

ProAudio Review

The Review Resource for Sound Professionals

Trends In Instrument Microphones

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Focal Twin 6 P28

In This Issue!

- ▼ **Focal Twin 6 Studio Monitors**
Audiophile Pedigree for the Pros
- ▼ **New Microphones**
M-Audio, Studio Projects
and Cascade
- ▼ **Behind the Scenes:**
Perennial Amp Builder QSC



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AT2050 FEATURES

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AT2035 FEATURES

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ProAudio Review

The Review Resource for Sound Professionals

September 2008 | Vol. 14 Issue 9

PRO AUDIO REVIEW (ISSN 1083-6241) is published monthly by NewBay Media LLC, 810 Seventh Avenue, 27th Floor, New York, NY 10019. Subscription information can be found at www.proaudioreview.com, by calling 703-852-4600 or writing to the above address. Letters to the editor are welcomed at the above address or par@nbmedia.com.

Phone: 703-852-4600 | Fax: 703-852-4582

Periodicals postage paid at New York, NY 10199 and additional mailing offices. POSTMASTER: Send address changes to Pro Audio Review, P.O. Box 282, Lowell, MA 01853.

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REPRINTS: Reprints of all articles in this issue are available. Contact Caroline Freeland at cfreeland@nbmedia.com.

Printed in the U.S.A.

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Evaluating audio products for professionals in commercial recording, broadcast production, audio for video/film, project studios, live sound, contracting and multimedia.

It's A Hard Drive World

It is amazing to see how far the computer has come in the world of pro audio for recording, editing, mastering, live recording, etc. It is all done via the PC or Mac.

One key component that has to keep pace with a computer's power and sophisticated software capabilities is the hard drive.

I remember when I first got in to desktop publishing in the mid-1980s, the hot machine was a \$2,599 Mac Plus that stored data on internal floppies. If you wanted a hard drive you went for an external 20 MB SCSI drive; it was about \$400. Today

you can purchase 4 GB of storage for \$25 in a USB pocket flash drive.

External hard drives connecting via USB, FireWire, eSATA or Ethernet are now dirt cheap, thanks to technical advances and overseas production capacity. I just bought a robust 750 GB, USB/FW400/800/eSATA connected external drive from FireWire Direct, based in Austin, Texas, for \$279. So far, the Chinese-manufactured drive has delivered flawless performance. It came with a host of standard accessories including connection cables for USB, the two FireWires and an eSATA, all included. And it cools via a whisper quiet fan. It's lightning fast through an Intel Mac with FW800 connection.

I believe these kinds of hard drives are ideal for pro audio. Of course, there are drives of various price ranges and some are assembled in the U.S. The lower priced drives often don't have cooling fans, which could lead to premature failure. But I have heard positive reports from drive makers Avastor, the aforementioned FireWire Direct, Glyph, and G-Tech. Avastor has pro audio, audio-for-video, and video in mind; the company even provides a handy carrying case to make your drive secure and portable to work at different studios or take-home projects. For the data intensive tasks, most of these companies also make the large capacity RAID set-ups.

No drive is 100 percent guaranteed against failure, and you should have backup capability, but the newer drives seem pretty robust for backups as well as primary use. At the end of the day, if you are a professional doing work with audio, you gotta have a hard drive. So do your homework in the pre-buy process, and you should be rewarded with years of reliability.

INSTRUMENT MIKING

This month, we have a feature entitled "Trends in Instrument Miking," which is indicative of the specialization in microphones for various instruments. In the article, Heather Johnson interviews some of the key players in the microphone manufacturing world.

More and more manufacturers are using the latest technologies to make mics that have full frequency response yet are small enough to fit inside a piano, on a violin, in a saxophone, etc. And yet, these small mics don't make concessions to sound quality. They flatter the instruments quite well. I have tried a few them on acoustic guitar and have been quite happy with the results.

UPCOMING AES

Here is just a reminder to all our friends who are going to be at the AES Convention Oct. 2-5; stop by the New Bay Media booth, number 718, and say hello. Judging by the number of companies exhibiting this year, there should be numerous new products that will likely pique your interest. Of course, PAR staff will be out in full force looking for the hottest products to bestow the 13th annual PAR Excellence Award.

John Gatski is publisher/executive editor of Pro Audio Review.

Feedback

We want to hear from you. Send your comments to jgatski@aol.com. Please include name, city, state and job title and firm in the email. For product submissions, contact Strother Bullins at newproductsPAR@earthlink.net.



G-Tech

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Lowell, MA 01853
Telephone 888-266-5828
(USA only 8:30 a.m. - 5 p.m. EST)
978-667-0352 (Outside the US)
Fax: 978-671-0460
E-mail: newbay@computerfilm.com
Web: MyPARmag.com

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MORE ON TAMING DRUMS IN HOWS

Dear Sirs:

Great article on isolation for drums and the problem of overall levels of stage volume (*Taming Driving Factor- Drums, July 2008 PAR*). As a drummer and monitor mixer for many of the groups I work with - in worship and club performances - I have solved some of these issues. I have been drumming for 44 years (I saw Ringo play with the Beatles on the Ed Sullivan show in 1964), and I now play a Roland V-Tour series kit with a TD-6V sound module. The total cost was \$2,000 - about the cost of any good acoustic kit.

There are, in my opinion, three reasons drummers shy away from electric kits: the feel (hard rubber does not feel like a drum head), the factory presets and the directivity soundfield of electronic drums through speakers vs. the 360 degree, omni-directional soundfield of a real drum (drummers like to feel the drums as well as hear them). The first problem was addressed by Roland in the newer fabric heads made by Remo for the V-Drums series. The feel is right and the play dynamics are like a real drum. The second issue is a bit trickier. You must take time to alter the sounds in the memory; I have totally reprogrammed or modified 25 of the 99 presets

because I play jazz, country, rock, blues and big band swing in addition to praise and worship. No single kit is going to be that adaptable unless it is electronic. This is going to require patience and a good ear for selecting the pitch and decay of every setting used.

Establishing the monitor environment to address problem three took months of trial and error. This was resolved by placing a good pair of powered nearfield monitors in front of my kit, facing me. This gives me an accurate stereo image of the drums mixed with the rest of the band. I even send this to the house PA in a small room without problems. Mixing stage monitors is not an issue when levels are tightly controlled. I can feel the band around me and not overdrive the room.

Honestly, without having some training in sound reinforcement and studio session work, this would have been much more difficult to deal with, and I admit that some of the presets in the sound module were changed radically. No matter if you prefer one or the other; drums of any type need some work to sound good and play without problems.

Marty Rogers
Professional Drummer/Live Sound Engineer



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BROADCAST

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NEW PRODUCTS

AUDIX M1255 Miniature Condenser Mic



The Audix Micros Series, which, according to the company, consists of the world's smallest condenser microphones with integrated preamp and detachable cable, has added the M1255. With brass housing and a modular threaded capsule, the M1255 is designed to handle a variety of live, studio and fixed-install applications. Features include a frequency response of 80 Hz-20 kHz, 12mm gold-vapor diaphragm, a selection of four capsules, and complete immunity from RF caused by cell phones and GSM devices. The M1255 can be used as a table microphone for meetings, conferences or as an overhead microphone for choirs and orchestras. There is an array of clips and accessories available that enable the M1255 to be used on instruments, podiums and mic stands. Also available for overhead and distance miking is the company's MicroBoom carbon-fiber boom arm.

PRICE: \$419

CONTACT: Audix | ☎ 503-682-6933 ➔ www.audixusa.com

ALESIS ProTrack Digital Recorder



Alesis has introduced ProTrack, a handheld digital stereo recorder for iPod. It provides direct-to-iPod stereo digital recording to iPod in a portable, handheld form factor. Users can capture live audio anywhere and anytime with their iPod or iPod nano. ProTrack's design integrates the iPod into the recorder, with included sleds to securely mount supported iPod models to the recorder.

Two high-quality condenser microphones are built-in, fixed in XY stereo configuration for field recording (44.1 kHz/16-bit max resolution). ProTrack also offers users a pair of combination XLR or 1/4-inch inputs for connection for external microphones and line sources. When running on plug-in power using the included AC adapter, ProTrack supplies 48V phantom power so that it can power condenser microphones.

PRICE: \$499

CONTACT: Alesis | ☎ 401-658-5760 ➔ www.alesis.com

RIEDEL VOIP-108 G2 Matrix Client Card



Riedel Communications has introduced its VOIP-108 G2, an integrated Intercom-over-IP solution for the Artist Digital Matrix Intercom platform. It provides intercom interfacing to IP-based networks and allows matrix-to-matrix connections, matrix-to-control panel connections as well as the distribution of audio lines over IP.

The card converts eight Artist matrix ports into a compressed IP-stream and vice versa. Users can choose between a high-quality mode with an audio bandwidth of 6 kHz resulting in a data rate of less than 80 kBit/s (including panel data), and a low-traffic mode with 4 kHz audio bandwidth and a data rate of less than 40 kBit/s per channel (including panel data). The VOIP-108 G2 client card communicates either with a VOIP-108 G2 client card in another Artist system, (e.g., for trunking), or with Riedel's Connect IPx8 panel interface.

PRICE: POA

CONTACT: Riedel | ☎ 49 202 292 90 ➔ www.riedel.net

SONIFEX Redbox RB-TGHDB



Introduced at IBC, the Sonifex Redbox RB-TGHDB is an eight-channel audio tone generator that provides line identification for multi-channel audio systems, including 5.1 and 7.1 surround sound typically used in high definition television

broadcasts. The unit offers a range of widely accepted industry standard tone sequences for channel identification and level control. Correct channel configuration in fold-down mixes can also be highlighted when a broadcaster needs to mix several audio channels into a stereo feed. The RB-TGHDB is available in two variations, each providing both analog and digital audio outputs. The RB-TGHDX offers balanced AES/EBU digital audio outputs on 3 pin XLR connectors and the RB-TGHDB has unbalanced digital audio outputs on BNC connectors.

PRICE: TBA

CONTACT: Sonifex | ☎ 207-773-2424 ➔ www.independentaudio.com

"Jimmy Kimmel Live" Music Mixer Barton Michael Chiate makes regular use of the Bricasti Research Model 7 Stereo Reverb Processors to add ambience to otherwise dry-sounding sources. "It is so easy to use and produces remarkable results," he says. "The Model 7 is also cool-looking. It's my Go-To



Reverb!" Jimmy Kimmel Live originates from Disney's El Capitan Entertainment Center, located on Hollywood Boulevard in the heart of LA's Walk of Fame with a specially-constructed, state-of-the-art performance stage to showcase A-list music acts. "Jimmy Kimmel Live" is shot in front of a live studio audience and produced by Jackhole Industries in association with ABC Studios.

For its extensive NFL and NASCAR coverage, FOX Sports conducts on-site audio/video production out of a multi-truck unit provided by Game Creek Video. The unit consists of four mobile production trucks that travel to NFL stadiums in the fall and racetracks in the spring, serving as an audio headquarters for both regular season coverage and the Super Bowl and NASCAR's Daytona 500 broadcasts. FOX Sports Audio Consultant/Senior Mixer Fred Aldous chose Tannoy speakers for all of the unit's monitoring environments.

Indianapolis Motor Speedway Productions has acquired a new HD truck equipped with a 64-fader Calrec Sigma with Bluefin console. At the end of the major auto racing season, the truck will be used to cover Indiana Pacers basketball and Purdue and Indianapolis University football games.

Multiple FiberPlex LightViper digital audio transport systems were utilized by CP Communications during the live ESPN and NBC television broadcasts of the U.S. Open Championship. ESPN and NBC were each supplied with two 32X8 LightViper fiber-optic "booth kit" audio systems.

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by Mel Lambert

Lawo mc²56 Digital Production Console

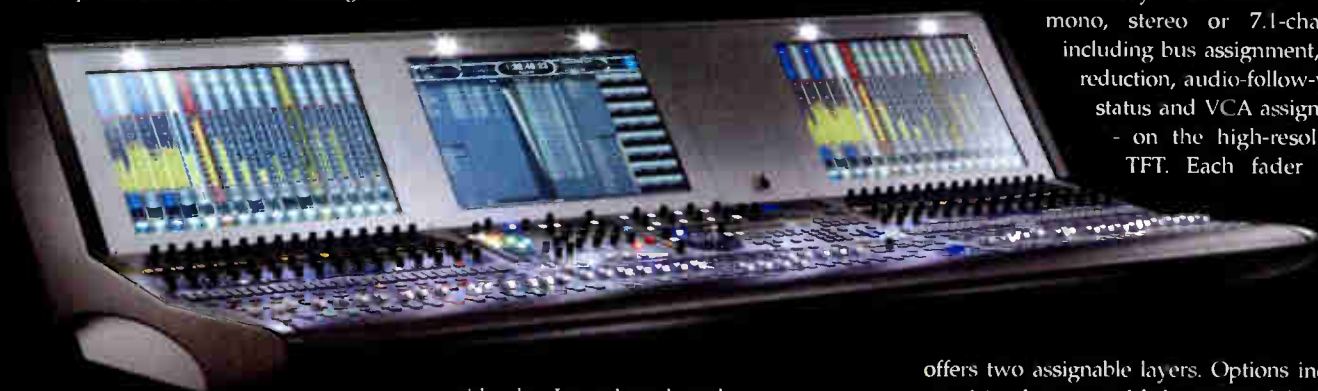
A fine achievement from the "other" German console manufacturer

The new mc²56 Digital Production Console utilizes the same 40-bit floating-point DSP engine and basic operating system as the current mc² Series, but with a more compact – and narrower – control surface intended for use within mobile-broadcast and sports-production vehicles and similar applications where space is at a premium. New control-system structure updates ensure that the third-genera-

the mc²66, which is targeted at HD broadcast vans as well as live-broadcast and production studios, plus the mc²90, which is intended for larger HD broadcast and production facilities. The new compact mixing system offers the complete functionality of the existing mc² Series, including transfer of snapshots and dynamic automation, as well as networking

Functions that might be accessed less frequently during live production, such as Sequence Automation, also are now one layer down on the touch screen. Other secondary functions relocated off the surface include highpass filter, selection of metering and aux send pickup points, delay-mode settings, four-band EQ curve selection and pan mode, plus certain bus-assignment and monitoring functions. But, as is to be expected, essential control elements that need to be easily accessed during a live broadcast are retained closer to the operator on the control surface: gain trim, EQ frequency, Q and cut/boost, plus delay time, dynamics and panning. Finally, with monitor source selection and functional modes now handled completely via the touch screen, re-labeling of user control buttons is dramatically streamlined.

A reduced fader width of 30 mm packs more controls and display elements into the same amount of control-surface space. Each 16-fader bay offers full metering – mono, stereo or 7.1-channel, including bus assignment, gain reduction, audio-follow-video status and VCA assignment – on the high-resolution TFT. Each fader bank



tion mc²56 console stays 100% alive while the DSP Core engine is receiving power. This means that, in case of a power failure, audio throughout remains uninterrupted. The console is also compatible with a number of router-control systems. The DSP Core operates at either a 48 kHz or 96 kHz sampling frequency, with 40-bit floating-point processing.

Various frame sizes accommodate between 32 and 80 channel faders, plus a special flight-case version for portable use. (Optional remote operation of up to 32 faders is available via an Ethernet connection.) Each mc²56 is built from bays that feature 16 channel faders, enabling 32 faders to be arranged in a single row just four feet (1.2 meters) wide, or 64 faders across the width of an average broadcast mobile truck. A maximum of 144 faders occupies just nine feet (2.77 meters.) US prices start at \$110k for a 32-fader surface with a small DSP core that accommodates 128 I/Os plus 96 fully equipped 24/96 signal paths.

Other mc² Series digital consoles comprise

with other Lawo-brand products.

The small-format mc²56's reason for being, so to speak, is to handle live-mixing and on-air applications where speed and ease-of-use are more important than multiple functionality. Using the design paradigm of "Form Follows Function," Lawo has redesigned the user interface using dynamic automation allied with rapid access to the most important control parameters, a hybrid combination that ensures easy operation and a reduced learning curve. Now crucial live features controls are located within easy reach on the control surface, while less-used features are accessed exclusively via a touch screen-based GUI on the primary TFT screen. The firm's new design allows a live-to-tape/server or tape-delayed program, for example, to be mixed with timecode automation running in parallel, a set-up that enables faster and more efficient post sessions that might be required for small fixes. In addition, for added speed, bus assignment is now fader-oriented rather than favoring the channel-type version provided on larger mc² Series control surfaces.

offers two assignable layers. Options include provision for a second fader row, and the inclusion of PPM metering. A pair of rotary controls and an input gain controller can be freely assigned to any channel signal path. The new mc²56 includes Lawo's new 7.1-channel controls with Hyper-Panning, a function that enables broadcast and post-production mix engineers to control multiple surround elements via a single fader with fully linked parameters and eight-channel metering.

A fully-loaded mc²56 console with a maximum of eight DSP cards will handle up to 384 fully-featured DSP channels at a 48 kHz sample rate, 144 summing busses and a routing capacity of up to 8,192 cross points. Sources offer A/B input selection, with 48 sub groups, 32 aux sends, 96 track busses and 48 main sums; grouping can be changed on the fly from mono through stereo to surround. All mc² Series consoles offer full compatibility with VST-format DAW plug-ins, an ability that allows EQ, compression and ambience algorithms to be accessed during live productions from the recently developed Lawo Plug-in

LAWO continues on page 12 ►

What's So Different?

3 Simultaneous Inputs

The only I/O in its price range with three inputs! If you're podcasting you can connect a stereo MP3/CD/DVD player and a microphone to do voice overs. If you're a singer/songwriter, you can connect a stereo keyboard or guitar processor and record your stereo instrument and vocal to a stereo track in one pass. Nice!

Combo Connector & Phantom Power

The combo connector lets you connect an XLR microphone or a guitar. The Audiogram 3 is the only I/O in its price range to offer 48 Volt Phantom Power letting you connect studio quality microphones to the ultra low noise mic preamp.

Includes:

 CUBASE AI4

The Audiogram Series comes bundled with Yamaha exclusive Cubase AI software that allows 48 tracks of Stereo Audio, MIDI, Notation and includes a HALion One softsynth with sounds ported from the Motif workstations. Get the Music Production Power Pack at www.MPSN.com and add over 4GB of extra VST sounds including IK Multimedia, Sonic Reality, BFD and Arturia.

6 Inputs for Connectivity Flexibility

Two low noise mic preamps and two stereo pairs of line inputs give you total connectivity flexibility.

2 One-Knob Compressors

A compressor is an essential recording tool that ensures you get the best signal level to your DAW. The one-knob compressors on the Audiogram 6 are totally easy to use. Just turn the knobs until you get the amount of compression you need.

Phantom Power

Like its little brother, the Audiogram 3, the 6 features 48 Volt Phantom Power to let you connect studio quality microphones to the ultra low noise mic preamp.

Audiogram 3



Estimated street price—\$119.99

Audiogram 6



Estimated street price—\$149.99

 X FACTOR

Get the X Factor Music Production Power Pack at www.MPSN.com and add over 4GB of extra VST sounds including IK Multimedia, Sonic Reality, BFD and Arturia

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 YAMAHA

LAWO Continued From Page 10

Server, with all parameters being saved/recalled as part of snapshot or sequence automation files.

The mc²56's three primary elements comprise the control surface, the HD Core housing the DSP cards and routing matrix, and the DALLIS I/O that connects via multimode fiber-optic links up to 1.25 miles (2 km) from the Core. (An optional monomode connection enables links up to 5 miles (8 km.)) Should an individual DSP card fail, a redundant card takes over all the cross points and DSP parameters within just a few milliseconds. The compact control surface connects to the HD Core engine via a simple Ethernet link that carries control and display information between the two elements, while a USB serial port provides data storage. MADI, ATM or AES-format connections are available into/out of the HD Core, while conventional analog/ digital I/O and control interfaces are via the DALLIS unit. Routing-matrix capacity is expandable from 3,072-by-3,072 to 8,192-by-8,192 mono channels.

in channels; these tie lines appear automatically on the GUI-driven TFT screen. In essence, the LPH is a dedicated, server-based environment for VST-format audio plug-ins, enabling seamless integration with the company's mc² series third-generation consoles while providing greater flexibility in the use and routing of processed signals - all while freeing up the host recording platform from the system overhead typically associated with numerous plug-in processors. The control surface imports plug-in parameters in the same way as it would conventional console-based EQ or dynamics parameters. All plug-in parameter settings are stored and recalled

ins from such leading developers as Sonnox/Oxford, Waves, Universal Audio and TC Electronic.)

The control surface features a well-considered balance between hardware push-buttons and touch-screen operation, in addition to other useful functionality including timecode-based automation EQ manipulation. For example, the ability to page through different channel sections assures efficient location of the various rotary controls and pushbuttons. Also, the on-screen 5.1-channel metering, within an optimum field of view, is far easier to see than conventional LED-based displays. And setting up different console configurations is a breeze. With GPI control, sequence automation and machine control, the mc²56 can be application-focused according to the production task at hand. For enhanced efficiency, a total of 16 assignable control presets can be assigned to the second encoder row, while six user-configurable press buttons are provided per channel for rapid access to more important channel parameters.

Compatibility of automation data between mc² Series consoles offers a number of advantages. Consider the example of a production that starts in stereo on a mc²66 within a broadcast mobile, is then continued with an mc²56 located in a portable control room, before an automated mix, complete with snapshots, is completed in an mc²90-equipped studio in 5.1-channel. All mixing functions are completely independent of the physical number of channel faders, size of the routing matrix, and the DSP Engine capacity.

FLEXIBLE SURROUND-SOUND MIXING WITH HYPER-PANNING

The new mc² 56 console also offers some stunning 5.1-channel capabilities. The operator can control multichannel stems from a single fader that links all channel parameters and up to eight-channel metering. Lawo's remarkable Hyper-Panning makes it possible to spin a surround stem through 360°, with front-width, back-width and depth determining the sur-

LAWO continues on page 52 ►

Uniquely, Lawo's mc² Series consoles offer complete integration of familiar DAW plug-ins. Based on a Windows PC, the new Lawo-developed technology incorporates extremely low latency and is controlled directly by the mc²56's console surface.

Each of the console's fully featured DSP channels can handle any audio signal path, irrespective of whether it is designated as an input, group, summing, monitor or aux channel. The mc²56 now features an adjustable pick-off point on the Track Send, which provides a dedicated track output per channel - making it possible, for example, to select a pre-fader feed and set a delay on the track path without affecting the main bus output sum.

DAW PLUG-IN INTEGRATION

Uniquely, Lawo's mc² Series consoles offer complete integration of familiar DAW plug-ins. Based on a Windows PC, the new Lawo-developed technology incorporates extremely low latency and is controlled directly by the mc²56's console surface. Operation is remarkably simple. A Lawo Plug-in Host (LPH) server assigns the virtual tie lines required for each triggered plug-in to the mc² HD Core which, in turn, establishes the required plug-

within static snapshots or sequence automation with the console's other parameters. (Dynamic automation is planned.) The result is a total amalgamation of what were previously separate mixing-console and digital audio workstation domains.

The LPH server accepts all VST-type plug-ins without further modification. The installation process is the same as it is for plug-ins being installed to a standard DAW platform, the only difference being that now the plug-in server is fully integrated with the mc²56's HD Core, with control originating at the console surface. As with DAWs, a single plug-in can be used within multiple functions, each with its own parameter settings, labels and independent signal routing. Visual feedback of all plug-in parameters is provided on the console's central display, allowing the operator to remain focused on the mix process. (To date, Lawo says, mc² Series consoles have been found to be fully compatible with VST-format plug-



Gain Control.



16 mic, 24 line in
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8 bus, 8 aux, Full Center Section

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STUDIO

The latest news and products

NEW PRODUCTS

BOCK AUDIO 5-ZERO-7



Bock Audio will unveil their new Bock Audio 5-ZERO-7 hand-built large body tube microphone at the 125th AES Convention in San Francisco. Engineered for high-end vocal applications, the 5-ZERO-7 is the first mic to take advantage of a new patent-pending elliptical large capsule design by David Bock and George Cardas. In development for over five years, this new capsule — hand manufactured in Germany — is different from capsule designs both past and present. Offering many technical advantages over existing round capsule designs, the Bock/Cardas Ellipse delivers higher levels of audio performance than has been seen before. Designed as a traditional tube mic/power supply package, the Bock 5-ZERO-7 is a large body mic with a beefy tube, audio transformers, fully discrete electronics and custom power supply very similar to those found in 1947 era microphones.

PRICE: \$6,995

CONTACT: TransAudio Group | ☎ 702-365-5155 🌐 www.transaudiogroup.com

STEINBERG Cubase 4.5

Steinberg has announced the latest update to Cubase 4 and Cubase Studio 4 Music Production Systems, version 4.5. Both are available now as a download for all US registered Cubase 4 and Cubase Studio 4 customers from



<http://www.steinbergupgrades.com>. V.4.5 offers many new integrative technologies, with full support for the upcoming Steinberg MR816 CSX/X Advanced Integration DSP Studios and the CC121 Advanced Integration Controller. Cubase 4.5 also introduces VST Sound, a new and improved universal media management format that is a fundamental part of Steinberg's VST3 standard. Further, the update offers full compatibility

with Steinberg's entry-level Sequel 2 Music Creation and Performance Software as well as the new Rock, Hip Hop and Industrial Content Sets.

PRICE: Free to registered Cubase 4/Cubase Studio 4 customers

CONTACT: Steinberg North America | ☎ 877-253-3900 🌐 www.cubase.net

Z RIGHT STUFF Z-Bar Miking Bracket

Z Right Stuff's Z-Bar miking bracket can be used as a simple alternative to conventional microphone stands for amp and cabinet miking applications.

The Z-Bar is made of lightweight anodized aluminum with dedicated hardware for attachment of any 5/8-27 inch mic clip. The bar can be slipped beneath a speaker cabinet or guitar amp, or hung from the top-carrying handle, suspending the microphone in front of the loudspeaker.



PRICE: \$20

CONTACT: Z Right Stuff | ☎ 800-771-8330 🌐 www.performanceaudio.com

TC-HELICON Harmony 4 Update

TC-Helicon has released a new version of its Harmony4 plug-in for Pro Tools|HD and TC's PowerCore platform. This version is now Universal Binary-compatible and adds an array of doubling presets, including doubling presets that emulate overdub sounds as well as octave doubling.



With TC-Helicon's Harmony4 plug-in, producers, engineers and songwriters reportedly can fatten existing harmony tracks and add new one- to four-part harmonies after the singer has left the studio. The update to Harmony4 is available as a free upgrade for existing users and can be downloaded from

the company's website.

PRICE: Free

CONTACT: TC-Helicon | ☎ 818-665-4900 🌐 www.tc-helicon.com

Producer and engineer Sterling Winfield is known in the hard rock music world for his heavy sounds, and for the past several years he has been exclusively mixing through the Dangerous Music 2-Bus analog summing system at Gary Long's Nomad

Studios in Carrollton, Texas. Winfield says, "I've been spoiled. I've worked with the Dangerous 2-Bus summing amp at Nomad Studios and I didn't want to do any mixing or critical listening without that technology at my side. The [Dangerous] D-Box is absolutely perfect for what I'm going to be doing at home. I also wanted to be fully compatible with Nomad." For more information about Winfield's production techniques, refer to the September 2007 issue of Pro Audio Review, where he was featured in the monthly production column, "Single Slice."



Over the course of 12 years, Copenhagen-based Studie73 was built from the ground up. owner/chief engineer Johan Lei Gellett slowly amassed a nice collection of high-end analog equipment and traded up smaller spaces for ever-larger and acoustically inspiring sites. Lei Gellett recently replaced what used to be purely a Pro Tools mixing situation with a brand new analog API 1608 small-frame mixing console. The 1608 joins Neve, Gyratech, TLA, Universal Audio, NTP, and ADAM outboard gear in creating Studie73's organic, vital sound.

Until recently, music scoring engineer Armin Steiner Steiner relied "almost entirely" on cardioid Sennheiser MKH 40s for spot miking. "Although I try to keep spot miking to a minimum, when I need to include a spot mic it's essential that the off-axis response blend linearly with the rest of the mics," said Steiner. "Until Sennheiser introduced the new MKH 8040, the MKH 40 was my favorite all-purpose spot mic. The 8040 shares all of the best qualities of the 40, including very low noise and terrific dynamic range, and although I wouldn't have guessed it was possible, the 8040 has better off-axis rejection and even greater clarity."

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World Radio History

by Dr. Frederick J. Bashour

Earthworks PM40 Piano Mic System

Lay it inside a piano, connect two mic cables to your preamp, and hit record; you're guaranteed to get a really good sounding reproduction of piano sound.

At last fall's AES convention, I was intrigued by a new "piano bar" gizmo at the Earthworks booth; it was an adjustable telescoping bar upon which were permanently mounted two special "high definition" diffuse field omnidirectional microphones. I was promised a review sample as soon as it was ready for sale. Now usually, when something seems too good to be true, it is ... but in this case, everything the Earthworks sales guys were telling me about their Piano Mic System has turned out to be true. It sets up in a jiffy, and sounds really good.

FEATURES

The PM40 arrives in a long silvery metal flight case that includes the telescoping bar with the two attached mic heads (adjustable from 46 to 64 inches), the (phantom powered) microphone electronics box, a leather pouch for mounting the electronics box to the leg of a grand piano with Velcro, a mic stand mounting bracket for the electronics box, and various rack ears, screws and other pieces of hardware and felt. The PM40 puts

FAST FACTS

APPLICATIONS

Sound reinforcement, houses of worship, concert and session recording

KEY FEATURES

Invisible from outside the piano; good sound with piano lid down; very little leakage from instruments outside the piano.

PRICE

\$4,495 list

CONTACT

Earthworks | ☎ 603-654-2433 |
 ☞ www.earthworksaudio.com



Earthworks PM40 On A Mason and Hamlin Model 50 Upright Piano

out standard condenser mic level (-36dBv/Pa) and, although its self-noise spec doesn't seem impressive (at 22dB), once one realizes that the mic capsules are placed very close to the piano strings and soundboard — and the system has 148dB SPL input capabilities — the actual perceived noise level from the PM40 is extremely low. In fact, the noise specification is quite good for a measurement-type microphone of the PM40's tiny diaphragm diameter.

The lightweight telescoping bar spans across the piano over the strings and is supported at its ends by the piano case. It's easier to position it on large grands than on a baby grand where there's really only one place it will fit; closing the lid on a small piano with the PM40 in there is a bit of a challenge. The mics are placed about one-third of the way in from each side of the piano, three inches in front of the hammers, and three inches above the strings. However, the telescoping bar has two clutches that can be loosened, allowing the center section to move up to eight inches in either horizontal direction; as a result, the engineer

can move the mics to favor either the low or the high strings. Furthermore, the flexible arms attached to the mic heads may be wiggled about four inches in almost any direction. Finally, the bar may be put onto the piano from either the left or the right so that the mics can be positioned facing towards the hammers or away from them. With smaller grands, I learned that only one of these choices is feasible.

IN USE

I used two grand pianos for my tests: the aforementioned Kawai baby grand at the North Hadley Congregational Church where I am Music Director and a full nine-foot Steinway on stage at one of the local colleges. I made my location recordings using an Apogee Mini-MP mic preamp feeding a pair of line inputs in an M-Audio FireWire 1814 interface into Peak Pro 6.0.3 at 96kHz. The first test I made was to play an 88-note chromatic scale from bottom to top. Playback revealed an incredible evenness of the scale, irrespective of whether the lid was up,

EARTHWORKS continues on page 18 ►

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The **PRE420** is a 4-channel mic-preamp with a plethora of features, including built-in, independent stereo mix and solo busses. The sonic performance of the **PRE420** has been described as making the instrument "sound like it's being played right in front of me!" It delivers the audio with such clarity that no

textures are lost or obscured by distortion or noise. The remarkably low noise floor spans a wide range of gain setting, making the **PRE420** the perfect pre-amp for ribbon microphones. For room and ambient recordings, the ultra-low distortion performance puts the listener in the live-room. Also, the **PRE420** circumvents "Murphy's Law" with its bullet-proof "phantom-hot-plug" protection circuitry and incredible RF immunity.

The **ADC1 USB** is a reference-quality, 2-channel, 24-bit, 192-kHz A-to-D converter. The UltraLock™ clocking system delivers unvarying mastering-quality performance - regardless of clock source. The **ADC1 USB** offers variable input gain from -6 to +39 dB to interface directly with a wide range of devices. Precise levels are easily achieved with the 9-segment, dual-range LED meter.

The **DAC1 PRE** is a reference-quality, stereo monitor system controller with the DAC1's award-winning, 24-bit, 192-kHz D-to-A conversion system. The **DAC1 PRE** continues the legacy of the **DAC1**, which has become a staple of control rooms around the world. The analog inputs provide a simple and direct path to the monitors for mixing consoles, iPods, etc. The AdvancedUSB™ input supports native 96 kHz, 24-bit operation without cumbersome or invasive driver software. The built-in, 0-ohm HPA2™ headphone amplifier provides ultra-low distortion headphone monitoring.

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closed, or on half-stick. I then played some solo jazz improvisations under these three conditions and was amazed at how closely the sound with the lid lowered to half-stick matched the openness of the full-stick quality. I also learned quickly that the level went up about 5dB with the lid closed; furthermore, the sound was a bit compressed and a little boxy. The compression would actually be an advantage in many pop sound reinforcement scenarios and the boxiness was easily remedied with a little broad low-mid/upper mid-bass cut. I also noticed — and this might be obvious — that the room in which the piano is located is much less important. Also — and this wasn't so obvious — while really good pianos sound really good, not-so-great pianos seem to record with the PM40 better than they sound in real life. That's a definite plus in my book!

I then used another test methodology to ascertain how recordings made with the PM40

I also noticed — and this might be obvious — that the room in which the piano is located is much less important. Also — and this wasn't so obvious — while really good pianos sound really good, not-so-great pianos seem to record with the PM40 better than they sound in real life. That's a definite plus in my book!

could compare to "good" piano recordings made with more traditional techniques. I selected two examples from my own commercially available piano recordings — one classically miked and one done with pop miking — and sought to duplicate these with the PM40. I would be the test pianist since one of the artists on these recordings lives in Europe and the other is no longer on this earth.

For the classical piece, I tried to play the Tarantelle, Op. 25 of Juliusz Zarebski, (Masques, Dorian 80121) originally performed by Elzbieta Wiedner-Zajac. I had recorded her in the Schubertsaal at the Vienna Konzerthaus in 1993 with a pair of Neumann M269s and a pair of M50s, playing a nine-foot Steinway. I recorded the test myself on a Steinway of similar size, with the PM40, here in Western Massachusetts. As luck would have it, the Audio Ease folks have sampled all three halls at the Konzerthaus, so I was able to instantiate Altiverb 6 into Peak Pro 6 and do a pretty good job of matching the hall sound I cap-

tured in 1993. It goes without saying that my piano playing didn't match Elzbieta's at all; she's an awesome concert pianist!

I had a much easier time duplicating Bill Albright's rollicking ragtime piano performances (Sweet Sixteenths, MusicMasters MMD 60149) and the PM40 — although it sits almost right on top of the strings — sounded remarkably like the Schoeps omnis I had placed several feet higher. I had recorded the original session at the University of Michigan's Hill Auditorium. Since I still had the Schubertsaal IR instantiated in Peak (and, as the smallest of the three Konzerthaus halls, it's actually similar in size to Hill), I used just a tidge of the IR to match the "bloom" of my original 30ips Ampex ATR-100 analog recording from 1980 with good results.

Neither of my new recordings surpassed the originals, but they certainly sounded very good by themselves and, with the originals as

models, were definitely "in the same ballpark."

"For something completely different" as they say, I thought to myself, "I wonder how the PM40 would work on my own Mason and Hamlin Model 50 upright piano?" Back in the mid-seventies when I was a lowly assistant Music Theory professor at the University of Michigan (and Bill Albright's colleague), I spent four months salary on that piano — the 50-inch tall "Rolls-Royce" of upright pianos — since I didn't have the space (nor the cash) for a baby grand. I've treasured that piano since 1976 and it has followed me everywhere I've moved. I continue to record it at least weekly and presently use a pseudo-ORTF arrangement with 2 AKG C60 tube mics (with CK1 capsules) a bit above and slightly behind it, pointing down; they are normalised to a pair of Manley MicEQ-500 preamps. This produces a very convincing sound and, when accompanying singers, no one can ever tell that the piano source was an upright unless I point it out.

Well, wouldn't you know; the PM40 fit

perfectly right underneath the lid of my Mason as if it were custom made to straddle the two sides of an upright. (The Earthworks literature simply states that the bar was designed to fit 88-key pianos.) The tiny mics ended up about two inches back from the hammers, an inch or so from the Mason's front cover, and I adjusted them laterally to give equal coverage to high and low strings. (See associated picture.)

One of the valuable features of an upright piano this tall is that the strings and soundboard actually have some space to develop a decent sound. Not having at my disposal any of those little wedges my piano tuner uses to keep the lid up, I stuck a face towel in there, to keep the lid about one third of the way up. This time I recorded into Pro Tools M-Powered 7.4; I wanted to simultaneously capture both the PM40 and my two C60s. I connected the PM40 into the mic preamp section of my Apogee Trak2 and fed its line output to channels 1 and 2 of my new M-Audio Fast Track Ultra 8R USB interface, again at 96kHz. I routed the standard C60s/Manley preamp combo to channels 3 and 4.

The sound from the PM40 was quite recognizable from my experience with the grands. Perhaps due to the small space between the hammers and the front cover of the piano, I got a bit more of the "ping" from each hammer strike than I did with either of the grands, but the sound itself was very similar: mellow, smooth and very well balanced. The C60s outside the piano were considerably brighter and had more of that "piano recorded in a room" sound but, of course, they would also pick up anything going on in the room — singer, drum set, etc. The PM40 needed only 25dB of gain from the Trak2 in this situation, so I can certainly see using it — even inside an upright — for reasons of isolation. And again, the stereo image was simply uncanny; I've never heard this quality of imaging from any recording of an upright piano — ever! I sweetened the sound with a little bit the Piano Plate preset from TC Electronic's VSS3 algorithmic reverb plug-in, which added the final icing to the cake.

SUMMARY

Should we recording engineers leave our expensive mics home every time we're asked to record a piano and, instead, opt for the Earthworks PM40? Well, yes and no. Despite all the positive things I've written about this miking system, I was not able to make it sound as good as my own recordings using standard techniques. But please consider that I always

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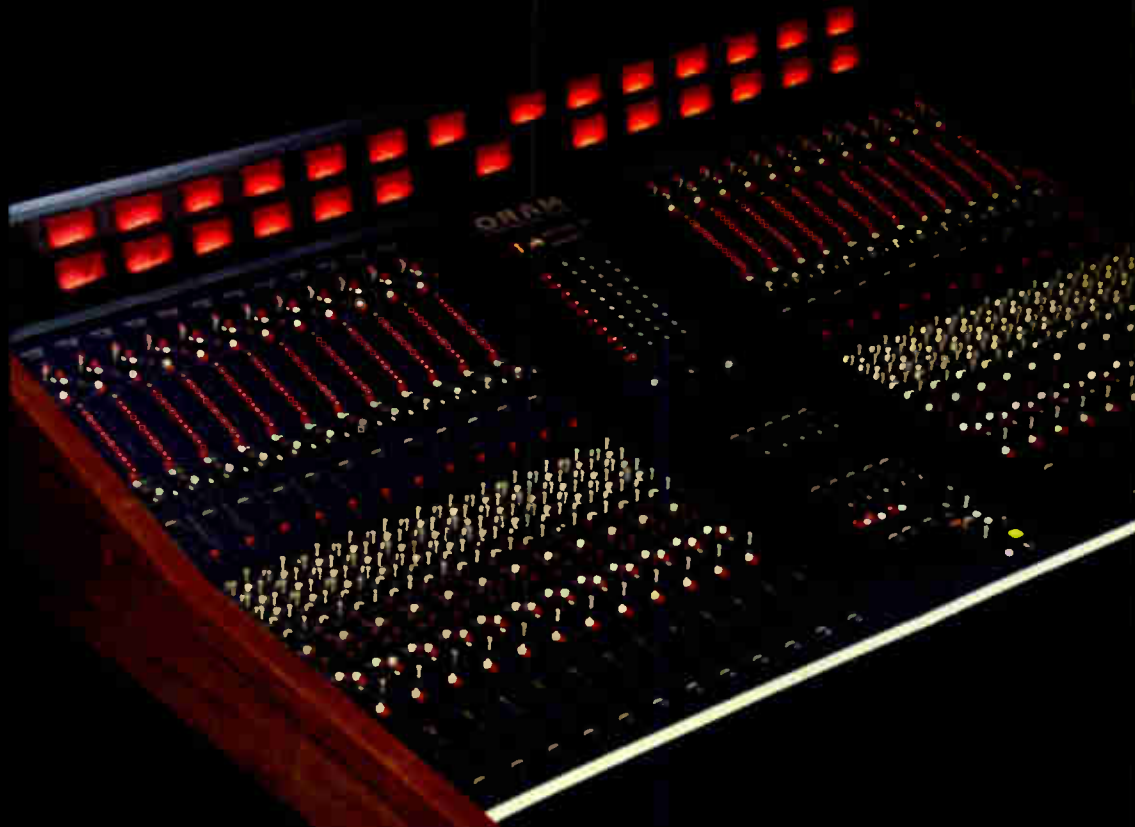
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by Russ Long

Onkyo Professional PR-SC885 HDMI 1.3a Surround Sound Processor

The Onkyo PR-SC885 should be a serious consideration for surround-equipped studios with a need for switching between a wide range of formats.

While most people are familiar with Onkyo's consumer electronics equipment, the company's Onkyo Professional product line may not be as well known — though this may soon change for studios specializing in surround projects. The relatively new Onkyo PR-SC885 is one of the first high-end SSPs (Surround Sound Processors) that offers HDMI 1.3a implementation, which means the support of all current Dolby and DTS formats (even DTS-MA), making it easily adaptable to the surround equipped pro studio as well as a perfect choice for the high-end home theater enthusiast. Consumers and professionals try-

ing to embrace Blu-ray (and the now-fading HD-DVD) require HDMI audio processing to get the most out of the lossless audio locked in the TrueHD and DTS-MA sound tracks on those discs. The PR-SC885 also supports the DSD format on SACD discs as a digital bit-stream from an SACD player.

FEATURES

The 17-1/8" x 7-5/8" x 17-1/2" (W x H x D) PR-SC885 weighs 29.3 pounds and includes balanced inputs (though only two) and outputs (eight — supporting 7.1 monitoring) and high quality video processing (HQV Reon-VX). Although it's better suited for the home theater than the studio, the Audyssey MultEQ XT feature makes speaker setup a cakewalk. The Audyssey technology uses the included microphone to detect and configure the speakers in the room, and then adjusts the level, delay and crossover settings for each channel to best suit the acoustics of the room.

The heart of the PR-SC885P is a toroidal transformer along with two independent audio and video transformers. The unit provides HDMI 1.3a Switching, Reon-HQV HD video scaling up to 1080p, and Dolby Digital Plus, Dolby TrueHD and DTS-HD decoding. Thanks to the high-quality, 24-bit/192kHz

Burr Brown DACs on every channel, it sounds great. Also included are four HDMI inputs and two HDMI outputs so a second display can be supported (although not simultaneously).



The rear panel of the unit squeezes about a trillion connectors (well, not that many but there are a lot) into a relatively small amount of space. The row of balanced connectors across the bottom support two channels of balanced input and up to 7.1 channels of balanced output via XLR connectors. If you are using the PR-SC885 to monitor your DAW's surround mix, the only real option you have, unfortunately, is via the unbalanced RCA surround inputs. Ideally, the PR-SC885P would include balanced inputs supporting up to 7.1 channels in addition to its balanced outputs.

Analog stereo inputs include CD, tape loop, and phono. Five additional stereo audio inputs provide support for S-Video and composite inputs. Additionally, there are five digital audio inputs (three coaxial and two TOSLINK), as well as an optical output.

IN USE

The PR-SC885 has an impressive build quality so it would easily stand up to the regular use of a professional recording studio. The setup was as simple as I've ever encountered on a receiver. The system's menu is visually attractive and easy to navigate. One frustration I have with the PR-SC885 is that when the digital format changes from one source to another (e.g. from Stereo PCM to Dolby Digital), there is a one-second delay before the new signal is locked on. I anticipate that this isn't a factor for home users but in the studio when sound sources are rou-

ONKYO continues on page 53 ►

FAST FACTS

APPLICATIONS

Studio, project studio, audiophile/home

FEATURES

2 balanced inputs; 8 outputs (supporting 7.1 monitoring); four HDMI inputs, two HDMI outputs; CD, tape loop, and phono analog stereo inputs; S-Video and composite stereo inputs; 5 digital audio inputs (3 coaxial and 2 TOSLINK); optical output; HQV Reon-VX; Audyssey MultEQ XT; HDMI 1.3a Switching, Reon-HQV HD video scaling up to 1080p; Dolby Digital Plus, Dolby TrueHD and DTS-HD decoding. 24-bit/192kHz Burr Brown DACs per channel

PRICE

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by Heather Johnson

Developments and Trends: Instrument Microphones



While the SM57 seems to work well on just about every instrument, both on stage and in the studio, having a collection of versatile microphones to choose from certainly makes for a more efficient recording process. The inherent qualities of each "mike-able" acoustic instrument has specific requirements when it comes to recording, and an increasing number of manufacturers are designing microphones and mounting systems specifically tailored to suit those needs. Here, we discuss the characteristics of some instrument-specific mics and mounting systems with three notable manufacturers — DPA Microphones, Earthworks, and sE Microphones — to reveal the motives behind their innovative designs.

DPA MICROPHONES

DPA manufactures premium-quality microphones with a leading emphasis on acoustic instrument mics. In recent years, the company also expanded their accessories line from one shockmount and a stereo boom in 1992 to more than 150 different products. Like their mics, their holders and mounts play a crucial role when it comes to instrument-specific miking. DPA president Bruce Meyers spoke about the characteristics (or lack thereof) of DPA microphones and mounting systems.

PAR: What acoustical and/or technological characteristics are studied when designing DPA's mounting systems?

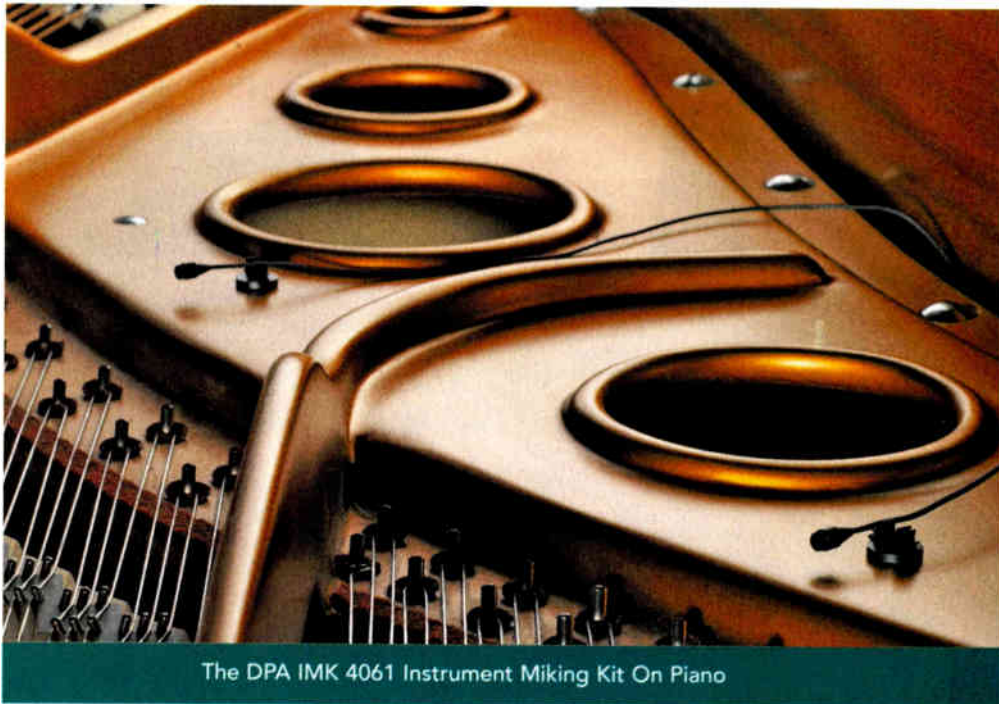
Bruce Meyers: At DPA, our goal is to capture an instrument's sonic character with the utmost accuracy. We are a company that does not believe in "adding" anything to the original source...no color, if you will. Capturing the true intrinsic qualities of any instrument requires the microphones to be placed in the proper location. Our unique mounting systems were designed specific to a given model of a DPA microphone with the goal of achieving the best possible placement that allows for a secure mount, out of the way of the performers natural movement, in

the location that captures the sound of the given instrument with the most natural reproduction possible.

PAR: How have the products evolved?

BM: In the case of our current product line of mounting systems, the materials we chose in their development were very good choices

instrument that has those specific qualities that resonates with their soul, and then they spend the rest of their life developing a specific sonic character which is a combination of their unique talents on that specific instrument. When those two things come together something nearly magical occurs and becomes their signature sound. At DPA we want simply to capture that magic and



The DPA IMK 4061 Instrument Miking Kit On Piano

and little if anything has been changed with them. That is the result of good design practices, something DPA is quite well known for.

PAR: In what way does DPA technology serve specific instrument miking trends?

BM: Where other microphones produce a sonic coloring of the source, (warm, bright, smooth, fat, dark, et cetera), we at DPA focus completely on producing mics that do not editorialize.

When you talk to musicians, as we at DPA do everyday, you will hear how frequently a musician has spent half of their life for searching for "the right instrument," that

believe that it is an injustice to the musician (and to their audience) to alter the sound they have worked so hard to achieve. It is our unique technology and manufacturing processes that allows us to produce such musically accurate microphones.

Later this year we will introduce a new line of instrument mics that both continues the heritage and legacy of what we have achieved to date as well as breaking new ground, setting a new standard of performance for the live sound stage, specific to acoustic instruments. We'll have much more to talk about regarding this subject by AES San Francisco this October.

TRENDS continues on page 24 ►

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EARTHWORKS

The piano is regarded as one of the most challenging instruments to record. Each piano has its own unique characteristics, and each element of the piano — from the hammers on the strings to the position of the lid to reflections from the room itself — all contribute to that sound. To help solve the piano-miking problems presented in the recording, live sound and church environments, Earthworks produced the PianoMic System, which consists of two high definition microphones mounted on mini-flex arms that point directly at the strings — no mic stands required.

PAR sat down with Earthworks' director of product development Larry Blakely to discuss the PianoMic, which joins the company's product mix along with the DK25 DrumKit Systems in their growing line of instrument-specific microphones.

PAR: How did Earthworks come to the decision to design a mic specifically for piano?

Larry Blakely: I was having lunch with a sound contractor and asked him, "Are there any microphone products that you need that you can't get, or i.e., don't exist?" And he said, "Yes. I need a piano mic for churches. I need a better balance between the high and the low strings of the piano. It must produce a better overall piano sound with more gain before feedback. I don't want it to pick up sounds of other instruments outside of the piano, and it cannot be visible from outside of the piano — no stands, no booms. And it has to sound nearly as good with the piano lid all the way closed as it does all the way open." That's a mighty tall list. I thought about it for a few minutes, pulled out a napkin and sketched out what is the essential PianoMic design. A year later, we had a prototype.

PAR: What characteristics make this mic so suited for acoustic piano?

LB: There's a telescoping rod that's supported by both sides of the piano. The rod suspends two specially designed mics on six-

inch mini goosenecks that come off the center of that rod. The rod will adjust so you can favor either the low or high strings, if desired. The distance between the two mics is fixed, but you have a plus/minus five-inch swing with the mini goosenecks that allow them to move left to right and/or up and down. We get the best results with it when the mics are approximately two inches in front of the dampers and two inches above the strings.



Larry Blakely, Earthworks' director of product development, With The PianoMic

The mics that we developed for the PianoMic have 148dB SPL and it needs to be that high with the mics that close to the strings. Our engineers also used random incidence omnis instead of conventional omnis. Random incidence microphones are designed to work within a diffuse sound field as inside of a piano is a diffuse sound field. Every string is a sound source, the soundboard is a sound source and there are tons of reflections. The random incidence polar response picks up all direct and reflected sounds with great accuracy. We did some PianoMic recordings with the piano lid at full stick, half stick, and all the way closed. There is precious little difference in sound quality between the three recordings.

PAR: Does Earthworks plan to design more instrument-specific mics?

LB: Yes. With our high definition microphone technologies, we can put one of our

mics on any given instrument and hear a significant improvement in sound quality. Our goal is to have instrument microphones that are far more faithful and do a much better job at reproducing the instrument's sound than conventional microphones. I'm not sure the world needs a whole slew of new instrument microphones, but there is room out there for microphones that provide a dramatic improvement in sound quality.

SE MICROPHONES

If the piano is one of the most difficult instruments to mic, acoustic guitar must be one of the most difficult instruments to stay miked. One slight movement of the player or the instrument will alter the sound, and engineers have gone to drastic lengths to maintain a consistent mic position without hiring a mannequin. SE aims to solve this dilemma with the GM10, an acoustic guitar mic featuring a universal clamping system that allows the user to adhere the mic on any flat-backed six-string. Bob Reardon, managing director for Sonic Distribution U.S., SE's North and South American distributor, showed us why the GM10 suits the acoustic guitar and why other mics situated on SE's clamping system won't make the cut.

PAR: Why did SE decide to design a mic specifically for acoustic guitar?

Bob Reardon: We wanted to deal with the age-old problem of "wait, you moved." If you put the guitar down and go into the control room and listen to a take and then sit back down it's very difficult to get in exactly the same spot. The GM10 allows you to get very specific as far as tone and placement. This allows you to really zero in on the sweet spot: find it and maintain it. And the player can come back after a break and the mic is in exactly the same spot.

PAR: What characteristics of the acoustic guitar did SE study when designing the GM10?

BR: Since almost all acoustic guitars are different, SE had to look at the broad range of instruments, especially when it came to the mounting — everything from thin bodies to jumbos and baritone guitars were measured. Isolation from the physical vibrations of the guitar body was important so these did not transmit to the mic capsule. Three levels of isolation were used: On the mount itself as part of the surface that also protects the guitar body; an isolated "socket" mechanism as part of the boom; and the mic capsule mount has a built-in "rubberized" isolator.

PAR: And the microphone itself?

BR: With a background in small-, medium- and large-diaphragm microphones, the company's research found that for the close mic positioning commonly used, a small diaphragm would be the best match. As the capsule diameter decreases in size, the off-axis response tends to be less colored. This advantage has to be balanced with the lower output from smaller capsules affecting the S/N, a 14mm inside diameter capsule fit the response, size and weight characteristics needed for this application. The biggest issue the design addresses is the hypersensitivity to movement when close miking an acoustic guitar. Movement of a 1/2-inch or even less can yield an obviously different sound color. This is a difficult constraint for both the engineer and the per-



The sE GM10
Acoustic Guitar Microphone

former to deal with. Using the small light diaphragm, a light boom, and capsule mount assembly, proper physical weight balance could be achieved, allowing a very large degree of placement options for the capsule. This allows a refined custom placement not only just for individual instruments, but also for playing styles (pick, fingers...) and even tunings on the same instrument. And best of all, once set, the guitar may be put down and the positioning is exactly the same when it's picked back up, something not possible before.

PAR: How does the GM10 accommodate the acoustic guitar's sensitive nature?

BR: As you go smaller in capsule size, you generally get a much better off-axis response. The off-axis sound is less colored. The smaller condenser mic is very nice for catching all the detail.

Because the clamp is right on the edge of the guitar near the bracing, it really doesn't deaden or change the sound, and we haven't encountered any acoustic feedback through the mount. The clamping mechanism does not change the sound of the guitar. I'm a guitar player, so I miked

up a nylon string guitar, which is much more sensitive than a steel string guitar, with an external mic, and then staying in the exact same position, played the same piece with the GM10 on the guitar and with the GM10 removed. When I A-B'd the two you could not tell the difference, proving the clamp did not change the sound.

PAR: Could an engineer use another mic with SE's clamping system?

BR: You can't put a mic such as an SM57 on the boom. It would be too big and bulky. The geometry won't work. The GM10 has been carefully designed so that the geometry of weight and counterbalance are specifically suited for our small-diaphragm capsule.

Heather Johnson is a San Francisco-based journalist and author whose books include "If These Halls Could Talk: A Historical Tour Through San Francisco Recording Studios"

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series
5

by John Gatski

Benchmark Media

DAC1 Pre

Benchmark adds analog source monitoring to its popular D/A converter.

Based on the the Benchmark DAC1 USB (last reviewed July '07 PAR), the Benchmark DAC1 Pre gets a set of analog inputs to provide greater utility for those who want to use their DAC as their solo gain device — for digital and analog sources.

According to Benchmark, many of their customers love the sound of the DAC1 USB (or standard DAC1) as a digital converter — with its excellent sounding headphone jack and line out, but they cannot play their analog sources through it. Well, now they can.

FEATURES

The Benchmark DAC1 Pre, priced at \$1,595 retail, adds analog input selection (RCA unbalanced only) that bypasses the digital converter to maintain an all-analog signal path through the headphone jack and line out. Like its other siblings (the standard AES/EBU, SPDIF, TOSLink input DAC1 and the DAC1 USB), the DAC1 Pre contains Benchmark's, ultra-low jitter and low-distortion converter that locks in all sampling frequencies 192 kHz and lower to 110 kHz sampling. These converters have proven to be among the best in terms of sonic trans-

parency — especially for the money.

Benchmark sent me one of their silver and black DAC1 Pre units. It resembles the standard DAC1 and the DAC1 USB on the front panel, except for a new knob control for rear-panel input selection. The rotary selector positions are: 1-TOSlink input, 2-SPDIF input, 3-SPDIF input, 4-SPDIF input, USB input, and the Analog inputs. The latter receive their signals from the RCA unbalanced jacks.

Like the other DAC1s, the front panel contains the two headphone jacks and the detented-volume control, but there is no non-PCM status LED. The headphone amp is based on Benchmark's HPA-2 standalone headphone amp, which is one of the best available.

Since the Benchmark DAC1 Pre was primarily intended for the audiophile market, it does not have the AES/EBU digital XLR input (standard on the DAC1 and DAC1 USB), or XLR balanced analog inputs for the straight analog connection. You only get the RCA unbalanced input for line and the SPDIF RCA jack for wired digital input. You do get XLR balanced output.

Although they probably would have to increase its size from the DAC1's half-rack format, I would like to see Benchmark make the DAC1 Pre with AES/EBU XLR digital input, XLR analog input — as well as XLR output — to make it a perfect pro piece.

But because of converter's pristine audio reproduction, as is, with RCA jacks, I believe pros can still use the DAC1 Pre for digital and analog monitoring tasks — minus the XLRs. There are a number of adaptor cables on the market that allow an XLR to mate to a RCA. I used the one from my Lynx L22 PCI card for digital, and it worked fine handling my digital XLR output source machines.

Besides the digital and analog inputs on the back panel, there also is a handy line-out switch that selects between fixed output and variable output level, and one extra click of the switch mutes the line output for exclusive headphone listening.

Internally, like the DAC1 USB and DAC1 Standard, this latest Benchmark has improved line gain stages and and headphone gain to make it easier to drive high impedance loads with out any loss of sonic transparency.



IN USE

Knowing how good the D/A is with reviews of the DAC1 USB last year, I decided to test the newest feature first. Using Westlake Low PE RCA cables, I found the analog inputs' audio quality (acoustic guitar and jazz guitar) to be outstanding, rivaling some separate analog preamps costing three times the price. I connected the RCA output of my Esoteric Audio DV-50 DSD/DVD-A player and found the DAC1 Pre close to the sound of my reference Legacy/Coda preamp. The analog input's noise performance is excellent — very quiet.

As expected, the Benchmark DAC1 Pre sounds identical to the standard DAC1 and the DAC1 USB — which is excellent. My various 24-bit/96 kHz recordings were detailed, accurate with a wide and very deep stereo image.

If you are satisfied with your connection options on your DAC1 USB or a more recent DAC1, there is no need to upgrade since the sonics are identical. If you have one of the older DAC1s, however, you might want to consider the upgrade a newer one. Although the DAC circuit is the same, the new parts in the analog stage, seems to add a bit more detail out on the edges of the audio transients. The difference was small, but in direct comparison with my original DAC1 from 2002, there was a teeny bit more detail — especially with the headphones.

One other point: I still wish Benchmark would add a power switch to the DAC1s, ADC1 and the HPA-2. I always have to power down my entire strip just to turn off the Benchmarks.

CONCLUSION

Although not purely a pro device, the Benchmark DAC1 Pre now gives you the option of analog-input monitoring — along with its renowned D-to-A — all in one package.

John Gatski is the publisher/executive editor of Pro Audio Review.

FAST FACTS

APPLICATIONS

Studio, Mastering, Broadcast

KEY FEATURES

Analog-to-analog signal path via RCA input jacks; low-jitter 24-bit D/A converter; SPDIF RCA digital input, TOSlink digital input, and USB digital input connections; unbalanced RCA and balanced XLR analog line outputs; high quality headphone amp with two stereo outputs.

PRICE

\$1,595

CONTACT

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AUDIX
MICROPHONES

by Russ Long

Focal Twin6 Be Studio Reference Monitors

The Twin6 Be is remarkably transparent, relatively non-fatiguing, and overall “absolutely marvelous.”

It seems like every time you turn your head, there is a new monitor company popping up. Unfortunately, most of them are making rubbish: poorly designed boxes of hype filled with cheap components. After spending a year with the amazing Focal Twin6 Be monitors, I've reconfirmed my belief that Focal is one of the few exceptions to the norm.

The Twin6 Be is a three-way active speaker with two 150w RMS and one 100w RMS amplifiers. The speaker's enclosure is comprised of two Focal 6W4370B 6.5 inch “W” cone sandwich composite drivers, loaded by two large section laminar bass ports and a Focal TB871 reversed dome pure Beryllium tweeter (the reversed dome tweeter is a hallmark of Focal). Both of the 6.5” drivers handle low frequencies but only one of the two (selectable) passes lo-mid frequencies.

FAST FACTS

APPLICATIONS

Studio, project studio, broadcast, post-production

KEY FEATURES

100-watt RMS class AB amplifier (HF); two 150 watts RMS amplifiers with BASH technology (LF and LF/MF); two Focal 6W4370B drivers; Beryllium dome tweeter; 40 Hz to 40 kHz frequency response; 115 dB max SPL (peak @ 1 meter). 10 kOhm electronically balanced female XLR jack input; Midrange Driver Selector; HF and LF control potentiometers.

PRICE

\$3,390 list (pair)

CONTACT

Focal Professional | ☎ 800-663-9352 |
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FEATURES

The Twin6 Be measures 9.8 inches by 19.7 inches by 13.4 inches and weighs 30.8 pounds. Its gorgeous cabinet has real red veneer sides with a black body and is truly visually stunning. The speaker has a frequency response of 40 Hz to 40 kHz and a maximum SPL of 115 dB (peak @ 1 meter). The input is a 10 kOhm electronically balanced female XLR jack switchable between +4 dBu and -10 dBu operation. In addition to the XLR jack and Input Sensitivity Switch, the rear panel includes a Midrange Driver Selector switch, HF and LF control potentiometers, voltage selector, fuse holder, IEC connector and power switch.

The Midrange Driver Selector switch allows the user to select which of the two Focal 6W4370B drivers will reproduce the midrange. Setting the switch to right will make the left driver the midrange driver and setting the switch to left makes the right driver the midrange driver. My listening tests have concluded that this setting isn't important as long as one speaker is set to left and the other is set to right.

The Twin6 Be has settings that allow the high and low frequencies to be contoured to adjust to a control room's sonic idiosyn-

crasies. The HF contour allows for a continuous adjustment of the high frequency level. It has a corner frequency of 5 kHz and is adjustable +/- 3 dB. The LF contour allows for a continuous adjustment of the low frequency level. It has a corner frequency of 150 Hz and is adjustable +/- 6 dB. The Twin6 Be's voltage can be set to 230V (1.6A fuse rating) or 115V (3.15A fuse rating). When the power switch is activated, a Power on LED on the front face of the speaker illuminates.

The HF amplifier is a 100-watt RMS class AB amplifier. The LF and LF/MF amplifiers

are each 150 watts RMS and incorporate BASH technology. BASH technology, which combines elements of Class D and Class AB amplification, blends high efficiency, low distortion, high bandwidth, and low EMI, resulting in a high quality yet cost effective amplification solution. BASH has only one switching stage and in a multi-channel configuration, the BASH converter only has to deal with one switching stage instead of multiple stages. The load of a BASH amplifier is directly connected to a power amplifier giving an advantage in both linear frequency response and EMI performance. BASH can use lower switching speeds and slower rise and fall times without compromising the amplifiers performance. The speaker is integrally shielded through cancellation magnets or by magnet design.

Focal believes that an ideal dome must combine lightness, rigidity and damping. They found that Beryllium is the perfect material for this since its density is 2.5 times less than Titanium and 1.5 times less than Aluminum while its rigidity is 3 times greater than Titanium and 5 times greater than Aluminum. This means that for a dome of identical mass, a Beryllium model is 7 times more rigid than one made of Titanium

or Aluminum and the velocity of sound in a Beryllium dome is 3 times faster than a Titanium version and 2.5 times faster than an Aluminum version. The manufacturing of Beryllium is very difficult and today, its production is limited to just three countries: the United States, France and Russia. Beryllium's unique characteristics make it extraordinarily expensive, much more than gold and nearly 100 times that of Titanium. Focal considers the expense worthwhile since the result is an outstandingly detailed loudspeaker with a frequency response that extends to nearly 40 kHz while maintaining a perfect impulse response.

IN USE

When the Twin6 Be's arrived nearly a year ago, I couldn't wait to put them to work. Focal recommends that they be placed at a distance between 1 and 3 meters from the listener pointing towards the monitoring position with the tweeters at the approximate height as the listener's ears. I heeded their advice and had excellent results. The Focal literature explains that the speakers are intended to be placed in landscape orientation although they can be positioned verti-

cally if necessary. I have listened extensively in both positions and have found that I always prefer the sound of the speakers when in landscape orientation.

After using the Twin6 Be's for nearly a year, I have found them to be extremely flat and natural sounding with the best imaging that I've ever encountered in a speaker in their price range. I have used the monitors in a wide variety of rooms, and — in nearly every instance — I have been pleased with the sound with them set flat. Needless to say, these have nearly all been professionally designed rooms but it is still nice to know that there is some sonic tailoring available within the box.

The Twin6 Be is remarkably transparent and its low distortion makes it relatively non-fatiguing. I've noticed that after a 12-hour mix session I don't feel fried like I do when using some other monitors. The non-fatiguing aspect keeps me from constantly turning up as the day goes on as well which is nice and good for the ears too. They are capable of rocking out when necessary, however, so the bands are always pleased when they come into the control room for their larger than life playback. The bottom end is nice as well. There is plenty of defined low-

frequency information making them accurate for tracking and mixing without a sub.

Most importantly, the Twin6 Be translates extremely well. I've found them to be exceptionally accurate and I know once I get a mix sounding right on the Twin6 Be's, it's going to sound right everywhere.

SUMMARY

At the end of the day, these monitors are absolutely marvelous. I haven't seen another pair of monitors for less than \$4000/pair that can touch them. Of course, what's right for one person isn't necessarily right for another; if that was the case, there would only be one monitor company). However, if you are in the market for an uncompromised studio monitor, the Focal Twin6 Be should be given top consideration.

Russ Long, a Nashville-based producer/engineer, owns The Carport recording studio. He is a regular contributor to Pro Audio Review.

REVIEW SETUP:

Apple Macintosh 2 GHz Dual Processor G5 w/2 GB RAM; Digidesign Pro Tools|HD 7.4; Apple Logic Pro; Lynx Aurora Converters

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by Russ Long

Cascade FAT HEAD II Blumlein Package

An impressive performer, the FAT HEAD II allows nearly everyone to discover the joys of ribbon microphone recording.

When I reviewed the Cascade FAT HEAD in 2007, I couldn't believe how much bang for the buck the mic delivered. Cascade has upped its ante with the FAT HEAD II Blumlein Package. This ribbon mic kit includes a pair of FAT HEAD II Ribbon Microphones, a pair of suspension shock mounts, a Blumlein stereo adapter bar, plus a micro-fiber cleaning cloth and a sturdy aluminum carry case at an order-direct price of \$375.

I reviewed the FAT HEAD II fit with the Cinemag transformer, a step up from the regular version. The other upgrade option is the Lundahl transformer which incorporates an open-end winding technique with insulation between each layer of copper wire, which improves the transformers' operation. Compared to the stock transformer, the Cinemag and the Lundahl transformers both provide extended bottom and top end frequencies as well as enhanced definition.

FEATURES

Before we go deeper, you may be asking yourself, "What's the difference between the



FAT HEAD and the FAT HEAD II?" Sonically, there is no difference; it is essentially the same mic in a slightly different casing. The FAT HEAD II's overall length is seven and 3/4 inches, it offers a three-inch diameter polished nickel grill, neck and nut with a larger body, and it includes a heavy-duty premium shock mount. The FAT HEAD II looks a bit better and it has the added shock mount.

The FAT HEAD II incorporates a hand-tuned ribbon element that is based on the classic symmetrical ribbon design. The mic has a sensitivity of -56dB +/- 2dB (0 dB=1V/Pa) and a frequency response of 30 Hz to 18 kHz (+/- 3 dB). The mic's output impedance is <=200 Ohms and the recommended load impedance is >1000 Ohms. The Maximum SPL (1% THD @1000 Hz) is 165dB.

The mic's corrugated aluminum membrane is positioned exactly in the center from front to back, which produces a true figure-eight polar pattern. This makes the mic ideal for a mid-side or Blumlein recording

configuration. The FAT HEAD II can optionally be purchased with either a Lundahl or a Cinemag transformer for additional cost. The FAT HEAD II's backbone is the 99 percent pure aluminum, 2.5 micron, 1-inch (L) X 3/16-inch (W) ribbon.

IN USE

My first opportunity to use the FAT HEAD II pair was as stereo drum set ambiance mics while tracking at Omni Sound Studios in Nashville. They have a great sounding tracking room, so it was a perfect place to hear the FAT HEAD IIs. I normally use Coles 4038 ribbons for that application and I found that, while the FAT HEAD II pair didn't sound exactly like Coles, they were extremely close. The Fat Head II's sonic signature is quite impressive, considering they are one-fifth the price.

On another session, I used a single FAT HEAD II on an electric guitar amp and had good results. Against my reference ribbon for electric guitar — the Royer R-122 — I ultimately preferred the R-122, But for the price, the Fat II was quite impressive.

I used the stereo FAT Head II pair to record an acoustic guitar in MS (using the included stereo bar), which produced a wonderful sounding, nicely separated acoustic track. The stereo bar is one of the Blumlein Package's strong points. The bar can be easily used with other microphones as well, making it a handy addition.

Using the FAT HEAD II pair to record the top of a Hammond B3 Leslie (with a Heil PR-40 dynamic on the bottom), the three microphones produced a particularly pleasing Leslie recording. On piano, the FAT HEAD IIs sounded lush, warm and detailed.

On drum kit overheads, I liked the FAT HEAD II's sound, but not enough to pick over Royer SF-12's. I also used a single FAT HEAD II on tambourine and shaker, and, again, I had good results.

SUMMARY

Although I have a preference for the high-end Royer and Coles microphones when it comes to ribbons, Cascade has proven that its much lower-cost ribbons perform well for many kinds of recording applications. If you don't own a ribbon mic and don't have a lot of money to spend, you owe it to yourself to try a FAT HEAD II; you can hear firsthand what all of the ribbon mic talk is about.

Russ Long, a Nashville-based producer/engineer, owns The Carport recording studio. He is a regular contributor to Pro Audio Review.

FAST FACTS

APPLICATIONS

Applications: Studio, project studio, broadcast

KEY FEATURES

99 percent pure aluminum, 2.5 micron, 1-inch (L) X 3/16-inch (W) hand-tuned ribbon element; optional Lundahl or a Cinemag transformer for additional cost.

PRICE

\$219 and \$349 each direct (standard and with Lundahl transformers); \$375 and \$675 stereo pair (standard and with Lundahl transformers).

CONTACT

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The Professional's Source

by Richard Alan Salz

Studio Projects CS5 Microphone

The CS5 is a good choice "for people that like to tweak settings" on their large diaphragm microphone.

Freedom of choice is a beautiful thing, whether we are talking about the right to pursue happiness, the ability to drive an inefficient car, or perhaps just having a microphone with five patterns, four low pass filters, four high pass filters, and four pads. Freedom of assembly is great, but please don't forget my shock mount and a flight case. If I'm being honest, I'd really like a foam windscreen as well. In this age of (perhaps) dwindling freedoms, it's nice to know that finding a microphone with the above features is easy, so long as you select the new Studio Projects CS5.

FEATURES

The first thing that you will notice about the CS5 is its weight, almost two pounds of solid feeling, satin finished goodness. The second thing you'll notice are all of the rotary thumbwheels. I've never seen a microphone with four thumbwheels on it before, though I'm sure someone will write in to tell me about a microphone with 5 thumbwheels. The plethora of thumbwheels kind of reminded me of a Fender Jaguar, or one of those Italian celluloid top electric guitars of the 1960's — in a good way, of course!

FAST FACTS

APPLICATIONS

Project Studio, Professional Studio

KEY FEATURES

Large diaphragm multi-position condenser microphone, shock mount, multi-position pad, high-pass filter, low-pass filter

PRICE

\$1,149 list

CONTACT

Studio Projects/PMI Audio | ☎ 877-563-6335 | 🌐 www.studioprojects.com

The CS5's self noise is a fairly subdued 12 dB (A-weighted), frequency response is stated as 20 Hz – 20 kHz with no deviation stated in the specifications, though the included frequency response charts seem to show a maximum deviation of about +6dB at around 12k whilst in omni mode. For the most part the frequency charts show this microphone to be on the more linear side, especially in wide-cardioid mode. The sensitivity is given as 14mV/Pa. The diaphragms are six micron in thickness and measure 1.06 inches and the CS5 is a bipolar output transformerless design.

The included polar patterns, pads, high-pass and low-pass filters are as follows: Cardioid, Wide Cardioid, Hyper Cardioid, Omni; -5dB, -10dB, -15dB, and -20dB Pads; 50 Hz, 75 Hz, 150 Hz, and 300 Hz high pass filters @ 6dB/octave; and 15kHz, 7kHz, 5kHz, and 3kHz, low pass filters @ 6dB/octave.

The CS5 comes in a nice aluminum "flight-lite" case and includes a clever shock mount and foam windscreen. Interestingly, stereo pairs are not available. According to the manufacturer, this is because all CS5 microphones are within 1 dB of each other, basically allowing any two CS5's to act as a matched pair.

The fit and finish of the microphone is very nice, and the thumbwheels feel sturdy in their mounting and positive in their action. If there were no label on this microphone, it might be difficult to guess who manufactured it, and in what country (China) it was manufactured.

IN USE

The shock mount is quite different than the traditional shock mount normally included with most microphones. I immediately appreciated that the shock mount screws into the microphone, which has some felt at the bottom to eliminate any metal to metal contact. I think it would be impossible for this microphone to fall out of the shock mount as long as it was screwed in securely.

Due to the shock mount's unique design, it's possible to position the microphone anywhere in a 360-degree sweep without unscrewing the microphone from the shock mount or mic stand, since the microphone can be rotated around the spine of the shock mount. Isolation-wise, it was comparable to most "normal" shock mounts, but fell shy of the acoustic isolation offered by the very

best. Because of the shock mount's low profile, it also lends itself well to Blumlein setups using a standard dual microphone bar.

I found the CS5 to deliver good results as a drum overhead microphone when placed about two feet in front of a Premier birch jazz sized drum kit. It was great to be able to compare polar patterns with the flick of a switch, though you should be aware that any changes to the functions controlled by the thumbwheels will introduce a very loud pop. So you'll absolutely want to make sure to mute the preamp or console before making any changes. The tonal balance of the microphone is more neutral than is commonly the case, which is actually a nice change of pace. Cymbals sounded natural, especially so when the microphone was set to wide-cardioid.

Moving the microphone further into the room indicated that the CS5 is pretty good at resolving the ambiance of a room. I also noticed that the CS5 tended to track dynamic changes faithfully. I would have liked to have heard a pair of CS5's used as room microphones, but I only received a single review unit. That said, I would expect that a pair of CS5s would be very nice to have around.

STUDIO PROJECTS continues on page 34 ►



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I also got a great "trash" drum track by setting the filters to their most extreme positions, which basically just leaves you with midrange. A ton of compression later, and I had a keeper track. Would it have been easier to use the Shure CB radio microphone I normally use to get a track like this? Sure, but it is cool that the CS5 can also play dirty.

A 1980 Les Paul played through a SonicCord Toad amplifier sounded really nice after I engaged the the high-pass filter (at the 300Hz setting) to clean up the sometimes overblown bottom end of that particular guitar and amp combination, (with the Toad's 15-inch vintage Sunn speaker). The CS5 seemed to have no problems with level even with the amp really cranked up, and the level pad disengaged.

Since the CS5 is flatter than many common mid-level vocal microphones, there wasn't the hyped response that users may have come to expect with a modern vocal

mic. That said, I appreciated the way that the CS5 seemed to be faithful to the source. The included filters were also handy for getting a little bit more vibe from the microphone. According to the microphone's designer the 15k low pass filter position is the optimal setting for use on vocal source. I did find that enabling this setting did warm things up ever so slightly. I ended up leaving the microphone in this position for the rest of the vocal session.

The included windscreen pushed the microphone into being a little bit on the dark side, so I found the use of an external multilayer windscreen to be a better choice. Still, it's always nice to have a foam windscreen available for those "special" clients ...

The proximity effect was not as noticeable as with some microphones I've used, which, in most cases, is a plus. I also found that the microphone wasn't particularly susceptible to p-pops and other nasties.

Used as an ambient room microphone, the CS5 captured the timbre and the transient attack of a Rainsong acoustic guitar in a pleasingly realistic way, especially for finger-style playing. There was a nice sense of "air" present in the output of the CS5; it seemed to make the guitar breathe within the recording. With the microphone in the same position, a variety of hand percussion instruments (including tambourine, guiro, bar chimes, and cowbell) sounded present and clean, with no obvious smearing of the transients.

SUMMARY

The Studio Projects CS5 is an interesting microphone. Certainly it's the perfect microphone for people that like to tweak settings. Its multipattern versatility and clever shock mount make it a natural for M/S setups. With more settings than any microphone that I've used (in recent memory at least), and a street price of \$499 (!), the CS5 represents good value in the (more crowded than ever) marketplace.

Richard Alan Salz is owner of Vermont Audio Labs.

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TapeOp Magazine



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violetusa.com



by Richard Alan Salz

M-Audio Pulsar II Small-Diaphragm Condenser

This version is a cut above the usual low-cost small-diaphragm microphone.

M-Audio is a company that is present and accounted for at virtually all parts of the recording process. Need an interface, pair of studio monitors, control surface, pocket-sized recorder, or perhaps some microphones? M-Audio has you covered. One could think that experience gleaned in one product area might very well translate to other product areas, bringing an entire product line's overall quality and performance levels up. In this review of the Pulsar II small-diaphragm condenser microphone, I will test that hypothesis.

FEATURES

The Pulsar II matched pair set retails for



\$399, though the street price is right around the \$300 mark. What do you get for \$300, other than two microphones? First off, a nicely fin-

ished wooden jeweler's box with die cut foam securing the contents inside, an ORTF microphone bar, foam windscreens, and a pair of microphone clips bearing way more than a passing resemblance those belonging to beyerdynamic MKV 9 microphones.

M-Audio claims that all Pulsar II matched pairs are within 1 dB of each other. The Pulsar II's self noise is rated at a low 15 dBA, which is rather good, especially for a small-diaphragm condenser microphone in this price range. From 20Hz to 20kHz, the included response chart seems to show a fairly flat response up until a moderate rise somewhere around 7kHz or so, and then a drop off up around the 14kHz mark. The microphone itself has a black painted brass body with a chrome grille and end-piece, and features a 6-micron, 3/4-inch diaphragm. The output of the microphone is biased into Class A, and the topology of the output stage is FET. There is a 10dB level cut pad along with a switchable high-pass filter (12dB per octave at 80Hz).

The Pulsar II microphones are made in China, and they carry a one-year limited warranty.

M-AUDIO continues on page 36 ►

"I've always liked
a beauty with brains."

Josh Homme, Artist/Producer,
Queens of the Stone Age

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IN USE

First up for recording duties was a birch Premier jazz drum kit with a 20-inch kick, along with a 12-inch rack tom and a 14-inch floor tom. I've grown fairly accustomed to the wood-rimmed Ayotte Keplinger stainless-steel snare drum that I've been using for a while, but truth be told it's a bit too much for the rest of this kit to keep up with. With that in mind, I also called into use a 1970's Ludwig Superphonic, which better matched the character and acoustic output of the rest of the kit. Cymbals for this project were 1970's Zildjian A and K series models.

Before I had the chance to record a single bar, I ran into something about the Pulsar II that really irritated me: it readily slides around inside of its clip. If someone were to consider using these on a gig, they'd absolutely need to duct tape the mics to the clips. Also, the tension on the angle adjustment of clips was much too loose out of the box (so don't forget to bring some mic clip Viagra — a 2.5mm Allen wrench — to a gig with the Pulsar II). On the other hand, the included

stereo bar is a nice extra, and one can position the microphones so that they will conform to the ORTF specification for microphone spacing. There is also a considerable range of adjustment possible, which is good if you choose to deviate from the ORTF spec.

I mounted the Pulsar IIs to large Atlas studio boom stand using the ORTF mounting bar and positioned them so that they were approximately one foot in front of the drum kit and three feet above the rack tom. Other than the bass drum (which was a bit low in the mix) the kit sounded surprisingly realistic, rendering the cymbals as more than just white noise (a common affliction among inexpensive mics) while providing an excellent representation of both the Ayotte and Ludwig snares. Toms sounded fairly robust, and the microphones did a more than credible job at tracking the transients.

Later, I pulled the stand away, positioning it about 12 feet in front of the drum kit to get an idea of how well the Pulsar IIs could resolve the ambiance and reverb tails of the

FAST FACTS

APPLICATIONS

Project Studio, Live Sound

KEY FEATURES

Matched pair of small-diaphragm condenser microphone, class A FET output, 10dB pad, high-pass filter, ORTF microphone bar.

PRICE

\$399 pair (list)

CONTACT

M-Audio USA | ☎ 626-633-9055 |
🌐 www.m-audio.com




room. Turns out they were pretty good! I didn't mistake the Pulsar IIs for a Neumann KM84/184 pair with a more "Schoeps-like" top end, (or even a 40 Series Audio-Technica small-diaphragm condenser), but I was nevertheless pleased with the overall ambiance and sense of space in this particular application for a microphone at this price point.

Thanks to the on-board pad (which extends maximum SPL handling to 144dB), the microphone didn't ever seem to overload when I put it very close to the shell of the snare drums. While it wasn't ultimately a sound used on that particular song's mix, it was still quite respectable. I didn't care for the sound of the Pulsar nearly as much when used in the typical "angled towards the drum head" positioning, but that sort of arrangement doesn't typically work that well (for me, at any rate) with most non-dynamic microphones I've used.


The Pulsar IIs were at their best when placed directly above the ride and crash cymbals, providing a nice contrast between the sound of nylon-tipped sticks hitting the cymbal and the wash of the undertone. I did notice that the low note of the K Series 20-inch ride was a little attenuated in volume compared to other (more costly) microphones I've used in this application. The Pulsar II also sounded quite good when used to capture the high hat. The Pulsars sounded clean, bright, and detailed when miking a brass-jingled tambourine, and I had similar good results with triangle and afuche-cabasa. Once again, I appreciated that the M-Audio mics didn't

M-AUDIO continues on page 54 ►




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NEW PRODUCTS

AKG ACOUSTICS D7 Vocal Microphone



Building on the success of the D5, AKG's new D7 is a dynamic microphone built to deliver "incredibly clear sound for lead and backing vocals for live sound applications," offers the company. The D7 additionally features an improved capsule design that contains a humbucking coil and a high-pass filter along with a sleek redesigned look; the humbucking coil reduces electrical interference and stage feedback. Also featured is an integrated high-pass filter that eliminates low frequencies, reduces handling noise, and increases audio clarity. The D7's new Laminated Varimotion diaphragm delivers high-end sonic performance by allowing the diaphragm to be fine-tuned without extra tuning resonators. The D7 kit comes with a carrying case, mounting clamp, and a replacement windscreens. Additional models are also available: the D7-S, which features an on/off switch, and the D7-WL1 microphone capsule for use with AKG wireless systems.

PRICE: \$239

CONTACT: AKG Acoustics | ☎ 818-920-3212 ↻ www.akg.com

METRIC HALO 2882 Expanded Processor/Interface



Metric Halo announces the immediate availability of the new "future proof" 24-bit/96kHz Mobile I/O 2882 Expanded multi-channel processor and FireWire interface for

recording and mixing in the studio or on the road. The portable 18-input/20-output 2882 Expanded incorporates the new 2d Card, which provides a nearly six-fold increase in the DSP power available for processing, routing and mixing in Metric Halo's world-renowned FireWire audio interfaces. The 2882 Expanded features eight Mic/Line/Instrument analog inputs, eight mic preamps with individually switchable phantom power, eight analog outputs on balanced TRS connectors, 24-bit/96kHz converters on all channels, eight channels of ADAT I/O (switchable to TOSLINK), and AES-S/PDIF Digital I/O with selectable SRC. Version 5 of the MIO Driver and MIO Console software, included with the 2882 Expanded, provides direct access to the power of Mobile I/O and the 2d Processing Architecture.

PRICE: \$1,895

CONTACT: Metric Halo | ☎ 888-233-6112 ↻ www.mhlab.com

PRESONUS StudioLive Digital Mixer



PreSonus Audio Electronics has launched its StudioLive 16.4.2 digital performance and recording mixer.

StudioLive is a 16-channel digital mixer with 16 high-headroom XMAX microphone preamplifiers, a built-in 22x18 FireWire recording and playback engine, "Fat Channel" processing with 4-band EQs, compressors, limiters and gates, DSP effects, six aux busses, four sub-

groups, extensive LED metering, talkback, CAPTURE recording software and more.

PRICE: \$2,499

CONTACT: PreSonus | ☎ 225-216-7887 ↻ www.presonus.com

DANLEY SH-96 Loudspeaker



Danley Sound Labs has debuted its SH-96 loudspeaker. It combines 11 drivers — four 15-inch woofers, six 5-inch midrange drivers and a single 1.4-inch high-frequency compression driver — in a single enclosure. Sensitivity of the SH-96 is 103 dB with a power handling capability of 2,800 watts RMS and a frequency response of 50 Hz-18 kHz (+/-3 dB). The enclosure, constructed from braced Baltic birch, is 26.5 inches high by 45 inches wide and 25 inches deep, and weighs 215 pounds.

PRICE: POA

CONTACT: Danley Sound Labs | ☎ 770-535-0204 ↻ www.danleysoundlabs.com

Sirius Showequipment AG of Niederdorfelden, Germany provided Audio Analysts with over 100 of Crown's I-Tech amplifiers for use on the Bruce Springsteen tour throughout Europe, while Audio Analysts also provided Crown I-Tech amplifiers on the North American portion of the tour. The amplifiers powered JBL



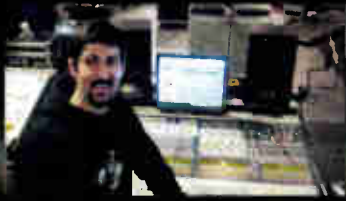
VerTec VT4889 and VT4887 line array elements and JBL VT4880 arrayable subwoofers. Springsteen's tour began in Hartford, Connecticut on February 28, making 29 stops throughout North America before a 12-country tour in Europe.

SSE provided a Midas XL8 and Klark Teknik DN9696 for "Rafi Resurrected," a tribute to legendary Bollywood singer Mohammad Rafi performed by Indian singing superstar Sonu Niigaam and the City Of Birmingham Symphony Orchestra. SSE's then project manager, Rob Hughes — now working for Midas and Klark Teknik's UK distributor Shuttlesound — won the contract to supply the PA and crew for the three shows. Hughes had no hesitation in naming the XL8: "Its large channel count, ease of navigation to channels via the VCA and POP groups and high quality audio was such an important factor for such a large show."

JAG Music Productions has taken delivery of 16 D.A.S. Audio Aero 38A line-array elements; their first use was a festival at Fresno's Grizzly Stadium. The Aero 38A is a self-powered, three-way, high efficiency, line array module. The medium format trapezoidal enclosure integrates two 12GNC low frequency units with 4 in. voice coils, two 10LMN16 mid-range devices utilizing 3 in. voice coils and one ND-10 compression driver with 4 in. coil and 1.5 in. exit geometry for high frequency reproduction.

Classic rock act Kansas has been touring with a package of Heil Sound microphones, including PR 30, PR 40, and Handi Mic models.

Drummer Phil Ehart uses all three models on his drumkit. The PR 40, Heil's flagship microphone, can withstand "huge amounts of SPL," guarantees Bob Heil, founder and principal of Heil Sound.



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Frank Sgambellone :: FOH for Godsmack, Alter Bridge, Sevendust



"It is, by a thousand miles, the best thing I have ever used on vocals."
Robert Scovill :: award-winning live sound engineer



"I carry the Rane C4 everywhere with me. It delivers the sounds I'm looking for, even with PA systems that change every day."
Ed Frebowitz :: FOH & Monitor engineer: 311, Luke Bryan, Joe Nichols



"The Dynamic EQ is fantastic. This is one tool I would take with me everywhere."
Greg Nelson :: FOH engineer for Incubus and Pearl Jam



"When I clamp down hard on the low end using the C4 Compressor, the sound remains full and round. And the transparency of the G4 Gate is outstanding. Both units give me total confidence that I can get the sound I need."

Pete Healey :: FOH engineer and monitor mixer for Kelly Clarkson, Mute Math, Alter Bridge, Another Animal, Luke Bryan, Joe Nichols



"For all my live shows, the C4 is an absolute must-have device, The C4's PEQ section is my favorite and most useful feature. The entire unit is excellent and easy to operate, but the PEQ really helps smooth out the mix."

Sully :: FOH engineer: Veruca Salt, Margaret Becker, Point of Grace, Jaci Velasquez, Joe Nichols, Luke Bryan, Steven Curtis Chapman

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by Strother Bullins

JBL MRX512M Live Monitor

The MRX512M should be a top consideration for anyone in need of a fully professional, full range wedge/utility speaker.

Neither large nor small, the MRX512M deserves the "utility" moniker; it is built to serve well in essentially any application, from one of many top touring act's wedges to a musician's main live speaker at an intimate coffee shop gig.

For this evaluation, I used a MRX512M pair in the most common applications I work in: monitors for both amplified and acoustic multi-musician/band rehearsals, wedges for high-volume amplified indoor and outdoor full-band performances, and mains for small restaurant/bar/club gigs. These wedges were used with a variety of amps — Behringer, Crown, Mackie, QSC Audio, and Yamaha represent the gamut of power sources paired with the MRX512M during their impressive, comprehensive run in my own gigging world.



| FEATURES

The MRX512M is a two-way, bass-reflex monitor speaker for live touring, club/theater, installed, and musician-based applications.

Specifications of the MRX512M are as follows: Frequency range (-10 dB) is 60 Hz to 20kHz and the frequency response (+/- 3dB) is 90 Hz to 20kHz. It is a passive speaker, and the crossover frequency is 1.7kHz. For 2 hours performance, the power rating is 400W continuous, 800W program, and 1600W peak; maximum SPL is 123dB SPL continuous. System sensitivity (1w @ 1m) is 97dB SPL. Nominal impedance is 8 ohms.

The enclosure is made of plywood at 15 and 18mm thicknesses with black DuraFlex painted finish. One JBL 262H 12-inch Differential Drive woofer and one JBL 2408 H 1.5-inch annular polymer diaphragm, neodymium compression driver reside behind the 16-gauge perforated grille. Dimensions are 25.25 x 15 x 13.5 inches; the MRX512M's net weight is 33 lbs.

Mounting hardware includes a dual angle (0- or 10-degree) 35mm pole socket. Carrying is easy via an integrated handle/input cup featuring two Neutrik Speakon NL-4 connectors, one on each end of the box.

| IN USE

In rehearsal and small room applications, the speakers served well as full band wedges

and mains. The 10-degree angle available from the pole socket made it very nice for in-studio use (reinforcement while recording, writing, and rehearsing) as well as a small, acoustic club gig (one was used as floor monitor for singer/guitarists and the other was used as a main, angled down to the intimate crowd from an elevated corner stage).

With no drums or bass guitar present in the club mix, the MRX512M's accurate, detailed midrange and pleasant, smooth highs allowed the speakers to be driven rather hard. The venue was a small yet narrow, long one; to get diction-friendly vocal transients to the levels they needed to be at the very back of the room, SPL was pushed a bit harder than I would normally prefer. The proof of the JBL's quality was that not a single person in the acoustic music loving crowd complained of loud levels.

In loud club use — wedges aiming back at a loud "Les Paul/Tele-via-Mesa Boogie" driven rock band — the MRX512M pair covered the entire front stage, easily pleasing a finicky "more me" vocalist. Further, sufficient guitar, bass and kick in the mix kept the two string players' fingers on their axes and off amp volume knobs, thus saving the main mix (through the club's rather old but trustworthy JBL/QSC PA).

Outdoors with an R&B/oldies band, three vocals dominated the dual MRX512M monitor mix at stage front; again, the monitors received compliments, as the singing trio collectively agreed that their vocals sounded better than normal (with the monitors and a QSC GX5 amp as the only variables from their normal on-stage environment).

I must comment on the quality of the MRX512M's construction: these wedges are built to truly professional standards, nothing less. I have no doubt that these speakers could be treated rather badly for a decade and still glean the same results as I reported above.

| SUMMARY

The JBL MRX512M is a fully professional wedge resistant to every kind of physical use (and abuse). Best of all, it sounds as good as, and in many cases, much better, than most of the wedges you see sitting on typical club/theater stages around the country. I would recommend the MRX512M to anyone wanting to buy a flexible wedge/small main.

Strother Bullins is a contributing editor for PAR.

FAST FACTS

APPLICATIONS

Live touring (club/theater, amphitheater, and arena use); permanent installation (club/theater and houses-of-worship); musician and personal PA use

FEATURES:

Two-way, bass-reflex monitor speaker; unpowered; 1 262H 12-inch Differential Drive woofer, 1 2408 H 1.5-inch annular polymer diaphragm, neodymium compression driver; 400W continuous, 800W program, and 1600W peak (at 2hrs); 123dB max SPL, continuous; dual angle 35mm pole socket, two Neutrik Speakon NL-4 connectors

PRICE

\$799 list

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QSC: Behind the Scenes

Barry Andrews, John Andrews, Pat Quilter

A

almost without exception, pro-audio companies have interesting origins. Sometimes it starts with a hot breakthrough from a technical genius that cannot help but make it to market, or maybe an enterprising marketer sees a unique opportunity

for a more powerful widget and locates talented designers to turn that dream into a practical reality. QSC Audio Products has a more unusual ancestry. When, in 1968, Barry Andrews' motorcycle broke down in an industrial park in Costa Mesa, CA, southwest of Los Angeles, he struck up a conversation with a guy working in a nearby garage. That man turned out to be Pat Quilter, who told Andrews about his fledgling business: designing and building various types of backline amplifiers. In those heady days of power-chord rock and roll, Quilter's best chance seemed to lie with local guitar and bass players; Andrews' experience in building loudspeaker cabinets appeared to be a natural fit. Initially based out of an 800-square-foot shop, the two founded a company to offer such exotic products as The Quilter Sound Thing and The Duck Amp.

The rest, as they say, is history. While Barry Andrews took charge of sales and marketing and currently enjoys the title of Co-Chief Executive Officer, his brother John Andrews - who had recently obtained his business degree from USC - was brought aboard to handle the financial side of the operation, and now serves as co-CEO. During the past 40 years, QSC Audio Products has continued to earn an enviable reputation as a high-tech developer and innovator of products for the live-sound and installed-sound industries and, since the Eighties, within the cinema market.

"Through all of the subsequent musical

QSC Audio Products — 40 years of high-tech innovation and development of products for live-sound, installation and cinema markets

trends," John Andrews considers, "the one thing that remained relatively constant was the power amp. Since the one thing we knew really well was power-amp technology, it made sense to us that we should play to our strengths, and concentrate on what we did best. We decided to become the world's largest amplifier company." In addition to the popular Series One, Series Three, EX Series and PowerLight amplifiers, QSC has also developed companion lines of loudspeakers for its target market segments; the combination has proved extremely successful.

In 1992 the company relocated to its current Costa Mesa headquarters as the site for a new 50,000-square-foot manufacturing facility capable of producing over 500 units per day; five years later ground was broken for a new 81,000-square-foot addition adjacent to QSC's existing building. During the late-Nineties, recognizing a growing need for digital networking, QSC developed RAVE (Routing Audio Via Ethernet), an open system architecture capable of carrying up to 64 channels of audio over standard Ethernet connections. And in 2001, QSC unveiled the ACE Series loudspeakers, sparking an important phase in the company's evolution, culminating with a new 42,000-square-foot product-distribution center. Manufacturing, warehousing, corporate offices, engineering, technical services and sales also are housed within these buildings.

CORPORATE PHILOSOPHY - IT'S THE SOUND THAT MATTERS

Regarding QSC's overall philosophy, "Most people would agree that great sound makes the experience better," John Andrews offers. "Whether it's in the cinema, at a concert or at church, we all know how much more pleasurable and memorable an event is that sounds great, as opposed to one that doesn't. Usually, sound is an integral part of that experience. It is pretty exciting to be in an industry where we can be intimately involved in delivering a mind-blowing experience.

"We want QSC to be the most trusted provider of high-quality audio systems and



Pat Quilter

services to artists and professionals worldwide; being 'the most trusted' is a heavy responsibility - it is not easily earned but you can lose it in a heart beat. We've always had the orientation to take care of our customers, even when we didn't necessarily have the skills or resources to do the job properly.

"We had a pretty well-publicized incident many years ago when we'd shipped tens of thousands of amplifiers before we found out that there was a defective ribbon cable that would fail over time. We spent millions of dollars recalling and fixing amplifiers that hadn't even failed yet. It was a humbling and expensive experience, but our customers saw first hand that they could trust us to take care of them - even when we screwed up. Our values are

pretty deeply embedded in our DNA across the organization. We've got a lot of people at QSC that have been here a long time. They take great pride in the atmosphere and work environment that we have created, which is one physical manifestation of our values, and they are quite protective of it."

"These elements are everyone's responsibility," emphasizes Barry Andrews. "It doesn't matter who you are within the company. Some of us are planners; others doers; others are front-line, back-line or support. Every single person in the QSC organization plays a significant role on a daily basis in supporting these elements."

"Innovators the world around are relentlessly ramping up technology used in audio, especially digital technology," offers company co-founder and Chief Technical Officer Pat Quilter. "This allows us to provide more bang for the buck, but the real trick is to ensure that all this power is user-friendly and satisfying to use. While [such attention to detail] takes extra time in development, we've seen too many bad experiences where users are frustrated by poorly designed interfaces, preventing them from providing the level of service required by the event."

QSC's four targeted market areas - concert, installation, portable entertainment and cinema - are considered complementary to one another, in terms of development, manufacturing and operating functions. "We are able to leverage our resources across the markets," concedes John Andrews. "However, in the external-facing areas of market research, market communications, product management and sales, and relationship management, there is more separation. Cinema, for instance, has a fairly distinct set of customers and needs that really allows us to focus our efforts.

"We have a separate business unit that is staffed with highly skilled people from the cinema industry. They live and breathe cinema, with 100 percent of their attention and efforts on those customers. The other three segments are not quite as distinct; there has always been a fair amount of smearing in the distribution channels but it seems to have

gotten more smeared in the past few years. Sound companies often have install divisions; retailers often serve smaller regional sound companies - they may have install divisions and they usually serve the portable entertainment customers.

"In the past, we tried to serve these segments with focused channel managers and staff that were responsible not only for relationship and sales management, but

also product management and the marketing efforts directed at those customers. Recently, we've reorganized that part of our business. Sales management is now done regionally, but we've maintained market focus in each of these areas for product management, applications support, marketing, etc. We think this will allow us to stay focused on delivering what customers need in each segment, but have a more coordinated and cleaner channel management infrastructure."

"We're able to amortize basic R&D and infrastructure costs across the markets," Barry Andrews confides. "But, we tailor product offerings and customer activities to meet the needs of each market area. Some products can be platformed - meaning different product variations share the same core; others may need to be significantly different. It is important to remember that all of these are pro-audio sound reinforcement markets - we don't serve the recording or broadcast markets, nor are we distracted by consumer markets."

QSC's product development is based on a stage-gated process. "Anybody in the organization can float an idea," John Andrews says.

"But to get serious consideration they need to flesh out the concept and present it for evaluation to our senior product-strategy group, which either kills it or green-lights it for further validation. A more in-depth feasibility study is conducted and the results presented to a group we call the Product Acceptance Committee, or PAC. PAC is made up of the most senior people from various disciplines across the organization, and acts as a board of directors in evaluating project-phase reviews.

"Members from manufacturing, procurement, quality, marketing and technical services participate on the team, as well as the product manager for that area. The project team is responsible for making the business case, identifying the whole-product needs, identifying technical hurdles and other risks and creating the development plan.

Once approved, they are responsible for managing the development schedule, coordinating team project activities and meeting the cost, quality and product performance requirements that they promised at the early phase review. They are also responsible for coordinating manufacturing, marketing, and product launch activities.



Electronic production line at one of QSC's three Costa Mesa-based facilities

MASTER OF ITS BUSINESS DESTINY

QSC has remained self-sustaining since its first days in business. It has never courted a takeover or external financing. But it has con-

QSC continues on page 44 ►



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QSC Continued From Page 43

sidered absorbing other companies. "When we decided to enter the speaker business in the late Nineties," recalls John Andrews, "we worked quite diligently for a couple of years to acquire a speaker company that would be a good fit with QSC. Unfortunately, we were unable to get a transaction done that made sense, so we went ahead and built a speaker company from scratch. It's taken longer than we thought, but I'm really proud of what we've accomplished.

"In terms of being absorbed by a larger company, we've had discussions over the years, but nothing ever made sense there either. For many years we've been in a very strong financial position, so we never really needed a financial sponsor to support our growth plans. There are other strategic benefits the right acquirer could bring to QSC — and vice-versa — that would make sense to our customers, our employees and the owners; consequently, there definitely could be advantages to being part of a larger organization.

"But there have also been some pretty significant advantages we've been able to erect because of our independence. Because we own the company, we don't have outside shareholders or a parent company or a private-equity manager demanding that we meet their minimum ROI expectations, or forcing us to run on a quarter-to-quarter mentality. This freedom has allowed us to invest in capabilities that have had really poor returns in the early going, but developed into assets that

are now fundamental competitive advantages for QSC."

"We're focused on building a unique brand," Barry Andrews emphasizes. "The founding partners always had a very long-term view. Investing for a five- to 10-year horizon is not uncommon for us. Most financially driven companies just don't understand what it takes from a long-term investment standpoint. Consequently, we find ourselves in a fairly unique position: well capitalized, well managed, a strong brand and distribution channel and a rapidly growing technology portfolio, all under a single organization that has a culture of excellence and service deeply embedded in it."



Final Inspection Of A CM16a Amplifier Network Monitor

In terms of looking back over four decades of unqualified success, Quilter has few regrets. "In the early Nineties, we made a conscious decision to expand beyond power amplifiers. Over time this became a commitment to be a systems provider, which has been a fundamentally sound decision that has fueled our growth. With hindsight, knowing that we were entering highly competitive

product categories, we should have been more realistic about the required up-front investments. Nonetheless, we persevered, learned from our mistakes, made the requisite investments in due course, and gained the experience we needed to advance the art in these areas as much as we have in our original core product."

Mel Lambert has been intimately involved with production and broadcast industries on both sides of the Atlantic for more years than he cares to remember.

QSC Milestones

- 1968 Pat Quilter meets Barry Andrews when the latter's motorcycle breaks down in an industrial park in Costa Mesa, CA.
- Seventies
 - Company that Quilter and Andrews forge incorporates as QSC Audio Products, Inc. Barry's brother John Andrews joins to handle finances.
- 1977 Company makes trade show debut at Winter NAMM, begins to establish industry niche as a power-amp manufacturer.
- Eighties
 - Series Three amplifier introduced with convection cooling, step-linear output circuitry and removable channel modules. Company also quietly builds up the cinema side of business.
- 1988 Debut of EX Series introduces the industry to QSC's "open architecture" design philosophy.
- 1993 Property in Costa Mesa is purchased as site for new state-of-the-art 55,000 square foot facility capable of manufacturing over 500 units per day.
- 1994 PowerLight Series amplifiers are released; QSControl debuts around this time.
- 1998 Ground broken for a new 81,000 square foot addition adjacent to existing building. RAVE (Routing Audio Via Ethernet) debuts.
- 2001 ACE Series loudspeakers introduced.
- 2002 AcousticDesign Series debuts.
- 2004 WideLine Series introduced.
- 2004 DCS Series introduced.
- 2005 Installation Line Array (ILA) makes industry debut; new 42,000-square-foot facility is opened to house growing loudspeaker division, which includes the WideLine Series.
- 2008 Company celebrates 40th Anniversary.

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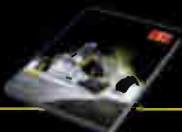
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NEW PRODUCTS

WORXAUDIO M80X5i-P Install Line Array



WorxAudio has announced the M80X5i-P Install Line Array, the newest member of WorxAudio Technologies' TrueLine Series. The M80X5i-P is a two-way, high efficiency, ultra compact line array system designed for natural sounding reproduction of speech and music program material. The M80X5i-P excels at a wide variety of sound reinforcement applications, including performance venues and clubs, houses of worship, theaters, as well as meeting and presentation facilities. The WorxAudio Technologies M80X5i-P

Install Line array incorporates five modules, each with a medium format, 1-inch exit compression driver coupled to a stabilized proprietary FlatWave Former (wave shaping device) that delivers clear, penetrating high frequencies over a predictable and controlled coverage area.

PRICE: \$6,490

CONTACT: WorxAudio Technologies | ☎ 336-275-7474 | ➔ www.worxaudio.com

ASHLY Audio NE-Series Amps



Ashly Audio has launched its NE Series (NE=Network Enabled) with 16 multichannel amplifiers. Targeted for the performance installation and constant-voltage markets, these amplifiers

include both 4- and 8-channel low impedance, 25V, 70V and 100V amplifiers and provide 250W of power per channel. NE amplifiers use standard 10/100 Ethernet protocol and Protea NE Software. No special outboard control units are needed. NE Series amplifiers are offered two ways; standard input with euroblock connectors and "pe" (Protea Enabled) with euroblock input connectors and Protea DSP signal processing.

PRICE: starting at \$1,350 list

CONTACT: Ashly Audio | ☎ 585-872-0010 | ➔ www.ashly.com

PEAVEY MediaMatrix NION Processor Upgrade



Peavey has released version 1.4.2 of its NWare software, as well as memory upgrades and new I/O hardware, for the NION programmable digital audio processing node. NION NWare version 1.4.2 is fully compatible with the Windows Vista operating system

and adds support for network time protocols that allow NION to sync with network time-servers or an Internet-based atomic clock. Additionally, NION nX, n6 and n3 nodes now ship with upgrades in flash memory up to two GB to enable additional storage of audio, project files and background music loops, plus enhanced efficiency for messaging, audio playback, recording and multi-tasking within the NION system.

PRICE: POA

CONTACT: Peavey | ☎ 601-483-5365 | ➔ www.peavey.com

KLEIN + HUMMEL CLS Slim Line Loudspeakers



Klein + Hummel has introduced its CLS Series of slim-line loudspeakers. With features like integrated power amplification and virtual effects on the FX version, the CLS-2 is targeted for such applications as point-of-sale digital displays or multimedia shows. The CLS-2FX Series of loudspeakers consists of 2-inch drivers, divided into two circuits for stereo applications, mounted into a aluminum extrusion that has been cut to the most common flat-panel display sizes. Built-in digital signal processing creates virtual subwoofer effects to add impact to in-store displays and conference room presentations. A universal

voltage power amplifier provides up to 107 dB SPL (peak level @ 1 meter). Options include custom variations in length and color.

PRICE: POA

CONTACT: Klein + Hummel | ☎ 860-434-9190 | ➔ www.klein-hummel.com

JBL Professional is now offering its VRX928LA-WH compact portable line array loudspeaker and VRX915S-WH subwoofer in a white installation version. The development of the popular VRX928LA and VRX915S systems in a white version is the result of feedback from systems designers and integrators who must consider the visual element of a sound system for



environments ranging from houses of worship to civic facilities. The VRX928LA-WH and VRX915S-WH models were designed specifically for permanent installations and build on the success of the

VRX series, which brings the versatility of the JBL VERTEC series line array to mid-sized venues and portable applications.

Brian Christ, general manager of Sonic Art in Oshkosh, WI, recently designed a new professional audio system for the historic St. Matthew Church in Campbellsport, WI that uses Aviom's audio transport protocol, A-Net. This Aviom technology allowed Christ to run all audio feeds throughout the church on CAT-5e cable, avoiding the use of a multipin analog snake while pulling together all the audio components of the system. "We've had nothing but positive feedback since we've installed the system," says Christ.

Westminster Presbyterian Church in Greensboro, NC recently upgraded its sound system with the assistance of Rock Hill, SC-based Paragon Productions. Paragon handled the install and design, an effort that included a WorxAudio M80i-P powered install line array.

Auralex Acoustics has introduced new Ceiling Tiles. Auralex's premium acoustic Ceiling Tiles can easily be installed into new and existing drop and suspending ceiling grids, and are ideal for upgrading in-room sound quality by controlling ambient noise and reducing noise transmission. The fabric-faced acoustical panels, which are available in standard ceiling grid sizes, can be customized in terms of size and thickness to meet any project's requirements.



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When you need help, time zones shouldn't matter. Yamaha provides coast to coast 24/7 technical support. With dedicated staff and regional service centers, assistance is around the corner. If we can't fix it over the phone, we'll put a part or a person on the next plane out. It's that simple.



by Strother Bullins

Primacoustic Broadway Professional Acoustic Solutions

Thanks to Broadway, affordable DIY acoustic treatment has never looked or sounded so pro.

"Acoustic treatment" means something different to every audio professional. It has to, because none of us work in exactly the same manner. Personally speaking, I am a recording musician. I've worked with (and continue to work with) some mighty fine engineers and mixers. I've worked in, and for, some mighty fine studios. Thus, I generally know what acoustics in a professional audio environment should be.

Before this review, I personally didn't enjoy such an environment. "I do need a

Primacoustic Broadway panel-based acoustic solution kit," I reasoned; I had seen them at nearly every pro audio industry trade show and liked their easily demonstrate-able physical qualities (and not to mention their looks). Further, I knew of many respectable engineers who work any way — and often, anywhere — they choose who have endorsed Primacoustic products.

After much daydreaming and planning, true opportunity knocked; my office/studio — located on my home's bottom floor in approximately 225 square feet of space — was flooded via city drain water ... "and for the last time," I said aloud to anyone who would listen. So, I received a chance to improve things via a small, but personally affecting "Act Of God" (says Farm Bureau Mutual Insurance Company, who, by the way, offered no help assistance in the matter). But I digress.

Upon tearing out wall-to-wall carpet and filling in the delinquent exterior door opening with 8-inch glass block (take that, flash floods), I covered the concrete floor with textured, stone-like 12" X 12" porcelain tile, then replaced toe molding and touched up paint. While enjoyable and rewarding, I was relieved when the rather big DIY job was done (as were the relatives that helped me do it)!

To finish this total redo of my residential audio workspace — and to balance its new form with equal functionality — I ordered a Primacoustic Broadway kit for what had become an uncontrollably loud, but attractive live/work space, ridden with standing waves and flutter echo thanks to its nearly cubic shape. Previously, this work environment was still not accurate frequency-wise, but also boring and dead sounding (apparently, thanks to all the carpet). Presently, it is an accurate yet pleasing, acoustically rich and — dare I say it — acoustically complex workspace. Best of all, it is capable and flexible, can be flooded with natural light, and my day-to-day coworkers — my family — really like it.



L to R: two MaxTraps, stacked (one is concealed by a guitar amp); a two-inch thick, 24 X 48-inch square-edged panel; and a two-inch thick, 12 X 48-inch beveled-edged panel. A three-section Stratus Cloud hovers overhead.



L to R: Two two-inch thick, 12 X 48-inch beveled-edged panels and two MaxTraps, stacked, create the front left corner of the room, which is currently set up for live drum tracking.

FEATURES

Broadway panels are made of high-density (6 lb. per cubic foot) encapsulated fiberglass with resin-treated panel edges and covered with acoustically transparent polyester fabric. The panels have achieved the ASTM E 85-05 Class A fire rating, meaning that they are safe and legal for installation in any commercial environment. The panels are available in black, grey, and beige; according to the company, they can be covered with a second fabric to better match or to develop a unique décor.

Broadway panel measurements include 1, 2,

FAST FACTS

APPLICATIONS

Tracking, mixing, and mastering studios; audio broadcast facilities; home/project studios; home theater/audiophile environments

FEATURES

A complete line of acoustic treatment components based fire-rated 6lb.-per-cubic-foot high-density encapsulated fiberglass panels and black MDF cabinets/enclosures; fabric coverings in black, grey, and beige; easy-to-use Impaler panel mounts (no glues or adhesives); professional, "non-foam" look; Broadway system acoustic design (with provided room measurements) and consultation by a Primacoustic acoustic engineer is included

PRICES

\$599.99 (London 12a room kit with anchors, screws, and drill bit); \$399.99 each (MaxTrap); \$119.99 per pair (Cumulus); \$199.99 (Stratus, per 24"x48" panel)

CONTACT

Primacoustic | ☎ 604-942-1001 |
 ☞ <http://www.primacoustic.com/index-broadway.htm>

and 3-inch depths; available dimensions for each depth are 12 X 12, 24 X 24, 12 X 48, and 24 X 48 inch panels. The 2 and 3-inch lines offer square or beveled edges.

The Broadway line offers a wide variety of treatment products beyond simple absorption panels, each of which features a panel fascia. Broadband absorber/bass traps such as the FullTrap (with 24 X 48 X 8-inch MDF cabinet), MaxTrap (with 24 X 48 X 19 MDF cabinet) and GoboTrap (36 X 22.75 X 12 MDF cabinet) are available alongside the Stratus Cloud Kit (an aluminum frame holding a 24 X 48 X 2 Broadway panel for ceiling mounting), the Cumulus Trap (a triangular bass trap for ceiling/wall corners), and the Razorblade quadratic diffuser (the only non-panel-based product in the line).

All Broadway panels are mounted via the simple 'Impaler' mount, a steel mounting bracket with four sharp "teeth" that sink securely into the back of the panel. Impalers come 24 to a box; larger panels require more Impalers for a secure mounting job.

Based on each customer's unique room measurements, Primacoustic configures various Broadway components to build a complete acoustic solution for nearly any audio workspace to absorb primary reflections, flutter echo, and the control of excessive bass. (See sidebar for more information on the room acoustic design process by Primacoustic.)

IN USE

In a review of an acoustic treatment system, an "In Use" report must include the installation process; after all, the physicality of assembling and mounting such a kit as the Broadway system is where the real work resides; what's left is simply using, listening to, and enjoying the altered environment.



The Stratus Cloud hangs by eight wires from ceiling-secured eye-hooks mounted in drywall anchors; behind the room's mix position are 12 one-inch thick 12 X 12-inch squares for rear wall diffusion and absorption.

For the entire install, the only tools that were required were measuring tape, a power drill, and patience, the latter of which was only because I wanted the install to look as proportional, professional, and attractive as possible. In other words, I worked slow and deliberately.

For the initial configuration, I received multiple boxes of beige Broadway components based upon Primacoustic's recommendations for my room. These included twelve 12 X 12-inch square-edged panels at a one-inch thickness, two 24 X 48-inch square-edged panels and eight 12 X 48-inch beveled-edged panels at a two-inch thickness, and

PRIMACOUSTIC continues on page 50 ►

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

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four MaxTraps (see the PDF layout of the room's design). This selection of panels is based on the Primacoustic Broadway London 12A room kit, which follows the live-end/dead-end acoustic design concept. I also ordered a 24 X 24-inch beveled-edged panel for the ceiling of the room's stairwell from the house's main floor.

At the time of the original consultation with Primacoustic, the room was still carpeted and included an exterior door. Upon the room's change to porcelain tile floors and glass block in the place of the door, two other major components were added to the mix: a three-panel Stratus Cloud and four Cumulus traps. As the floor became a reflective surface (parallel to the eight-foot ceiling), the two additional Broadway component categories became worthwhile additions to the mix.

Hanging each panel was a breeze. With detailed installation manuals provided for each category, I was able to place each panel rather easily by first drilling appropriate holes for sheetrock or masonry screw

anchors and screws per Impaler panel. I mounted all 12 X 12-inch panels with only one Impaler, the 12 X 48-inch panels with two Impalers, and the 24 X 48-inch panels with four Impalers in the time of one full workday. Next, with the help of a handy friend, I constructed the four MaxTraps with ease thanks to explicit directions provided with each kit; this took us less than 30 minutes per MaxTrap. The Cumulus corner traps were easily arranged and hung by myself; the innovative spring-based mounting system made this easy, as only one screw anchor and screw was required per trap.

Finally, hanging the three-piece, 6-foot long Stratus cloud over my room's mix position was the biggest task. Although it was quite simple in concept, the cloud was screwed together on the floor, then raised to be hung via eight wires attached to holes in the cloud's aluminum frame and eye-screws in screw anchors in the ceiling.

While the suggested components were based solidly on the mathematics of

THE PRIMACOUSTIC PROCESS

According to Primacoustic Product Manager Jay Porter, the design process of each Broadway system is simple, yet custom and detailed in its conception. Here, Porter reveals the process in three straightforward steps between customer and company.

"First, the customer provides a simple floor plan showing accurate dimensions, windows, doors, anything else that cannot be moved. Here, customers should also indicate wall, ceiling and flooring materials. Photos are also extremely helpful to create an accurate plan. Next, we input dimensions into our Room Calculator, designed in-house to quickly determine the square footage of panels required (usually around 20 to 30 percent of wall surface areas). Our philosophy is to start on the light side of absorption, as more panels can always be added later if needed. Then room modes are calculated to estimate the type of bass trapping that is needed. Once we determine all suitable materials, we then use a graphics program to draw a mock-up of the room. Being studio engineers, we use our experience to place panels in suitable locations to create a functional and aesthetically pleasing space."

acoustics, the installation incorporated a good deal of creativity. After the install, I wanted to be able to personalize the room with artwork and other personal items; the Broadway components certainly left room for that and — as directly compared to competing, largely foam-based products — looked refreshingly "acoustician-designed and installed," too.

Each component category installed from the Broadway series did something acoustically significant and necessary for the room; I listened to familiar material as I went along and could hear the room gradually become focused and "tight." The flat panels did a great job of controlling the room's out-of-control reverberation, which was especially harsh considering its nearly cube-like measurement with nothing but hard surfaces virtually everywhere (two sheetrock walls, two concrete on cement block walls, a sheetrock ceiling, and a tile floor). Behind mix position, the "checker-boarded" 1-inch squares absorbed and scattered higher frequencies (starting significantly at around 500Hz) coming directly from my monitors. Around the room, the various-sized 2-inch panels tamed the high-end liveness (starting significantly at around 400Hz) to a point where the room

PRIMACOUSTIC continues on page 52 ►

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fantastic on acoustic instruments!”*

– Larry Vilella

ADK President and Co-Founder



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PRIMACOUSTIC Continued From Page 50

was nearly usable as a "verby" tracking space. Next and most significantly, the MaxTrap and Cumulus Trap bass traps equalized the room significantly in the low end; with those in place, you could finally walk around the perimeter of the room and hear equal frequency response throughout the room. From 80Hz, the sound absorption coefficient of the MaxTrap is within a smooth 1.0 to 1.3 range; four MaxTraps arranged in two-and-two tower configuration finally allowed me to trust the low-end response of the space. Just because of their unassuming size, I expected less from the Cumulus Traps, yet they provided a most appropriate the



A two-inch thick, 24 X 24-inch beveled-edged panel and two Cumulus mid-bass traps perform quite well in the stairwell to the room from the house's main level.

'final touch' in the rear corners of the room; other than working well as a rear corner bass trap, they also removed some remaining 'spring' from their respective areas.

Even before hanging the Stratus Cloud, I was happy with the sound and frequency response of the room. However, to serve as a dual-purpose tracking and mixing/critical listening space, the cloud was a necessity that truly was the final touch. I chose a 15-degree angle for my cloud (facing mix position); I found this to be a happy medium between the other two recommended angles, 10 and 20 degrees.

To be honest, I could have probably done without it if I had carpet on the floor. The same room with wall-to-wall carpet and a

cloud would be entirely too dead, in my opinion; now, I can have a bit of life in the room and, if necessary, I can drop area rugs in strategic places, if desired. Another nice benefit of the angled cloud was its treatment of acoustics at higher altitudes; from a bit higher than the top of my head while standing (at around 5-feet, 10-inches) to the ceiling (slightly over 8 feet high), this cloud offered a bit more absorption thanks to its exposed back side made of the same material as its front (albeit not covered by fabric.) Thus, the room tightened a bit more just slightly, and I noticed that virtually any trace of displeasing springiness at overhead microphone height, etc., was nowhere to be found.

Upon hanging this monstrous three-section panel (a two-person job for sure), I truly did have the best of both worlds in the same room: under the cloud, a tight, trustworthy sonic oasis, and everywhere else, a small-mid room's natural reverb with a warmth



A bass trap/absorption tower consisting of two MaxTraps

BROADCAST |

FIRST LOOK

LAWO Continued From Page 12

round source. As a bonus, any mono or stereo source that has been assigned within a surround image can be positioned using a single pan control. And a simple Reveal function opens a surround stem onto up to eight channel faders, thereby providing direct access to component-channel parameters.

The console's surface is clear and straightforward - aided by the removal of less-used controls to the TFT screen, plus color-coordinated and clear labeling, which ensures an optimum overview during critical live productions. All EQ and pan settings, for example, can be seen at a quick glance from a central mix position, making labeling of individual module functions virtually unnecessary. Also, the console's LED illumination simplifies the location of required functions, even under poor control-room lighting. And to give some help in maintaining an overview when working with up to 144 faders, the mc²56 provides user-programmable color-coding of fader strips - a definite harkening back to the analog era.

The heart of the mc²56 - its Center Section - packs a great deal of functionality

into its reduced width, but retains all of the necessary controls needed for live mixing. Simple Access and Assign functions direct virtual channels to physical faders. A total of six banks of two layers each can be configured individually, with configurations - including every DSP channel parameter - being copied between banks and layers. Fader Control enables parameters such as mix-amp gain, audio-follow-video and aux send level to be controlled directly via the channel faders. Individual faders can also be isolated from Snapshot Control, as well as from the control reassignment function. Because of its simple layout, the center section provides good ergonomics and optimum user operations. Key functions - channel-strip assignment, bus combination and automation - are well laid out and can be located quickly and easily even during the most hectic of live productions. The mc²56 is a fine achievement from the "other" German console manufacturer.

Mel Lambert is principal of Media&Marketing, a Los Angeles-based consulting service for the professional audio industry.

ONKYO Continued From Page 20

and balance that now serves all tracking purposes from live drum kit to vocals to loud guitar amps.

I have no criticisms of the Broadway system. However, I do have one small complaint regarding the system's packaging. In shipping, a MaxTrap package corner was ripped; apparently, the bag containing all its assembly components fell out, so I had to call the company and wait for its replacement before putting together the last trap. Thus, I would recommend that Primacoustic securely tape the plastic component bag to a larger component rather than have it bounce freely around in the box. Considering how shipping companies regularly treat cargo in cardboard boxes, I can't imagine that this is the first time such a small hardware bag has fallen out of a MaxTrap box.

SUMMARY

Audio production is based on art; acoustics is based on science. With correct formulas and measurements and testable, provable acoustic theories, Primacoustic has made the application of proven audio science easy for audio folks who choose a Broadway-based acoustics solution ... easy,

that is, beyond the simple physicality of a Broadway system installation. However, Primacoustic's thoughtful help via phone and website make the Broadway installation process a breeze, and each installation manual per component is incredibly well explained and detailed.

Broadway is proof-positive that a significant acoustics improvement can be fun and easy — even with only novice-level construction skills and a little help from your friends. Finally, Broadway is a bargain for what it is and does; it feels, looks and performs "professionally." In other words, your peers may take one look at your studio and think that you spent a small fortune on your acoustics overhaul, yet — if you did your own labor — you didn't.

With Broadway, my audio workspace sounds like I never imagined it could. As a result, my work has never been better or more satisfying. Without a doubt, the Primacoustic Broadway system is the most significant pro audio investment I have ever made.

Strother Bullins is a Contributing Editor for Pro Audio Review.

tinely compared, this can become annoying rather quickly. For my testing purposes, I used the built-in Audyssey sound equalization but if I were going to make the box a permanent part of my studio, I would take the time to calculate the exact position of proper speaker placement. For my testing purposes, I was anxious to see how well the Audyssey process worked and needless to say, I was quite impressed.

SUMMARY

Between its video and audio options, its reasonable price and the fact that it offers eight channels of balanced output, any surround-equipped studio needing to have the ability to switch between a wide variety of surround formats (Dolby, DTS, SACD, etc.) should give the Onkyo PR-SC885 a serious look.

Russ Long, a Nashville-based producer/engineer, owns The Carport recording studio. He is a regular contributor to Pro Audio Review.

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PRICE: POA

CONTACT: Architectural Acoustics at 601-483-5376, www.peavey.com



ASHLY AUDIO NE-SERIES AMPS

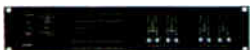
Features: 4- and 8-channel low impedance; 25V, 70V and 100V amps providing 250W of power per channel; use standard 10/100 Ethernet protocol

and Protea NE

Software; standard input with euroblock connectors or "pe" (Protea Enabled) with euroblock input connectors and Protea DSP signal processing models available.

PRICE: from \$1,350

CONTACT: Ashly Audio at 585-872-0010, www.ashly.com



ATLAS SOUND PA702 POLE-MOUNT AMPLIFIER

Features: 2-channels with 70W per channel at 8 ohms; current sensing circuit; switching power supply and class AB output stage; left and right channel gain controls, treble and bass controls, left and right channel signal indicator LEDs, limiter LED, power indicator LED and power switch.

PRICE: \$332

CONTACT: Atlas Sound at 800-876-3333, www.atlassound.com



BEHRINGER ZMX8210 8-channel 3-Bus Zone Mixer

Features: 6 mic/line inputs with gain, -20dB pad, +48V phantom power; 2 stereo line inputs; three output busses; 4-band master EQ; bus links and remote level control; channel muting with priority select; channel 1 automatic bus mute.

PRICE: \$379

CONTACT: Behringer at 425-672-0816, www.behringer.com



CROWN 280MA Mixer/Amplifier

Features: 4-ohm and constant-voltage outputs (70V and 100V); 8 inputs and dual 80W power amplifiers; balanced Phoenix-type mic/line inputs; touch-proof screw-terminal speaker

outputs; Priority muting; 3Y no-fault, fully transferable warranty.

PRICE: \$807

CONTACT: Crown International at 574-294-8200, www.crownaudio.com



DYNACORD DRM4000 8X2 Matrix Audio Processor

Features: 8 input, two output; 4 mic/line channels; 4 aux; each input assignable to either or both outputs; mono or stereo; ducking priority controls; limiters; RS-485 link; RS-232 remote control options.

PRICE: \$1,580

CONTACT: Dynacord at 952-884-4051, www.dynacord.com



ELECTRO-VOICE MA-1212 Mixer/Paging Amplifier

Features: 10 balanced mic or line inputs with 24V phantom power; 2 aux stereo summing inputs; 120W into 70/100V or 4 ohm loads; balanced line level output for adding amps; 24V powered operation for emergencies; telephone paging input.

PRICE: \$580

CONTACT: Electro-Voice at 952-884-4051, www.electrovoice.com



FACE AUDIO F100CS Zone Amp/Mixer

Features: 3 models (100W - 300W); 2 XLR, 2 1/4 inputs; four zones with independent variable controls; push-button announcement chime; adjustable priority channel 1 mic ducking; barrier strip outputs.

PRICE: \$635 (F100CS)

CONTACT: Face Audio at 801-233-0740, www.faceaudio.com



LAB.GRUPPEN C 20:8X Amplifier

Features: 8-channel; 250W @ 4 ohms, 70V RMS individually selectable per channel or 500W @ 8 ohms in bridgeable channel pairs; user adjustable gain; voltage peak limiters; GPIO connections allow stand-alone control; NomadLink networking, remote monitoring.

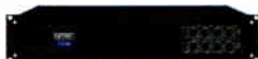
PRICE: \$2,845

CONTACT: Lab.gruppen at 818-468-8432, www.labgruppen.com



QSC CX168 8 Channel Amplifier

Features: 100W per channel @ 8 ohms; bridgeable channels; DataPorts; PowerLight technology.



PRICE: \$1,835

CONTACT: QSC Audio at 714-754-6175, www.qscaudio.com

RANE MA4 Multichannel Amp

Features: Four-channel; 100W per channel; universal-voltage switching power supply; constant load power; built-in automatic redundancy switching; advanced dynamics and filters.

PRICE: \$1,399

CONTACT: Rane at 425-355-6000, www.rane.com



SONY Electronics SRP-X500P

Features: Four-channel digital powered mixer/router/amp; slots for two optional Sony wireless UWP Series modular tuners; A/V interconnectivity.

PRICE: \$1,700

CONTACT: Sony at 800-686-7669, bssc.sel.sony.com



TOA ELECTRONICS A-9120DH Modular Matrix/Mixer Amplifier

Features: 2-channel; 120W @ 70.7v per channel; dual-channel DSP; flexible output power; level control; mixer or matrix mode; telephone zone paging; automatic mic mixing; ambient noise level controls.

PRICE: \$1,592

CONTACT: TOA Electronics at 800-733-7088, www.toaelectronics.com



YAMAHA XM4080 and XM4180 Amplifiers

Features: 4 channel; 80W @ 8 ohms (XM4080), 180W @ 8 ohms (XM4180); stereo, parallel, bridged switchable; dB display; detented attenuators; protection circuits; XLR and Euroblock inputs.

Price: \$899 and \$1,399

CONTACT: Yamaha at 714-522-9011, www.yamahaca.com



YORKVILLE CA1T 70V Amp/Tuner

Features: 180W (mono); drives 4 ohm load or four separate 70-volt systems; preamp output for aux amp, active subwoofer or A/V recording; multiple mic/source inputs; voice-activated paging from one mic or telephone; XLR/TRS balanced combi-jack or attenuated RCA unbalanced inputs; AM/FM tuner.

PRICE: \$419

CONTACT: Yorkville at 716-297-2920, www.yorkville.com



ARCHITECTURAL ACOUSTICS by Peavey PHR 890

Features: 8-inch woofer with 1.2-inch VC, PP cone and rubber surround with a 3/4-inch soft-dome tweeter; high-impact polystyrene enclosure with a formed-steel back can; removable locking installation arms; conduit-capable clamp for wiring; 90W Thru Mode (70V, 100V capable); Transformer Taps 60W, 30W, 15W, and 7.5W.

PRICE: POA

CONTACT: Architectural Acoustics at 601-483-5376, aa.peavey.com



COMMUNITY CLOUD12 Ceiling Loudspeaker

Features: Two-way; 50Hz - 16kHz; 12-inch woofer; 1-inch compression driver; 200W RMS; 500W PGM; 8 ohm; 60-X 60- or 90-X 90-degree coverage; optional 70/100 volt autoformers with watt selection, bypass switch; Air Gap Technology; metal enclosure.

PRICE: \$548

CONTACT: Community at 610-876-3400, www.communitypro.com



EAW CIS400 Ceiling Loudspeaker

Features: 2-way; 6.5-inch woofer; 1-inch neodymium tweeter; waveguide integrates HF and LF driver; 70V/100V line transformer; power adjustable (40W, 20W, 10W, 5W taps) via recessed front bezel rotary switch.

PRICE: \$148

CONTACT: EAW at 425-892-6500, www.eaw.com



ELECTRO-VOICE EVID 4.2 Surface Mount Speaker System

Features: Dual 4-inch woofers; 1-inch waveguide coupled titanium tweeter; 65Hz - 20kHz; 115dB SPL; 120-degrees horizontal, 80-degrees



vertical coverage; spring terminal connections; full system protection; Strong-Arm Mount; transformer taps version available.

PRICE: \$325

CONTACT: Electro-Voice at 952-736-4069, www.electrovoice.com

JBL PROFESSIONAL 8100 Series Ceiling Speakers

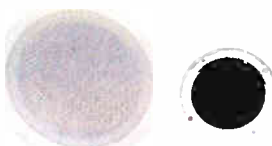
Features: Full-range; 4-inch and 8-inch (8124 and 8128);

low-saturation transformers with taps as low as 0.75W for 70V/100V

use; open-back design with pre-attached dog-ears; sculpted grille

PRICE: POA

CONTACT: JBL Professional at 800-852-5776, www.jblpro.com

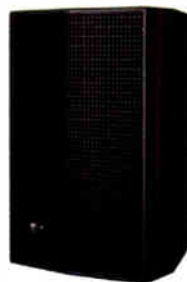


KLEIN + HUMMEL IS-122, IS-123 and IS-153 Loudspeakers

Features: 2-way, 12-inch (IS-122, IS-123), 3-way, 15-inch (IS-153) designs; Mathematically Modeled Dispersion; rotatable horn patterns in 80 x 50 and 50 x 40 formats; passive crossover, direct wiring for external bi-amplification or fully active, self-powered version with DSP tunings versions available

PRICE: POA

CONTACT: Klein + Hummel at 860-434-9190, www.klein-hummel.com



MEYER SOUND MM4-XP Miniature Loudspeaker

Features: Single 4-inch Meyer Sound cone; wide, flat frequency response; high output; very low distortion; flat phase response; self-powered; requires MPS-488 power supply.

PRICE: POA

CONTACT: Meyer Sound Laboratories, Inc. at 510-486-1166, www.meyersound.com



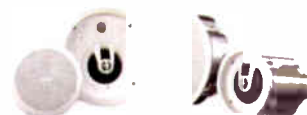
QSC AUDIO AD-CI52T, AD-CI52ST AcousticDesign Ceiling Speakers

Features: 5.25-inch fiberglass woofer; 1-inch titanium

dome tweeter; wide, even dispersion; ported (AD-CI52T); weather-resistant; sealed (AD-CI52ST).

PRICE: \$168

CONTACT: QSC Audio at 714-754-6175, www.qscaudio.com



TANNOY CMS 801 DC Ceiling Monitor

Features: 8-inch Dual Concentric drivers; extended frequency response; very low distortion; wide controlled constant directivity dispersion; tile rails, c-rings for easy installation; blind mount options.

PRICE: POA

CONTACT: Tannoy USA at 303-339-0162, www.tannoy.com



TOA ELECTRONICS F-122CU Ceiling Speaker

Features: 5-inch full-range driver; UL1480/2043-listed; wide-dispersion 180-degrees; 30W (xmfr)/120W (8 ohms); optimized EQ E-03R, AC-120 units.

PRICE: \$208

CONTACT: TOA Electronics at 800-733-7088, www.toaelectronics.com



YORKVILLE C165W Ceiling Speaker

Features: Coaxial 6.5-inch woofer; 1-inch titanium-coated tweeter; 70V taps at 7.5, 15, 30, 60-watt; 100V taps at 15, 30, 60-watts; Virtually any 70V amp or paging system, including the Coliseum CA1/CA1T, can drive.

PRICE: \$85

CONTACT: Yorkville at 716-297-2920, www.yorkville.com



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STUDIO | REVIEW

M-AUDIO Continued From Page 36

exhibit “white noise” type tonality on those instruments.

Used in a stereo configuration on a Jean Larrivee jumbo cutaway acoustic guitar, the Pulsar IIs sounded a little bit recessed and hi-fi, as opposed to natural and warm. I found that the high-end sheen that was pleasing on drums, cymbals, and percussion wasn't quite as nice on acoustic guitar. On the other hand, while this kind of semi-cutting tonality wouldn't be my first choice when used by itself, it could provide some assistance to help a guitar cut through a dense mix.

The M-Audio mics were a very cool choice when placed right up against the twin speakers in a vintage 1987 Gallien-Krueger 250ML guitar amplifier. This amplifier (which could never be described as mellow or recessed) really came to life through the Pulsar IIs, and its over-the-top chorus virtually exploded out of my monitors.

SUMMARY

The M-Audio Pulsar II microphones represent a good choice for those in the market for a low-cost matched pair of small-

diaphragm condensers. Their low self-noise makes them a contender for ambient miking duties, and the “1 dB match” between mics is impressive at this price point. In my opinion, they neatly fill the price/performance gap between the current crop of low-end, small-diaphragm microphones and the “old-line” fully professional microphones at a price much closer to the entry-level stuff. Now if they could just re-engineer those microphone clips!

Richard Alan Salz is owner of Vermont Audio Labs.

EARTHWORKS Continued From Page 18

put a lot of effort and love into them and I guess it shows. On the other hand, the PM40 sounds awesome — hands down and no question about it. Lay it inside a piano, connect two mic cables to your preamp, and hit record; you're guaranteed to get a really good sounding reproduction of piano sound.

For 75 percent of all piano miking jobs happening in the world today, the PM40 would do a better job — and do it with much less trouble — than any other solution currently available. It certainly wins (no contest) for recording or reinforcing a piano with the lid closed; for that application, it's a godsend. But on half-stick, in a worship setting, or even at a classical concert where amplification (or recording) needs to be simple and invisible, I consider the PM40 to be the new first choice in piano miking. Add in a little convolution reverb or high-class algorithmic reverb and you're there!

During the past 30 years, Dr. Fred Bashour has received credits on hundreds of recordings released on over a dozen labels.

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“Chatter & Buzz” featuring Micropixie | pc muñoz



SINGLE: “Chatter & Buzz” featuring Micropixie

ALBUM: *pc muñoz’s Grab Bag* (Talking House Records)

DATES: Recorded and mixed from Thanksgiving of 2006 to mid-2008 at Talking House Studios in San Francisco

PRODUCER: pc muñoz

ENGINEER: Justin Lieberman and Willie Samuels

MIXER: Justin Lieberman

MASTERING ENGINEER: Willie Samuels at Talking House Studios

OTHER PROJECTS: Artist/Producer/Musician pc muñoz has worked alongside TS Leach, Elephone, Ingrid Chavez, and Joan Jeanrenaud, among others.

STUDIO CONSOLES: Solid State Logic 9000K (Studio A) and Digidesign D-Command ICON (Studio B)

STUDIO MONITORS: Genelec 8050A and 1035B main monitors

STUDIO WORKSTATION: Digidesign Pro Tools | HD

VOCAL MICROPHONE: Neumann M 149

VOCAL MICROPHONE PRE-AMP: Martech MSS-10

SELECT VOCAL PROCESSING: Neve 33609 compressor

PRODUCER’S DIARY

Strother Bullins is a music and pro audio industry writer based in North Carolina.

Experimental songwriter pc muñoz — one of six producers that make up the whole of Talking House Productions in San Francisco — recently released the trippy *pc muñoz’s Grab Bag*, a record of mostly spoken word jams featuring sounds you haven’t heard in some time, if ever.

For the interestingly catchy “Chatter and Buzz” featuring female vocalist Micropixie, muñoz finally finished the track after leaving it alone for quite some time. “I originally had a whole other vocal where I sang the whole thing,” he recalls. “I think that’s why I had left it on the shelf. I wasn’t quite happy with it all. Upon revisiting it, I had the drummer (Adam Goodhue) come in and play on it along with some bass and freaky guitar. I then had Micropixie come in and add her vocal.”

The track was built from a unique base; a hypnotic, alternating two-note figure on the marimbula, “a bass calimba,” explains muñoz. Its earthy-yet-electronic feel developed from there. “It gives the track an atonal quality, making it a sort of keyless funk. From there, I added a cajon drum — steady fours to give it backbeat — and ride cymbal. The instrument that sounds like a marimba is a tongue drum, a Mayan instrument. Then, through parts of the song, I hit this plank, a piece of wood, with random knocks and sounds. Finally, the synthesizer is a Roland from the ‘80s, which I tweaked out; in mixing, Justin tweaked it even further. It ended up being the hook, but I had added it just for texture.”

For muñoz’s distinctive voice, engineer employed a Neumann M 149 with a Martech MSS-10 microphone pre-amp and vintage Neve 33609 compressor serving as a signal chain straight to Pro Tools | HD. “The Neumann M 149 works really well for the kind of speak-singing that I do and the timbre of my voice,” explains muñoz. “There’s a certain inflection that I want to capture in speak-singing; that mic does a really good job of capturing it, and we’ve been very consistent in using it.”





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