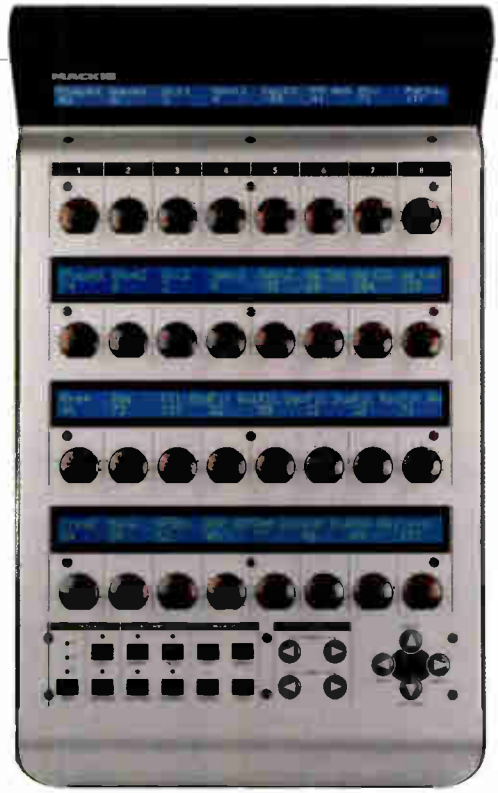
Upon opening the plug-ins, they automatically mapped out along the four rows of V-Pots. Even with instruments such as Sculpture or reverbs like Space Designer, their vast amount of parameters were easily accessed via the nudge and bank buttons and modified with the V-Pots, which makes "micro-mixing" almost effortless. Not only did the C4 Pro work great with Logic plug-ins, third-party instruments followed suit with no issues. When setting compression and EQ, I liked to split the rows of the C4 Pro, allowing more control with no wasted space.

Reason users everywhere will revel in the ability to completely control Reason from the C4 Pro. Again, the Lexan overlays provided by Mackie allow them to map what each button in the control section is for, as their functions do change between platforms. Thanks to the C4 Pro, I found programming in Reason to be easier and smoother. I had no problem modifying parameters, dropping into record, and using other transport functions all located just below the V-Pots.



Mackie C4 Controller Pro

Summary

Mackie MCU Pro and Extender Pro are a delight in many aspects of their design and implementation. In my opinion, the footprint is just right, all buttons function easily, and there is plenty of visual feedback from the multiple LCD displays. One could hardly ask for more given the reasonable price point. Still, I would like to see Mackie offer a version with a higher-quality fader as an option; I'm sure many professional users would spend the extra dough for it.

As far as the C4 Pro is concerned, Dustin and I couldn't find any flaws. Mapping worked great with all kinds of plug-ins and software (other than those within the world of Pro Tools, as explained above). All in all, the C4 will speed up production, allowing users more time to tweak and focus on the sounds themselves rather than clicking around on a screen. The C4 Pro earns our title of "a tweaker's dream controller."

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Antares Auto-Tune Evo Pitch Correcting Plug-In

Auto-Tune. To some, it's a dirty word; to others, it's a necessity and/or a creative tool. Whichever way you feel about it, there's no denying that Antares Auto-Tune has earned a significant role in the audio production world.

Although it's been around for over 10 years, I myself don't rely on it much for studio projects. However, when it comes to mixing concerts, it can literally save a take. I recently was able to run the new Antares Auto-Tune Evo through its paces on a live recording and came away with some interesting observations.

As an update from Auto-Tune 5, Evo ($399 list for Native, $649 list for TDM) has a handful of new features, which I'll briefly focus on for this review. First and foremost, under the hood there are updated algorithms including throat modeling, pitch shifting (Native only) and formant correction that take advantage of fast computers. The new Graphical Mode window can be resized (limited only by your monitor size), and Global transposition of all notes is now available.

My personal favorite feature is Note Objects; by clicking the Make Notes button on the bottom of the interface, Evo will analyze selected audio and create notes like a MIDI sequencer. It makes editing, fixing, stretching/shrinking and/or re-pitching notes quite simple (especially with a large Graphical Mode window). Also, the new Notes Tool can be used to draw Note Objects in, and the all-important transition between notes can be smoothed out with the Curve Tool.

I also like the real-time display of output pitch and the Pitch Graph display mode. The Pitch Graph display mode creates easy to view "lanes," grid lines that make it visually easy to correct notes (again, like a MIDI sequencer).

In practice, I found myself automating the Retune Speed (which can be individually assigned for each note), Humanization and Natural Vibrato to help fix the live concert vocals. In order to avoid the so-called "Cher" effect, sometimes more or less was needed, so I simply drew in the amount, literally, on a per word/phrase basis. It did a nice job, giving me natural-sounding results and truly saved a few nasty passages that would have been cut.

Auto Tune Evo is available for Mac and PC use on RTAS, TDM, VST, and AU platforms. Grooveboxmusic.com offers intro/tutorial videos for Evo, and I also went on to the Groovebox site and checked out the extended tutorials. Yes, it does cost a small fee to do so, but the time saved learning all the functionality of Auto-Tune was well worth it.

Overall, Evo is a fully matured piece of software that has a large number of well-thought-out features. You can either go easy with Auto mode or deep with Graph mode. While it's not the only game in town, it's a tool I'm glad to have when I need it. Now, if these artists would just sing in tune...

Contact: Antares Audio Technologies | www.antarestech.com

Producer/Mixer/Engineer/Sound Designer Rich Tozzoli also finds the time to be the Software Editor for *Pro Audio Review*. www.richtozzoli.com

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Ultrasone PRO 900 Headphones

Perched atop Ultrasone's high-quality professional headphone line, the new PRO 900 closed-back headphone ($599 list) is a luxurious, comfortable, and well-made pair of studio-grade cans.

Specifications include a 6 Hz to 42 kHz frequency range, 40mm Mylar/titanium driver, 40-ohm impedance, 96 dB maximum SPL, and a weight of 0.65 lbs. The complete PRO 900 package includes a canvas-covered, hardshell case with coiled and straight 10-foot cables terminated with Neutrik connectors, a 1/4-inch to mini-jack adapter, spare ear cup pads, a 20-song reference audio CD compiled and largely recorded under the direction of Ultrasone, and a manual.

Featuring proprietary S-Logic Plus technology — which, in part, requires off-center drivers angled towards the listener's outer ear — the PRO 900 has a unique sound for headphones that you may, or may not, be used to. However, it is my belief that the S-Logic technology greatly contributes to the PRO 900's impeccable imaging and fine detail necessary for engineers who use phones for meticulous editing and monitoring.

In direct comparison with high-quality conventional studio monitors, I did hear detail in the PRO 900's performance that wasn't apparent in the monitors; for example, in listening to The Beatles' "I've Just Seen A Face," I distinctly heard a harmony vocal, albeit short and mixed way back, with depth and detail that I had never even noticed before (and I've easily listened to the song several hundred times on dozens of sound sources). To my ears, the PRO 900 offers pronounced detail and acoustic presence at comparatively low levels; this quality will surely have you monitoring at lower-than-normal SPL, thus healthier listening habits over time — a notable and beneficial feature indeed.

On the PRO 900, pristinely produced vocal-oriented pop music — with reference material ranging from music by Beyoncé to Big & Rich — was translated with notable "air," well exposed reverb tails, and an overall "depth of mix." I wasn't as trustworthy of the PRO 900 when it came to low-frequency-based reproduction, though. On heavily compressed rock, such as Atreyu's "Right Side of the Bed," for instance, low end was rather "woofy."

If I were making mix decisions on similar material using the PRO 900, I would've produced a comparatively anemic mix, albeit possibly more pristine and "deep," but likely not "commercially competitive" within rock genres anchored by guitars with excessive low end and pronounced "chug." In other words, I trust the PRO 900 for its abilities in the realms of imaging and detail, yet would approach frequency-based decisions, especially those involving heavily compressed instruments and mix bus audio, with caution, or at least another pair of phones or, ideally, a pair of conventional studio monitors. I did just this and made some great mixes by predominately using the PRO 900 as a monitoring reference (mixes that even remained unchanged when referenced on my trusted studio monitor).

The PRO 900's $549 street price is at the top of our industry's pro- or studio-specific headphone range. As such, you'll initially cringe when handing them to a musician in your studio. (Or, at least, I did.) Luckily, the PRO 900 is a headphone built to take common studio abuse, such as ear-bleed-inducing tracking sessions while perched on the heads of rock drummers, guitarists, and vocalists. The PRO 900 is also physically fit: ready for studio wear and tear and, dare I say, built to be droppable. I've yet to use any set of phones that I consider worth buying for studio use that aren't up to being dropped, yanked, or accidentally kicked across the floor again and again.

In use as musician cans, the PRO 900 will seal well around most ears and heads; thus, you can give them plenty of juice and not suffer much from monitor bleed into your microphones. In my time with the PRO 900, every musician that used it had nothing but good things to say about its sound and feel, nearly to the point of disappointment if I didn't hand them the sole pair of PRO 900 cans I had during multi-musician tracking sessions.

In summation, I wholeheartedly recommend the PRO 900 to modern recordists and mixers who need a top-quality set of pro headphones and whose work generally ranges anywhere from dynamic classical, jazz, and "lightweight" pop to conservatively compressed rock music. And, while rather pricey, the PRO 900 is an incredible musician's studio headphone, too. Just be prepared for a band fight if you're a tracking engineer with only one pair.

Contact: Ultrasone | www.ultrasone.com

Strother Bullins is the Reviews & Features Editor for *Pro Audio Review*.

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Abbey Road Brilliance Pack

The Abbey Road Brilliance Pack ($499 TDM, $249 LE/AU/VST) is a plug-in bundle modeled after the original circuit schematics for the three vintage EMI "presence boxes." Each plug-in maintains the visual, sonic, and operational characteristics of the RS127 and RS135 hardware versions.

Abbey Road RS135

In 1962, EMI supplemented its studio's REDD mixing desk's EQ; its treble EQ was fixed at 5 kHz, and engineers wanted additional control in this area, thus the development of the RS127 (designed to mount in patchbay racks). The simple box provided passive treble control with two knobs, one selecting a center frequency (2.7, 3.5, or 10 kHz) and the other boosting or cutting up to 10 dB in 2 dB increments. Its popularity led to the construction of a second RS127, which had identical circuits and controls but was portable. The addition of an interfacing transformer in the later RS127 provided exaggerated EQ curves and a different sound than the original RS127.

Later, the RS135 was built and eventually became known as the "8 kHz box" since its center frequency is set at 8 kHz; it is the simplest of the group with only one control for boosting 8 kHz up to 10 dB in 2 dB increments. [According to EMI/Abbey Road Plug-Ins, "The addition of the interfacing transformer to the RS127 was much later (than the early 1960s). The RS127 and RS135 were originally plugged directly into the REDD desk as their impedances were designed to match that of the desk. But due to changes in impedance since the '60s, the transformer was needed to make the RS127 compatible with modern mixing consoles. This 'transformer effect' was thus discovered much later, as a kind of 'happy accident.'" — Ed.]

While the RS127 Box is more aggressive than the RS127 Rack, they are fairly interchangeable, and I've found that I enjoy the RS127 Rack on piano, drum overheads, and backing vocals. I prefer the RS127 Box on lead vocals, kick and snare drums, and electric guitars. The RS1235's frequency and bandwidth are perfect for making vocals and instruments pop out of a mix without actually getting louder, and all three plug-ins work well when strapped across the stereo bus.

I have found myself frequently running multiple instances of either the RS127 Box or Rack on the same channel so I could adjust multiple frequency bands. I achieved a great grand piano sound by simultaneously running three RS127 Racks (each set on a different frequency) and one RS135.

One could easily argue that Abbey Road should have developed the Brilliance Pack plug-ins with more adjustable parameters but that would keep them from being true to the original, and, frankly, I find it inspiring to work with some of the same limitations that Geoff Emerick worked with while engineering all those great Beatles albums.

The Abbey Road Brilliance Pack is in no way a jack-of-all-trades bundle; it does one thing, and does it amazingly well. As a matter of fact, I'd be inclined to say it does that one thing better than any other plug-in to date. Anyone looking to add a vintage sparkle to their in-the-box mixes should make this part of their plug-in collection.

Contact: Abbey Road Plug-Ins | www.abbeyroadplugins.com

Russ Long has been producing and engineering since the late 1980s. www.russlong.ws

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new live products

Beyerdynamic Opus 600 Systems

Beyerdynamic has introduced its Opus 600 series of wireless systems. The series is targeted for stage performances and small installations; it features AutoScan technology that allows the user to choose from 16 pre-programmed UHF frequencies. All Opus 600 systems are available in the frequency ranges 506-530 MHz and 668-692 MHz in the United States.

The NE 600 D 2-channel receiver (pictured) is housed in a 19-inch metal enclosure, the NE 600 S single-channel receiver in a 9.5-inch metal enclosure. The S 600 handheld transmitter features low-battery-warning LED and a "virtually noiseless" on/off switch. The compact TS 600 beltpack transmitter can be used as a guitar transmitter or in combination with a lavalier microphone for live presentations or theater applications.

Price: TBA

Contact: Beyerdynamic | www.beyerdynamic.com

Sennheiser Pro IE Headphones

Sennheiser has debuted its IE 6 (pictured), IE 7 and IE 8 ear-canal headphones, bringing pro-grade audio quality that performers use onstage to all music enthusiasts. The IE Series is designed with dynamic transducers that cover the entire frequency range with one system — basslines and sound effects separate themselves clearly in the mix. This eliminates the distortion that detracts from the integrity of the original source material, even at high sound-pressure levels.

Ear adapters in different sizes reportedly ensure the IE headphones fit the user's ear canal perfectly, are comfortable to wear and effectively seal off ambient noise. Good isolation further enhances precise audio reproduction. The top-of-the-range IE 8 can reach up to 26 dB of noise-blocking attenuation.

The cables are strengthened with Kevlar, and the headphones are made from durable materials. Each headphone is also equipped with a transport case, small cleaning tool and a cable clip.

Prices: $249, $299, and $449 (IE6, IE7, and IE8, respectively)

Contact: Sennheiser USA | www.sennheiserusa.com

McDSP Live Pack

McDSP has released Live Pack, a collection of plug-ins for mixing live performances. Aimed at both FOH and monitor engineers, Live Pack can be sold or rented as an electronic purchase, and includes Channel G Compact, Chrome Tone, DE555 (pictured), FutzBox, MC2000, ML4000 and NF575. In addition to supporting the Digidesign VENUE systems, Live Pack plug-ins also support TDM, RTAS, and Audiosuite formats on Pro Tools HD, LE, and M-Powered systems.

The company reports that rental costs may be applied towards a full purchase before a rental period expires, and that customers who already own McDSP plug-ins may be eligible for upgrade pricing.

Price: $1,999 (Live Pack HD), $495 or $695 (Live Pack HD Rental, three or six months, respectively)

Contact: McDSP | www.mcdsp.com

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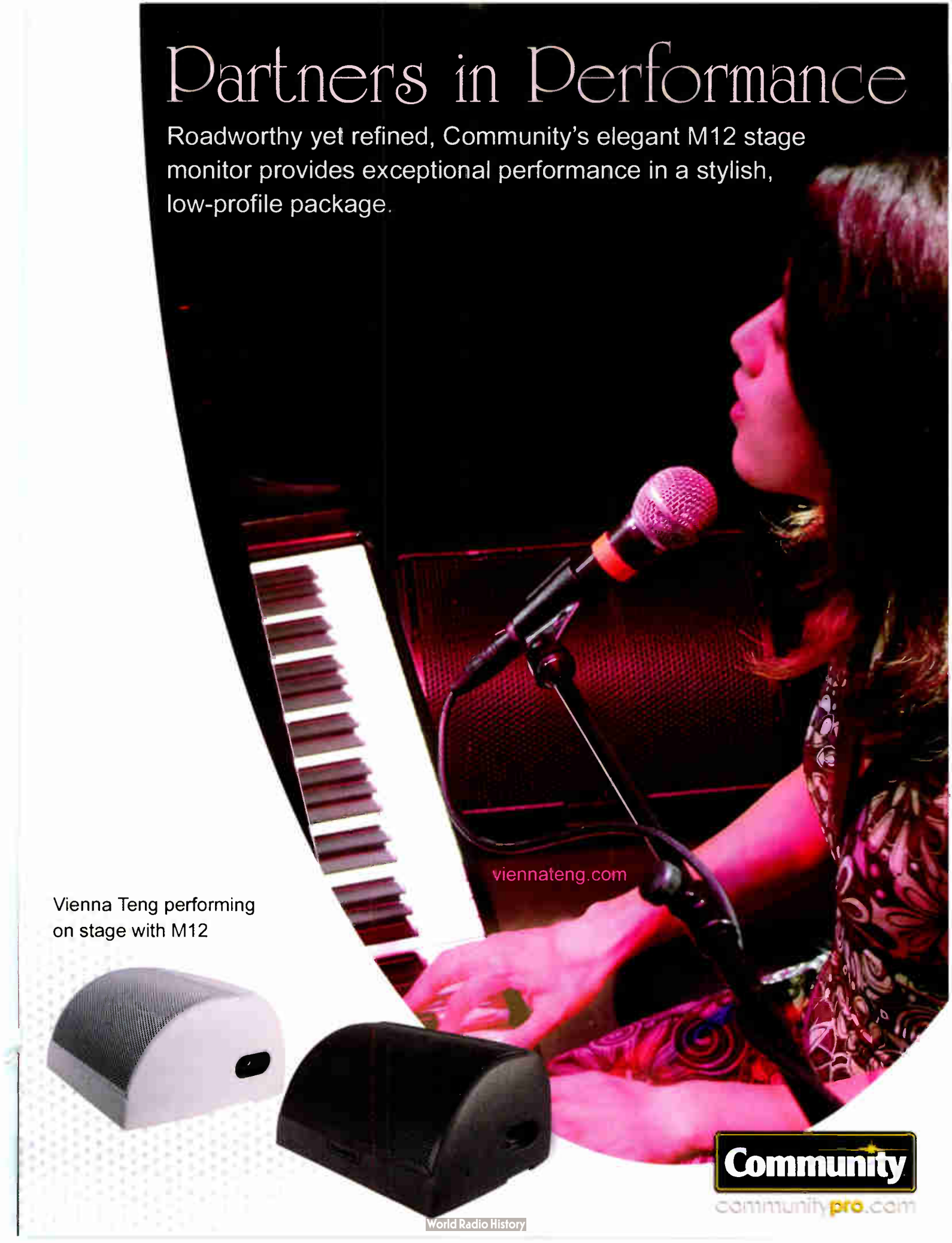
Roadworthy yet refined, Community's elegant M12 stage monitor provides exceptional performance in a stylish, low-profile package.



Vienna Teng performing on stage with M12

Community

communitypro.com

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new live products

Peavey Euro Series Enclosures

Peavey has introduced its Euro Series loudspeaker enclosures, a line of portable professional loudspeakers that utilizes a dual voice coil and neodymium magnet design. The two-way, full-range Euro 115 and Euro 112 (pictured) enclosures utilize this new loudspeaker — in 15- and 12-inch formats, respectively — in conjunction with the Peavey RX 22 titanium compression driver. Patented asymmetrical Quadratic Throat Waveguide technology reportedly eliminates distortions commonly caused by drivers pushing high sound pressure levels to deliver pristine, precise sound reproduction.

The Peavey Euro 218 Sub features a pair of 18-inch neodymium-loaded loudspeakers arranged in a vented, isobaric chamber.

Price: $769, $819, and $1,149 list (Euro 112, 115, and 218, respectively)
Contact: Peavey | www.peavey.com

Martin Audio ASX Subwoofer

Martin Audio has introduced its ASX floor mounted active installation subwoofer. It is reportedly capable of producing one of the highest SPLs ever from a single, low-frequency enclosure housing a single drive unit. The ASX enclosure — 46.85 x 23.62 x 46.85 inches — houses a patented 21-inch transducer, Class D amplifier with 8.5 kW peak power, and full DSP.

When incorporated into a Martin Audio Hybrid horn design, the complete system can deliver a 152 dB peak output (measured) from a single enclosure. It is designed for club installations, stadiums, and for special effects in theme parks.

Price: TBD
Contact: Martin Audio | www.martin-audio.com

Gator Cases G-Pro Roto Rack Cases

Gator has unveiled a new line of American-made, rotationally molded, polyethylene rack cases with 19-inch rackable depth. Built to take road rigors, these roto-molded cases come complete with recessed Penn Elcom twist latches, front and rear removable lids, and molded-in ergonomic side carry handles.

The G-Pro Series is engineered with interlocking tops and bottoms allowing secure stack-ability. All cases include heat-treated 10/32 screws with protective washers and a free rack rail offer. Cases are available in a wide range of sizes such as 2U, 4U, 6U, 8U, 10U, and 12U.

Price: $162 to $312 list
Contact: Gator Cases | www.gatorcases.com

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PAR RECOMMENDS

NEW LIVE SOUND AMPS

While professional-grade choices abound in the realm of amplification for live sound and installed audio, an elite half-dozen — listed here — are especially notable, deserving a special look from pro audio shoppers this summer.

by *PAR* Editorial Staff

Ashly NE8250: Eight Channels For Networked Systems

The NE8250 ($1,890 list) offers comparably simple setup and control for installed sound amplification. It features standard 10/100 Ethernet protocol connectivity and runs on Protea NE software. Eight 8-channel models are available with 250W output power for 25V, 70V, and 100V performance or constant voltage applications. Two standard configurations are available: standard input with Euroblock connectors or Protea Enabled (PE) with Euroblock inputs and Protea DSP. Input options include a 4-channel microphone preamp, AES/EBU, and CobraNet. This signal processing library utilizes two SHARC 32-bit/96 kHz processors with the following processing categories: Graphic, Parametric, Notch, and Shelving Equalization, High-, Low-, and All-Pass Filters (HPF/LPF/APF) with up to 48 dB/Octave slopes, Delay, Compressor/Limiter, Gate, Ducking, Auto-leveler, Gain, and Signal Generators (sine wave, white and pink noise).

Watch for an upcoming full review of the NE8250.

Ashly | www.ashly.com

Crown I-Tech HD: The Next Step In I-Technology

Reviewed in this very issue (on page 36), the new I-Tech HD Series of live sound amps represents the remarkable innovation that continuously takes place at Crown HQ in Elkhart, Indiana. The series — I-T5000HD, the I-T9000HD, and the I-T12000HD (priced $5,675, $6,855, and $8,510, respectively) — is comprised of Class I amplifiers, a.k.a. balanced current amps, with loads of power; an OmniDriveHD DSP engine; LevelMax limiter technology; a front-panel USB slot; and CobraNet, AES/EBU, and analog XLR input options.

According to *PAR* contributor Karl Bader, the features of the new I-Tech HD make it extremely easy to use. "Case in point is the USB port on the front panel of the ampli-

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fier. Simply insert a thumb drive with your processor settings, upload 'em, and use 'em. That's it — it's that easy and that user-friendly."

Crown Audio | www.crownaudio.com

Electro-Voice TG-7: It's In The Name

The "TG" in TG-7 ($4,890 list) stands for "Tour Grade," and deservedly so. Providing a maximum-bridged output at 4 ohms of 7,000W, 2,500W per channel at 4 ohms, this 2-channel, 31-pound touring sound amp also offers a microprocessor-controlled operation management system with features including compound thermal management, automatic mains voltage detection, and circuit-breaker control. It uses grounded-bridge, three-step Class H topology. System supervision comes via IRIS-Net (Intelligent Remote and Integrated Supervision Network), a Windows-based application.

Electro-Voice | www.electrovoice.com

Peavey IPR Series: A Featherweight (But No Lightweight) Performer

The new IPR Series from Peavey (ranging from $499 to $1,099 list) brings new meaning to "lightweight" — its lightest model is under seven pounds, yet offers two channels of 530W RMS at 4 ohms. The IPR Series is comprised of high-speed Class D amps featuring Peavey's own DDT speaker protection with multi-point clip sampling, two 100 Hz independent crossovers, combination 1/4-inch/XLR inputs, combination Neutrik Speakon/1/4-inch outputs, and — on four models, 32-bit DSP with program-specific EQ, delays, crossover settings, and lockable security settings. A front-panel LCD allows users access to the IPR DSP amps' presets.

Watch for a full review of the IPR Series in an upcoming issue of *PAR*.

Peavey | www.peavey.com

Powersoft K10: High-Power Packed In 1U

Originally reviewed in 2007 by *PAR* contributor Dave Rittenhouse, the Powersoft K10 ($8,395 list) is considered a high-performance must for many pro tour sound engineers and takes up little space in their rack. "If you are in the market for a powerful, sleek, chest-pounding amp that is fully loaded with all the latest features and runs more efficiently than anything else, the K10 is your amp," declared Rittenhouse. "The fact that it sits in a single rack space and provides more power than the amps each of us have and use (and does with greater ease and full DSP) means it is truly the top breed, exotic race car we have all dreamt of."

The 2-channel K10 delivers 6,000 watts at 2 ohms per channel at a weight of 26.4 lbs and provides two XLR inputs with two Neutrik Speakon outputs. An RS485 interface is provided for working with the provided Powersoft remote control software, or all functions can be controlled from the amp's front-panel menu screen.

Powersoft | www.powersoft.it

QSC GX Series: Affordable Amp Serves Many Masters

Originally reviewed in 2008 by *PAR*'s Will James and Strother Bullins, the QSC GX Series bring pro-grade performance to a wide range of potential customers. The GX Series offers Class H power supplies; a built-in crossover; XLR, TRS 1/4-inch, and RCA Left and Right inputs; and Neutrik Speakon NL4/1/4-inch and standard binding post outputs.

"I expected great achievements from this power amp given the reputation of QSC Audio, coupled with my own prior QSC experience," tells James of his review of the GX5 ($499 list), the 2-channel, 500W RMS (at 8 ohms) GX model. "I was not let down. The GX5 performed without issue. It is a stout little power amp; it is light in weight but not a lightweight in the general power amp world. The QSC Audio GX5 earns my full respect as a good quality amp that will, I believe, deliver many years of power at a most reasonable price."

"It is not only a good choice for the full-time live sound professional," adds Bullins. "It is an ideal choice for the budget-restricted gigging musician who often runs his own sound, and/or lugs his own monitoring rig to clubs, and much more. Thus, it's totally worth its 'under $500' list price."

QSC Audio | www.qscaudio.com

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Crown I-Tech HD

Our industry's legendary amplifier company collaborates with sister firm BSS Audio on DSP processing for its new flagship product line.

For years, Crown has built the industry-standard I-Tech series: great-sounding amplifiers featuring onboard DSP processing. Offering advantages such as improved signal-to-noise ratio and optimized gain structure, Crown raised the bar with the introduction of its proprietary Class I amplifier technology.

Now, with the introduction of the I-Tech HD, Crown has once again raised the bar, this time with the assistance of another Harman-owned company, BSS Audio, to supply the DSP processing.

The Crown I-Tech HD is available in the following models: the I-T5000HD, the I-T9000HD, and the I-T12000HD. I-T5000HD offers two channels of 2,500W at 4 ohms or 4,000W at 4 ohms bridged; the I-T9000HD offers two channels of 3,500W at 4 ohms or 5,600W at 4 ohms bridged; and the I-T12000HD offers two channels of 4,500W at 4 ohms or 7,500W at 4 ohms bridged. The I-T12000HD was used for the review.

Features

The I-Tech HD is a Class I amplifier; Crown holds the patent for the Class I, also known as Class BCA (Balanced Current Amplifier). One of the great features of a Class I amp is that it can handle low impedance loads. For instance, in Stereo mode, the I-T12000HD can run at a 1-, 2-, 4-, 8-, or 16-ohm load; in Bridged mode, the amp can run at 2, 4, or 8 ohms. As it is built, the I-Tech HD amp can run more efficiently, and longer, than non-Class I amplifiers. Instead of turning energy sent back to the amplifier from the speaker into heat, the Class I will recycle this energy back into the amp and cycle. [Associated information on the I-Tech HD and Class I amplifier technology can be found at www.crownaudio.com. — Ed.]

The next-generation OmniDriveHD DSP engine within each I-Tech HD, developed in conjunction with BSS and JBL, offers proprietary FIR filter technology for "significantly improved midrange clarity and dramatically improved off-axis response," says Crown. Other new features within the I-Tech HD include LevelMax limiter technology, which links Peak, Thermal, and RMS limiters for a smoother response and more SPL. Standard input options include CobraNet, AES/EBU and analog XLR. The front-panel LCD display can access full amp diagnostics and menu-based system setup while a handy USB slot can be used to quickly load presets into the amp on the fly and without a computer.

In Use

The Crown I-Tech HD's features allow it to be very easy to program and use. Case in point is the USB port on the front panel of the amplifier. Simply insert a thumb drive with your processor settings, upload 'em, and use 'em. That's it — it's that easy and that user-friendly. However, I did find a down side to the feature, for Mac users, at least; if the need arises to quickly dial in some basic crossover settings — for instance, for a last-minute add-on to the show, or because of an equipment failure — you must use HiQnet System Architect Software on a Windows computer (no Mac) to create settings. [According to a Crown representative, "It is possible to run System Architect on a Macintosh computer, but it is not possible to run it as a Mac application. To run System Architect, one can either use BootCamp (www.apple.com/macosx/features/bootcamp.html) and

Karl Bader is currently a lead engineer for Washington, DC's Entertainment Sound Production. www.espsound.com

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start the computer in Windows, which is running Windows on the Macintosh hardware, or use a virtualization software solution. The virtualization software, typically either Parallels (www.parallels.com) or VMWare Fusion (www.vmware.com/products/ fusion), allows one to run Windows without having to leave the Macintosh operating system. One of the software team members at Crown runs all three of these solutions on his personal MacBook Pro, so we are confident that it works." — Ed.]

Let me digress by saying that HiQnet System Architect is very easy to use: just click, drag, and drop to set up your "system" with Harman components, then open each component to configure. I did not have to consult any manual or online help to create a setting for our EAW SB85D subwoofers. I found System Architect much easier to navigate than the BSS Omnidrive that I am accustomed to using.

The I-Tech HD's inputs are selectable between analog and AES/EBU. My testing, due to this being our only amplifier capable of digital inputs, was done with the analog XLR inputs. There is also an option for sending digital AES/EBU with analog backup in case of failure.

The front-panel controls of the amplifier access some very cool and interesting features. Some worthy of mention are continuous load monitoring and voltage monitoring readouts, signal generator, and spectrum sweep set up for any bandwidth; results can be monitored on your PC using the System Architect software. Due to only having one amplifier for testing, I did not fully explore the I-Tech HD's comprehensive networking capabilities.

In addition to using the I-Tech HD in the field with great results, I decided to do an amp shootout in our shop against two other inventoried amplifiers: a Lab.gruppen fP 6400 and a QSC PL (PowerLight) 4.0. Granted, the QSC PL 4.0 is a little low in power rating comparison to the other two amplifiers, but it was the next closest that was in stock. All comparisons were made on two speakers — an EAW SB850 dual 18-inch subwoofer and a JBL SRX-712M stage monitor — with any necessary processor settings sent through an Ashly Protea crossover. To get an accurate difference between just the amplifiers themselves, the I-T12000HD's onboard processing was not used for this part of the evaluation.

Sonically, the fP 6400 and the I-T12000HD had a clearer low end than the PL 4.0, dismissing the power-rating difference, as this was the same at low, or higher, levels. The fP 6400 and the I-T12000 HD are very similar-sounding, too similar for me to name which brand/model I liked better. I would even have a hard time trying to describe what the sonic differences are between the two.

Next, I did a processor shootout, and two JBL SRX 712M speakers were used for this part of the testing. The output of a console went into channel one of the amplifier in which the onboard processing was used, and the other side went to various processors we had around the shop; so, the only variable were the processors themselves. The processing competitors for the I-T12000HD were a BSS 336 MiniDrive, a BSS 366 OmniDrive, and an Ashly Protea processor. JBL recommended settings were entered into the processors to keep the experiment as controlled as possible. Sonically, I would declare a tie between the BSS 366 and the I-T12000HD's processing. The Ashly sounded harsh, even a bit shrill and crunchy, especially when hit hard in comparison, even before limiters and clip meters were hit. Again, there was a difference between the 366 and the I-T12000HD but exactly what that difference is was too close to call; it could come down to many variables in the experiment.

Summary

The Crown I-Tech HD is a great amplifier with a great onboard processor. It matched up with the best my own shop has to offer, and it has added benefits that our shop doesn't have to offer, including USB connectivity. If you get a new I-Tech HD into your own shop, updating it will takes minutes rather than hours via RS-232. Plus, the advantages of on-the-fly monitoring, sending signal from the amp, and superior sonic quality make this a nice addition to any inventory.

Fast Facts

Applications
Live or install settings that require high-quality sound and processing as well as easy and/or frequent system updates

Key Features
Onboard BSS DSP processing; computer control and programming via easy-to-use System Architect software; USB thumb-drive settings for download and upload

Price
$5,675, $6,855, and $8,510 list (5000HD, 9000HD, and 12000HD, respectively)

Contact
Crown Audio | 574-294-8000 | www.crownaudio.com

Product Points

- USB download and upload for quick settings transfers
- Onboard signal generator
- Onboard or System Architect Software-based system monitoring

- DSP settings cannot be created from the amp itself
- System Architect software is not available for Mac users

The Score: The Crown I-Tech HD is a recommended amplifier, highlighted by its superior features: great sound, a high-quality onboard processor, and easy USB-based setting transfers.

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Audio-Technica M3 Wireless In-Ear Monitoring System

A-T debuts its road-worthy wireless monitoring kit, and it sounds "amazing."

Audio-Technica has been the purveyor of many fine microphones for two decades. A-T now presents a foray into the in-ear monitor realm with a new wireless rig called the M3.

Features

The M3 comes in a well-conceived package with the wireless receiver/belt-pack, the transmitter, power supply, in-ear dynamic headphones (EP3 ear buds) and several ear bud accessories like extra rubber ear cups and a short ear bud cable extension for use with portable audio players [The locking 3.5mm connector won't work with a standard 3.5mm jack. — Ed.] The M3 transmitter is 1U tall and a half-rack-space wide; optional rackmount ears are included. The transmitter is connected to the console by means of separate left and right XLR/TRS combo connectors; also included is a L/R XLR throughput connection. The M3 front panel is simple. Its headphone output jack is flanked by a headphone volume rotary control. The channel/frequency controls are accessed through a series of menu button pushes and the accompanying Up and Down-arrow controls. The frequency display LCD screen is the centermost component of the transmitter.

The M3's receiver is a conventionally sized belt-pack, about the size of a pack of cigarettes. The receiver case is plastic and contains the 9V power source, centered display, and frequency controls. You can attach an external lavalier-style microphone, allowing for personal control of ambient sounds (more on that later in the review). The top surface contains L/R pan control, which is concentric to the volume control.

In Use

The M3 kit arrived just in time for me to employ it at a Daryl Worley concert, where our company was providing audio, lighting, and stage production. The show's monitor complement was a mixture of in-ear monitors for a few players and conventional wedges for the other players. I sent signal to the A-T in-ears by means of wiring the transmitter to an unused output of our Midas Sienna monitor console. I did insert an equalizer on the insert point of the master output of the chosen mix, much the same as you would for any wedge monitor or speaker for any monitor mix. Even ear buds sometimes require a little EQ to give them a nice edge.

I built my own mix to send to the transmitter, and I did so by using the supplied EP3 ear buds as the reference speaker, as opposed to a cue wedge. My first impression of the EP3 buds was "amazing." They were comfortable, even with the supplied generic rubber cups; equally important, they sounded superb. The bass response was excellent, which is fairly unusual for ear buds. The midrange frequencies were crystal-clear, and the highs were sizzling but never splashy. I first inserted the outboard EQ and then bypassed it, repeating this process several times, ultimately deciding to leave the

Will James, owner and chief engineer of Atlantis Audio and Lighting, is a longstanding *PAR* contributor. www.atlantisaudio.com

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Product Points

- Great-sounding ear buds with nice low-end
- Durable, solid construction
- Audience/ambient mic

- None noted

The Score: The M3 is a high-quality, very roadworthy IEM wireless system with excellent features.

Fast Facts

Applications
Live, studio, audio for broadcast

Key Features
1,321 selectable UHF channels with automatic frequency scanning; up to 16 simultaneous systems per frequency band; personal mix, stereo, and mono receiver modes; volume and mix control of two independent signals at receiver; LCD information display; XLR loop output (true pass-through); adjustable squelch; multi-level limiter (defeatable); M3 ear buds with three rubber ear tips sizes plus ear-conforming foam tips; selectable auxiliary input.

Price
$1,099 and $799 list, $799 and $599 expected street (M3 and M2 kits, respectively. Replacement and additional accessories are available separately)

Contact
Audio-Technica | 330-686-2600 | www.audio-technica.com

EQ out of the signal path, as the EP3 ear buds sounded incredibly good without the EQ.

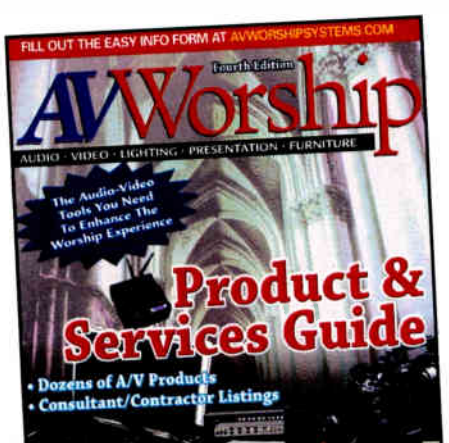
A great feature of the M3 kit is that it allows you to attach an optional lavalier microphone to the belt-pack receiver and clip it wherever you want; it gives the user the option of how to mix the ambient audience and stage volume to interlace that mix with your monitor mix. The side of the receiver has an 1/8-inch jack, and when optioned to do so, it allows you to send the ambient to the right side of the pan control and the actual monitor mix to the left pan, thus giving you the ability to balance the two sources at your own discretion.

I actually found this feature to be useful, because once the monitor engineer has installed the ear buds in his ears perfectly, it never fails that someone suddenly has 200 questions for him. I have always used a separate mic at the console with PFL on for that mic's channel; if others wish to talk to you, they can do so through the mic; the M3's A-T lav mic attachment eliminates that need. However, it's worth considering the downside of doing this: The lav mic picks up a fair amount of other ambient sounds during soundcheck, such as stage volume and backfire from the mains. [A-T notes that the receiver does have an external mute for its ambient mic. — Ed.] The belt-pack receiver can also scan the available frequencies, permitting you to easily link to a spare M3 transmitter that frequency group. The well-written M3 manual gives the complete frequency chart for Audio-Technica IEM systems, allowing for a little advance info in rental applications.

Audio-Technica also supplied a model M2 in-ear rig, which has the same buds, the same receiver, but doesn't have the back-lit displays or the scanning capability of the M3 receiver. It's also a quality product and slightly less in price.

Summary

Audio-Technica has a winner with the M3. I found it to be a high-quality product that is very roadworthy with excellent features. I used the product on four of our own shows, and each time I was treated to a very pleasant listening experience. I recommend this product whether you are a musician or a monitor engineer.



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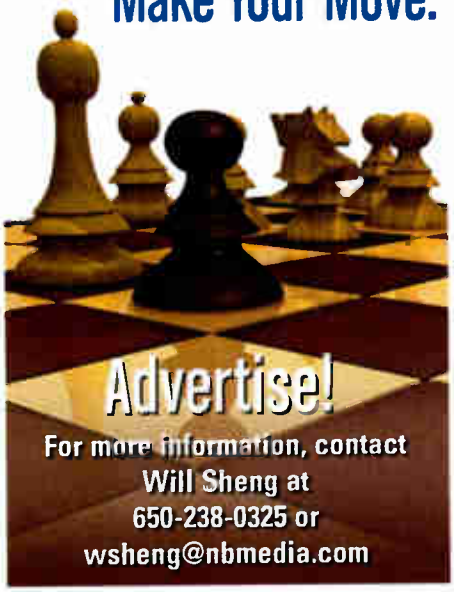

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World Radio History

"Know Your Enemy" — Green Day

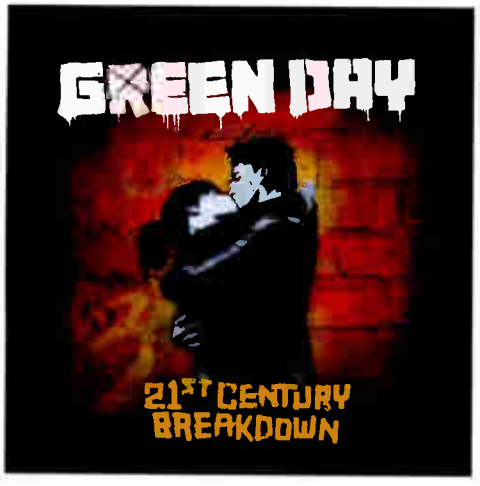
Engineer's Diary:

Butch Vig

Green Day's highly anticipated *21st Century Breakdown* has exploded out of the gate, a critical and commercial success that builds on the themes of the band's preceding hit album, *American Idiot*.

For producer Butch Vig, success is very sweet: the May 15 release was the culmination of many, many months of work. "I'm pretty stoked," he admits. "It's my first No. 1 debut, at least in the U.S., which is pretty cool. I think the record's gonna have some legs. Fingers crossed, it's going to connect with people."

Vig and the band spent over six months in preproduction before cutting the album tracks in sequential order. "By the time preproduction was done, we'd worked on the songs so much that we had a sequence and pretty good-sounding demos," he recalls. "So when we went in to record, after getting sounds on things, it was a pretty fast process, because we knew what we were doing."



"Know Your Enemy," says Vig, was recorded in Studio B at Ocean Way in Hollywood. "We cut the song and let it sit for a couple of days," he explains. "We had the basic track and were getting ready to move on and cut another basic, and were like, 'Let's review and listen to it.' The track sounded amazing, but we felt like it was a little too fast, a little too hyper-sounding. There's a certain 'swing/pulse' thing that Green Day gets when they really lock in. When we re-cut it, we got it in the first or second take. Just a little slower, and it just had more of a pulse to it.

"We made a very deliberate decision to not make the rough mixes sound too polished," Vig continues. "We'd do a little bit of editing if we needed to tighten things up, but most of the record is very analog in terms of how we recorded it. There's not a lot of digital manipulation. We made a conscious decision to try and record it, as much as possible, 'old-school,' with a really good-sounding analog chain.

"The song is so simple," Vig allows. "It reminded me of 'Street Fighting Man' when I first heard it: It's basically two chords, back and forth. Rather than add a lot of fancy parts or other riffs or counterpoint things going on, that's the main riff; we just made sure that riff sounded killer."

Song Facts

Single: "Know Your Enemy"

Album: *21st Century Breakdown*

Date Recorded: September 2008

Producers: Butch Vig, Green Day

Engineer: Chris Dugan

Mixer: Chris Lord-Alge at Mix L.A.

Mastering Engineer: Ted Jensen at Sterling Sound

Other Projects: Gish, Smashing Pumpkins; Nevermind, Nirvana; New Wave, Against Me!; All or Nothing, the Subways

Single Songwriter: Billie Joe Armstrong, Green Day

Mixing Monitors: Yamaha NS-10, Infinity Systems BU-2, M&K MPS-2510, Sony SZ-M1 Desktop MiniDisc System

Mixing Console: Solid State Logic G Series with all E modules

Vocal Signal Chain: (Billie Joe Armstrong) Telefunken|USA U 47, Chandler LDT-1, Retro Instruments 176, Apogee AD-16X; (Mike Dirnt) Telefunken|USA Ela M 251, Chandler TG Channel MKII, Retro Instruments 176, Apogee AD-16X

Recorder: Digidesign Pro Tools

Christopher Walsh is the recording editor for *Pro Sound News* and the associate editor of *Pro Audio Review*.

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