THE FIRST LEED-CERTIFIED GREEN RADIO STATION. Page 16

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Status Report

Which big groups are on the HD-R bandwagon and which are on the sidelines?

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Ty Ford says the AT2020 USB mic will be an instant hit for anyone looking to reclaim desktop space normally occupied by a mixer.

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Radio World

$2.50 The Newspaper for Radio Managers and Engineers June 4, 2008

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'MISGUIDED PROPOSAL'

Readers believe the localism initiative could cause stations simply to turn off at night. Page 46

NewBay Media

Take a video tour of the award winners with CoolCast demos at radioworld.com.

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World Radio History

NEWSWATCH

News Roundup

ALASKA DRM: A company applied to the FCC for an experimental license to test Digital Radio Mondiale transmission on several shortwave bands in Alaska. Digital Aurora Radio Technologies of Delta Junction, Alaska, intends to test statewide DRM in the 5, 7 and 9 MHz shortwave bands. The DoD-funded test would use Continental transmitters designed for an over-the-horizon radar transmitting system and a digital signal generator operating from the Delta Junction area.

HARRIS is considering selling itself, the Wall Street Journal reported in May; it quoted sources saying the company was only in the exploratory stages and could also decide not to sell.

CLEAR CHANNEL: Shareholders "are likely not to squabble about the sale price," Forbes reports about a revised settlement of the Clear Channel deal. The company and private-equity firms Thomas H. Lee Partners and Bain Capital agreed to a lower sale price of $17.9 billion, or $36 per share. AP reported the agreement reduces the value to $17.9 billion from $19.5 billion. Clear Channel and its buyers had sued a consortium of banks; the agreement settles those lawsuits.

HD2: A "next generation" of multicast programming has rolled out on stations and online, members of the HD Digital Radio Alliance said, providing airtime to local and unsigned acts, bringing back former stations and formats and offering programming relevance for various demographics. They cited examples like "iChannel" aired by Bonneville in Chicago, "Live Rock-WMMR Archives" by Greater Media in Philadelphia and "Solid Gold 106" by Beasley in Ft. Myers, Fla.

OMNIA GOES LINEAR: Telos Systems completed its acquisition of TV audio processing manufacturer Linear Acoustic, which had been announced last year. Telos is also parent company of Omnia and Axia Audio.

ALERT: Global Security Systems said Broward and Miami-Dade Counties are the first two counties in Florida to have access to its FM radio-based emergency alert and messaging system.

ALERT II: SpectraRep won a contract from the state of Missouri to deploy a statewide emergency alert system, an upgrade to that state's EAS and Alert Missouri programs. The company is part of BIA Financial Network.

ALERT III: Local governments in central Virginia and the Hampton Roads coastal area are getting a new satellite-based digital alerting system that will allow them to keep communication with the Virginia Emergency Operations Center in the event of phone or Internet loss. The Emergency Management Network, EMnet, also lets localities send EAS messages directly to local media during emergencies and disasters.

18 MILLION: Sirius and XM's combined subscriber total is just under 18 million. That compares to 14.4 million at this time a year ago. The companies separately reported revenue for the quarter that, combined, would total $578.4 million.

MOBILE TV: Two major competitors for a U.S. broadcast mobile TV service have teamed up to propose a jointly developed standard. TV Technology magazine reported LG Electronics and Samsung announced the agreement in advance of the first field tests for the ATSC M/H mobile TV standard.

JVC+KENWOOD: Japanese consumer electronics companies JVC and Kenwood formally agreed to merge, establishing a joint holding company through a share transfer on Oct. 1.

MEET THE SQUARE

The Wheatstone E² (E SQUARE) gives you the convenience of Ethernet audio without all the IP hassle. It just *knows*. The built-in Setup Wizard lets you configure an entire system with just your browser and a laptop. Unplug it when you're done and there's no PC between you and system reliability.

SQUAREs are totally scalable: use one as a standalone 8x8 studio or transmitter site router, with browser access from anywhere. Plug two together and have a standalone digital snake. Add a fanfree mix engine and build yourself a studio using analog and digital I/O SQUAREs.

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88D I/O: 8 digital inputs and outputs. You can headphone monitor and meter any of the SQUARE's inputs or outputs in real time. The 32 character display gives you all the information you need about your audio and system configuration. And because you can operate in either 8-channel stereo or 16-channel mono mode, 16 channels of metering are provided.

88E DIGITAL ENGINE: Just plug an E-SERIES control surface or GLASS E computer interface into this engine and get all the mixes, mic and signal processing you need. Fanfree, so it can stay in the studio where it belongs.

88A I/O: 8 analog inputs and outputs. You can bring a new SQUARE up in seconds and of course use the front panel encoder for your X-Y control. Front panel status LEDs give you continuous link, status, and bit rate information as well as confirmation of any GPIO activation.

88AD I/O: 4 analog plus 4 digital inputs and outputs—perfect for small studios or standalone routing.

88 I/O CONNECTIONS: E² has both DB-25s for punchblock interface and RJ-45s for point-to-point interface. All SQUAREs have 12 individually configurable opto-isolated logic ports that can be either inputs or outputs.

Because the E² system doesn't rely on a third party GUI, tech support is straightforward (and 24/7). Likewise, system operation doesn't require external PCs for continued full functionality. Best of all, 1 Gigabyte protocol eliminates the latency and channel capacity restrictions associated with older technology.

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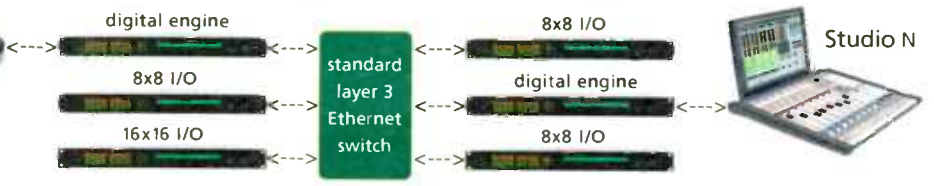

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World Radio History

WUVT, Sterne Focus on Their Futures

Helped by Industry, Virginia Tech Radio Station Moves Forward With Signal Upgrade

by Randy J. Stine

BLACKSBURG, Va. With lots of help from its broadcast brethren, equipment manufacturers and the Society of Broadcast Engineers, a student-run radio station here is moving forward with plans to upgrade its signal through a proposed power increase and antenna move.

WUTV(FM) gained the industry's attention following last year's shootings at the Virginia Polytechnic Institute and State University, known widely as Virginia Tech.

Kevin Sterne, the station's chief engineer, was shot twice through his right leg while sitting in the classroom where the attack took place in April of 2007.

More than a year later, Sterne, 23, says he is still recovering from the physical and emotional wounds.

Several industry groups stepped forward with equipment and labor in Sterne's absence to assist WUVT with emergency engineering needs. For several months the station's 24-year-old transmitter had been languishing, which relegated the station to low-power mode.

"WUVT was limping along at a percentage of their licensed power and they were suffering from antenna problems," said Barry Thomas, now the president of SBE. "We were able to gather a huge mass of equipment and support for the station in a short time."

Kevin Sterne in the engineer's office at WUVT(FM), Blacksburg, Va.

Equipment contributors included Clear Channel, Cumulus Media, Harris Broadcast, Electronic Research Inc., Orban and Broadcast Electronics, Thomas said.

He specifically noted the assistance of Steve Davis, senior vice president of engineering and management at Clear Channel Radio, for his help.

WUVT is still using a loaner Harris ZX-3500 transmitter from Clear Channel and a Flexstar exciter donated by Harris, Thomas said.

With its immediate broadcast needs addressed, attention has turned to planning a power increase and eventually moving the antenna from atop Lee Hall, a dorm on campus, to an existing tower on nearby Price Mountain. WUVT hopes to collocate with several commercial FMs at the facility.

Thomas said SBE General Counsel Chris Imlay and Dane Ericksen, consulting engineer with Hammett & Edison, put in many hours of pro bono work on behalf of SBE on the project. Imlay provided legal advice and prepared the non-engineering portions of the NCE application during the FCC's non-commercial filing window last fall.

Ericksen, who completed interference studies and prepared the engineering portion of the FCC filing, said SBE and others stepped up to help a fellow broadcaster.

"We did all of the work we would normally do for a non-commercial client. But this was a special case that we were happy to help with," he said.

Ericksen said he figured out height and coordinates of the new site and plugged in supplemental coverage maps in his efforts to ensure the success of the FCC filing.

WUVT is seeking a power increase from 3.5 kW to 10 kW. Station officials

See HOKIES, page 6 ▶

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Cool Stuff: Array Solutions PowerAIM 120 Vector Impedance Analyzer

Broadcast consultants gave input to this design, and it shows. Users involved in adjusting and commissioning AM HD Radio systems will benefit in particular.

The PowerAIM 120 Vector Impedance Analyzer is by Array Solutions and sold to broadcasters by Kintronic Labs, in whose booth it was displayed. It costs only $2,995.

It provides capabilities of a single-port network analyzer in a software-driven instrument that is easy to carry onto airlines and in the field. It is simple to set up and use but accurate even at tens of thousands of ohms of impedance.

All impedance parameters are measured and calculated. The software is loaded on your laptop, which is coupled to the instrument via USB, RS-232 and Bluetooth.

Scans can be overlaid on top of each other and also recycled to make adjustments in real time. It allows NIST calibration in the field or in house.

Besides antennas, any RF component can be measured over any frequency range of the instrument, so you can use it to scan the input impedance of an ATU, for example. The swept impedance data can be saved in an Excel spreadsheet or as a scan file to be recalled or used as an image for documentation.

There are numerous other neat features including tools for IBOC setup.

You can measure impedance of an antenna with as much as 50 volts peak-to-peak externally generated RF voltage appearing at the input to the analyzer on the same frequency, even though it is producing only milliwatts of RF itself.

Photo by Jim Peck

The instrument is self-protected against a higher RF input overload. This makes it possible to conduct antenna system impedance sweeps in the presence of incoming co-channel or adjacent-channel nighttime skywave radiation.

Its custom calibration function can completely calibrate out test leads, transmission lines, a complex filter or other RF componentry. The PowerAIM 120 includes features such as distance to fault, 1/4-stub macro tool, crystal measurements and other functions used by RF engineers.

Included are calibration loads, battery with recharger and a Pelican carrying case with room for your laptop.

Tom King, president of Kintronic Labs, is shown.

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World Radio History

What It's Like to Refit a Masterpiece

(This is our "Cool Stuff" issue. Winners are posted throughout these pages. Also take a video tour of the award winners with CoolCast demos at radioworld.com/coolcasts.*)*

Bill Sacks is refurbishing classic analog Optimod processors.

Sacks is a former chief engineer; he worked for Carl T. Jones Associates as a consulting engineer and founded Straight Wire Audio Inc. in 1979. A former SBE chapter chairman, he also does product design for Henry Engineering. In 1979 he was the first audio editor of this publication.

He's an insightful engineer and big fan of Optimods. I chatted with Sacks about his venture and his strong feelings about them.

Bill Sacks, left, with wife Kim, and working on Optimods in his workshop.

McLane: What business name are you using?

Sacks: Signal Bars R Us is our trade name for most of our consulting work and other business — we provide bidirectional cell phone amplifiers and consulting to enhance wireless service inside buildings — but I refurbish Optimods simply as Bill Sacks, CPBE.

This is a personal passion and I do all the work on Optimods, without hired help.

I have been a close friend of Bob and the rest of the Orban Associates family since the late '70s when I used to visit their Bryant Street factory. I was also friends with Bob's late partner John Delantoni.

We share the full support of the factory along with a select few authorized repair centers.

McLane: How did your relationship come about?

Sacks: In my youth, I "hot rodded" many an Optimod 8000A with new op-amps, better and more capacitors and some modifications to be cleaner and less obtrusive yet maintain that musicality unique to Orban processing.

I shared my work with Bob Orban and we became friends. He became a great mentor and teacher, going back to when he took me to the woodshed over some incorrect modifications I was doing in 1978.

Bob took the time to show me a whole world of seeing the synergies he exploited in the 8000A and gave me an appreciation for the deeper math, which I had skimmed in my hurry to play with the hardware. I listened and learned about his philosophy of processing musically and what he intended for his product.

I have kept my modifications fully supportive of Bob's original desire to maintain the integrity of the audio and preserve quality. I have seen many abusive modifications done to these lovely machines and I remove the toxic and nasty sounding ones on sight.

The idea of me refurbishing legacy Optimods came about in conversations with Bob about how the 8000As were now a legacy product and so old that none of the original factory people remained from the time of production.

Knowing how much I enjoyed working on 8000As, he liked the idea of me joining the few support depots for the old products.

McLane: What makes you feel the industry needs this type of support?

Sacks: There is a growing, small cult of quality revival in broadcast sound and they are generating a quiet revival of sweet, clean audio using these boxes, which are the pinnacle of analog technology.

From the Editor

Paul J. McLane

Analog Optimod processing is uniquely musical and unobtrusive. This smooth sound is provided by the legacy Optimods year after year with only modest care and feeding. There is still a place for well-seasoned analog sound in broadcasting.

Years ago, Bob Orban referenced the listener's ability to turn the radio volume control up or down vs. excessive processing for that last dB; and that is still true today, except the volume control is now via remote and includes other options, such as an iPod.

The modern listener now has more dynamically unprocessed options such as AAC on their iPod. AAC from an iPod certainly sounds better than HD driven by a cheap pedestrian DSP tin-horn processor.

It is also true a good sweet-sounding analog FM employing a refurbished analog Optimod sounds far better than that same iPod because it has a professional polish of just enough processing.

Also, many noncommercial stations still prefer legacy Optimods because they are competent, serious music processors with a track record. A used Optimod can be had for a reasonable price and cost-effectively refurbished.

Many legacy Optimods are still in service as backups and should be maintained. Run your backup air chain along with your testing of the generator every so often.

McLane: What kinds of models can you work on?

Sacks: We work on 8000s, 8100s,

See SACKS, page 5 ▶

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World Radio History

Sacks

▶ Continued from page 4

9000s, 9100s, etc. Orban also still services 8100s. We offer some special enhancement upgrade modifications and do alignments of 8100s as well; and now we handle analog sections of the 8200 and 9200 Optimods.

We also have released a unique proprietary bass EQ control modification for the 8100XT, which remakes the two controls into a separate low and high LF EQ control in L+R only. This also makes the unit easier to adjust live without having to null the L-R of left/right bass EQ for each setting, in addition to more flexibility in the EQ.

Another benefit is that the bass boost does not inadvertently increase LF L-R modulation due to imperfect L/R EQ settings.

I work on all the analog models. We seek out, buy and hoard many of the odd and out-of-production parts and chips used in the older units.

We are starting to produce retrofit modules, such as LED meters for the old pointer movement meters, which have become difficult to obtain.

We also offer a retrofit replacement for the input transformers, which uses the world's best active balanced input stage, the InGenius chips, with servoed common mode inputs, under license from THAT Corp. This module also has a switchable phase rotator to create modulation symmetry and reduce apparent processing.

We are also going to be offering a life-extending retrofit power supply kit for all the analog units, to get the heat from the regulators off the limiter board.

McLane: What is the most common Orban question people ask?

Sacks: "Why do you replace all of the ceramic capacitors, when they don't wear out like the electrolytic types degrade with time?"

I have seen many abusive modifications done to these lovely machines and I remove the toxic and nasty sounding ones on sight.

— Bill Sacks

The answer to that is an RW article of its own. Many people have casually replaced op-amps in Optimods without upgrading the bypass capacitors. This practice can be dangerous and has caused stability issues.

We use select film capacitors not just for the audio path, but we replace all the green ceramic 0.05 uF bypass capacitors with high-performance 0.47 uF or 1.0 uF film capacitors as well.

Doing this step alone smoothes the sound audibly, even without changing the op-amps. The detail of the sound just opens up with the enhanced power supply high-frequency bypassing.

Of course, we upgrade all the caps in the audio path, as well as install better electrolytic and bipolar capacitors, which also has a significant sweetening affect. Changing the bypass caps synergistically allows one to employ very high-performance op-amps, which are unsuitable with the original power supply design.

McLane: You told me, "I feel like I have a franchise to refurbish and detail Stradivarius violins." Why?

Sacks: Orban's revolutionary concepts and his artistic reduction to practice of these concepts gave us modern FM quality as we know it today.

The 8000A is still a first-rate musical instrument, one built with serious artistic integrity by a rare talent of historic proportion. It was made by a prodigy maestro and compliments the sound of a fine rare violin by its very design. It is timeless; once tuned, refinished and refurbished by a caring artist it is smooth, pleasing and unobtrusive to the music.

Optimods still predominate on serious music stations and will remain the classical music FM and serious jazz standard processor through my lifetime.

More info is available at the tribute sites optimod.am *and* optimod.fm. *You can e-mail Sacks at* billsacks@gmail.com. *Comment to me about this or any article at* pmclane@nbmedia.com.

2007: One More Look

We feature winners of the 2008 "Cool Stuff" Award throughout this issue. Meanwhile, here's one more look at the reigning winners from last year:

- Broadcast Electronics TRE Revenue Center
- Broadcast Bionics PhoneBox Solo
- Broadcast Tools Inc. ProMix 12
- Burk Watchband Remote AM/FM/RDS Receiver
- Burk AFD-1 Arc and Flame Detector
- Comrex Access Portable
- DaySequerra Model M3 HD Radio Precision Multi-Monitor
- Digital Radio Express Aruba
- FMeXtra Receiver
- Global Security Systems AlertFM USB
- Henry Engineering USB-AES Matchbox
- JK Audio Daptor Three Wireless Audio Interface
- Inovonics BandScanner Model 512
- Kowa PX-10
- Nautel Reliable HD Transport Suite
- NDS RadioGuard
- NewTek TriCaster Studio
- Omnia One Multicast
- Roland RSS S-1608 Digital Snake System
- SAS Dees Digital Rubicon-SL Retro
- Telos Zephyr/IP
- TowerSwitch Talking Alert-Mini!
- V-Soft AM-Pro Ver. 2.0
- Yellow Jacket WASP AMS

Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: Google Radio Automation

This is an all-new radio automation system designed by the team that developed SS32 and Maestro.

It essentially combines the power of Maestro and the ease of use of SS32. But Google also calls it the first system to offer an open architecture and a user-configurable widget-based screen.

Widgets are definitely cool; they let you integrate other products broadcasters use into the automation system.

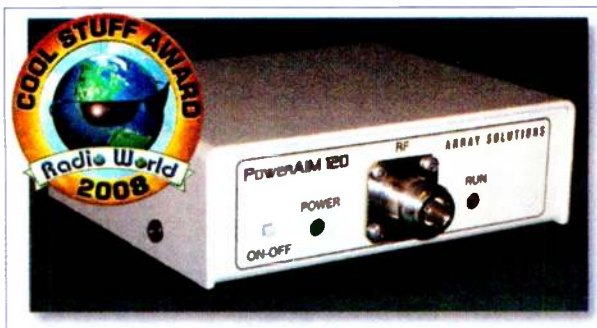
Google showed several examples in the booth that give just a flavor of what's possible. For instance, Google has adopted A-Ware's MusicMaster Nexus Server, which lets announcers in the studio request replacement songs that pass MusicMaster's scheduling rules through a widget on the Google automation interface.

Open architecture allows users to create custom applications and interface external custom apps to the automation system backend. The automation system also offers features for podcasting, unattended operation, distant city voice tracking, multi-city operation and other functions.

Brian Kuhn and William "Dub" Irvin work the booth.

Price: Depends upon configuration
Shipping: Summer/fall, with beta in spring
Info: (800) 726-8877 or (214) 451-4000 or visit *www.google.com/radioautomation*

Photo by Jim Peck



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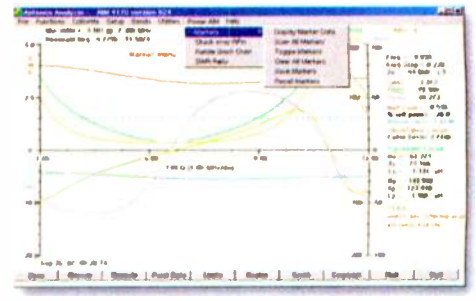

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World Radio History

Hokies

▶ Continued from page 3

say the changes would allow the station to reach further outside the local Blacksburg community.

If WUVT's power increase is granted, Clear Channel has a Harris Z-5 for the station to use with a digital exciter already tuned to 90.7 MHz, the school station's frequency, said Davis.

Upgrade obstacles

Clear Channel also has pledged help with moving the station's permanent transmitter to its new location on Price Mountain and donated a transmitter building, he said.

Despite the industry's goodwill donations of equipment and manpower, the radio station still faces obstacles in its efforts to upgrade its signal.

A co-channel FM in Emory, Va., licensed to Emory & Henry College, filed its application to increase power on the very same day as Virginia Tech officials did. WEHC(FM) has asked for FCC approval to go from its current 500 watts of power to 10 kW.

Emory, Va., is approximately 45 miles southwest of the city of Blacksburg.

"Despite doing as much as we could to avoid competing applications, we drew one anyway. I understand it is being resolved through technical amendments to both applications," Imlay said.

Being "mutually exclusive" is unfortunate, said Ericksen, who expects there will be swapping of proposals between the sides.

Virginia Tech officials confirmed that talks have been held with Emory & Henry administrators and William Culpepper, their consulting engineer on the broadcast project.

"The overlap is not the end of the world and it is negotiable," Ericksen said. "We will continue to support [the] school and work with the Emory people to hammer out some modifications. This is fixable."

It's unclear exactly how long negotiations could take to resolve the conflicting applications, Ericksen said.

However, he expects the WUVT signal upgrade likely won't be as significant as it originally hoped. Ericksen said his new calculations suggest a lower ERP of 6.5 kW.

"Barring any kind of fatal flaw discovered in the Emory filing, the solution will be an overall power reduction in all directions for both stations," Ericksen said.

According to one source familiar with the situation, Emory & Henry administrators are expected to approve a similar power reduction for WEHC to eliminate the overlapping contours.

One day at a time

The modifications to their FCC applications would result in WUVT remaining a Class C3 FM and WEHC a Class A FM, Ericksen said.

As for Sterne, who joined WUVT in 2003 and helped spearhead initial efforts to upgrade its technical facilities, he said he is thankful for the radio industry's support throughout his ordeal.

Associated Press transmitted an image of Sterne, in bloodstained clothing, being carried in the arms of police officers across the school grounds to safety. The shooter, Seung Hui Cho, killed 32 students and faculty that day.

Sterne, who still undergoes physical therapy for his wounds, probably saved his own life by fashioning a tourniquet from electrical cord to stop his bleeding. He returned to the radio station four months later but still thinks daily about the shooting spree.

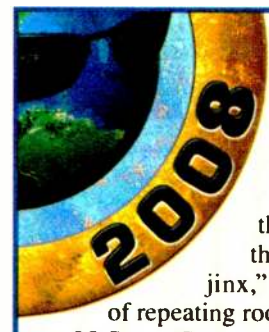
"Some days are good and some are bad. Thankfully the pain has subsided for now, even though some days I have slight stinging pains or some general aches. Everyone has their own way of moving on, but it's something I'll never forget."

Sterne, who is working on his master's degree in electrical engineering at the school, is undecided about his long-term job plans, though he said a career in broadcasting is a possibility.

"I'm only focusing on finishing my master's and helping the radio station right now. I would like to stay in broadcasting," Sterne said.

WUVT, which has a mostly volunteer staff, is known for its eclectic music and student DJs. GM Kim Foley said the support from the broadcasting community could not have come at a better time.

"I can never thank everyone enough times for what they did for WUVT. I was exhausted and frustrated by that point with everything that happened in the semester. For everyone to reach out to us and show such kindness meant so much to all of us," Foley said.



Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: 25-Seven Systems Program Delay Manager

In baseball they talk about the "sophomore jinx," the difficulty of repeating rookie success.

25-Seven Systems came to NAB with other ideas for its second product introduction and scored solidly with its Program Delay Manager, a twist on the familiar profanity delay concept.

The feature set includes PD Alert, a system in which a time-stamped audio file is internally archived and e-mailed to the PD (or GM, or CE) every time questionable material is "dumped."

This idea instantly prompted our judges to dream up wonderful scenarios for using the audio in aircheck sessions and end-of-year "blooper reels."

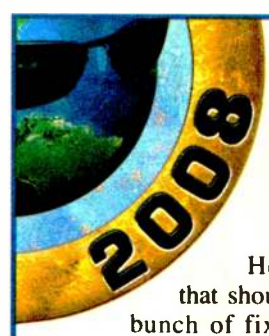
PDM's browser allows setup and control over a LAN or WAN. A delay of up to 90 seconds can be built through pre-rolling, time expansion or audio file playout; you can exit a delay through time compression, or by using the Cough button to wait and exit.

This also is the first broadcast delay to offer Axia Livewire IP audio, in addition to standard analog/AES IO. A programmable 8+8 GPIO allows users to remote control the front panel or delay contact closures to keep network programming in sync. RS-485/422 is provided to enable connections to clock systems and other equipment.

Shown, Rick Sawyer, Geoff Steadman, Derek Pilkington and Ed MacKenty.

Price: $2,850; PDM-Axia LiveWire version, $2,350
Shipping: Summer
Info: sales@25-seven.com, (888) 257-2578 or visit *www.25-seven.com*

Photo by Jim Peck



Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: HHB UDP-89 Professional Universal DVD/CD Player

Photo by Jim Peck

Here's a device that should find use in a bunch of fixed and mobile installations. It's a "universal" DVD/CD player that delivers broadcast-quality video and audio playback.

The designers made it compatible with a range of disc and file types in the hopes of removing limitations imposed by conventional devices. They include an alphabet soup of formats: CD, CD-R, CD-RW, CD-Video, SACD, DVD-Video, DVDD-Audio, DVD-R, DVD+R, DVD-RW and DVD+RW.

MP3 audio and MPEG4 .avi video files can also be played.

Dave Dysart is shown.

Price: $935
Shipping: Summer
Info: (860) 434-9190, worldwide: +011-44-20-8962-5000; *www.hhb.co.uk*

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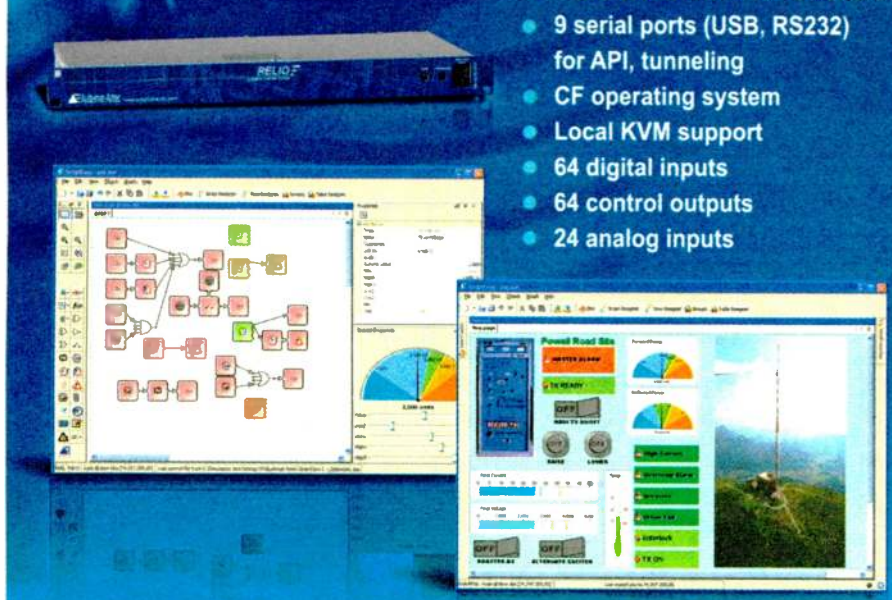

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World Radio History

Above: Rays broadcasters **Andy Freed** *(left) and* **Dave Wills** *(right) interview Rays' star third base prospect* **Evan Langoria** *on the "The Hot Stove Radio Show."*

Top: **Larry McCabe**, *Tampa Bay Rays Senior Director of Broadcasting and* **Rich Herrera**, *broadcaster and Director of Radio Operations are shown on the field during spring training.*

Impossible Remote?
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Tampa Bay Rays' Real-World Super Hero Saves the Day!

Fans of the Tampa Bay Rays baseball team are intimately familiar with Dave Wills and Andy Freed, play-by-play announcers and hosts of "The Hot Stove Radio Show." Offering the inside track on all things Rays, the show kicked off its 2008 season with the "Countdown to Opening Day" series. While at a remote from a well-known sports bar, ACCESS showed its true worth. Two minutes before the broadcast, the ISDN line that was supposed to be used for the broadcast failed to connect. Luckily, they had the ACCESS running on Wi-Fi provided by the restaurant. The broadcast got on the air and was flawless for the entire one hour show.

ACCESS delivers mono or stereo over DSL, Cable, Wi-Fi, 3G cellular, satellite, POTS (yep, ACCESS is a full featured POTS codec and works seamlessly with Matrix, Vector and Bluebox)—plus some services you may not have even heard of. Given the challenges of the public Internet, it's no small boast to say that ACCESS will perform in real time over most available IP connections.

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World Radio History

Workbench

John Bisset SBE Educator of the Year

Radio World, June 4, 2008

Past columns are archived at *radioworld.com*

Chlorine Products, Electronics Don't Mix

by John Bisset

I met Gary Ellingson at this year's NAB Show in Las Vegas. He's the chief engineer for Northwestern College and Radio, KFNW(AM/FM) in Fargo, N.D., and KNWC(AM/FM) in Sioux Falls, S.D.

Gary told me about his RFI interference issues and how they have been mitigated with products from Nott Ltd. and ferrite suppressors from Newark Electronics.

Gary has Nott Ferrolinear RF chokes installed on the power line poles surrounding the KFNW array. There's an interesting tutorial on static and ground lines on wooden power poles at *www.nottltd.com/FerrolinearRFChoke.pdf.*

There's also a procedure to see if the wooden poles are affecting your AM array.

The clamshell toroids in Fig. 2 were used inside and are a remarkably inexpensive way to control interference in a high RF field.

Made by Fair-Rite, their part number is 16F002. It is a round cable snap-on suppressor with an inner diameter of 0.21 inches. The 73K6078 is a little larger, with an inside diameter of 0.275 inches. The 50B335 has an inner diameter of 0.525 inches.

All three suppressors are less than $3 each and can be found in the Newark catalog at *www.newark.com.*

Gary Ellingson can be reached at *glellingson@nwc.edu.*

★ ★ ★

Lawrence Behr is CEO of LBA Group Inc. in Greenville, N.C. (*www.lbagroup.com*).

He commented on two recent *Workbench* topics, both in the April 23 column: mouse contamination and the spark gap shield.

With regard to cleaning up after rodents, chlorine substances may be a winner from a sanitation standpoint, but it's a potential disaster equipment-wise, he says. Chlorine substances are corrosive to aluminum and copper and will wreck electronics.

Fig. 1: Nott Ltd.'s Ferrolinear RF chokes

Fig. 2: Clamshell style ferrite toroids slip over cables to reduce RFI

As readers may know, smoke from PVC ruins all it touches; the same is true for Clorox, and you can't clean it up. Even using it on the floor near the air intake for a transmitter can cause corrosion problems.

Inside an enclosed antenna tuning unit, the resultant fumes can take their toll on copper coils and strap. Lawrence's advice is to check the ingredients of any cleaning compound you intend to use, to prevent these headaches.

With regard to Harry Bingaman's funnel spark gap shield, Lawrence agrees that the funnel will work. The problem is that the tower is fitted with a vertical spark gap in the first place. Much better would be the installation of new offset gaps.

While the funnel solution doesn't matter much at low power, this arrangement at high power could do a lot of damage.

Station engineers should insist that tower erectors not install the vertical spark gap, which is all too common because it is cheap — a good point to consider if you're specifying a new AM tower.

Lawrence Behr can be reached at *lbwireless@lbagroup.com.*

★ ★ ★

Speaking of funnels, contract and projects engineer Gary Saber in Raleigh, N.C., observes that an open funnel could entice wasps or bees to build a nest inside.

Gary suggests adding a fiberglass insect screen over the opening of the funnel and sealing the top opening with RTV to help prevent insect nesting.

Also, a funnel made of black plastic should last longer because it will not deteriorate from UV exposure.

Gary Saber can be reached at *gbs1043@earthlink.net.*

★ ★ ★

Cary, N.C., is a stone's throw from Raleigh, and Chuk Gleason calls it home.

Chuk does mostly two-way work now. He keeps up with Radio World online, and writes that he was intrigued by the idea of hiding cabling and ground strap

See PLASTIC, page 10 ▶

Instead of mounting painted plywood panels, how about using sheets of plastic — polyurethane, for example?

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Digital Stereo Utility Audio Processor

DSP-based AGC, compression, peak control and independent pre-emphasis protection limiting. Unobtrusive operation, ideal for link/uplink protection, general leveling, LPFM. Easy menu-driven setup with restricted artistic control so it can't be made to sound bad. Features panel and remote alarms for out-of-tolerance program inputs.

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The new 720 surpasses all previous designs in ease of installation and operation. Serial and USB interface – built-in diagnostics for quick automatic connection to station automation – supplied with self-guiding software. A front-panel LCD shows all setup and operating parameters without the need of a computer on site! Incoming data from automation can be seen on-the-fly and scrolling messages are displayed exactly as they appear to listeners. The automation command set is compatible with earlier models and a new 'no-headers' mode supports unformatted streaming text feeds.

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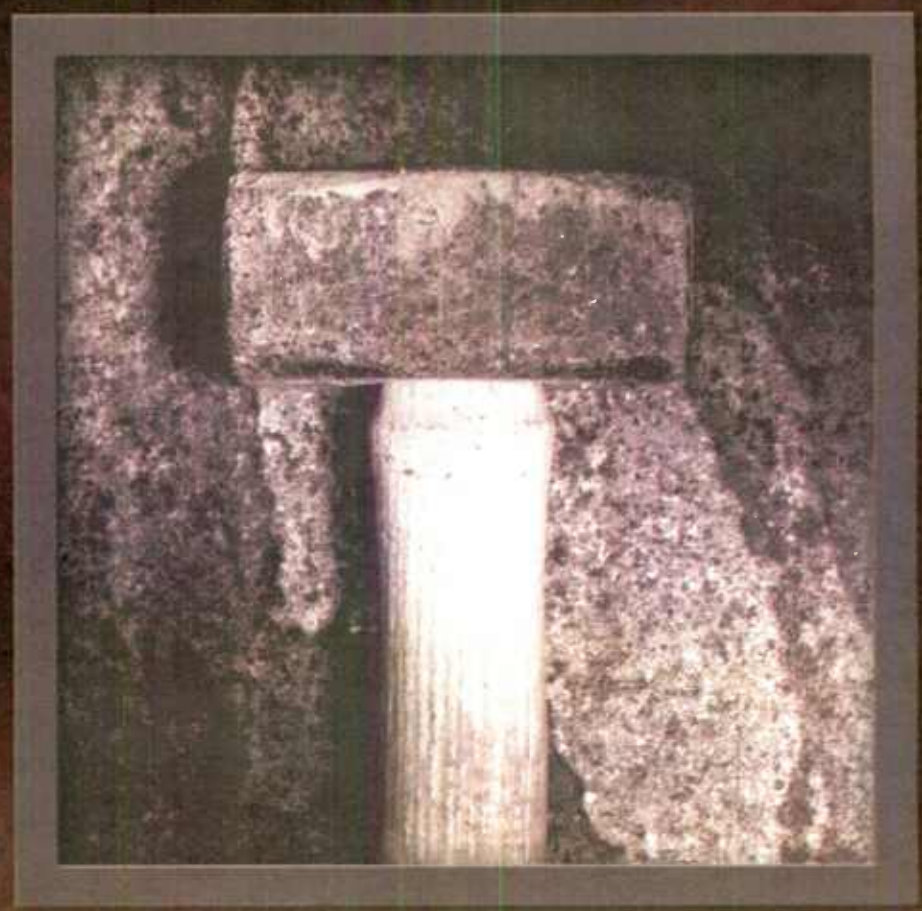

AND EVERYTHING IN BETWEEN

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World Radio History

Plastic

▶ Continued from page 8

behind plywood panels under AM ATUs (*Workbench*, April 23).

Chuk offers a slightly more advanced suggestion.

Instead of mounting painted plywood panels, how about using sheets of plastic — polyurethane, for example? The heavy plastic sheets that are used to cover walls in restrooms might last longer.

Plywood, Chuk adds, no matter how well you seal it, eventually will weather and delaminate. He suggests a visit to a plastics distributor to see what's available.

Chuk admits that cost may be an issue. Four panels of half-inch sheet plastic may seriously impact your budget!

Reach Chuk Gleason at *kb4mdz@earthlink.net.*

★ ★ ★

Mike Babbitt is the customer support manager for Dolby Laboratories. He wants *Workbench* readers to know of the launch of the online Dolby Forums, for the use of professionals who have registered an account at *www.dolbysupport.com.*

After logging into the site, you'll notice a blue "User Forums" button on the left side of the page. Clicking here will open a new Dolby Support Internet presence in your browser that will allow you to ask and answer questions, post application ideas and communicate and share ideas with fellow users of Dolby products and technologies as well as Dolby specialists.

★ ★ ★

Paul Sagi in Kuala Lumpur always has an interesting tip or two.

Reading about ways to run wires, he suggests visiting *www.ezhang.com*. The patented EZ Hang can shoot a line 100 feet or more.

It's a combination slingshot and fishing reel that comes with 300 feet of 10-pound-test monofilament line, a quick disconnect clip to release the weight, and an easy-to-see bright yellow one-ounce lead weight.

Used by hams to string antennas from trees, it may be of help in plenty of other applications.

Paul adds that when he was using fish tapes inside a wall or ceiling, he needed a way of knowing when the tapes touched.

Since he was working blind — the entry and exit holes were small — he could not see the two ends. Connecting both tapes to a low-voltage DC source and a buzzer gave him an audible indication of when the tapes touched. Knowing this made hooking them together easier.

Fig. 3: Paul Sagi in Kuala Lumpur says the EZ Hang can shoot a line 100 feet or more.

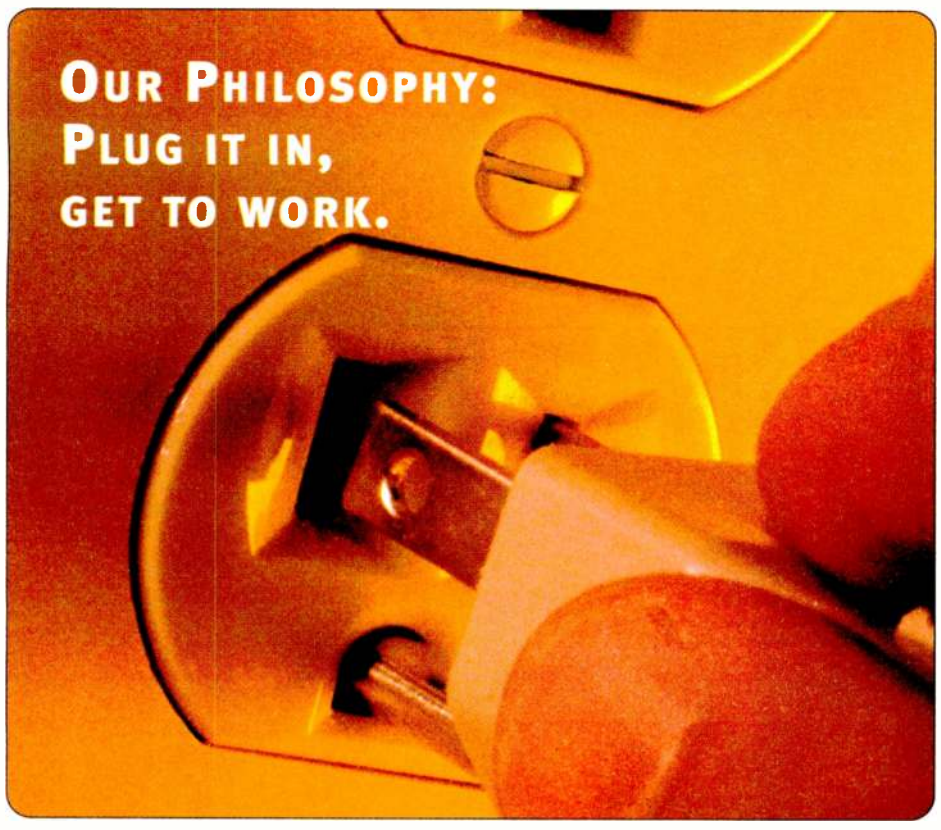
Write to Paul Sagi at *pksagi92@gmail.com.*

Workbench *articles are archived at radioworld.com. Click on the* Workbench *tab to discover thousands of past tips, tricks and problem solutions.*

John Bisset has worked as a chief engineer and contract engineer for 39 years. He is the northeast regional sales manager for Broadcast Electronics and in 2007 received the SBE's Educator of the Year Award.

Reach him at (571) 217-9386 or jbisset@bdcast.com. *Faxed submissions can be sent to (603) 472-4944.*

Submissions for this column are encouraged and qualify for SBE recertification credit.



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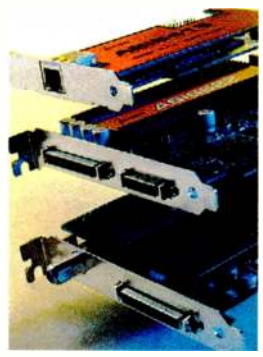

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Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: Studer Call Management System

Studer takes another angle on solving the needs of telephone interfacing in a radio or TV studio.

Studer's Call Management System uses Voice over Internet Protocol technology to supplement or replace physical telephone hybrids and codecs — as Studer puts it, possibly replacing all the codecs in a broadcast facility with control under the CMS/OnAir 3000 software.

Multiple telephone lines, phone voting and gaming, off-air interviews and data collection require flexibility that may not be found in simple hardware hybrids. DJs need to bring multiple callers onto the console to get them on air, helpers must collect addresses for prize mailings and producers need to brief a journalist who is calling in, monitor call-ins and the progress of the show, possibly from somewhere other than the studio.

CMS software applications have an intuitive and friendly GUI to help in the business of the jock, producer or engineer.

Axel Kern is shown.

Price: Based on configuration
Shipping: Now
Info: (818) 920-3206 or *www.studer.ch*

Photo by Jim Peck

Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: Neutrik ConvertCon

The Neutrik ConvertCon — so new it didn't even have a name yet when our judges discovered it on the exhibit floor — makes it possible for you to use a single XLR connector when mating with male or female connectors.

It negates the need for "gender benders" or adapters. You simply slide the front housing to turn your male XLR into a female XLR and vice versa. Cool! Once you get it into your hands it's hard not to play with it.

Mark Boyadjian shows it off. To order ConvertCon use part number NC3FM-C.

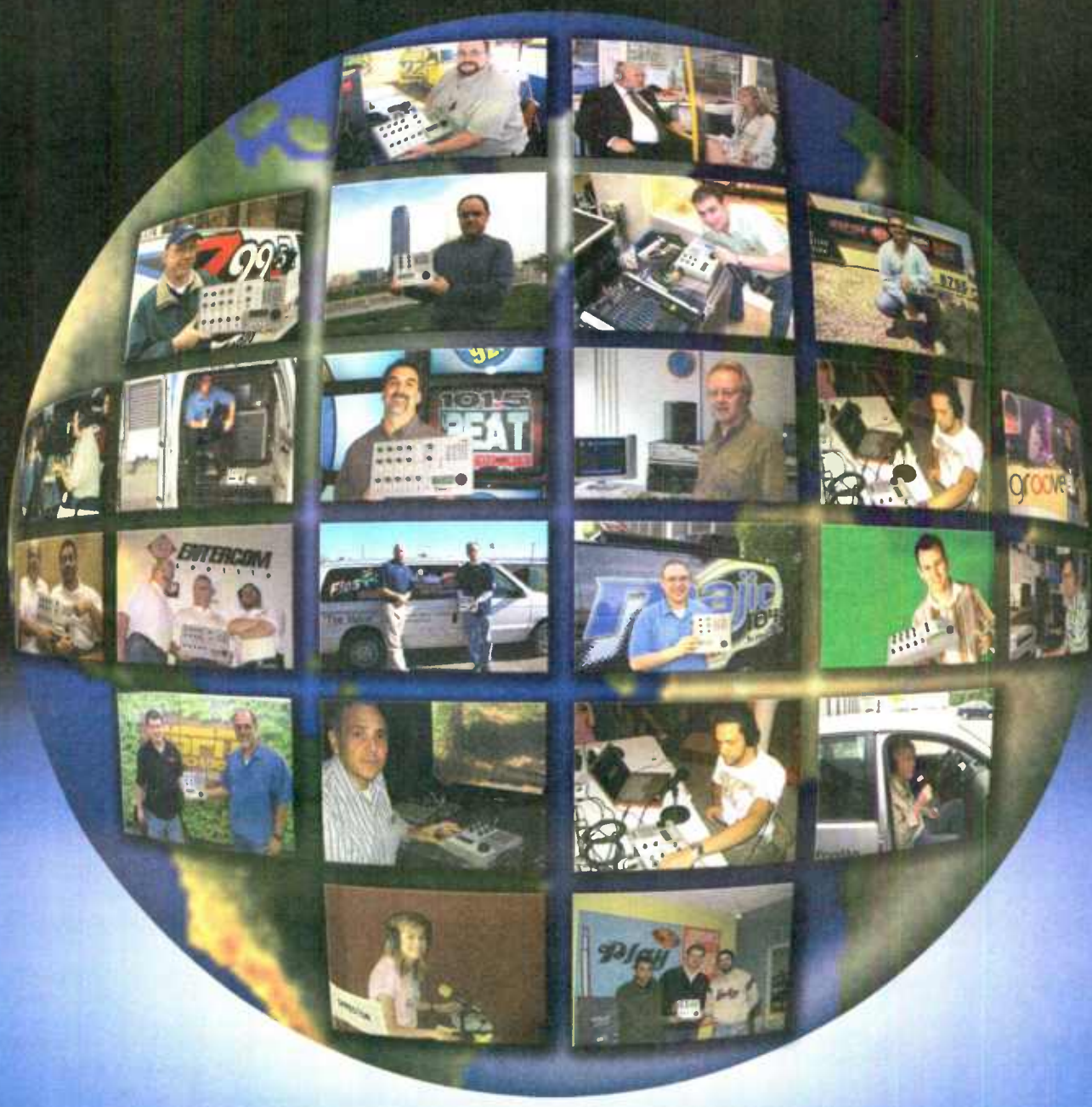
Price: TBD
Shipping: July
Info: (732) 901-9488 or *www.neutrikusa.com*

Photo by Jim Peck

World Radio History

Thousands

of people across America use Tieline codecs for remote broadcasts every day.



> **The broadcast was wonderful - Tieline's wireless 3G provided all the benefits of a remote pickup unit with bidirectional audio paths, and a communications circuit.**
>
> Marcus Xenakis,
> Director of Engineering and IT,
> Clear Channel Radio in Philadelphia

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World Radio History

2020: The Biggest Loser vs. Tiny Tim

If Recent Trends Persist, Terrestrial Radio Certainly Faces a Difficult Future

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

NEW YORK, Dec. 31, 2019 *As engineers prepared to shut down the last of the city's FM radio stations at midnight tonight, one wondered aloud whether anyone would notice.*

"We haven't had any signs of real listenership for years," sighed Ralph Burns, chief engineer of WNEW, as he packed a box of spare parts at the station's transmission facility atop the Empire State Building.

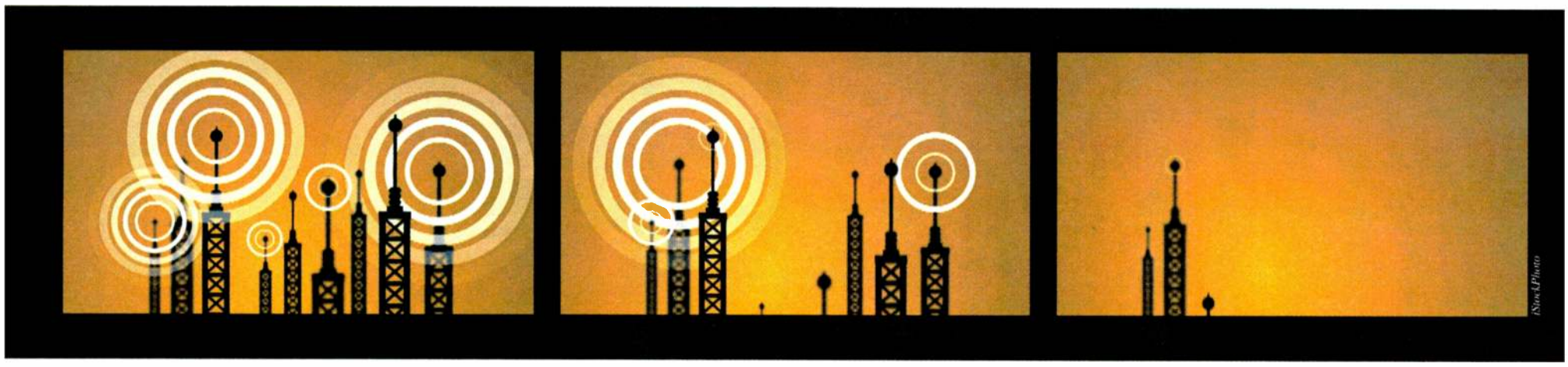
Burns' station and several others that still share the transmission facility, plus a few more at Freedom Tower, will go dark as the decade ends tonight, ending the long saga of broadcast radio in a city that played a key role in its early development.

When New York's AM radio band went silent six years ago, broadcasters hoped the city's FM channels might pick up some listeners and revive.

But as FM stations around the country continued to switch off in increasing numbers, broadcasters in even this once-largest of radio markets saw the writing on the wall.

Sales of new receivers had fallen to zero since the AM shutdown, an attempted transition to digital radio broadcasting had failed and FM audience numbers had plummeted steadily over the last decade.

In a sad irony, there was a time when this particular new year had been touted as a target for reinvigoration of the medium — a promotional program named "Radio 2020" was launched by broadcast trade groups in 2007, when the industry's troubles began.



Nick Photo

Instead, the dawning of the year will bring an end to the medium, its former listeners happily ensconced elsewhere, now served by so many other, more modern media sources...

Plausible?

Could the bit of fiction above really come to pass? Or will a far rosier picture emerge by that time, in which IBOC digital radio is a triumph, broadcasters have switched to all-digital mode and their content flows with audience-leading numbers on multiple other platforms?

The most likely outcome is somewhere in between, of course; but some recent indicators present disturbing signs that tough times lie ahead for traditional radio.

For example, an April study by Forrester Research showed that traditional (non-Internet) radio listening by U.S. households has dropped 18 percent in the last four years, while Internet usage is up over 70 percent during the same period.

Among the media usage surveyed in the study — TV, VHS/DVD, video games, newspapers and magazines were also included — radio was by far the biggest loser across the period (2004–2007). Other research has shown similar results.

If unabated, this behavioral trend could push radio to marginal status in fairly short order.

Another important element is the movement toward new portable communications devices that include A/V capability but largely do *not* include AM/FM radio tuners.

Many millions of these devices are sold each year, so it might not take long for the proliferation of non-radio-equipped personal A/V devices to become the norm.

Finally, although cars sold in the United States continue to be equipped with AM/FM radios, an emerging trend includes mobile Internet connectivity, as well.

While this will remain a high-end feature for awhile, its popularity will almost

See LOSER?, page 14 ▶

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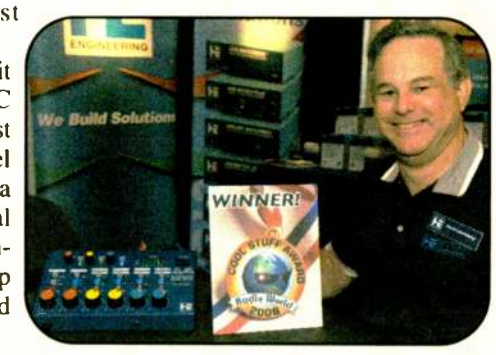
Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: Henry SixMix USB Broadcast Console

Henry Engineering's SixMix is a compact, functional USB broadcast audio console.



The company calls it a "missing link" that turns a PC or laptop computer into a broadcast studio. It is a 10-input, six-channel console that's about the size of a laptop computer. It has an integral USB digital audio interface; so connect a USB cable to a PC or laptop and it's ready to record, edit and play digital audio.

Features include a cue bus with cue speaker, monitor system with mic-on muting, a mix-minus output and guest headphone facilities with talkback. Targeted uses are with automation; in digital production, news editing or Webcasting; or as a self-contained emergency studio.

Price: $1,195
Shipping: Now
Info: www.henryeng.com or call (626) 355-3656.

Photo by Jim Peck

World Radio History

Axia consoles come with 24/7 support.

(Because radio is a 24/7 business.)

Broadcasting doesn't take time off for holidays and weekends. So why do all the other console companies only provide support from 9-to-5? This doesn't make much sense to us.

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Axia consoles are engineered to deliver years of trouble-free use. They're so reliable, they carry a **5-year warranty** (the industry's best). Chances are, you'll never need assistance, but if you do, we'll be ready for you.

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Support

World Radio History

Loser?

▶ Continued from page 12

certainly drive it into the mainstream fairly quickly, and we could see a trend toward Internet radio listening reaching a state of parity with terrestrial radio in the automotive listening environment.

In a New York minute

We are often not very good at predicting the future, even when we possess good understanding of relevant past models. For reference in this case, we usually turn for guidance to how the broadcasting industry grew and eventually became a ubiquitous economic and cultural force in American society.

It took decades to get to that point, but once there it remained in the position for decades since. Radio, in particular, has fended off numerous challenges, and seems nearly impervious to threat as a result.

How could anything challenge it? Or even if a viable contender arose, surely it would again take decades to topple the radio from dominance, right?

Perhaps the strongest of many assets that have enabled radio to maintain that enviable position is its value proposition to audiences. It's hard to beat free service, especially by any new entrant that relies on a fee-for-service model — such as satellite radio or the Internet.

That assumption seems unassailable, and has proven so for a long time. But there's a key feature to one of those challengers that changes the equation.

Consider that all previous media have been essentially one-trick ponies, in that each medium required a complete and independent architecture to deliver one, or at most, two related forms of content.

Books delivered text, or text and images; records, radio and CDs delivered audio; movies delivered moving images, then added sound; TV, VHS and DVD delivered audio + video; and so on.

The Internet, however, is a far more fungible medium. Within one architecture, and via a single conduit to the user, it can deliver any of the media just mentioned, and more.

Moreover, it can provide it in an inherently interactive way by virtue of its two-way nature.

Yes, it costs more to make this connection to any given user than the broadcast model does, but when the user considers the *total* return on that investment, any — or perhaps all — of the traditional, single-purpose media may find themselves on the losing end of the analysis.

The current availability and economies of scale for broadband Internet service already represent a great value, and these will both only improve over time. Thus a single, highly affordable, paid pathway provides users with access to a vast range of content presented in practically any medium (text, image, audio, video, etc.), and with accessibility and quality levels that rival traditional forms today — the latter continuing to improve at a fast pace.

Therefore, even though it's a paid service, the Internet provides (at least potentially) so much more than any single free service that the cost per Internet media stream seems to approach free itself.

Moreover, in many developed parts of the world today, Internet access is viewed as a utility — like electricity or water — in that it is assumed to be generally available and its cost is simply part of nominal household expenses. Therefore the access to any individual (non-subscription) application or service via the Internet indeed appears free.

And thus most Internet radio services may already rival the value proposition of traditional radio, with some streams *surpassing* it, given the strong appeal of their more niche-oriented content to some users.

Add to this the growing availability of Internet service via wired and wireless access, and you finally have a challenger that could, in aggregation, do to radio what no other competitor has been able to since the establishment of the senior medium.

So with apologies to Howard Stern, we note that the Internet is well on its way to being crowned "King of All Media."

We also acknowledge that the Internet's bidirectional nature makes it a more egalitarian avenue for media traffic, offering the personalization and democratic access well suited to the preferences of today's — and likely even more so, tomorrow's — audiences.

Finally, we understand that the hyperlinking and social networking attributes of the Internet serve to further accelerate its appeal.

It's not hard to conclude that this medium is a potential juggernaut, and that we may have as yet seen only the first few degrees of its ultimate trajectory's arc.

Further, its impact may be felt faster than we can imagine, given the perfect storm engendered by the factors outlined above. The Internet is not just riding on the coattails of Moore's Law (which is a techno-economic phenomenon), but on a much more powerful sociological corollary — one that violates all previously known methods of analysis.

Tune in tomorrow

How will the story we started above actually conclude?

Given that IBOC is (intentionally) an attempted extension of the established paradigm, how might it fare given the above analysis? Can another single-purpose, dedicated medium and device format succeed in this environment — even as a free service — or has that time already passed?

Another point to ponder: What happened to the radio companies and their personnel in that story? Did they fade away with their transmitters' signals, or did they transition successfully to the new milieu?

That question is perhaps most critical to readers of this publication, and it's the hardest to answer today. Yet it's also the component of the story's outcome that lies most within the industry's own hands to influence.

As Ebenezer Scrooge asked the Ghost of Christmas Yet to Come: "Are these the shadows of things that *will* be, or that *may* be, only?" As Scrooge learned, it's never too late to make some changes that bring the story to a happy ending.

Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: Nautel NX50 50 kW AM Transmitter

The NX50 is the next generation of the company's 50 kW transmitter for high-power AM broadcasting.

It supports all HD Radio or DRM modes with an internal DRM or Exgine IBOC generator. The NX50 provides adaptive precorrection, 2.7 MHz Direct Digital Modulation and 88 percent efficiency, which Nautel touts as best in the industry.

Control is provided by Nautel's new Advanced User Interface, a 17 inch color LCD screen with a range of configurable displays. The AUI includes real-time locus measurement; an instrument-grade spectrum analyzer; an IBOC modulation analyzer; module-level monitoring and control and logging of functions. The AUI can be controlled by touch screen or via a mouse and keyboard.

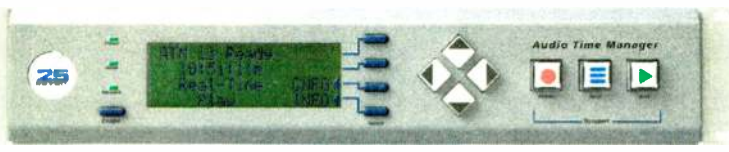
Judges liked the real-time load analysis so an engineer can monitor orientation and symmetry of the load, critical for AM HD Radio performance, without taking the station off the air. Real-time spectrum analysis allows the engineer to keep a constant eye on emissions to head off interference problems that might crop up between the required annual occupied bandwidth measurements. The Ethernet connection and Web server allow the engineer or factory techs to look remotely at every parameter available for monitoring locally. "This is huge for the busy engineer," one observer said. "With a click on a browser bookmark from his desk or anywhere, he can look at all the transmitter's operating parameters (including internal diagnostics), load orientation/symmetry, occupied bandwidth and HD Radio performance."

Price: $160,000 with dual exciter
Shipping: Q3
Info: e-mail *sales@nautel.com* or call (902) 823-2233

Photo by Jim Peck

Change the way you think about the clock...

AUDIO TIME MANAGER doesn't just shift time, it shifts the clock paradigm. Imagine inserting an extra traffic report in a network show, with no loss of content. Imagine backtiming into the network perfectly every time, even when breaking local news means you're running long. Imagine eliminating make-goods. Now shift your thinking about time, because your old clock just got a new face.



"The 25-Seven Systems box is an amazing device and leaves all others in its dust. It's truly the **SECRET WEAPON** to make your station sound tighter, time shift segments and never miss a network cue again. We're still finding new and creative ways to use the 25/7 every week."

-Gabe Hobbs
Senior Vice-President of Programming, News/Talk/Sports
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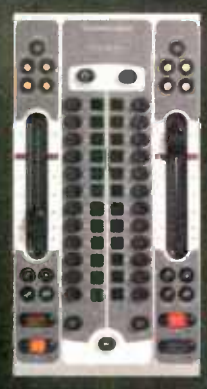

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Console + turret mounted accessory controllers put control right at the talent's fingertips. Axia Element users get even tighter integration.

CALL CONTROLLER

Simplified and cost effective option for call screening and on-air control.

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World Radio History

A Green Station Came to Bedford Square

In Pittsburgh, WYEP(FM) Is Where the Music and the Environment Both Matter

This article appeared in The Cornerstone, a publication of the Green Building Alliance, www.gbapgh.org, *and is used with permission.*

The initial thing Lee Ferraro asks first-time visitors to do when entering the new WYEP(FM) community broadcast building is to take a deep breath.

"What do you smell?" he asks. The correct answer is, "Nothing."

In this healthy, LEED Silver-rated studio, attention to green building is evident in everything from non-toxic finishing materials to a flood of daylight.

[LEED refers to the Leadership in Energy and Environmental Design Green Building Rating System. Ferraro said WYEP's Community Broadcast Center in Pittsburgh was named the nation's first LEED-certified green radio station by the U.S. Green Building Council.]

Photos by Ed Massery

"This project is simpatico with our mission of improving the quality of life in the region," says Ferraro, WYEP's station manager.

"Building green is building quality and it fits into our culture. Everyone who works here is into energy savings."

Jeans and wheat

Another fit for the adult alternative station's philosophy: ceilings made of recycled blue jeans.

To minimize the impact on the environment, recycled materials are used throughout the building, from linoleum floors of linseed oil and flour, to wheat board for sub-floors and as a wood substitute. Additionally, WYEP chose to reuse office equipment wherever possible from their old headquarters instead of buying new.

When at the end of its lease and feeling squeezed in its 3,000-square-foot office space on the other end of East Carson Street, WYEP's management and board opted to build new in nearby historic Bedford Square.

From the start, everyone was on board for a green building. After all, this is the listener-supported radio station that produces the "Allegheny Front," an environmental news program that urges listeners to act responsibly.

Further motivation came from a $500,000 building grant from The Heinz Endowments to support the station's green building objective. The initial goal of a LEED Silver-certified building received an additional incentive from the Kresge Foundation, which stepped forward with a potential green bonus grant of $150,000 to achieve the Silver rating.

Reuse

The WYEP crew was off to a good start with its new location, an urban site with existing water, sewage and power service that was within 100 yards of mass transit and 250 yards of a bike path.

Before starting construction, two old buildings on the site had to be demolished. Instead of clogging up a landfill, 85 percent of the materials from the buildings were hauled off to Construction Junction (Pittsburgh's only non-profit

See WYEP, page 20 ▶

Case Study

Facts about WYEP from the Green Building Alliance

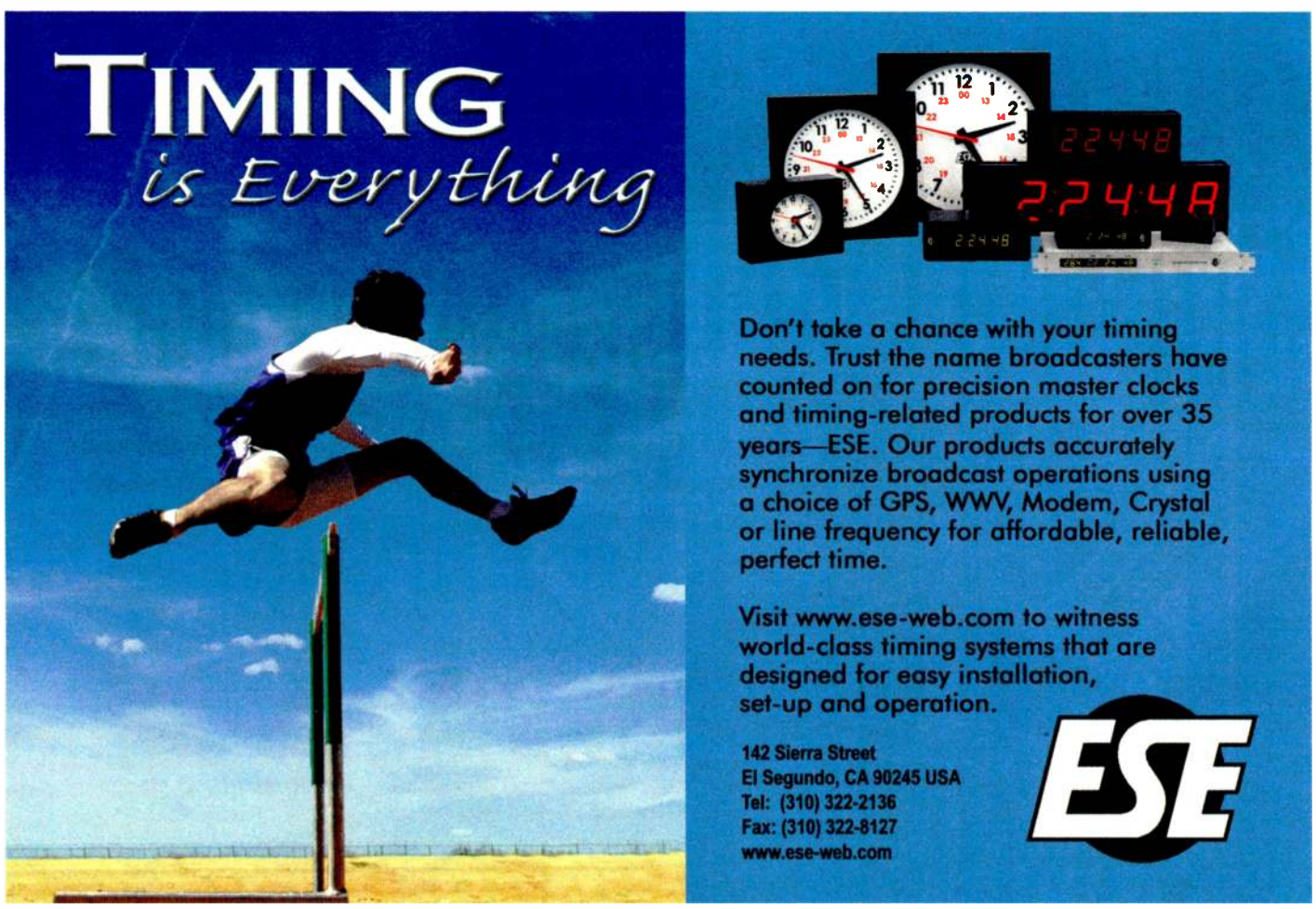
Sustainable Sites:
- ✓ Close proximity to a multitude of local busways
- ✓ Bicycle storage and shower facilities for employees who prefer alternative transportation
- ✓ Reflective roof designed to reduce heat island effect
- ✓ Light pollution reduction
- ✓ Educational signage as well as educational tours are available to visitors of the facility

Water Efficiency:
- ✓ 30 percent water use reduction through the use of waterless urinals and high-efficiency units

Energy & Atmosphere:
- ✓ Project estimated to perform over 20 percent better than ASHRAE 90.1-1999 requirements
- ✓ No HCFC-based refrigerants or Halons
- ✓ 100 percent of project's energy consumption is purchased with Tradable Renewable Certificates

Indoor Environmental Quality:
- ✓ IAQ management plan during construction and as future policy
- ✓ CO_2 monitoring system installed in conjunction with operation procedures
- ✓ Operable windows and fans increase ventilation effectiveness
- ✓ Finish materials with low-level VOCs improve indoor air, and policy in place to meet this standard for all future work
- ✓ Direct line-of-sight views 91 percent of all space occupied

Materials & Resources:
- ✓ Over 89 percent of on-site generated construction waste was diverted from landfill
- ✓ Use of local materials and materials with recycled content reduces total energy used in material production



World Radio History

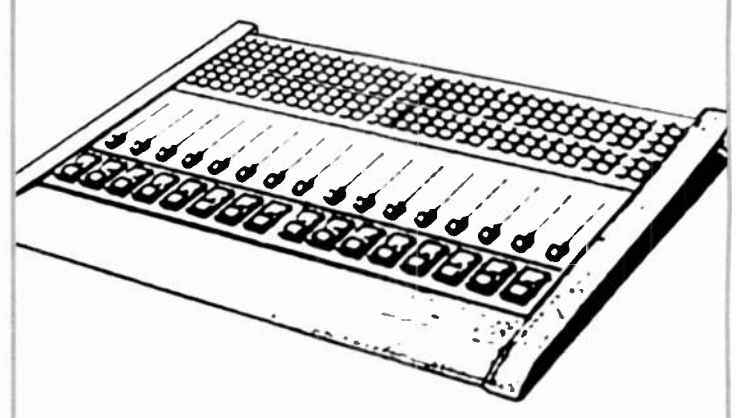
Nobody knows what the future holds.

(But there's a reason our logo is a crystal ball.)

Comdial Executech® PBX phone, *ca.* 1996. Comdial was one of the leading PBX companies in both sales and technology, with a million-square-foot assembly facility and over $7,000,000 in reported earnings. Comdial continued with traditional PBX tech and declining sales until filing for Chapter 11 bankruptcy protection in 2005, when all assets were acquired by **Vertical Communications**, a VoIP company.[1]

Cisco® 7970 IP Phone, *ca.* 2006. Founded in 1984 as a manufacturer of multi-protocol routers, Cisco began, in 1998, to promote VoIP technology to Fortune 500 companies as a more cost-efficient, feature-rich alternative to PBX phone systems. In just 10 years,VoIP effectively killed the traditional PBX; VoIP revenue is projected to reach $48 billion by the end of 2010.[2] Cisco annual revenue reached $35 billion in 2007.[3]

Axia Element broadcast console, *ca.* 2008. Founded in 2003, Axia is a division of Telos Systems, worldwide leaders in broadcast audio equipment. Axia was launched with the mission of bringing proven technology from the computer world – switched Ethernet, audio routing via IP, distributed network architecture – to radio. Using open standards and bulletproof Cisco routing technology, nearly 1000 Axia consoles have been built in just 5 years, making Axia the fastest-growing console brand in radio.



Generic TDM console, *ca.* 200*x*. Some radio consoles and routing systems are still based on Time-Division Multiplexing, developed in 1962. TDM was once the basis of most (if not all) digital PBX telephone systems. Consoles and routers based on TDM employ centralized "card cages" that require all inputs and outputs to be wired to a single location. Like traditional PBXs, TDMs typically rely on closed, proprietary code, and cannot be easily or economically changed or expanded when new operating criteria arise.

Santayana famously noted "Those who cannot learn from history are doomed to repeat it." Some people change when they feel the heat; others when they see the light. With that in mind, a quick comparison of telecom and broadcast technology reveals some common trends that broadcasters are finding hard to ignore.

Nearly 1000 Axia studios are installed around the world — more are added every week. And while our clients probably don't think too much about the technology inside our consoles, they know they won't have to worry about it in the future.

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Technology

World Radio History

Cool Stuff: Broadcast Devices PWM-200 RF Power Monitor/VSWR Protection System

Photo by Jim Peck

This system provides accurate forward and reflected power measurement of analog or digital power; it also provides three-strike protection due to reflected power faults for protection of vital transmitter systems.

It provides relay outputs for interlock and on/off control of one or more transmitters. The PWM-200 is designed to be used with the DPS-100 Dual Power Sensor, also from BDI; the PWM-200 accepts up to four DPS-100 sensor outputs, making it suitable for master antenna monitoring, main/alternate/digital monitoring and lab testing.

The PWM-200 will scan all RF inputs and issue alarms and/or interlock interruption upon trip points you define for forward and reflected power. It also has an RS-485 interface for communication with an optional Web server; that interface makes the unit suitable for remote monitoring and control of RF parameters via a simple Web browser over the Internet.

Shown: Ron Kumetz and Bob Tarsio.

Price: $2,295, plus required DPS-100 power sensors
Shipping: Now
Info: (914) 737-5032 or visit *www.broadcast-devices.com*

Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

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RADIO IT MANAGEMENT

Tweets Help Disseminate Your Brand

by James Careless

A Web site, podcasts, MySpace profiles, YouTube videos, a Wikipedia entry, Facebook walls ... Surely a station that tied in to social networking and Web 2.0 is up to date, right?

Maybe not. Now it is time to engage listeners with Twitter.

Twitter updates, often called "tweets," are ultra-short, ultra-punchy communications posted simultaneously to multiple Web sites, instant messaging clients, Facebook walls, RSS feeds and even mobile telephones as SMS text messages.

Twitter users can let friends and strangers know what you are doing right now in one to two short sentences. Tweets are limited to a maximum of 140 words, thus earning the medium the sobriquet "micro-blogging."

Users can search the Twitter Web site — *www.twitter.com* — to find people or groups with interests that interest them, and then use Twitter to interconnect with them on an ongoing basis.

How can Twitter be of use to radio? To find out, we contacted three broadcasters who are using Twitter to connect with their audiences.

WGFA Radio and the BBC

Situated on the border of Indiana and Illinois — "Illiana" — WFGA(AM/FM) in Watseka, Ill., uses Twitter to connect with listeners in both states.

"We utilize a plug-in for our content management system that pings Twitter anytime the station makes a new post or addition to our Web site," said Justin Kaiser, director of operations at WFGA Radio.

In doing so, the station alerts listeners to these changes, and gives them "additional access to up-to-the-minute news updates."

"In our case, we're pushing content out, but when we do a morning show contest and ask for the first winner to text/tweet/e-mail us, it is nice to throw a question out and get back anywhere for 10 to 25 responses," he said. "The bigger the user base, the better the response. But it's about bringing the listener into the conversation. That's why they call it social media."

Beyond connecting with listeners, WGFA uses Twitter to stay in touch with off-site news staff, to find out where they are and what they are doing at any given time.

"With the abilities that Twitter has, we also are able to text a short message from a phone or other device/computer to our Twitter account and it will show up on our site, the Twitter site and subscribers' computers and phones within the next 5 to 10 minutes," said Kaiser. "It's great when we're getting ready to go on-air with a remote or for contest purposes."

Operationally, Twitter "doesn't cost us anything, is easy to implement and increases our Google juice and search engine rankings, as well," he said.

"The more pages of relevance that point back to our main site at *wgfaradio.com*, the better we show up in the rankings."

World Radio History

BBC Radio 1 is possibly the highest-profile broadcaster to use Twitter. The public-service broadcaster uses tweets both to alert listeners of upcoming programs and to garner their text comments for use on-air.

"We have only used Twitter with Radio 1 around actual events," said Ben Chapman, BBC interactive editor for Radio 1 and 1Xtra. "Twittering has an immediacy that sits comfortably alongside the 'live-ness' of radio. We can bring together a range of voices around our events and coverage that is unique and current.

"We've tried some ideas with Twitter all of which have been relatively low profile in relation to other activity around events; by that I mean these ideas formed a small part of much bigger overall offerings," he said. "For example, it is a great way to communicate immediate reviews of bands at our gigs."

With its restriction to 140 characters or less per tweet, this form of social networking feels "personal and intuitive; it is simple social media that is cut back to a core concept," Chapman said.

The bigger the user base, the better the response. But it's about bringing the listener into the conversation.

— Justin Kaiser

Currently BBC Radio 1 has only used Twitter to foster communications between individual talent and staff. "We are in the process of discussing further ideas with Twitter directly," he said.

WILL(AM)

Every Sunday afternoon, WILL(AM), the public radio station based at the University of Illinois — Urbana broadcasts the news and media commentary "Media Matters" hosted by Bob McChesney.

And every Tuesday before the show, producer Andrew Ó Baoill sends out alerts to listeners via Twitter, letting them know who the week's guest will be.

"We already flag our Web site with information about upcoming guests," said Ó Baoill. "Adding the Twitter feed is a supplement to that, and it is very easy. I simply send out a message [to those] who have subscribed to us on Twitter, and they get the news."

Because a number of "Media Matters" listeners are out of the WILL broadcast area — listening in via the Web or podcast — Twitter helps the show extend its reach across the country and internationally.

"We only have a smaller group of Twitterers, but since the service is free and takes virtually no time to use, it is worth the effort," Ó Baoill said.

Cool Stuff: ATI DM500 Digital Audio Monitor

Photo by Jim Peck

The DM500 is both a digital audio monitor and a digital-to-analog converter in a portable carry case.

It accepts AES/EBU and S/PDIF digital audio formats from 27 through 96 kHz sample rate via XLR, BNC and RCA connectors. A 24-bit D/A converter feeds a stereo headphone monitor amplifier, balanced analog line outputs and a stereo LED meter.

The DM500's display tells you what you need to know about a digital audio signal including input level, sample rate, validity and errors. The stereo VU meter can be switched to indicate headroom below 0 dBFS (the digital maximum output of the D/A) or the analog output level with 0dB midscale equal to +4 dBm output. Analog display ballistics are PPM for optimum indication of audio peaks.

Shortly after the show, DaySequerra finalized an agreement to sell its ATI business to International Contract Assembly Group. Art Constantine, shown, stays with ATI and becomes VP of sales and marketing.

Price: $999 for portable; $899 for desktop with external AC supply.
Shipping: June
Info: (800) 922-8001, *sales@atiaudio.com*, *www.atiaudio.com*

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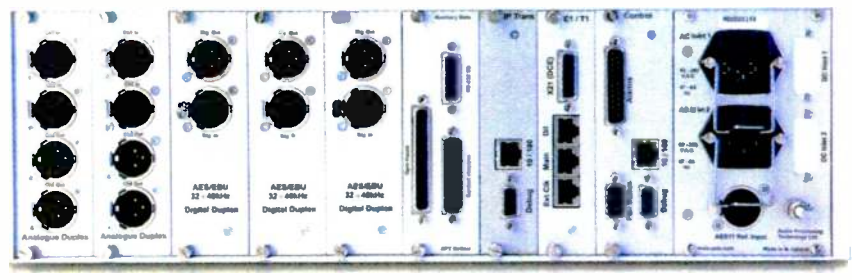
With a modular approach and a large selection of audio, data and transport options, the WorldNet Oslo can be tailored to the exact requirements of your current network and easily upgraded on-site as these requirements change. Inherent flexibility enables LAN extension, ring networks with drop and insert over T1 and unicast, multicast and multiple unicast configurations over IP.

Uncompromised Audio Quality
The WorldNet Oslo offers both linear PCM and Enhanced apt-X coding options. Enhanced apt-X will deliver the same audio quality as linear with under 2ms delay and at a fraction of the data rate. Other options include MPEG L2, J.57 and J.41 companding. With four channels of audio per plug-in module, up to seven audio modules per unit, and a choice of over 20 different audio modules, each WorldNet Oslo has the capacity of up to 28 mono channels / 14 stereo pairs.

Rock Solid Reliability
On the WorldNet Oslo, solid dependability comes courtesy of DSP-based architecture, hot-swappable modules, passive backplane, redundant PSUs, automatic back-up switching and a user-configurable suite of audio, link, sync and PSU alarms.

Throw your terminal screwdriver in the trash can!
No Dip Switch settings here - configuration and control of the WorldNet Oslo is straight-forward and simple thanks to APT's powerful and intuitive Codec Management System (CMS). Offering extensive real-time management of multiple codec units, the CMS enables alarm monitoring, logging and performance monitoring as well as configurable user and audio profiles.



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World Radio History

WYEP

▶ Continued from page 16

building materials reuse retailer) or diverted elsewhere and sold for reuse.

To ensure a smooth design process, the staff met regularly with the design team of an architect, green building contractor and management.

"It was very important that everyone understood why we were doing certain things," says Ferraro, "and every goal of ours needed to be integrated since every single decision impacts other things. Everyone needed to understand so they could not only contribute ideas but also incorporate others' ideas."

That same consideration extended to the neighborhood. To ensure good external relations, WYEP met several times with a neighborhood design review committee that cheered the decision to add ample first-level parking below the building to avoid placing a further burden on already crowded streets.

The building's interior design was feasible, smart and efficient in every way.

"Much of what we did there was good commonsense planning in terms of arranging spaces so folks working at desks the majority of the day received the most access to light and views," says architect Kevin Gannon of dggp. "No one sits in the studios for eight hours, so they're grouped together in the center of the building."

Big savings

The studios were designed to be "floating" — literally unconnected for acoustic isolation — which allowed them to take advantage of different types of insulation.

"We combined techniques for floating studios with insulated floors, so it was sort of a two-fer," continues Gannon. "That's what we tried to do all over the place — obtain multiple benefits from a single design element. It directly impacts the bottom line."

As much as possible, materials were shipped from within 200 miles of the site, including up to 90 percent of the steel, which was trucked in from Rankin.

Work stations feature individual temperature controls, while CO_2 monitors on thermostats reopen roof vents if the air gets dirty. Operable windows throughout the building allow for fresh breezes, as well as a sense of environmental control.

Initial energy models calculated a 25 percent energy savings for a 13,000-square-foot green building vs. a conventional one. Instead, the operations budget demonstrates a savings of slightly more than 50 percent, says a proud Ferraro.

"It's a great project in terms of a building in an urban setting meeting goals and fitting into historic Bedford Square," offers Gannon

And now, through WYEP's education outreach program, popular tours show visitors the inner workings of a radio station, from broadcast studios to CD storage rooms, while, throughout the whole, green features and an environmental message are clearly conveyed.

Green Practices at the WYEP Community Broadcast Center

Key:
SS = Sustainable site
ID = Innovation in design
WE = Water efficiency
E = Energy efficiency
M = Material and Resources
IEQ = Indoor environmental quality

1) Healthy work environment — Indoor Environmental Quality
   a) clean air through non-toxic finish materials, paint and carpeting, operational (IEQ)
   b) operable windows, CO_2 sensors connected to venting system ensure clean air (IEQ)
   c) daylighted space — 90 percent throughout the building (IEQ)
   d) individual controls for heat, cooling and lighting (IEQ)
   e) Operational windows to let in fresh air (IEQ)

2) Recycling — Materials and Resources
   a) 85 percent of blighted buildings were diverted from landfill to other construction purposes (M)
   b) 40 percent to 50 percent of materials used to construct the CBC are recycled (M)
   c) 75 percent of construction waste was diverted from landfills (M)
   d) 40 percent to 50 percent of construction materials were harvested and purchased locally (M)
   e) Use of motion sensors to conserve use of light fixtures (ID)
   f) Use of water-conserving fixtures (ID WE)

3) Energy Use
   a) Community Broadcast Center is 25 percent to 30 percent more efficient than a conventional building (E)
   b) Energy Recovery Ventilation system recycles warm air (E)
   c) No ozone-depleting CFCs in HVAC system which uses "puron" instead of freon (E)
   d) Building is powered by 100 percent e-Certified Green Power (E) & (ID)
   e) 90 percent day-lighting of the space reduces use of energy (E)

Green Principles Guide the Creation of the CBC

1) Process
   a) Board of Directors and staff convene to create program plan and ensure thoughtful design
   b) "Green Team" assembled to ensure green design integration from start to finish. Green Team included LEED-certified architects, and general contractor and interior sub-contractor.
   c) Board of Directors retains a construction manager and commissioning agent to ensure full implementation of design
2) Chose a site that is within 100 yards of mass transit and 250 yards of a bike path (SS).
3) Chose an urban site with existing water, sewage and power service (SS)
4) Selection of a LEED-certified architect and LEED-certified builder (ID)
5) Recycled existing blighted building after demolition approval by an historic review commission (SS)
6) Guidance and approval sought from neighborhood design review committee, city-wide design review committee and Pittsburgh historic review committee (SS)

Some Green Facts

1) Energy savings in a well-designed green building can average 25 percent to 50 percent over a conventional building
2) Daylighting interior spaces can reduce energy costs by up to 60 percent
3) Fresh air in green buildings can reduce absentee rates and healthcare costs
4) Low VOC paints contain fewer harmful chemicals that lead to poor indoor air quality
5) Recycled carpet means diversion of material from landfill; carpet tiles means replacement due to stains or wear-and-tear is less costly. Recycled carpet does not give off the harmful gases of new synthetic-based carpets.

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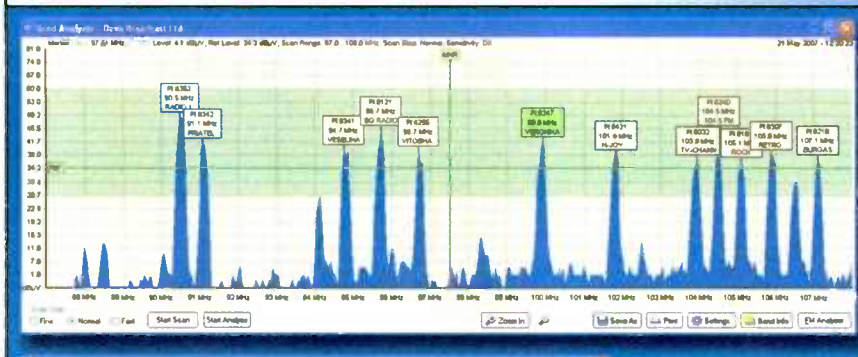

R·D·S RADIO DATA SYSTEM
Band Scanner Pro

The Band Scanner is a tool to evaluate FM broadcast band congestion and to log station identification parameters. The system is powered by the USB port of any Windows PC. Supplied free of charge Windows software sweeps the receiver across the FM band, logging every carrier and generating a spectrum display of carrier level vs. frequency. It then analyzes each carrier and creates a station list. Stations with an RDS presence are further refined to show all the radio data groups being transmitted. Its interface is like a portable radio: It may be tuned manually through the receiver screen or by double-clicking a point on the spectrum plot or an entry on the station list. Spectrum plots may be saved as jpg or bmp files. The RDS data error level is graphed in a separate window on the receiver screen. The program can be monitored with headphones plugged into a standard 1/8" jack.

World Radio History

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World Radio History

HD Radio News

Radio World | Covering Radio's Digital Transition | June 4, 2008

A Big-Market Snapshot
Page 23

FIRST PERSON

KBIA: Have HD-R, Will Travel

Station Delivers HD Radios to Donors, Talking Up Content

by Roger Karwoski

The author is assistant manger/director of engineering, KBIA(FM), Columbia, Mo., licensed to the University of Missouri.

Are you an HD Radio broadcaster? How many HD Radios do you have in your audience? Not as many as you would like, I'm sure.

We at KBIA have made a major commitment to support our investment in HD Radio through a program that includes special premium policies, in-person visits by upper management to listener homes, displays of receivers at station events and extensive on-air promotion — not of HD Radios specifically, but of the expanded programming they offer.

We all know that listeners have more program choices delivered to them in more ways than ever. KBIA's management knows that to stay viable we need to be producers and distributors of appealing content delivered to our listeners in ways they want and in ways that expand their choices.

We'll broadcast it, we'll HD-R multicast it, we'll stream it, we'll podcast it!

The editors of Radio World asked me to write about what we've learned in talking to our listeners. What follows may be of help to any station that has HD Radio service and wonders how to generate more awareness and enthusiasm.

Information in this story also includes thoughts I've shared with engineering colleagues on the Pubtech listserv.

Make them affordable

As KBIA is a public radio station, it is funded in great part by listener donations.

As you probably know, public radio often offers premiums or incentives for donations. But instead of a mug or T-shirt, how about an HD Radio?

Understand that normally the value of a premium shouldn't exceed around 10 percent of the donation. So if you were going to give out one of those early HD Radios that cost $400, you'd be asking for a donation of $4,000.

KBIA GM Mike Dunn explains the functions of an HD Radio he has delivered to a donor.

Not many people are able to be that generous. Even with $100 radios, that's still a $1,000 donation.

But we have found the price point — or is that donation point? — at which people will respond for an HD Radio offer. At a $180 pledge level, people are interested in the offer.

Okay, so the premium is half the value of the pledge. But it's better to think long term. The goal of getting HD receivers into our market is worth the one-time cost.

In addition, we are counting on the donor being more pleased with our program offerings and thus continuing their financial support of the station.

KBIA is the only HD-R station in Columbia, Mo. Over the past three years, we have given out some 400 HD Radios as premiums and gifts.

While we have no way of knowing how many people have purchased HD Radios, we do note that about half of the people we talk to indicate that they have an HD Radio they purchased from a local or online retailer.

So our gut feeling is that we have another 100 to 300 HD Radios out there, in addition to the 400 we have directly distributed. Not bad for a station in a small market with a weekly total survey area cume, including counties outside the metro, of just under 31,000.

Most of the radios currently being distributed are Radiosophy's HD100. Radiosophy offers discounts to broadcasters and in quantity, they also offer discounted shipping rates.

Our experience has been that some people get a little too anxious to tune the radio and miss the multicast channels because they have failed to let the digital signal lock in.

The RadioShack Accurian radios are purchased in smaller lots that are still afforded a small group discount. We've also taken advantage of some of the offers found on Ibiquity's Web site.

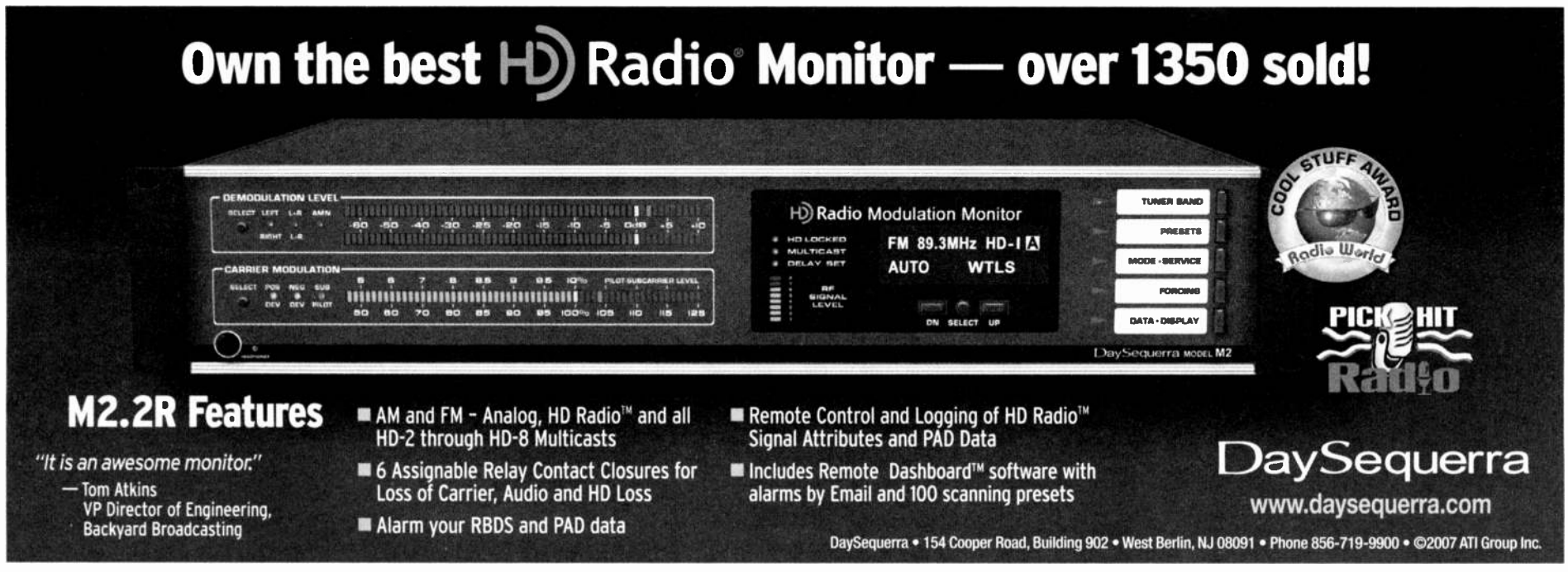
One on one

When a supporter in the immediate area pledges for an HD Radio, our general manager, Mike Dunn, calls the donor.

He thanks them for their donation and offers to deliver their radio to them and explain its functions; the majority (two thirds) prefer that the radio just be mailed to them.

During the phone conversation, Mike takes the time to explain what they will get, such as a program grid showing them the additional programs they will be able to receive.

See KBIA, page 24 ▶



World Radio History

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	Total
BE 1 1 1 1 1 1 1 1 1	9
Visitors 1 0 1 0 0 0 0 0 0	2

Tomorrow's Radio Today

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Radio World's HD Radio™ Scoreboard

The HD Radio Scoreboard is compiled by Radio World using information supplied by iBiquity Digital Corp., the HD Digital Radio Alliance, BIA Financial Network and other sources. Data reflect best information as of early May. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

HD Radio at the 50 Largest Commercial Groups

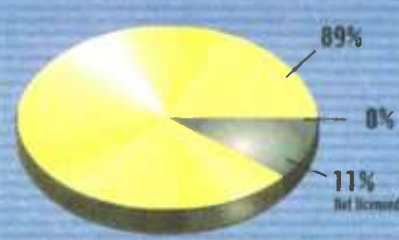
Rank	Radio Owner	HD Licensed	HD On Air	HD Multicasting	Total Stations	% On Air
1	Clear Channel	423	396	299	737	54%
2	CBS Radio	109	103	75	140	74%
3	Entercom	69	62	56	111	56%
4	Cox Radio Inc	50	45	17	85	53%
5	Univision	40	38	12	71	54%
6	Citadel Comm	49	47	0	204	23%
7	Citadel/ABC	21	20	12	24	83%
8	Aloha Station Trust	64	58	50	158	37%
9	Radio One Inc	51	45	5	52	87%
10	Cumulus	25	24	2	290	8%
11	Bonneville Intl	25	25	17	28	89%
12	Cumulus Media Prtnrs	24	24	9	36	67%
13	Emmis Communications	17	17	14	23	74%
14	Greater Media	22	18	12	23	78%
15	Salem Comm Corp	5	1	0	94	1%
16	Spanish Bcstg System	6	2	0	20	10%
17	Beasley Bcst Group	29	26	11	45	58%
18	Saga Comm Inc	32	31	0	91	34%
19	Lincoln Financial Md	7	7	3	14	50%
20	Entravision Comm Co	22	21	4	48	44%
21	Regent Comm	35	25	6	62	40%
22	Journal Bcst Group	17	14	0	35	40%
23	Liberman Bcstg Inc	5	5	0	23	22%
24	Inner City Bcstg	0	0	0	17	0%
25	ABC/Disney	38	36	1	47	77%

Rank	Radio Owner	HD Licensed	HD On Air	HD Multicasting	Total Stations	% On Air
26	Sandusky Radio	6	4	2	10	40%
27	Lotus Comm Corp	4	2	2	26	8%
28	NextMedia Group	4	4	1	42	10%
29	Nassau Bcstg Ptrs LP	2	2	2	53	4%
30	MultiCultural Radio	5	1	0	42	2%
31	Wilks Bcst Gp LLC	1	1	1	18	6%
32	Renda Bcstg Corp	3	0	0	25	0%
33	Tribune Company	1	1	0	1	100%
34	Gap Bcstg	1	0	0	63	0%
35	Border Media Ptnrs	1	1	0	26	4%
36	Pamal Broadcasting	0	0	0	37	0%
37	Buckley Bcstg Corp	4	3	2	17	18%
38	Three Eagles Comm	0	0	0	56	0%
39	Main Line Bcstg	3	2	0	17	12%
40	Service Bcstg Group	0	0	0	4	0%
41	South Central Comm	1	1	0	11	9%
42	UNO Radio Group	4	1	0	15	7%
43	Millennium Radio Gr	2	2	1	11	18%
44	WEAZ-FM Radio Inc	1	1	1	1	100%
45	Midwest Comm Inc	2	2	0	42	5%
46	Max Media LLC	0	0	0	37	0%
47	Curtis Media Group	0	0	0	20	0%
48	Hall Communications	1	1	0	25	4%
49	Peak Bcstg	5	5	4	6	83%
50	Fisher Comm Inc	0	0	0	3	0%

Source: Data above is from BIA Financial Network's data service MEDIA Access Pro ™ and also includes Ibiquity information. Visit www.bia.com

HD Radio at Bonneville

Total stations: 28



The HD Radio Bottom Line

	Total Licensed	On the Air	FMs Multicasting
	2,125	1,675	878
Last Month:	2,104	1,660	863
Last Year:	1,853	1,261	597

World Radio History

KBIA

▶ Continued from page 22

In addition, he explains a few things about the radio such as where the HD-R lock indicator is and how to tune in the additional multicast channels. Our experience has been that some people get a little too anxious to tune the radio and miss the multicast channels because they have failed to let the digital signal lock in.

Mike has observed an increasing number of people who, when he starts to explain the additional programming available, say something like, "I heard that program online, I already know what you are talking about."

Why go to the trouble to help set up a simple thing like a radio? Well, in addition to explaining the way one tunes the multicast channels, it offers us an opportunity to tell them about the station and to observe their reactions when hearing the new programming.

If a listener is a news fan, the individual is thrilled to be able to hear more of what he or she wants on the additional channels.

Classical listeners react the same way. And they do make their programming preferences clear! About 60 percent are looking for the additional news and information programming, while the rest are looking for more classical music including the additional opera offerings we have made available.

The author checks HD-R reception on his JVC radio.

It's fun to see a new HD-R listener respond to having a radio capable of delivering more of the type of programming they enjoy. Mike also encourages them to tell others of their experience. Spread the word!

How do we promote HD Radio?

Comments we get from our HD-R listeners (and online listeners) confirm the importance of not promoting HD Radios; rather, we promote what people want — the additional programming that the radio delivers to them.

Our on-air promotions and pledge drive pitches stress the new programming they can receive. For the past six months, every piece of mail we have sent out to our listeners has included a program grid showing the content that's available to them either online or with an HD Radio.

Why are people pledging for HD Radios? Content, content, content!

What are they excited about when they get a chance to experience it? Content, content, content!

It's our job to deliver it to them in whatever way we can get it to them.

Other than the need to replace an occasional malfunctioning radio, we have received no complaints from our HD Radio users. They are very pleased with the new program choices they now have.

Know your HD coverage

A question posted a few months back on the PUBtech listserv for public radio engineering types asked, "How does your station handle an HD-R receiver premium if the listener discovers that he or she cannot get HD-R?"

I think the answer to the question is more complex than it might seem at first glance.

The best way of advising potential HD Radio buyers is to not tell them to get an HD Radio if they won't be able to use it. And the way to accomplish that is to know what your HD-R service area is ahead of time.

Those of us who have ventured into IBOC broadcasts quickly learned that our HD-R coverage was far less than that of our analog FM signal. (This is the impetus for the recent push for increasing the digital level for FM IBOC transmissions.)

Our station was an early adopter of HD Radio in 2005. For several months, we had the only receiver to listen to it. As HD Radios started to come down in price and become more available, in 2006 we started multicasting a second channel and a year later added a third.

KBIA has since its beginning in 1972 aimed to serve two audiences: news and information listeners and classical music listeners.

In the past we've only been able to partially serve each of these groups. We've done news and information during early mornings and late afternoons with classical music mid-days and evenings.

But the news listener wants more news and the classical listener wants more classical music. For years we have unsuccessfully searched for an additional frequency to have a second program service in our market.

The multicast ability that HD Radio affords gives us the chance to deliver more of the programming that our listeners have been wanting.

KBIA-HD2 basically counter-programs what is on KBIA's main channel (classical when main is news; news when main is classical).

Our third channel offers a new news program called the "Bryant Park Project" from 6 to 9 a.m. The rest of the day is "XPoNential Radio," a Triple-A format. View our program grid at *kbia.org* and click on the program schedules.

In order to determine our HD Radio service area, we equipped the cars of three key staff members with HD-R tuners — the JVC KD-HDR1 — and sent them out and about to see what type of coverage we could expect.

If we were taking a trip for business or pleasure, we were also noting HD-R coverage capabilities.

We were interested not only in how our main channel's HD Radio coverage was doing, but also in the coverage of the HD2 and HD3 channels, which do not have an analog component to fall back on.

These empirically gathered reception data, along with listener reports, continue to be noted and reported to our staff. They can use this information when counseling listeners who express an interest in obtaining an HD Radio.

We advise those who live in marginal HD-R reception areas that the radio might not work with the digital channels. If they are outside our area of known, reliable coverage we advise them that the radio probably won't work for the HD Radio channels, but we will send it if they want one.

Our customer really is number one

So what about marginal areas? What about HD Radio tuners sent to people who have been told that the radio might not receive our digital signals?

In cases like these, several alternatives have worked.

In a community that was know to be a marginal HD-R reception area, a donor pledged for an HD Radio. The radio we normally send out is a Radiosophy HD100, one of the most affordable radios and one that offers good reception capabilities.

But in some cases, its sensitivity is not good enough. We have addressed several of these situations by offering to exchange the HD100 with a RadioShack

See KBIA, page 26 ▶

Comments from our HD-R listeners (and online listeners) confirm the importance of not promoting HD Radios; we promote what people want — the additional programming that the radio delivers to them.

Radio World's HD Radio Scoreboard is published in alternating issues. Selected data is from BIAfn's MEDIA Access Pro™; the scoreboard also uses information supplied by sources including iBiquity Digital Corp., the HD Digital Radio Alliance and RW's own research.

BIA fn Financial network

MEDIA ACCESS PRO

www.bia.com

Cool Stuff: NAB Embedded Exporter Initiative

In 2006 National Association of Broadcasters board member Steve Newberry sought out HD Radio transmission equipment manufacturers to see how NAB could best help reduce the cost of implementation for broadcasters.

The equipment manufacturers agreed that an NAB investment in development of a next-generation "exporter" would result in equipment costs going down and in addition, reliability would be enhanced.

NAB, through its HD Radio Technology Advancement Task Force, chaired by Caroline Beasley, executive vice president and CFO of Beasley Broadcasting, issued an RFP for "Embedded Exporter" development and ultimately worked with the U.S. exporter manufacturers in bringing the equipment to market on an expedited basis.

Photo © NAB

That's positive advocacy by a trade association, and the "Cool Stuff" judges sought to acknowledge it.

The award was presented as well to Ibiquity Digital and the four manufacturers, whose exporters are described separately throughout this issue.

Shown: NAB's David Rehr at podium with Bob Struble of Ibiquity, Ted Lantz of Broadcast Electronics, Dan Dickey of Continental Electronics, Tim Anderson of Harris Corp. and Scott Martin of Nautel.

Info: Contact David Layer at NAB, (202) 429-5339 or e-mail *dlayer@nab.org*. Ibiquity at *www.ibiquity.com* or (443) 539-4290.

World Radio History

ONE

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HDx Exciter brings HD Radio™ and analog audio to a new level. Featuring real-time adaptive correction for increased power and efficiency and the latest iBiquity platform in HD Radio™—Exgine—HDx Exciter unlocks new revenue streams.

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Highly efficient, medium-wave transmitter, and the latest in the DX™ family of world-class digital AM transmitters. Fully compatible with HD Radio. Harris AM transmitters are available from 1 kW to 2 MW.

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World Radio History

KBIA

▶ Continued from page 24

Accurian. That radio seems to perform better in marginal signal areas.

If that solution doesn't work, we advise the listener to try different antenna positions or even a different antenna.

Several months back, one of our major donors wanted to get an HD Radio. We took it out to their home, but we could not get a good signal no matter what radio or antenna we used.

He was interested in getting an HD Radio for his home. As he is a tech-oriented person and a good friend of the station, we sent him home with several radios and antennas to try. He was kind enough to write up his results, which are shown in Table 1.

So sitting inside his metal home, Frank chose the Sangean HDT-1 with the C. Crane antenna.

Remember, this was not a scientific study; but it does add a great deal of information for us to use with other listeners.

In the few cases where none of these approaches works, we offer to exchange the radio for another premium choice that is being offered at (or close to) their pledge level. Keep the donor (our customer) satisfied! The few that have fallen into this category have been very understanding.

RadioShack Accurian Tabletop HD Radio
(positioned in a window toward KBIA transmitter)
- With enclosed loop FM antenna — mono analog only
- With C. Crane FM Reflect antenna — five bars full HD-R
- Moved to interior — spotty HD-R with C. Crane antenna

Sangean HDR-1 Table Top Radio
(positioned in a window toward KBIA transmitter)
- With factory-supplied telescoping antenna — poor reception, mono analog only
- With wire dipole — better analog, no HD-R
- With C. Crane antenna — HD-R received
- Moved to interior — analog signal only with C. Crane antenna

Sangean HDT-1 Tuner
- With Philips powered tabletop antenna — no HD-R unless the metal front door open
- With big yagi antenna outside — great HD-R
- With C. Crane antenna — great HD-R signal inside interior

Table 1

Noting that they had an outdoor yagi antenna because they liked to view TV stations from Columbia 60 miles away, we asked if we could put a splitter in their antenna line. The result: a great HD-R signal and a satisfied donor/listener, who even sent a thank you note saying we had gone above and beyond in our service. (Aw, shucks!)

Our volunteer field tester

Frank, a donor who lives in a marginal reception area — as well as in a metal-sided house — had trouble picking up even our analog signal.

Reaching potential buyers

Last, I reflect on the keynote presentation at this year's Public Radio Engineering Conference, which was given by Paul Jacobs, general manager of Jacobs Media.

He had a rather sobering look at consumers' knowledge about HD Radio and their potential to become buyers of HD Radios. Yes, I said sobering.

The report found that while 13 percent of the consumers in the study have satellite radio, up 6 percent since last year, only 1 percent have HD Radios, a figure unchanged from the previous year. Houston, we have a problem.

Why are consumers reluctant to buy an HD Radio? Here are some of the key reasons listed in the Jacobs report:

- Don't know enough about it
- Haven't heard it yet
- Don't know anyone who has one
- Confusion about various aspects of HD-R
- Don't know where to buy one

This confirms our own experience and also our approach that we have taken in promoting HD-R listening.

People are reluctant to purchase an HD Radio because they don't know enough about it and they haven't heard it yet. It would be wonderful if people could walk into the local Best Buy store and see a great display of HD Radios, but unfortunately that's not the case.

The solution for us is to get the HD Radios displayed where our listeners are gathering. One such place is at the donor/sponsor receptions that are held prior to concert events held by our sister organization, The University Concert Series. And yes, we do get inquiries about HD Radios based on these events.

Tell us about your own experiences in marketing digital radio to consumers. E-mail Lstimson@nbmedia.com.

Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: AudioScience ASI8914 HD Radio Tuner Adapter

The ASI8914 is a professional PCI tuner adapter for use in HD Radio broadcast audio monitoring and auditing.

Four channels of digital HD Radio or analog AM/FM can be received and recorded simultaneously from a single antenna input. Recording formats include PCM, MPEG-1 Layer 2 and MPEG-1 Layer 3 (MP3).

Using MRX technology, each stream can be recorded at any sample rate between 8 and 48 kHz

Each tuner can decode and stream the HD Radio Program Associated Data (PAD) data and RDS/RDBS data for analog FM.

HD Radio multicast is supported, allowing the audio and PAD stream to be switched between the Main Program Service (MPS) and Secondary Program Services (SPS) under software control.

Eliot Blennerhassett and Andrew Elder tune in from the booth.

Price: $2,995
Shipping: June
Info: (302) 324-5333 or e-mail *salesasi@audioscience.com*

Photo by Jim Peck

Cool Concept: Apple iTunes Tagging

iTunes Tagging helps stations interact with listeners in a new way while earning commissions on music sold on the iTunes Store.

That's the pitch, anyway, and the "Cool Stuff" judges saluted the big company in Cupertino for the concept and for getting the word out there.

Whether tagging will catch on in a big way will be seen. But Apple gets kudos for understanding that "old" media and new media can work together in unexpected and profitable ways.

Listeners hear a song and press "tag" on a compatible radio or car stereo system. A connected iPod saves the song's title and metadata; the listener then syncs iPod to a Mac or PC and a new Tagged playlist appears in the iTunes jukebox, with links to the iTunes Store.

Listeners can preview tagged songs free, then buy them.

Broadcasters get a commission on each purchased song that was tagged from their broadcasts. Listeners get an added incentive to keep the dial on you.

We hope other CE companies will get more involved in radio/content delivery experiments.

Price: No cost to station from Apple
Shipping: Now
Info: e-mail *itunestagging@apple.com* or visit *www.apple.com/itunes/itunestagging/*

World Radio History

21st Century NTR

mysimbook

Mobile Marketing for Radio
Start Earning Non-Traditional Revenue

A wise man once said, "if the railroad people had realized they were actually in the Transportation Business they would have come to own the airlines and the trucking industry."

Today Radio must be in the Communication business in order to adapt to the 21st Century because more and more consumers are being reached outside of traditional broadcast, print and outdoor advertising. There is a generational divergence occurring in the area of perception of technology. Therefore we must recognize to the fullest extent the Net Profit potential opening to us if we are to become fully empowered to enjoy the opportunities presented.

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World Radio History

Digital Network Lets Reporters Phone It In

Cellphones Coupled With Audio Interfaces, Bluetooth Ease Newsgathering, Field Reports for Journalists

by Paul Kaminski

For those of us who remember what it was like to scurry for the nearest open payphone to file a field report, the introduction of the cellular phone opened up newsgathering options the late Paul White — the force behind CBS News — could have only imagined.

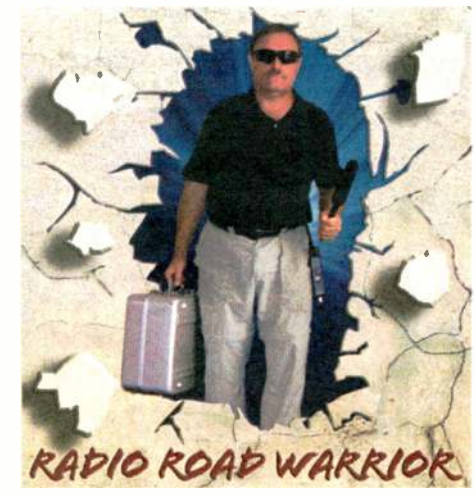
First-generation analog cellphones (which were the size of breadboxs) cut the ties from the land lines, if one had the right equipment. Subsequent generations of digital cellphones have made and are making the technology even more portable and useful.

In the 'bag'

On Feb. 18, 2008, the FCC allowed cellular telephone providers to shut off analog cellular service. A "bag" phone is a familiar example of analog cell service; many radio stations used one (like the model on the left of the picture) for "live shots" or ad hoc remotes.

Bag phones usually had an RJ-45-like jack for the handset, into which users could plug interface equipment like Conex Electro's CellJack 20 or CellJack 30, which would then allow users to connect a small field microphone mixer, recorder, or even a cellphone."

Analog and digital phones sit on either side of the Cellphone IFB.



That's the playing field on which we operate. While there are more elegant solutions to sending high-quality audio by cellphone, most of those work by sending audio as digital data on a broadband data channel. We'll deal with these in a future column.

Call when you can

A cellphone's 2.5 mm headset jack has a standard convention of Tip–send, Ring–receive and Sleeve as the ground. Some phones, like the Nokia 6103 I use, need a special adapter to interface that TRS convention to the proprietary connector. My phone and others also will allow the wireless connection of Bluetooth audio devices.

JK Audio's Daptor Three utilizes Bluetooth technology.

Conex Electro-Systems (*www.conex-electro.com*) makes the FlipJack (FJ) line of audio interfaces for cellphones. The FJ10 lets a user connect two inputs and a headset to a cellphone's headset jack. The FJ500 also allows the use of a cellphone's headset jack to send and receive audio, and also allows the unit to be connected to a land line telephone's headset jack.

The FJ700 allows the connection of four microphones and four headphones to the cell connection and land line connection capability. John Plattner of Conex said the company's CellJack line morphed into the FlipJack line because "the CellJack line got its power from the bag phone (RJ-45 connector)" and it was difficult to design a device to get power from the 2.5 mm headset jack. The FlipJack line is battery-powered.

The CircuitWerkes MicTel (*www.broadcastboxes.com*), which I

See WARRIOR, page 30 ▶

mics and headphones. The change to a totally digital cellphone network has been in the works for years.

A digital telephone is capable of sending text messages and Instant Messages, and browsing the Internet. They have a Subscriber Identity Module, a SIM card. T-Mobile and Sprint have always had digital service. Other providers, such as Verizon, AT&T Mobility (Cingular), U.S. Cellular, Dobson and Cellular One, are making or already have made the transition.

Analog bag phones operated with a maximum of 3 watts of transmit power, which made them a useful tool when broadcasting outside built-up urban areas. The typical digital phone operates with 0.3 watts of transmit power. Most digital phones are handheld or flip open, and have a small headset jack (usually 2.5 mm) or another proprietary style connector, with which to get audio in and out of the phone.

News Flash Number One: Cellphone audio is not full fidelity. (OK, call it "Understatement Number One.") The radio frequency and audio frequency limitations of the cell network yield a limited audio bandwidth.

News Flash Number Two: Sometimes a cellphone is the *only* way to get audio back for a broadcast because of time constraints and limited resources. It may be the most economical method, given the available free minutes on nights and weekends on most post paid cellphone plans.

"Yes, POTS, ISDN and IP codecs are the right way to get 'broadcast quality' audio back to the station," says Joe Klinger of manufacturer JK Audio, "but sometimes you just don't have time, and the majority of small stations and reporters don't have the money (to use or connect one of those methods). Usually the 'money quote' is caught on a tape

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Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: m!ka Microphone and Monitor Arms by Yellowtec

m!ka is a Yellowtec product line for mounting microphones, flat-panel screens and nearfield monitors. Features include extruded and anodized aluminum profiles, single-tube construction, articulated joints, internal springs and a modular design. The line combines mic and monitor arms in one modular system.

No doubt about it, one of the coolest features is the optional "on air" signal indicator built into the unit. Note the illuminated red cuff in photo.

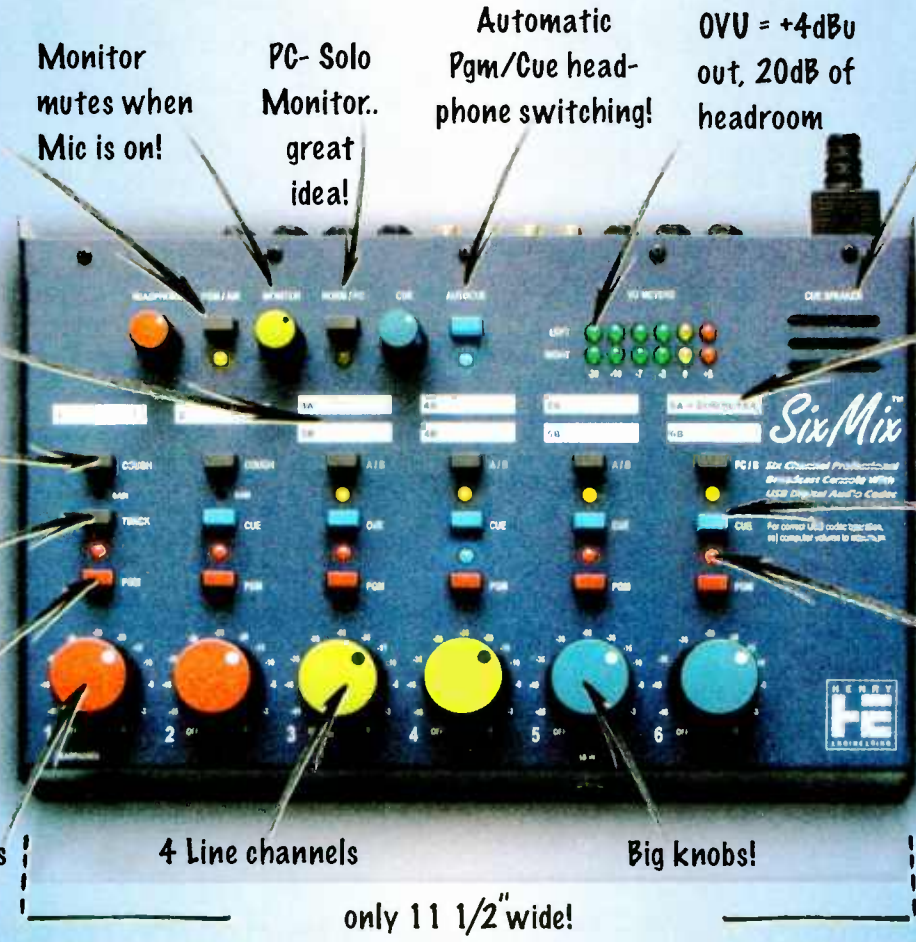
Yellowtec is a brand of German company Thum+Mahr and is sold through several U.S. dealers.

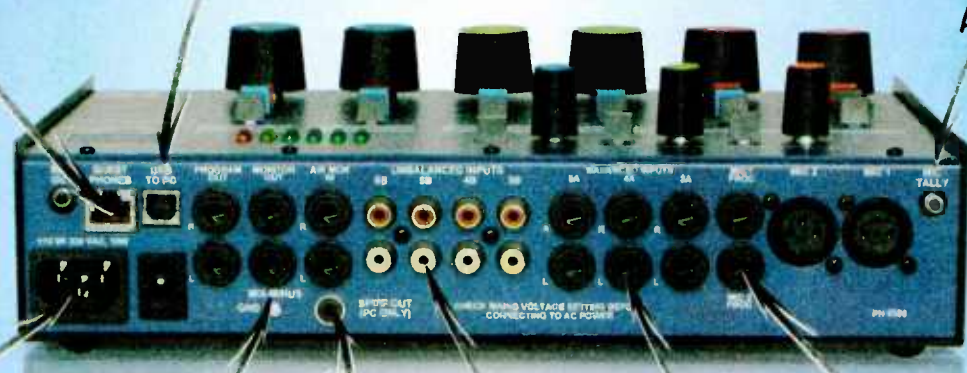
Price: $325 with on-air signaling, $259 without
Shipping: Now
Info: E-mail *mbartsch@yellowtec.com* or visit *www.yellowtec.com*

Photo by Jim Peck

SixMix does real radio on your laptop!

10 inputs, built-in USB, and real radio features!





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▶ Continued from page 28

reviewed in 2005 for Radio World, lets users connect to the cell network, a land line handset and a broadcast +4 line-level input (POTS codec, loop, ISDN, etc.).

Cellphone IFB (*CellphoneIFB.com*) is a device originally made for television crew members and talent who need to hear IFB (interruptible foldback mix of program and director cues) over a cellphone. The device has circuitry that splits the send and receive signal, and has a mute switch. It clips to a belt and connects to the headset jack of a cellphone.

This design allows radio reporters to do "live shots" with a professional-quality XLR-connected microphone (much better than speaking into the standard cellphone microphone) or send nominal line (–10 dB) level audio over the cell connection.

The Cellphone IFB also allows interactive remotes where the talent can broadcast among a crowd or on the run, and not be tied down to a mixer. My reporting from Daytona 500 Victory Lane for CBS News Radio in February was done with a Cellphone IFB and Nokia 6103 (pictured).

JK Audio has a range of devices that allow the connection of microphones, mixers and headphones to a cellphone's 2.5 mm headset jack (or proprietary adapter) like the Daptor One and Two, RemoteMix and ComPack. The Remote Mix and ComPack also will connect to land-line RJ-11 (service) connections and land-line handset connections.

The company also has embraced Bluetooth technology, with wireless audio connection solutions like the Daptor Three and all-in-one RemoteMix 4 mixer. But JK Audio did not rest on those substantial accomplishments. I've seen a prototype of the next big thing from Sandwich, Ill.: the BluePack, which uses Bluetooth connectivity to make a seamless wireless connection of a mic and headphones to a cellphone or Bluetooth-equipped laptop.

Some observers would never consider sending audio to be used in an over-the-air broadcast over the cellular network. Those observers don't realize news does not normally happen in front of a nailed-up, studio-quality audio circuit.

Budgets and time constraints won't let most stations purchase and install those circuits (if they are even available), and events (to include revenue producing opportunities) operate on their own schedule.

As for those of us who produce news and ad hoc remotes in the real world, we need to recognize the limitations of the cell network, and deal with them effectively so we can take our listeners to where news is being made, when it is being made, and do so economically with the best audio quality possible.

Next time I'll look at one-piece and smaller-format digital audio recorders (recorders without removable memory and SD or smaller memory cards), how they are used and tips and tricks to maximize their usefulness in the field. Your tips, suggestions and questions for future columns are, as always, appreciated.

Road Warrior columns are archived at radioworld.com.

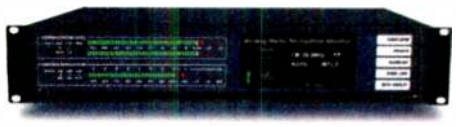
Paul Kaminski is the news director for the Motor Sports Radio Network, contributor for CBS News Radio and a Radio World contributor since 1997. E-mail him at motorsportsradio@msrpk.com.

World Radio History

PRODUCT GUIDE

DaySequerra Has HD-Ready Analog FM Mod Monitor

DaySequerra's M2A-FM analog modulation monitor is HD Radio-ready. It has monitoring capabilities for analog FM such as demodulated audio level, carrier modulation level, pilot and SCA injection level, incidental AM noise and RBDS decoding and display.



The M2A-FM includes programmable opto-isolated alarms for audio peak, audio program, carrier loss and RBDS data loss.

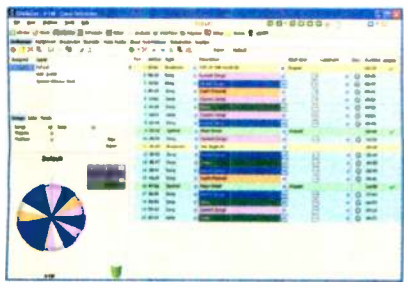
It includes adjustable channel spacing, de-emphasis and operating voltage selection; and can be equipped with an optional Ethernet remote control package including DaySequerra's Remote Dashboard, a PC-based app that has monitoring, logging, alarms via e-mail and scanning of up to 100 preset stations.

The company says it created the M2A-FM in response to requests for an FM monitor with the accuracy and features found in the company's HD-R units. "We've designed our products with an upgrade path in mind," said CEO and President David Day. "The M2A-FM gives analog [stations] a chance to replace their aging monitors with one that will never become obsolete."

For more information, contact DaySequerra at (856) 719-9900 or visit www.daysequerra.com.

GSelector 3.7 Speeds Response Time

RCS expanded its GSelector program, which it says eliminates unscheduled song positions so the best song lands in the best slot each time.



The demand-based scheduling engine in GSelector lets users create a station, design clocks, and enter and code songs. Then GSelector schedules them according to their demand.

Added features include GSelector Helper, a utility that loads when Windows starts and allows GSelector to start and run more efficiently; and a new LINKER | Link Goals | Balance window that lets users apply shifts, limits, maximum per hour and minimum separation values to individual links.

When highlighting items in Editor, the Test Bar and Failure Details panes now update more quickly; and the Cumulative Airtime field is now available in Editor, Export Schedule and Reports. Also, the interface between GSelector and Master Control Versions 15.2.2 c and greater has been improved.

For more information, contact RCS at (914) 259-4733 or visit www.rcsworks.com.

Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: You/Com Parrot Recorder

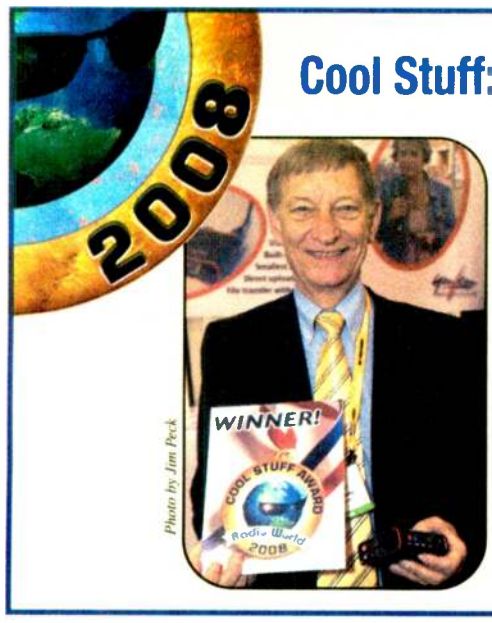


Photo by Jim Peck

This is a next-generation ENG flash recorder, with live on-air and file transfer capability that does not require a PC.

The unit is small, robust and easy to use. It supports the MP3 format and was developed for news and sports reporters.

This is a communication and transmission device that can go live on-air because it acts as a digital hybrid when connected over Bluetooth to the mobile phone in your pocket.

Pre-recorded items can be inserted during the live feed. Also by pressing the GO File button, a wireless connection is made, again using the integrated Bluetooth module and the reporter's mobile phone, and the contribution is sent to the studio as a high-quality file.

Karel Raven is shown.

Price: Base Unit with 1GB SD Card $1,608; case and accessories available
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PRODUCT EVALUATION

Bid Your Preamp, Mixer Adieu

Latency Issues Aside, This USB Mic Helps Streamline Recordings, Reclaim Desktop Space

by Ty Ford

Audio-Technica has entered the USB mic competition with its AT2020 USB mic, a build-out from its wildly successful AT2020 that answered the gauntlet tossed down by the many mic sellers who headed to China for cheap, if not always dependable, electronics manufacturing. AT followed.

The mics are QC'd three times by Audio-Technica before distribution in the United States: in China, in Japan and at Audio-Technica in Stow, Ohio.

For a list price of $249 and a street price of about $150, the AT2020 USB mic will be an instant hit for anyone looking to reclaim desktop space normally occupied by a mixer. Not a computer desktop; the actual piece of furniture.

Why? Because you no longer need a preamp or mixer.

The AT2020 USB, like its non-USB sibling, has a medium-sized capsule with a fixed-charge back plate and a cardioid pattern. Frequency response is listed as 20 Hz to 16 kHz. It has a crisp presence peak that can be useful for recording tracks that need to cut through a mix.

It is solidly built, and comes with a simple but sturdy metal mic clip; table stand; and 9 foot USB cable. The mic requires 5 V DC USB power.

If 16 bit, 44.1 kHz audio is good enough for you, the real challenge may be the murky netherworld of USB and the various programs or applications to which the USB mic hopes to connect.

To be sure, USB has latency issues that don't become noticeable until you connect a mic to a computer and talk while listening with headphones. Recording voice tracks with this much delay can be off-putting to just plain impossible.

Latency also makes it impossible to tell in real time if your recording area is too slappy. To do that, you need to record something and listen back on good closed-back headphones. If you know your space, it doesn't matter. If you can deal with the delay or don't need the headphones, no problem.

On the edge

When you plug the AT2020 USB into a USB port, a blue LED glows behind the head grille, letting you know that contact has been made.

Typically, you then need to take a trip to the computer's audio preference panel to assign the mic to the proper input. The AT2020 USB manual goes into specific detail as to where to go and what to click on for Mac OS X, Windows XP and Vista PC computers. You also may have to check the specific application preferences or input panel.

The 2020 has a fairly tight cardioid pattern that disregards sounds from the side and rear. Although I didn't have a non-USB AT2020 here for comparison for this review, I think they sound much alike.

There's a bit of edge on the top. If you like a really natural sound, this may bother you, but if you like a little edge to cut through, it's already there and you don't need any EQ.

I was able to smooth the edge by using the half-inch-thick AT8137 foam pop filter. It controls plosives nicely, and the foam smoothes the high frequencies while still allowing a full low end when worked closely. It fits the AT2020 well and lets you get a lot closer than you might with a pop screen.

Most of my older Macs still running Mac OS X 10.4 had problems recording into Quicktime Pro until I upgraded to Quicktime 7.4.1. Quicktime recordings were two-channel. The first day I had problems recording with Garage Band 3.0.4 and Soundtrack Pro (STP) 2.0.1 on the 10.4 Macs. The next day and since then, the only problems I've had with those two applications is figuring out the eccentricities in their GUIs.

I also was able to record properly with the AT2020 USB using Audacity on a 500 MHz G4 Mac running OS X 10.4.11. The program itself is awkward, but hey, it's free.

Both of my newer Intel Macs (a Pro and a MacBook) worked more smoothly with Quicktime, Garage Band and STP from the start. There were a few hitches, but nothing that couldn't be adjusted.

Metering and pan controls on these programs are a little short compared to the Pro Tools system I use, and it took extra effort to record in mono rather than stereo.

When my wife asked about using Skype on her Mac G4 so she could talk longer with her best friend on the west coast, I was temporarily stumped for what mic I could plug in to the Mac. As it turns out, the AT2020 USB worked really well with Skype and iChat, even at a distance of 18 inches.

The table stand was perfect for positioning the mic. Stick one on your desk for that "David Letterman" look. Skype's audio is simplex rather than duplex (at least on my Macs), but the sound quality of its compression algorithm is better than any POTS line I've heard.

The day has finally come when you can, almost without problems, discard your desktop mixer and/or mic preamp. As a final test, I sat in front of a new iMac, Apple's latest all-in-one computer. In a quiet room, the iMac was quiet enough to allow bare voice tracks to be recorded with the AT2020 USB plugged into a USB port on the backside of the large screen. In the average radio news room, you'll never hear the iMac. We've come a long way.

Ty Ford has been reviewing audio gear for Radio World for more than 20 years. He may be reached at www.tyford.com.

Mark J. Pescatore, editor of RW's sister publication Government Video, also recently reviewed the AT2020, including an audio version of the review recorded with the USB microphone. The review — which demonstrates the audio quality of the mic — can be heard at *www.governmentvideo.com.*

Product Capsule:
Audio-Technica AT2020 USB Microphone

Thumbs Up

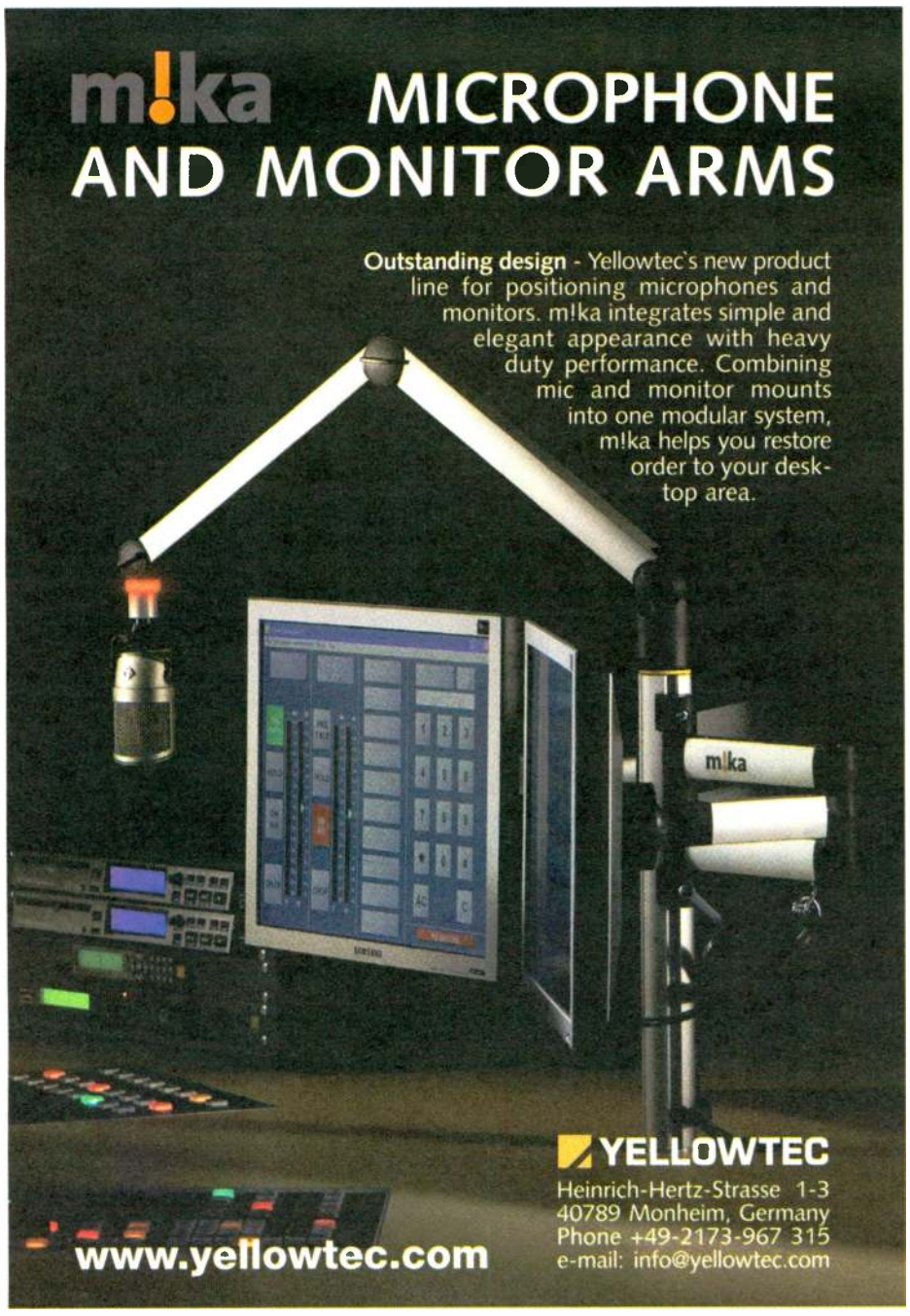
- ✓ Price
- ✓ Simplicity
- ✓ Crisp presence peak
- ✓ Tight cardioid pattern
- ✓ Comes with solid metal mic clip and table stand
- ✓ AT8137 foam pop filter controls plosives nicely

Thumbs Down

- ✓ Latency (delay) in the headphones while recording
- ✓ Only 16-bit; 24-bit would be nice

PRICE: $249 list

CONTACT: *Audio-Technica at (330) 686-2600 or visit* www.audio-technica.com.



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USER REPORT

KSMU Gives Neural the Ol' College Try

Missouri State Station Uses NeuStar 4.0 Preconditioner To Curb Bit Reduction Codec Quality Issues

by John McMellen, CBNT
Senior Broadcast Engineer
KSMU(FM), KSMS(FM) and KSMW(FM)
Missouri State University

SPRINGFIELD, Mo. Missouri State University's radio network and flagship station, KSMU(FM), cover almost all of southwest Missouri and portions of northern Arkansas, reaching 50,000 people each week. The network broadcasts a variety of popular news and information shows and classical music. Response from our listeners has always been positive.

Listeners have many more choices today when it comes to media. As the senior broadcast engineer for the network, I am constantly looking for technology that enables us to broadcast our content at the highest audio quality possible.

HD Radio provides new opportunities to improve our service by providing more and different content than is available currently. When we designed our HD-R system, our objective was to get the best sound we could from the digital technology, and to deliver multiple streams in bandwidth originally intended for only one channel.

The HD Radio codec uses bit reduction, so we looked for a product that could help alleviate the sound quality issues that affected other bit reduction codecs at low bit rates, but at a price that fit into our budget.

Better than the original

We installed the original Neural Audio NeuStar back in June 2006 after an initial preview at the 2005 Public Radio Engineering Conference. We were on the air with it for only a few months before receiving our upgrade to the NeuStar 4.0.

The latter performed even better than the original, and it has helped us to split our digital bandwidth in half for two multicast streams without artifacts that one would expect at such a low bit rate.

John McMellen

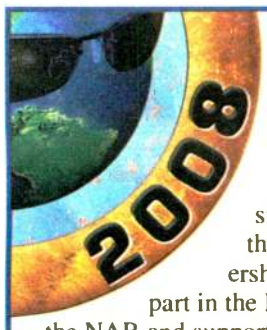
The NeuStar 4.0 is much easier to use and has much more flexibility in a small package. It gave us the added advantage of two outputs (one digital, one analog), which allowed us to use codec preconditioning on the Internet stream of our main signal as well.

NeuStar also is flexible enough to handle our everyday processing needs.

Our station does not use heavy processing. As a result, we did not suffer as much from the codec artifacts that come from the clipping and limiting. At the same time, classical music has some content that is difficult to encode. The NeuStar 4.0 has improved the sound of the coded audio, reducing artifacts by sacrificing a small amount of stereo sound image.

The NeuStar was simple to install and set up. The presets offered a good starting point to get on the air quickly. We are using it on our main HD Radio program, so our goal was to match the sound of the analog to a reasonable degree. Hence, we didn't use some of the features like level and frequency control, as they were duplicates of the

See KSMU, page 36 ▶



Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: Broadcast Electronics XPi 10esp Embedded Exporter

Broadcast Electronics announced a new signal generator/exporter unit that lowers the cost of FM HD Radio technology ownership; it is one of four manufacturers taking part in the Embedded Exporter initiative prompted by the NAB and supported by Ibiquity.

BE's XPi 10esp with on-board signal processing replaces current PC-based HD Radio exporters.

The system is based on an embedded signal processing design, promising increased reliability and affordability. The design eliminates use of consumer operating systems and PC hardware such as hard-disk drives and audio cards.

Features include encoding for Arbitron Portable People Meter (PPM) measurement of main as well as new multicast channels.

The XPi 10esp is now standard in BE HD Radio FM systems.

Shown: Kim Winking and Deb Huttenburg.

Price: Not published
Shipping: Late summer
Info: (217) 224-9600, e-mail *bdcast@bdcast.com* or *www.bdcast.com*

Photo by Jim Peck

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KSMU

▶ Continued from page 34

features in our existing processing.

The NeuStar input is fed from a digital output of our Orban 8500HD processor. The AES output of the NeuStar goes into the Exporter in the equipment room. The analog output of the NeuStar goes into our Internet streaming encoder (a tip I learned from a fellow engineer that gives us a better sound on our Internet stream as well).

Our setup also includes a Harris Z Series HD+FM transmitter using the Exgine architecture with our HD Importer and Exporter at the studio. FM audio and HD E2X data are transported on a Moseley Starlink STL with LAN card.

We have been planning our rollout of digital services, and are slated to unveil our HD2 channel this fall; it will feature jazz music and informational programs not available in our market. Part of our strategy is to get feedback from listeners for other programming possibilities that we could build into additional HD multicast channels.

As prices continue to fall and more products are available, I think our listeners will become excited about HD Radio.

For more information, including pricing, contact Neural Audio at (425) 814-3200 or visit www.neuralaudio.com.

TECH UPDATE

ALPS Series Uses Sure-Level Algorithm

ALPS-2

Audessence offers its ALPS line, a range of audio level processors for HD/digital radio, Internet streaming and ITU-BS 1771 "sound for video" applications.

The company says ALPS was developed with digital coding in mind, enabling users to extract the best value from their bit rate at a low cost.

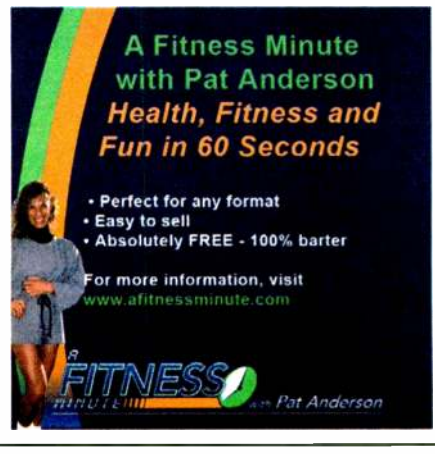
Each model contains Sure-Level, a real-time algorithm with a large capture range and unobtrusive response, delivering a clear, consistent program level while creating fewer digital artifacts than traditional multiband processors. Various levels of control functionality such as dayparting, IP and GPI interfacing are available.

Additional highlights include XLR balanced audio, AES-3 I/O and intuitive control software featuring "Easy Mode" as standard.

Audessence also offers the AM Pro-1 air chain audio processing system for AM radio stations, and says its AGC enhancement features brighten and clarify output.

For more information, including pricing, contact Broadcast Depot at 877-90-BDNOW (23669) or visit www.audessence.com.

STATION/STUDIO SERVICES



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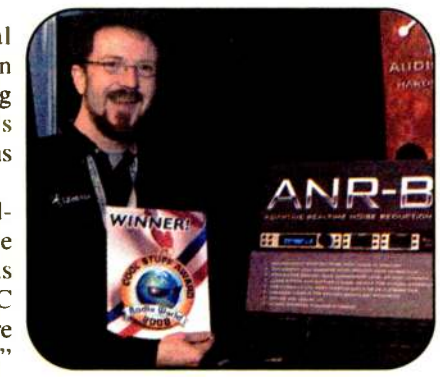
Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: Izotope ANR-B Adaptive Noise Reduction



This audio signal processing company in Boston doesn't have a big name in broadcast yet but its products are used by hobbyist musicians and pro audio types.

It is hoping radio folks will see the utility of removing ambient and path noise automatically to help problem situations like cell phone call-ins and noisy AC units. Ray Fallon and WGBH Boston are using a prototype to produce "The World."

The ANR-B Adaptive Real-time Noise Reduction Unit puts the company's audio algorithm into a hardware unit for broadcast. The technology identifies and suppresses environmental broadband noise, hum and phone line artifacts.

Of note is that the system detects noise in real time and adapts to changing noise over time, allowing for automatic operation with little to no input from a user.

The two-channel device features broadcast connections including analog and digital I/O, LAN for parameter control and remote automation capability. Presets are available for common applications. A manual learn function also enables it to reduce noise of a specific trained profile.

Tedd Terry is shown.

Price: $4,995
Shipping: Summer
Info: www.izotope.com/broadcast

Photo by Jim Peck

Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: Nautel Exporter Plus

Nautel is among the companies honored for its participation in the Embedded Exporter initiative prompted by the NAB and supported by Ibiquity.

The Exporter Plus, Nautel's next-generation IBOC Exporter for encoding HD Radio signals, replaces PC-based Exporters that have been used in Exgine-based HD Radio systems for about three years.

The new product is a firmware-based solution, which boots quickly and is more affordable than older designs. The Exporter Plus is a single rack unit with a front-panel LCD display. Intelligent buttons allow easy setup without the need for a keyboard, mouse and monitor. A front headphone jack is supplied for monitoring of the audio being processed.

Connections are provided on the unit for digital and analog I/O, monitor, USB, RJ45 connections and remote I/O. A front-panel analog audio bypass switch is also provided. Firmware updates may be done online or by plugging in a USB stick. A GPS receiver for synchronization is built in and the system tolerates AC failures so an external UPS is not required.

Price: $8,000; discount for NAB members
Shipping: Third quarter
Info: e-mail *sales@nautel.com* or call (902) 823-2233

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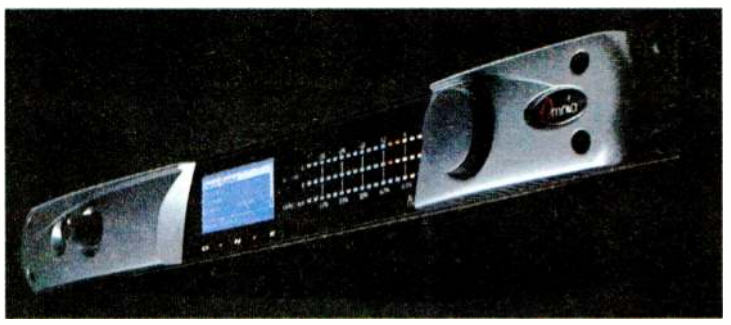
World Radio History

TECH UPDATES

Omnia Expands One Series With AM Model



The **Omnia** One audio processor is available in three versions: multicast/DAB, FM and most recently, the Omnia One AM.

The newest model features a wideband AGC/leveler followed by four bands of AGC and a separate (not integrated) four-band limiter section with shared precision linear crossover.

Omnia One also includes an advanced, NRSC-compliant, distortion-managed final limiter/clipper with selectable low-pass filters that support AM HD transmission installations.

"AM stations shouldn't have to sacrifice audio performance to budget limitations," said President Frank Foti. "Omnia One for AM uses the latest advances in DSP hardware and manufacturing techniques for full-band AM processing that will help any AM sound like a major-market flamethrower."

Additional highlights of the Omnia One for AM include Axia Livewire I/O connectivity, which allows it to be used in the studio, for transmission and in networked applications; front-panel level control for the stereo headphone jack; analog XLR balanced inputs and outputs; digital AES/EBU input, output and external sync input; and automatic input failover on loss of audio. Also featured are the jog-wheel user interface, LED level metering and an LCD screen.

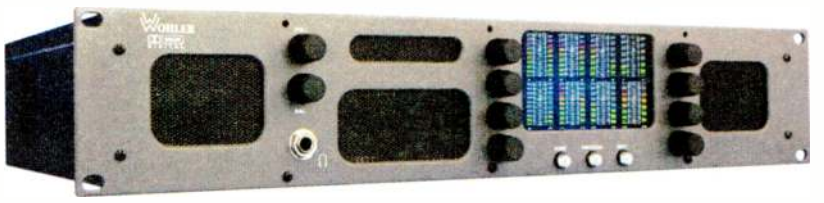
The four-band AGC adds dynamic EQ enhancement for consistency and builds density before the limiter stages. The wideband AGC enables smooth "hand on the pot" gain riding, according to the company.

The four-band peak limiter uses feedback limiters for the lower two bands (optimized for bass punch and lower midrange warmth) and feed-forward limiters for the upper two bands (optimized for upper mids and highs).

The Omnia One AM retails for $2,995.

For more information, contact Omnia at (216) 241-7225 or visit www.omniaaudio.com.

WohlerPlus Units Offer Various DSP Options



Wohler Technologies released its WohlerPlus line of modular audio processors, suitable for digital or terrestrial broadcasting, video over IP, cable or satellite.

The company, most familiar for its applications in video but also offering crossover products, says the configurable WohlerPlus units offer a variety of DSP options, and are intended to address the entire audio signal chain within digital broadcast operations, giving users the processing capabilities they need rather than the "all-or-nothing" functionality of dedicated processing systems.

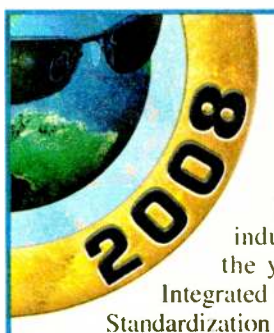
The modular system features five processor slots with flexible I/O benefiting from 16 channels or eight AES pairs per card — five cards per system — and includes monitoring and metering. Other options include alarms, multi-channel synchronization and shuffling of channels for 5.1 or 7.1 signal confidence.

Optional inputs include multi-rate serial digital embedded audio with Dolby decoding. The 2 RU WohlerPlus features a high-resolution TFT screen and on-board menu system for control, as well as Ethernet and RS-232.

Additionally, WohlerPlus units can be operated through an integrated menu interface or, soon, via Ethernet and RS-232.

For more information, including pricing, contact Wohler at (510) 870-0810 or visit www.wohler.com.

Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts



Cool Stuff: Fraunhofer MPEG Enhanced Low Delay AAC (AAC-ELD)

It's hard to overstate the impact on our industry of work that has been done over the years by the Fraunhofer Institute for Integrated Circuits. Here's another example.

Standardization of AAC-ELD within MPEG was finalized in January, and broadcast codec manufacturers have jumped right on it.

High audio quality, low coding delay and very low data rates are selling points of MPEG Enhanced Low Delay AAC, aimed at delay-critical applications that need audio bandwidth at data rates down to 24 kbps per channel.

The developer says AAC-ELD combines the strengths of MPEG Low Delay AAC and Spectral Band Replication.

"Whereas MPEG AAC-LD features low encoding/decoding latency, SBR provides high-quality audio at very low bit rates. SBR is also used in MPEG HE-AAC, today's most efficient audio codec."

Optimized for bit rates ranging from 24 to 64 kbps, it promises low algorithmic delay down to 15 ms at 64 kbps and up, to 32 ms at 24 kbps, plus full audio bandwidth and multi-channel support.

Look for this new tool to be used in super wideband fixed and mobile video and audio conferencing and high-fidelity VoIP as well as broadcast codecs for remotes.

Shown: Jan Nordmann and Stefanie Frank accept the award.

Price: OEM
Shipping: Now
Info: (408) 573-9900 or
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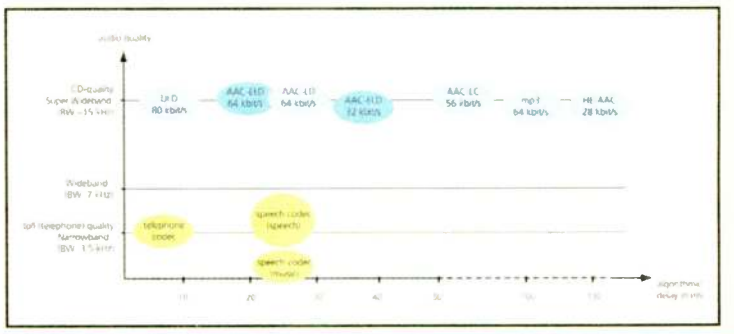

Photo by John Casey

World Radio History

Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

Cool Stuff: Orban Loudness Meter

Circuit Research Labs announced the first public beta of its Orban Loudness Meter software for Windows XP and Vista, making it available for free download

The company intends this as the first in a family of meters and is using it in its Optimod 8585 Surround Audio Processor. Judges liked Orban's entry into the niche as well as the no-charge price tag.

Future paid versions will offer features including logging, surround monitoring and oversampled peak measurements that indicate peak level of the audio after D/A conversion.

The software simultaneously displays instantaneous peaks, VU, PPM, CBS Technology Center loudness, and ITU BS.1770 loudness. Meters include peak-hold functionality that makes the peak indications of the meters easy to see.

Engineers and scientists now can compare the CBS algorithm with others, including the BS.1770 Recommendation, which Bob Orban said researchers have wanted to do.

Photo by Jim Peck

The software accepts two-channel stereo inputs. The VU and PPM meters are split to indicate the left and right channels. The PPM meter also displays the instantaneous peak values of the L and R digital samples.

The meter includes an experimental long-term loudness indication derived by post-processing the CBS algorithm's output. "This uses a relatively simple algorithm that attempts to mimic a skilled operator's mental integration of the peak swings of a meter with 'VU-like' dynamics," the company said. "The operator will concentrate most on the highest indications but will tend to ignore a single high peak that is atypical of the others."

Greg Ogonowski, Jay Brentlinger and Bob Orban are shown.

Price: Free
Shipping: Now in beta
Info: Download at *www.orban.com/meter*

Vorsis AP2000 Adds DSP, Clipper, Revamps AGC

The AP2000 is the successor to **Wheatstone**'s Vorsis AP1000 31-band audio processor. The company says it offers 30 percent more DSP horsepower, an overhauled five-band AGC, new voice distortion management technologies and a high-performance distortion-managed clipper.

The five-band AGC now incorporates Sweet Spot Technology (SST), which manages the behavior of the AGC in real time to ensure it operates within its "sweet spot." The company says SST manages the five-band dynamics controller to maximize the consistency of a station's on-air presentation, no matter the source material or audio levels from source to program source.

The redesigned AGC also incorporates adjustable inter-band coupling for a consistently set spectral balance, regardless of program content.

Features include a 31-band Fine Grain Processor, pre-processing via five-band or three-band AGC, Vorsis Multiband Dynamics Controller with SST, Vorsis Bass Management System, FM peak control via oversampled look ahead limiter or specialized clipper; oversampled distortion masked clipper; and AutoVOX voice distortion management.

Also included: Precision 8x oversampled HD output limiter, four-band full parametric EQ sections, variable high-pass filter and voice phase rotator, Ethernet-based remote control with front/rear jacks and eight input GPI preset triggers.

The AES3 digital input accepts 32 kHz – 96 kHz; AES3 digital output automatically synchronizes to AES3 digital input. There is an HD latency FM delay of up to 10 seconds.

Additional highlights include FM stereo MPX generator with multiplex mask filters to protect SCA and stereo pilot; front-panel control via high-resolution LCD display; Track Pad; and navigation buttons.

For more information, including pricing, contact Wheatstone at (252) 638-7000 or visit www.wheatstone.com.

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TECH UPDATES

BW Broadcast Has Three Processors for HD-R

BW Broadcast says its DSPX-HD digital audio signal processor can be used for Internet and digital radio broadcasting.

It is driven by a fast 8 bit micro-controller that controls specialized analog and digital circuits such as 24 bit A/D and D/A convertors, analog level control circuitry, 16 x 24 bit DSPs, an Ethernet port, trigger port, two RS-232 ports, 200 metering LEDS, an LCD screen, two sample rate convertors, a headphone jack and memory devices to hold software and firmware.

DSPX-HD

After input selection the 24 bit digital audio signal is passed through a wideband AGC processing block to normalize input levels. The output of the AGC feeds the EQ and audio shaping sections before being split into four bands by linear phase time aligned filters.

The four bands are processed by a further four AGCs before being fed to dynamic audio limiters on each band. Look-ahead limiting and distortion canceling clipping keep the signal to a maximum while maintaining sound.

The DSPXmini-HD is a trimmed-down HD version of the DSPX. The company says it took the DSPX-HD and removed the front meters and headphone output, and cut back on the processing features and distortion control. Metering is shown on LCD screen via hot key.

The unit is suitable for broadcasters who need a simple but effective DSP audio processor.

Features include analog and digital (AES/EBU) inputs, four-band gated AGC, four-band program dependent limiting, look-ahead peak limiting, preset trigger port and a real-time clock for preset scheduling.

BW Broadcast also offers the six-band DSPXtra-HD, which features TransLanTech's Ariane RMS leveler with sum and difference processing.

Additional highlights include multi-band program dependent limiting and look-ahead limiting, distortion-canceled clipping, a USB front-panel interface and blue LED audio metering.

For more information, contact BW Broadcast at (888) 866-1671 or visit www.bwbroadcast.com.

Digiplexer 2/4 Has Multi-Band Processor For HD-R

Audemat's Digiplexer 2/4 "radio all in one" unit includes an audio processor in addition to RDS encoder, remote control I/O, stereo encoder and audio backup.

The digital audio processor is available in either the two- or four-band version.

The company recommends the two-band version as a main audio processor for soft and medium formats like classical, voice or jazz; or as a secondary processor to finalize the audio at each transmitter site, for example, after pre-processing at the studio.

Audemat recommends the four-band version as a main processor for all formats, and for stations that need loudness.

Additionally, the processor can be used to process audio for FM and digital broadcasting such as HD Radio and Internet streaming. Using multi-band DSP technology, the DSP board provides up to 2.8 gigaflops of processing power.

The Digiplexer 2/4 operates at a sampling frequency of 192 kHz for the main audio processing, and 1.5 MHz for the final limiter.

Audemat says its one-box approach is better than separate boxes because it enables synchronization of subcarriers, lets users adjust their levels interactively and eases control of overall deviation.

Users get a cleaner signal than separate units would provide, according to the company, because subcarriers are combined in a single digital operation; noise does not build up as it does with separate units.

The Digiplexer 2/4 has an auto-switch input and audio backup in case of STL loss. Additionally, the Sound4 audio card is independent of the control system; reboot the unit and hear processed audio after a couple seconds.

Additional highlights include an 80 GB embedded hard drive.

For more information, including pricing, contact Audemat at (305) 249-3110 or www.audemat.com.

Nautel Offers 'Orban Inside' Audio Processing

Nautel and **Orban/CRL** are working together to offer a single-box solution for audio processing that uses Nautel's Advanced User Interface (AUI).

The companies have entered into an agreement for Nautel to license Orban's audio processing algorithms and develop embedded solutions for Nautel transmitters, so customers get Orban processing in new Nautel transmitters.

Photo by Jim Peck

The Nautel and Orban teams pause for a group photo by Radio World during the NAB Show.

The first product to support the embedded audio processing is Nautel's NV40 44 kW solid-state FM transmitter. The digital embedded audio processor consists of a daughter card that plugs into the FM exciter. Control is via the Nautel AUI, which for the NV40 means a 17 inch touchscreen interface for local use, and remote access to the local interface via the Web.

"Now customers can choose to implement their audio processing either internally or separately depending on their own specific requirements and preferences," said C. Jayson Brentlinger, president/CEO and chairman of Circuit Research Labs Inc.

For more information, contact Nautel at (902) 823-3900 or Orban/CRL at (480) 403-8300.

Firmware Upgrade Adds Limiting Function to 261

Inovonics says the Rev. 2 firmware update for its Model 261 DSP-based digital stereo "utility processor" adds an independent high-frequency limiting function to protect the pre-emphasis characteristic endemic to FM broadcasting. It is offered free to existing users.

Model 261 is a low-latency design using look-ahead limiting technology. It combines three basic audio processing functions: gated, gain-riding AGC; program dynamic range compression; and final peak control.

Model 261

The unit is menu-driven from the front panel and may be configured to provide a single basic function independently, or to use all processing options for comprehensive program audio control in LPFM and other modest air chain applications. Inovonics says this gives the broadcaster an economical and unobtrusive means of normalizing and controlling audio levels in an all-digital or mixed-signal plant.

For more information, contact Inovonics at (800) 733-0552 or visit www.inovon.com.

Watch the CoolCast video for a product demo: http://radioworld.com/coolcasts

2008

Cool Stuff: Harris FlexStar HDE-200 Embedded HD Radio Exporter

Photo by Jim Peck

Harris is among the companies honored for participation in the Embedded Exporter initiative prompted by the NAB and supported by Ibiquity.

It has expanded its FlexStar line of HD Radio equipment with the HDE-200 exporter; the company says it better supports delivery of multiple HD-R programs over a dedicated IP connection.

The exporter supports TCP over IP transport of the E2X protocol, as well as HD Protocol (HDP), a new transport layer protocol that provides support for IP distribution from a central studio to multiple transmission sites.

It includes remote and front-panel metering and monitoring features and an internal GPS module, as well as options for profanity delay, diversity delay and an Arbitron People Meter.

Ted Staros and Rich Redmond are shown.

Price: $9,995, discount for NAB members.
Shipping: September
Info: (800) 622-0022 or *www.broadcast.harris.com*

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July 2

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Cool Stuff: Continental Electronics 800EXP Embedded Exporter

Continental is among the companies honored for its participation in the "next-generation" Embedded Exporter initiative prompted by the NAB and supported by Ibiquity.

The 800EXP Embedded Exporter is based on embedded DSP technology for a more accurate and reliable HD Radio broadcast experience.

In a 1 RU box is the technology required to develop and manage complex HD signals. Control and monitoring is accessed through a Web browser. Because there is no hard drive or OS, system start-up is fast and stable. Familiar exporter features are retained including up to 16.4 seconds of analog audio delay.

The 800EXP is compatible with IP-based STL systems, both unidirectional or bidirectional; it is field upgradable through its browser interface, and there is no need for external GPS clock synchronization, when paired with a Continental 802EX FM Digital Exciter using a dedicated Exporter to Exgine network processor.

Mike Pugh, David Hershberger and Dan Dickey are shown.

Price: $13,900; discount to NAB members
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Info: (214) 381-7161, (800) 733-5011 or *www.contelec.com*

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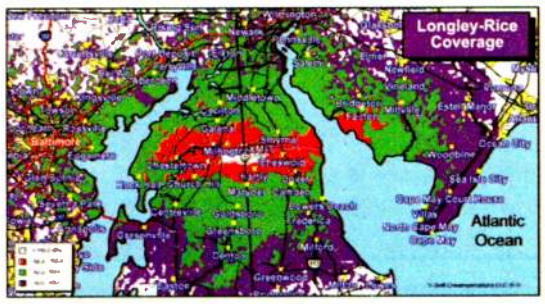

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440 feet Rohn 65G tower, 20 foot sections, painted with 1 flashing beacon & control, $10K, Ken Diebel, 318-728-2370.

6-bay ERI antenna, 100.9 FM w/230 ft of 3 inch Antdrews Coax with all brackets and connects, $7000. Clay Center, KS, 785-632-5661.

Set of 6 radomes for an ERI SHPX-6AC, like new w/all hardware, they weren't needed for a mission station in Haiti, tests showed almost no effect on performance of the antenna w/wo, prior to shpg, VSWR after installation is Haiti still 1.02:1 without, BO & you pay shpg from Omaha, NE, about 300 lbs. J Gebuhr, wb0cmc@cox.net.

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◆READER'S FORUM◆

Quinn/Olguin Commentary

I read with great interest the separate March 26 responses by Vince Nowicki and Tim Shamble ("BBG: Nostalgia Doesn't Get the Job Done") to the Feb. 1 article by Jack Quinn and Nick Olguin in Radio World.

Mr. Nowicki and I are former colleagues at the International Broadcasting Bureau, and I have nothing but the greatest personal and technical respect for him and the challenges of his present position there.

I do not think that either Mr. Quinn or Mr. Olguin are in basic disagreement with Mr. Nowicki over the importance of a proper "media mix" to reach the desired audience of the U.S. government (USG). The disagreement is over what that "mix" should be.

Most of the governments of the world the USG wants to reach are often somewhat hostile to the message, necessitating what has historically been called "cross-border" broadcasting.

This is why during the Cold War the broadcasts to the former Soviet Union, former Eastern Europe, China and much of formerly closed Southeast Asia, Africa and the Middle East, came from transmitting locations in Botswana, Germany, Greece, Morocco, Philippines, Portugal, Spain, Sri Lanka, Tinian and others, as well as stations in the United States — all cross-border stations under the almost total and complete control of the USG.

And it also is true that satellite radio and TV as well as the Internet are the most viable and valuable media to accomplish the same goal.

As Mr. Nowicki eloquently explained, and which is validated by current situations in Armenia, Tibet and other places, shortwave still has its place and is being used.

My disagreement with this scenario is that shortwave should not be an "emergency-when-all-else-fails" medium, but rather should be maintained and expanded as the Quinn/Olguin article stated.

Readers of Radio World are certainly aware of Digital Radio Mondiale, which has successfully demonstrated the ability to dramatically overcome the undesirable vagaries of analog shortwave, which have long been tolerated through necessity.

Yet the IBB, to my knowledge, while certainly following the developments of DRM, are not aggressively engaged in its success. This is in contradiction to other international broadcasters such as BBC, Deutsche Welle, Radio Canada, Radio Netherlands and many more who already are broadcasting in DRM in a regular schedule.

I have only one significant disagreement with Mr. Shamble's letter.

I am the only person, to my knowledge, who has been DOE of both IBB Engineering (formally VOA before it became IBB) and Radio Free Europe/Radio Liberty (RFE/RL) Engineering.

RFE/RL was almost totally USG-funded, although a Maryland corporation. The IBB is a U.S. government federal entity.

It is certainly a misnomer to call RFE/RL "private" by any common definition of a private corporation. It, as stated above, was and is funded by the USG, but it was not (during my tenure there, anyway) subject to encumbering federal regulations such as federal procurement regulations, for example.

We were bound by a much simpler and more flexible, and more practical and more effective, OMB procurement guideline. RFE/RL was certainly not perfect nor 100 percent effective and efficient — no business is — but compared to the federally operated IBB, there is no comparison to what we were able to accomplish, usually with 1/10 to 1/20 the assets and staff, though we were roughly half the size of VOA then.

My boss at RFE/RL, E. Eugene Pell, also was the only president of RFE/RL who also had been the director of the VOA. He expressed to me on numerous occasions the same basic feeling I have described above, albeit on a much larger scale than just engineering matters.

Furthermore, it is fundamentally a contradiction in common sense for anyone to claim that any federal entity is more effective and efficient than a private corporation.

George Woodard
McKinney, Texas

Signing Off

I have filed comments (more than once) with the FCC concerning the Localism Proposals, Docket No. 04-233. I would encourage other small operators who cannot afford 24/7 staffing to do the same.

If you do nothing else, indicate to them that the following announcement will be broadcast daily following your forced evening sign-off. I included this with one set of comments:

"Due to new federal regulations designed to improve your local broadcast service, it is no longer financially possible for us to provide 24-hour coverage as we have been doing for many years. (Your call) will now leave the air and we will resume broadcasting at ____ a.m. We apologize for any inconvenience this may cause but it is out of our control.

"You will have to tune elsewhere for EAS alerts, which would have been aired here automatically, and you will have to tune to a more distant station to receive updates on your local weather. Local public service announcements, which you would have heard during the nighttime hours, will now be available only during the day.

"Please contact the Federal Communications Commission in Washington for a complete explanation on how your local broadcast service has been improved."

I also would suggest having your local city, county, emergency and law enforcement people file comments that they are satisfied with the service you provide them, and that they have no trouble finding you any time during the day or night. (If they won't do that for you ... maybe you really *do* have a localism problem that needs to be addressed.)

Maynard Meyer
President/GM
KLQP(FM)
Madison, Minn.

ADVERTISER INDEX

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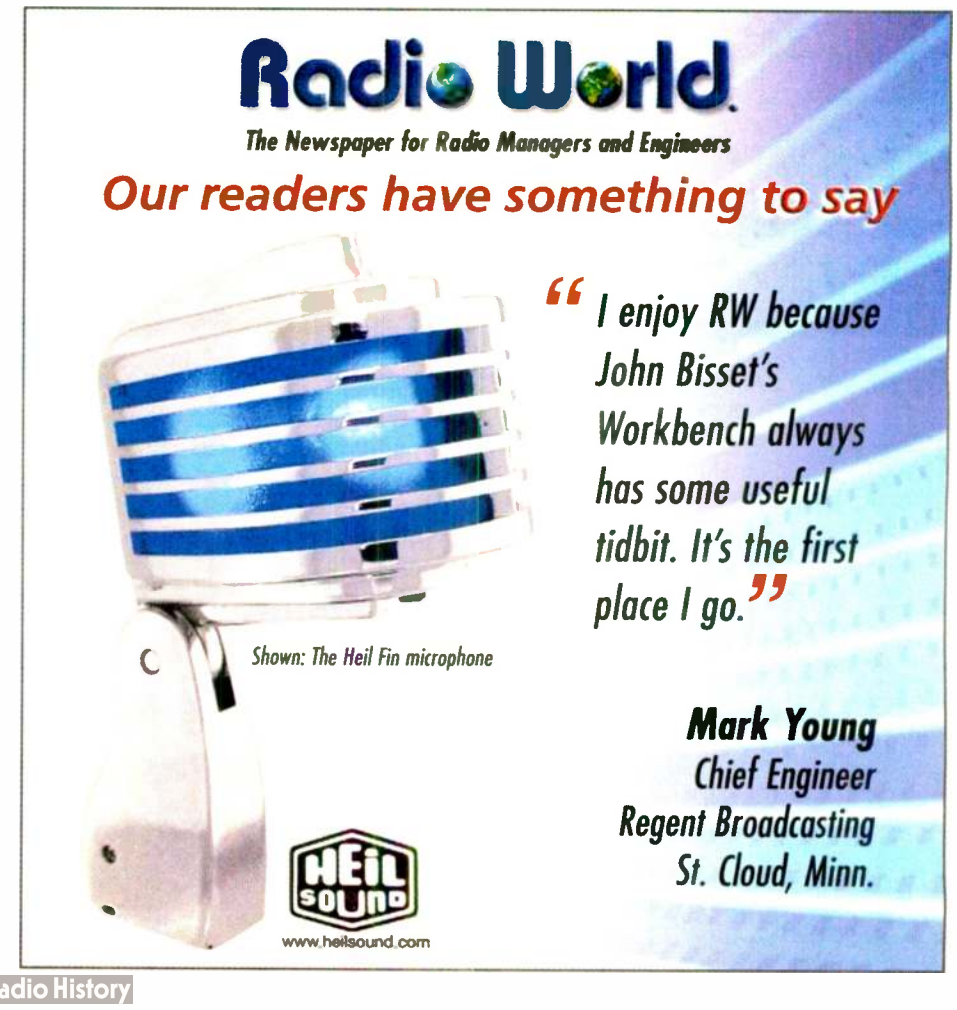

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Hitting the Bullseye

How Can Radio Compete Against a Fine-Grained, Personalized, Interactive, Mobile, Two-Way Medium?

Time was when "mobile marketing" implied either radio or outdoor (i.e., billboard) advertising.

If you wanted "targeted mobile marketing," it was down to just radio; and you picked the formats that fit your desired demographics.

Much of radio's revenues in recent years have resulted from this unchallenged assumption.

An emerging trend eventually could create radical change, however.

The term "mobile marketing" increasingly has been repurposed to refer to advertising delivered to personal communication devices.

Most of the big agencies and accounts are salivating at the prospect of such micro-targeting of messaging, and have been developing plans along these lines for a few years. The technology is maturing, and involved companies are getting close to providing these services in a robust and cost-effective manner.

It's a world that promises a solution for the old conundrum, "Half my ad dollars are wasted — I just don't know which half."

This could cause substantial shift of ad revenues away from conventional media, and it's quite likely that radio could be hit hardest. How can broadcast radio compete against such a fine-grained, personalized, interactive, portable/mobile, two-way medium?

One possibility is stressing the continued value proposition of the broadcast model, which sets the bar quite high for CPM.

That will still appeal to large, mass-market brands; but smaller, local advertisers may be harder to retain. For them, partnering with the new players on clever campaigns that incorporate both broadcast and targeted mobile elements into a powerful package may help.

There is also the option of radio developing its own targeted ad delivery via its online services.

Here the risk is "trading digital pennies for analog dollars," as one pundit has cautioned, so radio broadcasters will have to decide what business they're in, and focus on core competencies.

Differentiation, particularly in terms of cost-effectiveness, likely will be the key to maximum retention of business.

We certainly don't have the answers — no one does, at the moment — but we do know that this will be among the most important questions facing the radio industry soon.

And we remind everyone that radio is already a powerful mobile medium. Radio invented mobile media. So discussion of mobile marketing is not an instance of "us vs. them."

We *are* them; and the questions should be about how radio can evolve, not about whether it's appropriate for radio to play in this space at all.

Keep your eye on the targeted mobile marketing ball.

— Radio World

◆READER'S FORUM◆

Are You 'Experienced'?

I am a broadcast engineer just starting out in this line of work.

One of the common elements I'm finding in the various classified ads for broadcast engineering and allied fields is the requirement for "experience." This might be "two years," "2–5 years," etc. Some ads ask for specific experience while others are more generic.

Oddly enough, I'm also finding ads asking for experience in positions best described as entry-level. Sure, experience counts; but one can only imagine that hires fitting that bill can only be described as making a "lateral move" career-wise.

I am looking for "honest" work, so I'm not going to waste an employer's time if I don't have the experience they're seeking in a new hire.

By the same token, what options are there for those engineers lacking specific work experience but whose hiring could bring a comparable, perhaps even improved, skill set to the position?

Not to oversimplify, but if you've been driving Ford cars all your life and the employer only wants applicants with 2–5 years experience driving Chevrolets, your ad is going to get some raised eyebrows.

Robert Ballou
Hampstead, Md.

Living in The Past

John Terhar's letter (*Reader's Forum*, March 26) deserves a reply.

His implication is that "Big Radio" has somehow failed to serve the public interest by not staffing their studios 24/7. He goes on to lobby for the FCC's current, misguided proposal to require the same.

It is a fact that 10 years ago every broadcaster in Amercia was required to replace their EBS equipment with EAS equipment. This new system, adopted by our industry at great expense as an unfunded mandate, was specifically designed to allow unattended operation.

Similarly, there are stable transmitters, automatic remote controls and computers that perform the functions that used to require an operator.

To require a return to 24/7 staffing is to deny broadcasters the advantage of these legitimate technological advances, which include lower operating costs through reduced payroll expenses. Mr. Terhar would not think of sending every letter or note he writes through the snail-mail system today, yet he wishes to condemn the radio industry to using obsolete technology and operation methods.

He uses Dayton, Ohio, as an example. Fine.

I know Dayton well. When I started in radio some 30 years ago, Dayton was market No. 50. Today it is market No. 60. It has lost industry and population during those years. It has shown double-digit *declines* in revenue for the past couple of years.

These figures, to a large extent, mirror the problems of our industry. They range from losses in small markets to Citadel's whopping $848 million loss in the fourth quarter of 2007.

Few are making money right now due to a soft economy and competition from new (and largely unregulated) advertising mediums.

Mr. Terhar's implication that Big Radio is stuffing its pockets with cash and ignoring its obligation is absurd.

He needs to read up on the recent earnings performance of the companies he is so critical of. There is less money available for paid babysitters in Dayton and every other market than at any time in the past.

Mr. Terhar states that "it's just one minimum-wage person." My experience as an employer is that you get what you pay for.

A minimum-wage person is not going to have the experience and the poise to do the job in an emergency that Mr. Terhar envisions for them. Personally, I think that a minimum-wage babysitter would probably be far less reliable than the expensive electronic equipment we currently use.

Mr. Terhar is probably aware that the EAS equipment gets tested weekly and repaired promptly in the event of a problem. Indeed, most failures of the EAS system have been caused by human error, which Mr. Terhar proposes to re-insert into every station in America, 24/7.

The reality is that the cost would be much more than he says, and would fall hardest on independents like our campany that do not have seven stations to spread the costs over.

In our case, we estimate the increased costs for our stand-alone small market station to be roughly $75,000 per year. That figure is significant given the size of our market and the available revenue.

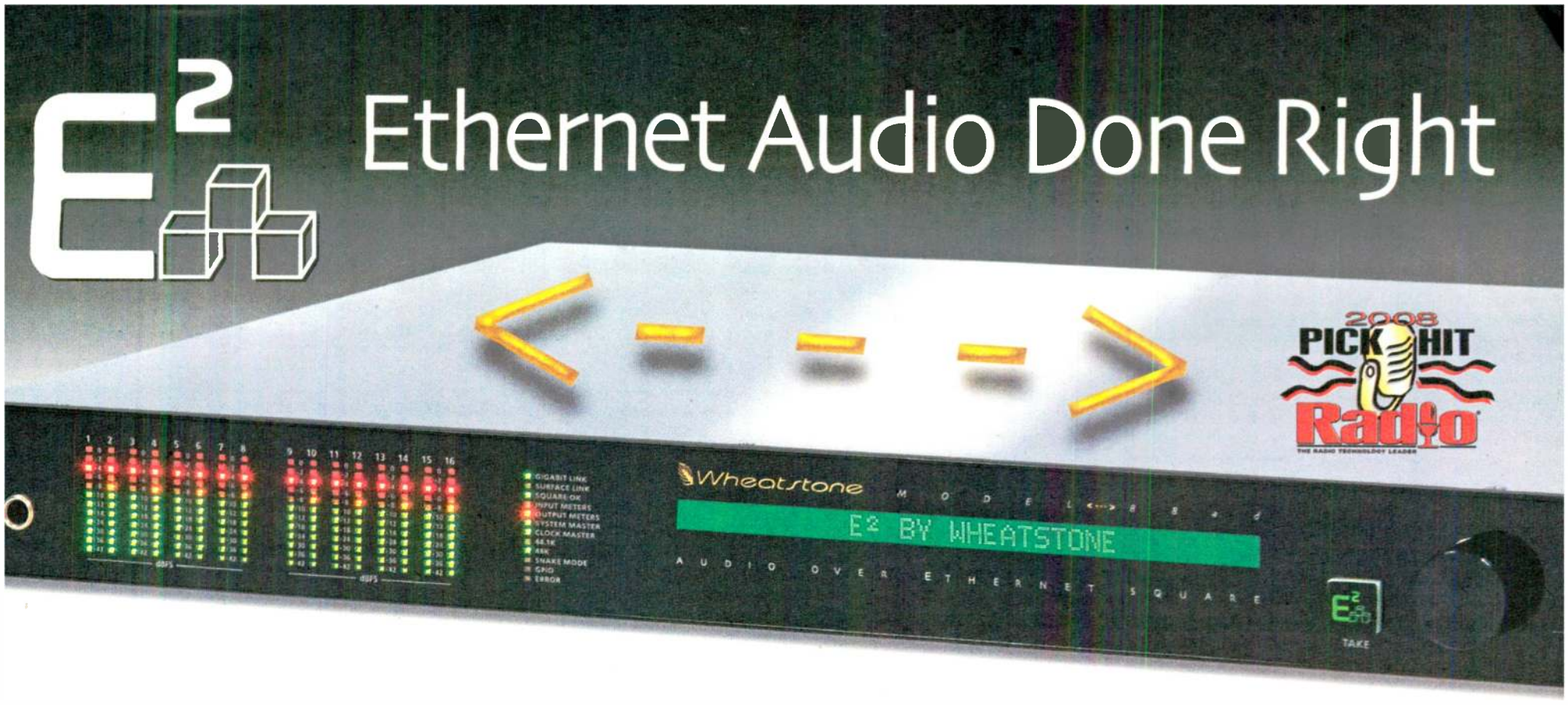
Early in my career, under the rules Mr. Terhar wants to return us to, I saw the solution for this problem in smaller markets time after time. Stations simply signed off after 10 p.m. or midnight, rather than pay somebody to sit there and "man" the facility.

This practice is likely to become fashionable once again if Mr. Terhar has his way. Perhaps he could write to you again and explain how the elimination of nighttime service in smaller locales is forward progress.

Jeff Ziesmann
Grant County Broadcasters Inc.
WNKR(FM)
Williamstown, Ky.

World Radio History

E² Ethernet Audio Done Right



MEET THE SQUARE

The Wheatstone E² (E SQUARE) gives you the convenience of Ethernet audio without all the IP hassle. It just *knows*. The built-in Setup Wizard lets you configure an entire system with just your browser and a laptop. Unplug it when you're done and there's no PC between you and system reliability.

SQUAREs are totally scalable: use one as a standalone 8x8 studio or transmitter site router, with browser access from anywhere. Plug two together and have a standalone digital snake. Add a fanfree mix engine and build yourself a studio using analog and digital I/O SQUAREs.

All the power is *in* the SQUARE. Distributed intelligence replicates all configuration data to every unit. Profanity delay and silence detection are done *in* the SQUARE. Even virtual mixing (w/automation protocol) —it's *in* there; all with real front panel meters, 32 character status indicators and SNMP capability.

88E DIGITAL ENGINE: Just plug an E-SERIES control surface or GLASS E computer interface into this engine and get all the mixes, mic and signal processing you need. Fanfree, so it can stay in the studio where it belongs.

Because the E² system doesn't rely on a third party GUI, tech support is straightforward (and 24/7). Likewise, system operation doesn't require external PCs for continued full functionality. Best of all, 1 Gigabyte protocol eliminates the latency and channel capacity restrictions associated with older technology.

E-SQUARE is Ethernet audio done RIGHT!

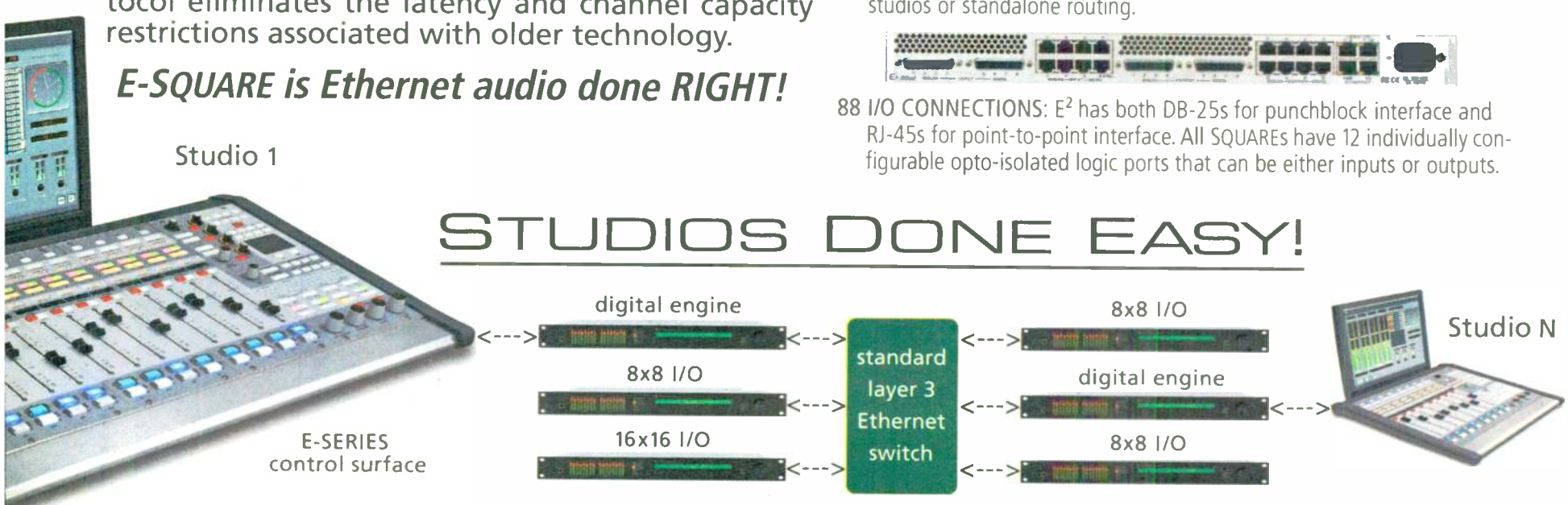
88D I/O: 8 digital inputs and outputs. You can headphone monitor and meter any of the SQUARE's inputs or outputs in real time. The 32 character display gives you all the information you need about your audio and system configuration. And because you can operate in either 8-channel stereo or 16-channel mono mode, 16 channels of metering are provided.

88A I/O: 8 analog inputs and outputs. You can bring a new SQUARE up in seconds and of course use the front panel encoder for your X-Y control. Front panel status LEDs give you continuous link, status, and bit rate information as well as confirmation of any GPIO activation.

88AD I/O: 4 analog plus 4 digital inputs and outputs—perfect for small studios or standalone routing.

88 I/O CONNECTIONS: E² has both DB-25s for punchblock interface and RJ-45s for point-to-point interface. All SQUAREs have 12 individually configurable opto-isolated logic ports that can be either inputs or outputs.

STUDIOS DONE EASY!



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Wheatstone

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World Radio History

AIR WARRIOR

A modern air warrior needs all of the power and control he can muster to bring to the battle. **When it's you against the other guy, the VORSIS AP-2000 has it ALL.**

NOT AN ACE YET? The AP-2000 comes preloaded with over 70 presets tuned to do battle. Try a test flight with the latest VORSIS 31-band digital processor—and join the broadcast elite!

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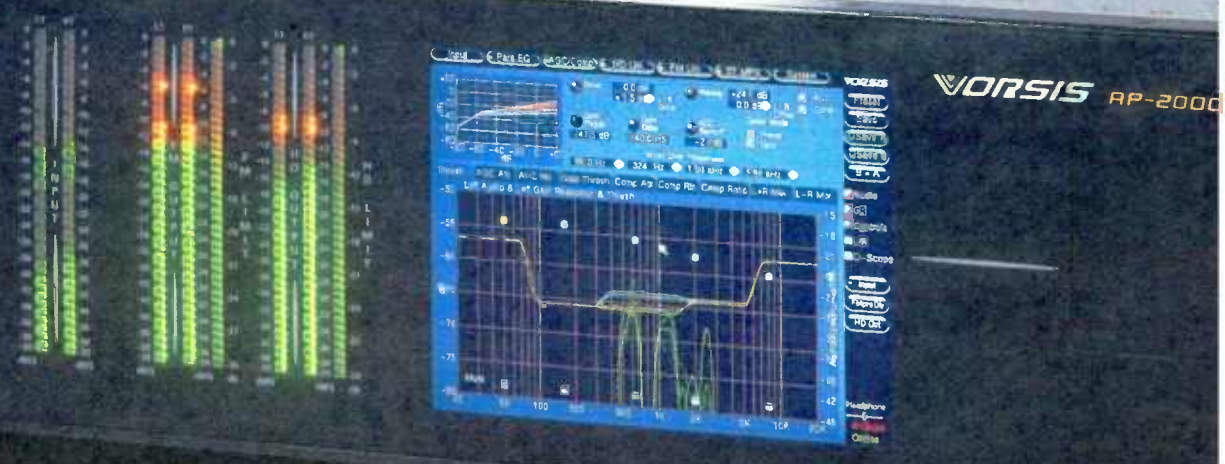

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DIGITAL SPECTRAL PROCESSOR
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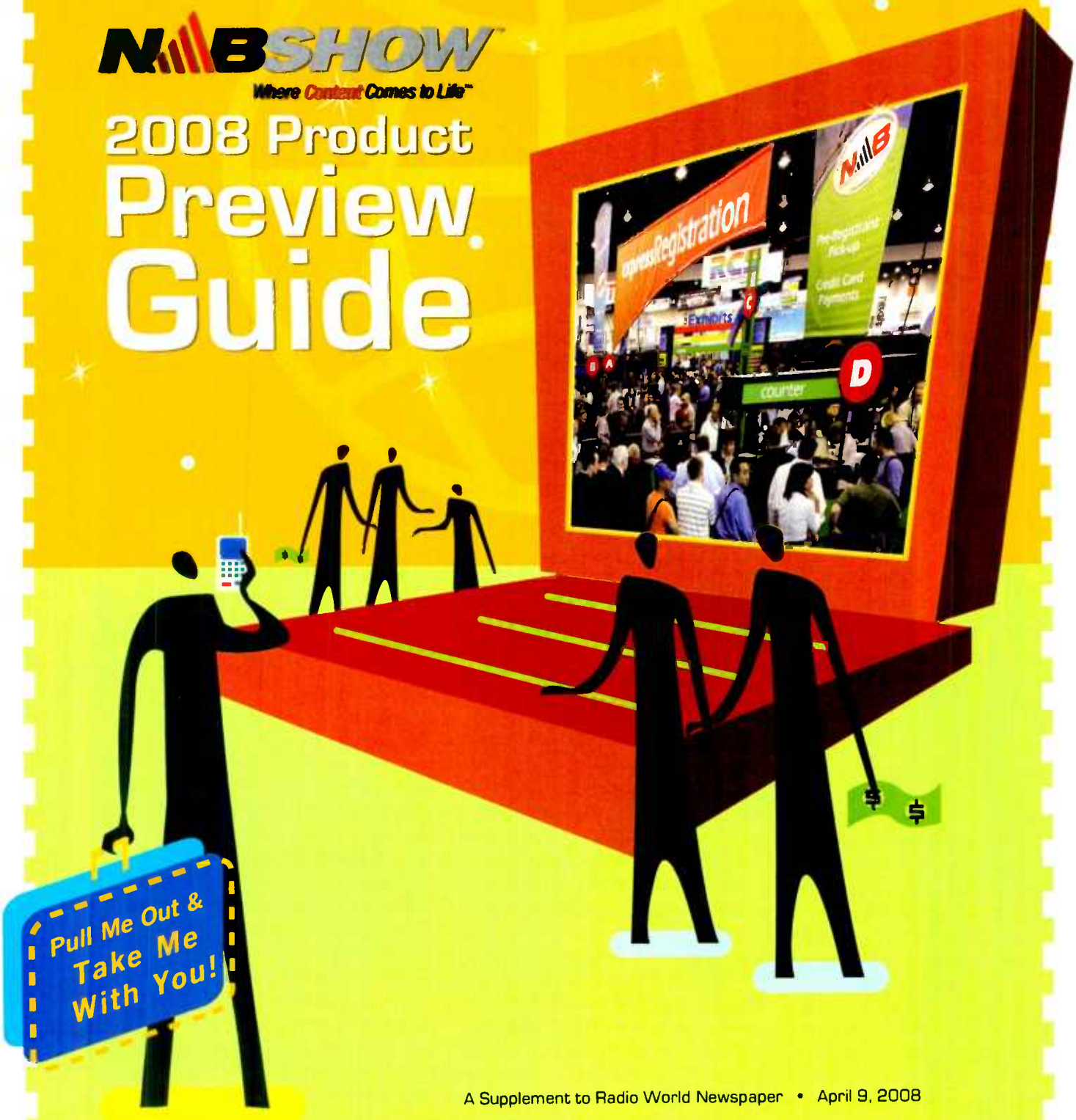
World Radio History

Radio World

NAB SHOW

Where Content Comes to Life™

2008 Product Preview Guide



A Supplement to Radio World Newspaper • April 9, 2008

World Radio History

Aphex Anaconda™

Everything a Snake Should Be

- **Open architecture**
  Uses world-standard ADAT® I/O
- **Lowest latency**
  42 microseconds, plus the speed of light
- **Redundancy and reliability**
  Redundant fiber runs and power supplies
- **Absolute electrical isolation**
  No noise, no hum, no buzz, no ground loops
- **Distance**
  1.25 miles (multimode), 10 miles (single mode)
- **Complete system solution**
  1788A Remote Mic Pre; 141 D/A; 142 A/D; 144 AES/ADAT
- **Splits**
  Model 824 Distribution Hub adds four transmitters
- **Word Clock distribution and stability**
  Eight BNC outputs, less than 1 nanosecond jitter
- **Most cost effective fiber snake**

No other snake offers the advantages of the **Aphex Model 828 Anaconda™** 64 Channel Bidirectional Digital Snake. It's the most reliable, most versatile, and easiest-to-use method of signal transport, while remaining the most affordable choice available. Find out why it was selected as the most outstanding pro product of NAMM 2008 by Live Sound International... contact your authorized Aphex dealer today!

VISIT US AT NAB BOOTH N5617

www.aphex.com

APHEX

World Radio History

2008 NAB SHOW

Creation • Management
Commerce • Delivery

It's all about the content

Radio is not just radio anymore. But even as our industry is enveloped by new media, and portable and online tools undreamt of 20 years ago, the challenge facing today's technology manager is all about the content. You need to deliver winning content — no matter the channel or platform.

Our Product Preview Guide is intended to help you create, manage and deliver that content so you can get the most out of your commerce. Take this with you to Las Vegas or use it to start your post-show research.

This advertising supplement to Radio World includes:

- Product Previews from industry-leading vendors who provide an advance peek at their new products.
- Contacts and booth information for each supplier.
- A color-coded map of the Radio/Audio Hall of the Las Vegas Convention Center. Colors on each profile page correspond to sections of that map.

Have a great NAB Show.

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—Printed in the USA—

World Radio History

New-Look APT Unveils New HD Radio™ & IP Codec Solutions

With a brand-new image, several new product announcements and a growing customer base throughout the U.S., the APT booth should be on everyone's visit list for NAB 2008. New gear on show will include:

New Audio Codec for HD Radio™ STLs

At NAB 2008, APT will launch its new audio codec designed specifically for HD Radio™ applications: the WorldCast Horizon HD.

WorldCast Horizon HD is a duplex stereo codec enabling the delivery of FM and HD content from studio to transmitter site. With both a T1 and Ethernet interface, broadcasters can utilize existing T1 links for the FM transport and send their HD content as a UDP stream embedded in the T1 link, eliminating the need for additional bandwidth and cost. At the remote/transmitter link, the HD content is presented back on an IP port.

As a fully duplex device, WorldCast Horizon HD allows off-air monitoring or an independent channel to backhaul RPU feeds and satellite down-linked audio. An RS-232 port is available for PAD and contact closures for remote control.

Compatibility Over IP With SIP

APT is delighted to announce that all its IP codecs are fully EBU N/ACIP-compliant with support for both SIP and SDP protocols.

With hundreds of APT's new IP codec range already deployed worldwide, this latest development strengthens the company's position as a leader in the field of IP audio networking and ensures compatibility with several other major brands.

Linear Audio for IP & T1 STLs

This year's NAB sees the official launch of the linear audio module for the WorldNet Oslo — the unit which is increasingly becoming the STL system of choice for both synchronous and IP circuits amongst major U.S. broadcast networks.

With this new module, the WorldNet Oslo can deliver uncompressed audio quality over both IP and T1 links. The unit also offers an MPEG L2 option and the prograde, low-delay Enhanced apt-X coding which is utilized in hundreds of STLs and studio links throughout the country.

When operating over IP networks, flexible unicast, multicast and multiple unicast configurations can also be achieved using the WorldNet Oslo and APT's range of IP stereo codecs (which also support both linear and apt-X encoding). In T1 operation, back-up transport modules can provide cross-connect functionality (also between IP and T1) and advanced network features such as drop and insert, drop and copy, and backup schemes, in addition to simple unprotected point-to-point links.

Color-keyed map: Pages 16 & 17

World Radio History

Innovative, Powerful Solutions for Broadcasters

AT2020 USB Cardioid Condenser Microphone

Audio-Technica is introducing its new AT2020 USB Cardioid Condenser Microphone at the 2008 NAB Show. This Windows- and Mac-compatible side-address condenser plugs right into a computer's USB port, offers studio-quality articulation and intelligibility, and functions seamlessly with all popular recording software.

With low self-noise, the AT2020 USB is perfectly suited for sophisticated digital recording equipment. Equipped with a USB digital output, the microphone delivers crystal-clear, natural sound ideal for home studio recording, field recording, podcasting and voiceover use.

The AT2020 USB is based on the design of Audio-Technica's critically acclaimed AT2020 cardioid condenser microphone. Like the AT2020, it features a low-mass diaphragm, custom-engineered for extended frequency response and superior transient response.

- Side-address studio condenser with USB digital output
- Crystal-clear, natural sound for podcasting, home studio recording, field recording and voiceover use
- Cardioid polar pattern reduces pickup of sounds from the sides and rear, improving isolation of desired sound source
- Low self-noise — perfectly suited for sophisticated digital recording equipment
- Includes tripod desk stand, pivoting stand mount, USB cable and storage pouch

ATH-M50 Professional Studio Monitor Headphones

Stop by the A-T booth at the 2008 NAB Show and try out the critically acclaimed ATH-M50 professional studio monitor headphones. Listen in for the whole truth: natural response through the entire frequency range — no little white lies smudging out or hyping sounds along the way.

Designed for professional monitoring and mixing, the ATH-M50 headphones feature circumaural ear pieces (180 degree swivel) and luxuriously padded ear cushions that create an outstanding seal for maximum isolation and ultimate comfort.

The adjustable headband is generously padded for the ultimate comfort during long mixing sessions. A coiled cable at the left earpiece terminates to a gold-plated mini plug with included 1/4 inch adapter.

Audio-Technica's sophisticated driver technology and superior components deliver exceptional power handling and very high SPL capabilities while maintaining clarity of sound throughout their extended range, with deep, accurate bass and outstanding vocal projection. The headphones feature proprietary large-aperture drivers with neodymium magnet systems for ultra-efficient signal transfer.

- Exceptionally natural response for professional monitoring and mixing
- Collapsible design for easy portability and efficient storage
- Ear pieces swivel for one-ear monitoring and easy storage
- Padded ear cushions create an outstanding seal for maximum isolation
- Adjustable padded headband for ultimate comfort

- Proprietary large-aperture drivers with neodymium magnet systems for ultra-efficient signal transfer
- Single-sided coiled cable terminates to gold-plated mini plug with 1/4 inch adapter
- Protective pouch included

audio-technica
always listening

Audio-Technica U.S., Inc.
1221 Commerce Drive
Stow, OH 44224
Phone: (330) 686-2600
Fax: (330) 686-0719
E-mail: mediaproduction@atus.com
Web: www.audio-technica.com

NAB Show Booth N4529

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World Radio History

The Fastest-Growing Brand in Broadcasting

With nearly 1,000 studios now on the air using Axia IP-Audio networking technology, Axia Audio is the fastest-growing brand in broadcasting.

Axia lets broadcasters build audio networks and routing switchers using standard Ethernet to connect a few rooms or an entire facility, reducing much of the cost of wiring labor and infrastructure. Axia networks can carry hundreds of digital stereo (or nearly a hundred surround) audio channels over a standard CAT-6 cable — over 10,000 streams per system!

Axia's modular Element™ broadcast console offers a wide range of module choices and frame sizes. Element is built for 24/7 reliability, using beefy aluminum extrusions, aircraft-quality switches and custom-molded ergonomic controls. It's scalable from two to 40 faders in single- or split-frame configurations so you can order the ideal surface for every studio.

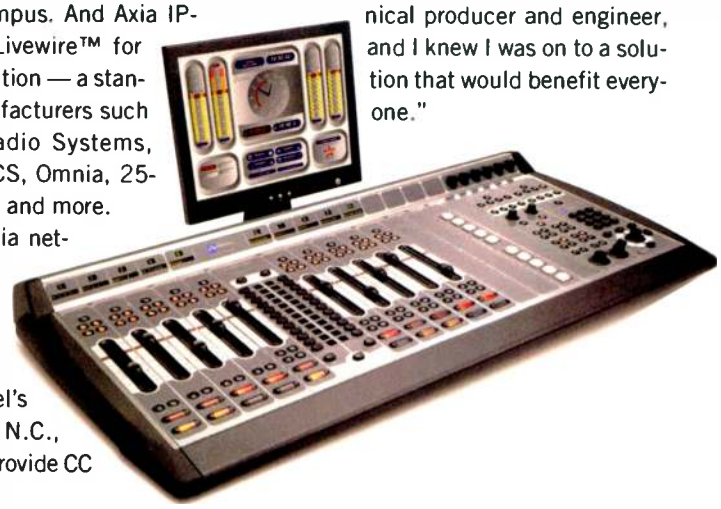
Element's abundant outputs and flexible architecture can be switched between stereo and surround mixing, and its info-rich user display, built-in router control, automatic mix-minus and integrated phone and codec support simplify the most complex shows. Element is the only radio console available in a choice of colors (Bronze on Charcoal, Silver on Charcoal or Gray on Silver) and features dedicated talkback for every fader, instant one-button recall of individual talent preferences, three-band digital parametric EQ for every source, headphone processing and built-in voice dynamics by Omnia.

The Axia system includes a family of "audio nodes" that interface quickly and easily with digital, analog and microphone audio. Just place a Node next to your audio equipment, connect them and they're on the network. CAT-6 cable connects any studio device to any other, anywhere in your broadcast plant — across the hall, across the building, via fiber or Ethernet radio, even across campus. And Axia IP-Audio networks use Livewire™ for audio and logic connection — a standard adopted by manufacturers such as AudioScience, Radio Systems, Google, Telos, IDC, RCS, Omnia, 25-Seven Systems, ENCO and more.

Clients love their Axia networks. "The Axia IP-Audio system emerged as [a] winner," says Chris Karb, chief engineer for Clear Channel's six-station Asheville, N.C., cluster. "We hoped to provide CC Asheville with a versatile and reliable studio system ... it turned out that we achieved much more than that, and moved CC Asheville to the head of the line in innovative studio system design."

Bruce Potterton, CE of KSGN(FM) in Redlands, Calif., says "The talent absolutely loves working this way and the consoles have really been a hit. The ergonomic layout is fantastic. It's extremely flexible, and everyone found the system very intuitive."

And Iain Grant, manager of broadcast operations at XM Canada, says, "I was sold on the Axia platform from the moment I saw it. Throughout my career I've worn many hats, including host, producer, technical producer and engineer, and I knew I was on to a solution that would benefit everyone."



AXIA
A TELOS COMPANY

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E-mail: inquiry@AxiaAudio.com
Web: www.AxiaAudio.com

NAB Show Booth N7620

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World Radio History

A Secure, Robust Digital Emergency Alerting System

Global Security Systems (GSS) presents ALERT FM™, an FM-based alert and messaging system that allows emergency managers to create and send emergency information, including NOAA (National Oceanic & Atmospheric Administration) weather warnings, Amber Alerts, evacuation notices, homeland security notices, plant or school closings, employee notifications, traffic alerts and other emergency information before, during and after a crisis to first responders, businesses, schools and citizens.

The single-to-multi-point system delivers messages using RDS technology via GSSNet, our digital network of existing FM radio transmitters around the United States. The reliability and redundancy of ALERT FM lies in its use of overlapping FM signals provided by GSSNet. Targeted alerts and messages are delivered by satellite to FM transmission towers and can be received on ALERT FM receivers and other devices, including PDAs, cell phones and other specialized devices equipped with an FM chip.

ALERT FM is a powerful switchless solution because messages will not clog up existing switched wireless networks, and the broadcast signal is more robust than cellular signals. Alerts or messages can be targeted to one receiver or to all receivers in a specific county, neighborhood or building.

ALERT FM™
Powered by GSSNet

Broadcasters across the county are cooperating to provide the data subcarrier for the delivery of potentially life-saving messages. Those participating in the ALERT FM program will get the RBDS encoder at no cost to the station along with that added ability to transmit an array of non-emergency information, including song titles and artists, call letters and slogans, while reinforcing their public service commitment. These added benefits allow radio stations to monetize listenership with the MySimBook application.

MySimBook, another GSS product, is a mobile social network that enables broadcasters to interact with listeners by synchronizing their radio broadcasts and advertisements with mobile devices. MySimBook allows businesses to deliver advertisements instantly to opt in members via SMS and e-mail.

ALERT FM and MySimBook give FM broadcasters a wider spectrum of possibilities by advancing FM technology beyond the radio. They can help potentially safeguard their communities and directly advertise to those community members.

GLOBAL
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Global Security Systems
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Fax: (601) 709-4241
E-mail: info@gssnet.us
Web: www.alertfm.com
NAB Show Booth N9307

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World Radio History

Comrex Has the Answer: DH42

As technology changes, broadcasters must adapt. This is especially true as VoIP technology has improved in both the quality of digital delivery and in its cost-effectiveness. In recent years, we have seen low cost Internet telephone services give the traditional telcos a serious run for their money. But finding an elegant way to interface VoIP telephone audio to a broadcast audio console or recording device has been a challenge.

The new DH42 from Comrex represents the natural evolution of the broadcast telephone interface. It is essentially a four-line conferencing telephone hybrid, designed to allow callers to be put on-air with separate send and receive paths, filtering, AGC, and control functions.

What makes the DH42 special is that it blends the technology of the legacy POTS (Plain Old Telephone System) phone interface with Voice-over-IP (VoIP) technology. The unit can handle up to two POTS lines simultaneously with two SIP-based VoIP channels. The VoIP lines may be served from a low-cost Internet-based provider or from an in-house SIP-based VoIP PBX. This makes the DH42 extremely versatile and suitable in many telephone interface environments.

DH42

The DH42 can be configured to operate in many different ways, including:

- Choice of which callers are routed to which of three separate output connectors
- Choice of which of two available input feeds are fed to which callers
- Choice of which calls are conferenced together
- Choice of which incoming lines ring through to one of two external telephone jacks (or to your PBX inputs)
- Choice of which outgoing lines are presented when each of two external telephone connections (or PBX trunks) are "picked up"

In addition, the DH42 provides the ability to put any phone line "On Hold" and deliver program or "On Hold" audio to callers on hold. It features familiar, DH-style front panel and remote control capability.

Audio interface is via balanced, professional level XLR connectors. Audio level controls and setup are available behind a front panel access cover. VoIP and SIP-based setup, as well as audio routing choices, are made via the built-in web page accessible from any computer web browser.

AAC-ELD makes Comrex ACCESS Debut

Comrex has recently signed an agreement with Fraunhofer IIS to license its new MPEG-4 AAC-ELD (Enhanced Low Delay) coding algorithm for use with the Comrex ACCESS line of audio codecs.

AAC-ELD combines the best aspects of low-delay audio coding with Spectral Band Replication to reduce bit rate. This combination creates a coding algorithm that is uniquely suited to real-time audio transmission over IP circuits.

Combined with BRIC Technology for ACCESS, using AAC-ELD allows full-fidelity, high-quality audio transmission at a data rate that easily fits into satellite and 3G wireless upload channels. One-way ACCESS transmission delay using AAC-ELD is an easily managed 50 milliseconds.

Comrex is pleased to be able to offer this outstanding algorithm as part of the AAC Option package for ACCESS codecs. AAC-ELD is free to current owners of the ACCESS AAC Option.

The new DH42 and AAC-ELD for ACCESS will both be on display at the Comrex booth, N2125, in the North Radio/Audio Hall of the Las Vegas Convention center.

More details at www.comrex.com

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E-mail: info@comrex.com
Web: www.comrex.com
NAB Show Booth N2125

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World Radio History

*Above: Rays broadcasters **Andy Freed** (left) and **Dave Wills** (right) interview Rays' star third base prospect **Evan Langoria** on the "The Hot Stove Radio Show."*

*Top: **Larry McCabe**, Tampa Bay Rays Senior Director of Broadcasting and **Rich Herrera**, broadcaster and Director of Radio Operations are shown on the field during spring training.*

Impossible Remote?
Nah...You've Got ACCESS!

Tampa Bay Rays' Real-World Super Hero Saves the Day!

Fans of the Tampa Bay Rays baseball team are intimately familiar with Dave Wills and Andy Freed, play-by-play announcers and hosts of "The Hot Stove Radio Show." Offering the inside track on all things Rays, the show kicked off its 2008 season with the "Countdown to Opening Day" series. While at a remote from a well-known sports bar, ACCESS showed its true worth. Two minutes before the broadcast, the ISDN line that was supposed to be used for the broadcast failed to connect. Luckily, they had the ACCESS running on Wi-Fi provided by the restaurant. The broadcast got on the air and was flawless for the entire one hour show.

ACCESS delivers mono or stereo over DSL, Cable, Wi-Fi, 3G cellular, satellite, POTS (yep, ACCESS is a full featured POTS codec and works seamlessly with Matrix, Vector and Bluebox)—plus some services you may not have even heard of. Given the challenges of the public Internet, it's no small boast to say that ACCESS will perform in real time over most available IP connections.

Contact Comrex today and find out how ACCESS can help you become a Real-World Super Hero — wherever you are!

Put Comrex On The Line.

COMREX

19 Pine Road, Devens, MA 01434 USA Tel: 978-784-1776 • Fax: 978-784-1717 • Toll Free: 800-237-1776 • www.comrex.com • e-mail: info@comrex.com

World Radio History

Meet the SixMix and the MiniPod

SixMix USB Broadcast Console

SixMix is the industry's first compact broadcast console that includes a built-in USB computer interface.

SixMix is a 10-input, six-channel broadcast console that's about the size of a laptop computer. SixMix is the "missing link" that turns a PC or laptop computer into a complete broadcast studio.

The most important (and unique) feature of ***SixMix*** is its integral **USB digital audio interface**. Just connect a USB cable to any PC or laptop, and it's ready to record, edit and play digital audio with superb audio quality. SixMix uses the same A/D and D/A converter technology that is used in the award-winning Henry Engineering USB Matchbox, providing audio quality that is superior that that of a typical PC "sound card."

SixMix is a true broadcast console (not a PA mixer) that is designed for "real radio." It accepts up to 10 audio sources (two mics, seven stereo line plus the PC) and provides numerous *broadcast-specific* functions and features: Stereo Program mix bus, Cue bus with integral Cue speaker, Monitor system with programmable mic-on speaker muting, an "Air" input for the Monitor system, Mic Tally outputs for control of *on-the-air* warning lights, Cough switches for the mic channels, a Mix-Minus output and a guest announcer headphone system with full duplex Talkback.

These broadcast features make ***SixMix*** ideal for a live on-air studio, for use with radio automation, digital production, news editing, Webcasting or as a self-contained emergency studio. Its color-coded knobs, buttons and LEDs prevent embarrassing on-air errors, and its clean uncluttered layout make operating SixMix easy and intuitive.

SixMix offers the best of both worlds: the familiarity and reliability of an analog console with the convenience and sound quality of digital audio. LIST PRICE: $1,195.

MultiPhones MiniPod Compact Stereo Headphone Amplifier

The new MultiPhones MiniPod is a compact stereo headphone amplifier. Each MiniPod includes a volume control and headphone jacks. Its compact size allows it to be mounted on a tabletop or under a counter.

MiniPods can be used with a MultiPhones Master unit, OR as "stand-alone" headphone stations. In either case, multiple MiniPods can be linked together (using Cat-5 cabling) to form a multi-listener headphones system. LIST PRICE: $135.

HENRY ENGINEERING
Henry Engineering
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Fax: (626) 355-0077
E-mail: henryeng@aol.com
NAB Show Booth N9023

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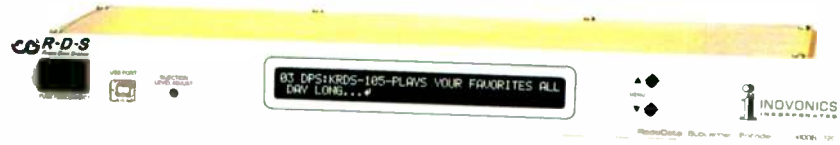
World Radio History

Inovonics Shows New Stuff!



Inovonics will bring three new items to NAB 2008. The first is the latest generation in the firm's line of RDS/RBDS RadioData encoders.

The new Model 720 features self-guided setup routines and diagnostics in both the hardware and the supplied Windows® software to make programming easy and installation virtually foolproof. A front-panel LCD display flips through the contents of all RDS flag and message registers, and shows incoming programming data "on the fly" plus scrolling messages exactly as they are seen by the listener. The 720 interfaces with all popular station automation systems and features a new "no headers" mode that enables the scrolling of song title and artist information from raw, unformatted satellite feeds.

Also new this year is the Model 525 AM Reference Receiver and Modulation Monitor. This frequency-agile wideband AM monitor maintains off-air AM modulation measurement accuracy even for "hybrid digital" IBOC transmissions.

The 525 gives simultaneous display of positive and negative modulation, and switches to also show RSSI (signal strength) and asynchronous noise as well. Operation is entirely menu-driven with front-panel tuning and five station presets.

A special feature of the 525 is a variable low-pass function to provide a user-selected audio cutoff for the monitored audio while maintaining full 10 kHz measurement bandwidth. The filter can be programmed between 10 kHz and 2 kHz to simulate the rolloff of typical consumer radios, or to allow the broadcaster to preview effects of transmission bandwidth restriction. The monitor gives front-panel and remote alarms for overmodulation, carrier and program audio loss, and is supplied with a weatherproof outdoor antenna.

Inovonics will also have a firmware update for their Model 261 Digital "Utility" Processor, the firm's DSP-based AGC, compressor and limiter that was introduced at NAB 2006. The new Rev. 2 firmware adds independent preemphasis protection limiting to the product, making the 261 a truly multifaceted and versatile audio processing product, ideal for LPFM as well as link protection and general leveling jobs around the station. Rev. 2 firmware is available free of charge to existing 261 owners and is implemented in minutes with a plug-in PROM chip.

The firm's full line of products will be shown and demonstrated by the company's team of "usual suspects," and the legendary candy bowl will never be empty. Come see us at Booth N5829.

Inovonics
INOVONICS, INC.
1305 Fair Avenue
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Phone: (831) 458-0552
Fax: (831) 458-0554
e-mail: info@inovon.com
Web: www.inovon.com
NAB Show Booth N5829

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World Radio History

Making Life Easier for Engineers.

New JTS Test Section

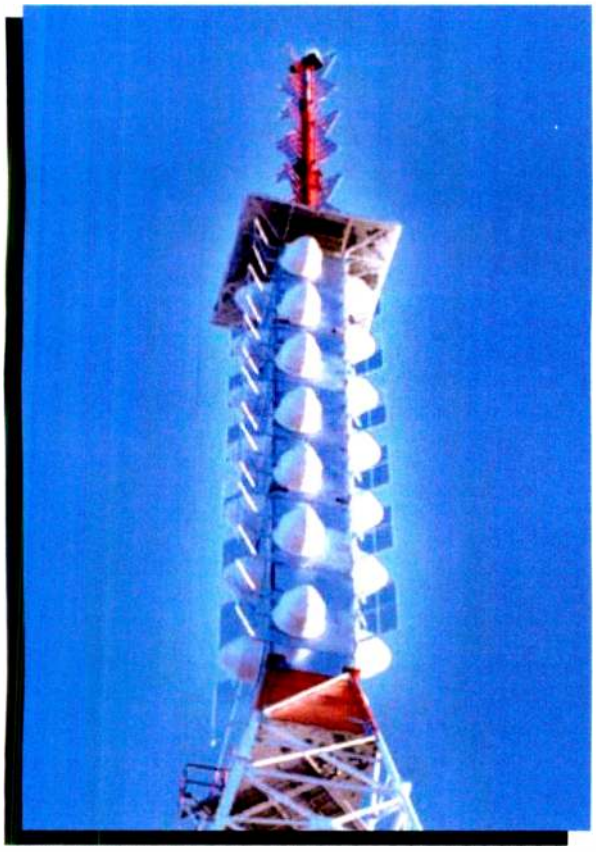
Making life easier for engineers is Jampro's mission, hence the new compact replacement for the bulky tuned elbow complex. The JTS Test Section allows access to either the antenna or the coax system without the need for a tuned elbow complex. It's available for Band I (Low-Band TV), Band II (FM), Band III (Hi-Band TV) and Band IV (UHF TV). It comes with fixed bullets for Input and Output, plus one "O" ring, hardware set, pass-through connection and test turn. Port closure maintains impedance for normal operation.

RCPU Unitized Power Splitter/Patch Panel

Jampro Power Splitter and Patch Panel assembly divide the output of a Band II (88–108 MHz) combiner or transmitter into two equal signals. The unit is composed of one power splitter, a quick release patch panel and interconnecting coaxial lines. All of these items are assembled and packaged in a compact unitized rack cabinet. The power splitter is fitted with coaxial input and outputs, and interlock switches are mounted on the patch panel. The system is designed to allow the broadcaster to split the signal to both upper and lower antenna halves during normal operation or select either upper or lower antenna for emergency or maintenance operation. Also available in Bands I, III, IV/V.

World Radio History

When You Want More Than Just An Antenna



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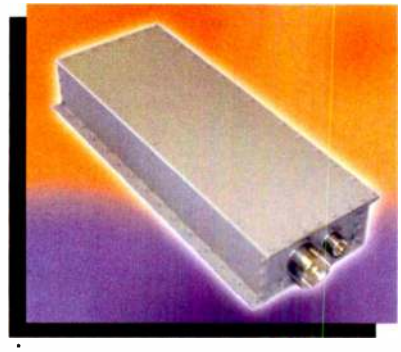

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World Radio History

Sleek Packs, Professional Performance

JK Audio introduces our new Beltpack series of man-on-the-street interview and IFB monitoring tools. These sleek packs provides a professional look and feel to field reporters and remote talent.

BluePack connects a microphone and headphones to your cell phone using Bluetooth Wireless Technology. This professional microphone preamp and powerful headphone amplifier makes sure the message gets through.

A 3.5 mm stereo line input jack allows recordings to be mixed into the broadcast. The 3.5 mm stereo line output jack provides your full-bandwidth microphone signal on the left channel and Bluetooth audio on the right channel. Like any phone call, live interviews are limited to 3.4 kHz voice bandwidth back to the station. This stereo output jack allows you to make a full-bandwidth recording using your favorite recorder.

The stereo headphone output gives you a mix of the XLR microphone input, 3.5 mm input and Bluetooth audio. This powerful 1/2 watt stereo headphone amplifier will cut through any crowd noise. BluePack also pairs to Bluetooth-equipped sound cards and music players in full-bandwidth stereo A2DP mode. You can expect >10 hours on one 9 V alkaline battery.

RemoteAmp Blue allows IFB monitoring through a cell phone equipped with Bluetooth Wireless Technology. This is a listen-only device designed for voice IFB or full-bandwidth stereo music listening.

The XLR and 3.5 mm line input jacks allow wired operation in parallel with the Bluetooth connection. The XLR input accepts either a balanced mono signal, or a party line intercom feed (listen-only). The 1/4 inch headphone jack provides 1/2 watt per channel into 8 ohms. The 3.5 mm stereo output jack can power either mono or stereo earpieces. RemoteAmp Blue also pairs to Bluetooth equipped sound cards and music players in full-bandwidth stereo A2DP mode. You can expect >10 hours on one 9 V alkaline battery.

RemoteAmp Two provides a wired, listen-only connection for mono IFB or full-bandwidth stereo music listening. Separate volume controls for the XLR and 3.5 mm line input jacks allow a simple mix of mono and stereo sources. The XLR input accepts either a balanced mono signal, or a party line intercom feed (listen-only). The 1/4 inch headphone jack provides 1/2 watt per channel into 8 ohms. The 3.5 mm stereo output jack can power either mono or stereo earpieces. You can expect >20 hours on one 9 V alkaline battery.

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World Radio History

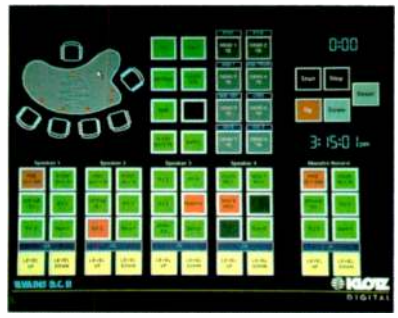
New Workflow Efficiencies From Klotz

DECENNIUM
Customizable Digital Audio Console

KLOTZ DIGITAL is the inventor of digital signal processing and distribution systems for the modern broadcast industry. Based on the unique digital VADIS platform, KLOTZ DIGITAL offers solutions ranging from stand-alone on-air mixing consoles for radio and TV stations to complete solution packages, including simple to highly complex audio- and control-networking systems.

Latest products from KLOTZ DIGITAL showcased at NAB are designed for the media industry to enable new workflow efficiencies while driving down installation and operating cost. Join KLOTZ DIGITAL at NAB to see and experience why so many broadcasters are choosing KLOTZ DIGITAL. On Booth N5925 in North Hall KLOTZ DIGITAL will be introducing:

VADIS Workflow Tools: Every broadcaster in the world has a unique way of operating, which, up until now, has been limited by the technology installed in their facility. At KLOTZ DIGITAL we believe workflow rules and technology adapts. That is why our engineers have developed a large range of software modules which can be used in almost any combination to achieve a completely custom solution. Tailoring each solution allows the simplification of previously complex tasks, improve operational flexibility and accommodate future change and growth all of which save the client time and money.



To manage the use of sharing resources through LAN infrastructure KLOTZ DIGITAL has invented the VADIS Workflow Tool 'Shared Control Management.' It is one of a wide range of software tools KLOTZ DIGITAL will introduce at the 2008 NAB Show.

XENON — the "all-in-one" Digital Audio Console — is the perfect mixing solution for small radio stations, small studios that are part of large radio facilities and for outside broadcasting. The all-in-one, fully digital broadcast console offers audio inputs and outputs in analog and digital format, routing capabilities and free assignment to faders, DSP functions for audio treatment and processing and a pool of free configurable GPIs for best integration capabilities. XENON is available as a six- or 12-fader console.

AEON Audio Networking Console: Combined with an integrated state-of-the-art router, AEON provides a cost-effective mixing solution. Based on KLOTZ DIGITAL's ultra-slim console modules (2.5 cm thick) it allows flexibility in console layouts and studio set up. AEON is available with eight—, 12-, 16- and 20-fader control surfaces. The "AEON Setup Tool" software is included and enables users the configuration of the system exactly according to one's personal requirements.

Radio broadcasters will be delighted by **DECENNIUM**, KLOTZ DIGITAL's Customizable Digital Audio Console. It is networkable and comes along with an avant-garde audio engine to be integrated in audio and control networks. As DECENNIUM is equipped with first-class DSP features, an external voice processor or other peripheral equipment is unnecessary. Fully parametric six-band equalizers and highly sophisticated Dynamics with limiter/compressor/expander can be inserted and stored in each channel. The console's special feature is the eye-catching "Multi-Purpose Control Element" (MPCE) which is integrated in each channel strip. With the MPCE the console is easier to operate and offers the implementation of additional customer- or project-specific dynamic functions.

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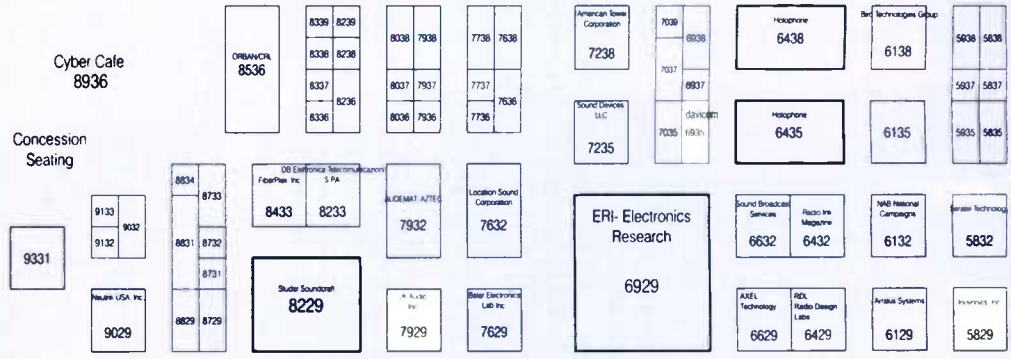

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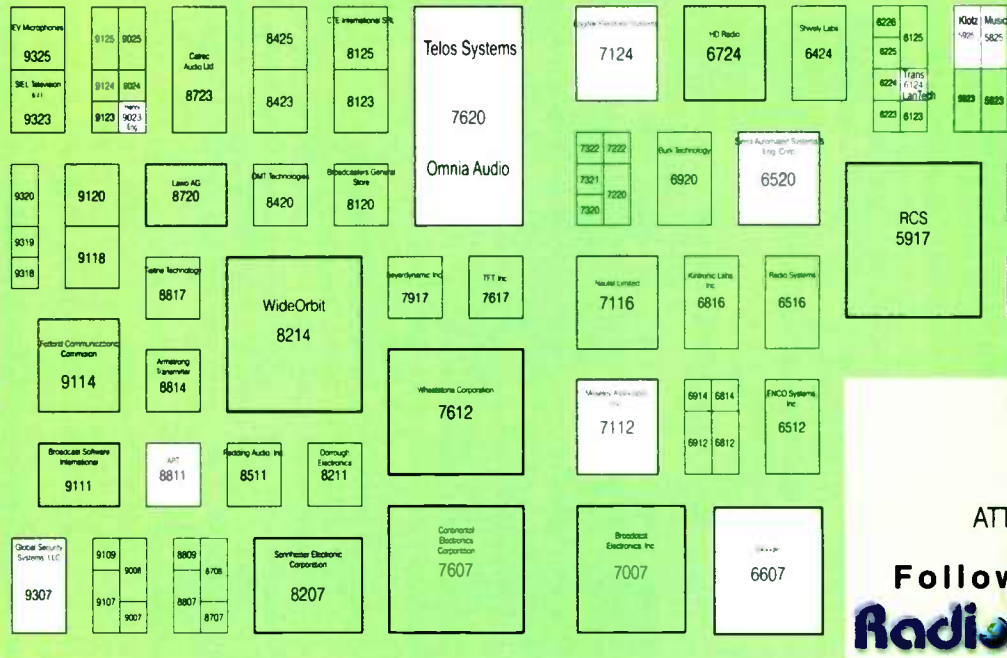

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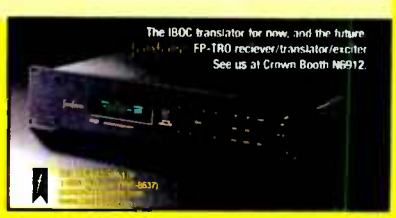
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World Radio History

Meeting the Needs of Broadcast for Today and Tomorrow

Corporate Computer Systems Inc., better known as CCS, d/b/a MUSICAM USA, shipped the world's first professional broadcast audio codecs in 1987. Since then, we have led the industry with innovative codec products that have connected tens of thousands of audio professionals worldwide.

Long the standard of those who test and measure audio, CCS/MUSICAM USA's first-generation codecs were the first to offer multiple algorithms, multiple data rates, Prima™ Logic Language, in-band SMPTE Time Code, remote relay contact closures, ISDN BONDING, MUSICAM®-enhanced MPEG Layer 2 Encoding, and a host of useful features designed to make your job easier. The second generation of CCS/MUSICAM USA products offered a modular design with E1 and T1 support.

Third Generation

Today, MUSICAM USA innovates again with the beginning of its third generation of codecs, led by the **Suprima**.

Suprima is a versatile, multi-network audio codec, which can utilize many different industry-standard types of communication networks to transport studio-quality audio. The **Suprima** can send and receive full-fidelity, real-time stereo audio not only via ISDN and dedicated data lines, but also via IP, which opens a new realm of connection capabilities. **Suprima** contains many of the industry-standard algorithms including the latest MPEG 2 Advanced Audio Coding (AAC), AAC-HE and uncompressed linear audio and near-zero delay.

For portable applications, there is the **RoadWarrior**, which is based on the **Suprima** with IP and ISDN interfaces and a five-channel mixer.

RoadWarrior provides two communication lines: Program and TalkBack line. It comes fitted with a built-in five-channel mixer with level control for both input and output sources. The user can set the various monitoring signals on the headphone and auxiliary outputs, and the audio inputs to be sent to the Program or TalkBack lines. **RoadWarrior** can be controlled from its top panel, through a large, easy-to-use navigate menu display, or via remote control, through its embedded Web Page.

For large IP installations, the **SupriMAX** codec line is for you. The **SupriMAX** is a Multi IP Codec in a 3U rack, which can house up to 14 IP audio modules. These IP audio modules are based on **Suprima**, so it supports all the main features of **Suprima** when working over IP, and supports the widest range of audio compression modes. The **SupriMAX-1U** can hold up to 4 IP audio modules in just a 1U high rack space.

With IP broadcast capabilities now upon us, MUSICAM USA is well equipped to handle today's broadcast needs as well as tomorrow's.

MUSICAM USA

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670 North Beers St., Bldg. 4
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NAB Show Booth N5825

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World Radio History

Omnia ONE: Good Things Come in Small Packages!

The Omnia ONE family continues to grow. The popular 1 RU audio processor is now available in three versions: Multicast/DAB, FM and most recently, the New Omnia ONE AM.

Brand-new from the ground up, the Omnia ONE is designed as a "universal hardware platform." Using the latest and most powerful DSP hardware architecture, the Omnia ONE platform can handle and adapt to the demands of both traditional and digital broadcasting through simple software downloads.

Today, you need a lot of flexibility in an audio processor because transmission systems exist in many different forms. The processor you choose must have the tools to meet those needs. The Omnia ONE's dual firmware banks allow it to meet the challenges of FM, AM, HD Radio™, DAB, DRM, multicasting, podcasting, netcasting, satcasting and any other form of "casting" you can think of. There's plenty of power inside its 1RU frame, so don't let the size fool you!

Omnia ONE isn't dedicated to a sole application style. It can be used in the studio, for transmission, and even in networked applications, thanks to its Livewire™ interface. Modification is achieved through a simple download. It's that easy!

And since there are two software banks, two styles can be onboard at once, easily switched between when needed. Processing functions like AGC, limiting, audio enhancement, MPX stereo generation and codec pre-conditioning are just the start. As signal processing advancements occur, Omnia ONE goes along for the ride, through the flexibility of its platform.

And Omnia ONE is ready for broadcasting's future. It uses the Livewire™ standard for professional networked audio over Ethernet, connecting directly to Axia IP-Audio networks. When used as part of an Axia network, a single Cat 6 cable carries all inputs, outputs and remote control.

Omnia ONE Features:

- Ethernet, RS-232 Modem and GPI remote control ports with built-in Web page interface.
- Livewire I/O Connectivity now available.
- Analog XLR balanced inputs and outputs.
- Digital AES/EBU input, output and external Sync input.
- Automatic input fail-over on loss of audio.
- Universal power input.
- Built-in stereo headphone jack with front-panel level control.
- Single jog-wheel user interface with LED level metering and LCD screen.
- Web browser remote interface.
- Wideband AGC for smooth "hand on the pot" gain riding.
- Selectable phase rotator.
- Four-band AGC to add dynamic EQ enhancement for consistency and to build density before the limiter stages.
- Four-band peak limiter using feedback limiters for the lower two bands (optimized for bass punch and lower midrange warmth) and feed-forward limiters for the upper two bands (optimized for sparkling upper mids and highs).
- Time-aligned, dynamically flat crossover.

Omnia ONE Multicast / OAB Features:

- Ultra low-distortion look-ahead final limiter optimized for codecs.
- SENSUS™ algorithm self-adjusts processing architecture improving coded audio quality.
- Multicasting isn't the only bit-reduced stream that can benefit from Omnia ONE Multicast: Satellite uplinks, Internet broadcasters, cellcasters, podcasters — anyone producing real-time audio for coded channels can benefit from the audience-grabbing sound that's made Omnia the first choice of broadcasters everywhere.

Omnia ONE FM Features:

- Advanced, pre-emphasized, fully distortion-controlled final limiter/clipper.
- Integrated digital stereo generator with advanced peak control, two composite MPX outputs, SCA input and 19 kHz output.

Omnia ONE AM Features:

- Advanced, NRSC pre-emphasized, fully distortion-controlled final limiter/clipper.
- Selectable low-pass filters suitable for NRSC, HD AM or any ITU installation.

Omnia
A Telos Company

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World Radio History

OMNIRAX BROADCAST FURNITURE

The Engineer's Choice

What differentiates Omnirax from other furniture manufacturers is our uniquely balanced blend of style, functionality and ergonomics, our excellent collaborative custom design ability and our fanatical attention to detail.

Omnirax works directly with chief engineers, program directors, architects and station owners to provide intuitive and custom solutions at near-production prices.

At Omnirax our products and services speak for themselves. We let our customers do the talking.

"...I wholeheartedly recommend Omnirax to everyone." *

"Our furniture from you not only fit into our budget and timeline, it was very well constructed and looked beautiful. I expect to be outfitting many more facilities with Omnirax ..." *

What's new?

The year 2007 saw further expansion of our Innova line into many more stations across the country, including a suite of rooms and several dozen workstations for the ground-breaking organization Youth Radio in Oakland; a five-room suite of studios for West Virginia Radio's Cumberland Facility; as well as rooms for Focus on the Family in Colorado Springs, and Horizon Broadcasting's Network Operations Center in Minot, N.D.

"...I was impressed with the exceptional care given packaging for shipment. A few very large and potentially fragile components made it cross-country completely unscathed." *

Clear Channel NYC

"...The Omnirax design makes these studios incredible for talent and operators on both sides of the console." *

"...Ease of installation is important and we got that with Omnirax. Customer service was superior to almost any other vendor we deal with." *

Innova combines modular components with custom tailored shapes to fit particular requirements of on-air, production and imaging studios. Cable raceways are integrated into the structural design to facilitate wiring and create logical access points throughout. Conventional casework and cabinetry can be provided so that an entire facility has a unified look and feel. Omnirax also offers custom designed acrylic copy stands as well as a full line of monitor arms.

Clear Channel NYC

We are currently putting the finishing touches on two major projects in New York City: WNYC Public Radio's new facility in the West Village, comprising upwards of 40 rooms, including six on-air and five production studios; and Clear Channel's 30-room consolidation of five stations under one roof on the Lower West Side. This is Omnirax's first large-scale design utilizing Corian solid-surface, featured in the design of 10 futuristic on-air studios.

"...OMNIRAX service has been personal, timely and unflinching. Upon seeing my desks up in my space for the first time, I simply shot an e-mail to OMNIRAX saying, 'I love you.' If you've ever had any doubt at all about OMNIRAX, rethink. Rethink OMNIRAX. Entrust them with your dreams." *

**References available upon request.*

OMNIRAX

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World Radio History

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Sage Alerting Systems, Inc. and its famous Sage ENDEC continue the tradition of bringing the finest Emergency Alert System technology to radio, TV, cable and public safety.

The original Sage ENDEC, certified in 1996, has helped thousands of broadcasters and public safety organizations serve the public with tornado warnings, Amber alerts and notifications of toxic and hazards spills. Taking EAS to the next step is what Harold Price and Gerald LeBow, founders of Sage Alerting Systems, are now doing with the new Digital ENDEC.

Designed as a plug-compatible replacement for the original ENDEC, this new product features a host of new and exciting functions including:

- AES/EBU digital audio connectivity
- LAN/Internet connection
- Secure remote control via Web browser
- CAP-ready, with text to speech capability
- Logging to USB and network printers or e-mail
- Monitors all inputs and emails you if any input fails
- Front-panel menus are compatible with the original ENDEC, minimizing retraining for existing features
- Support for the original ENDEC peripherals and software add-ons
- Software is in FLASH for easy update — no more ROMS

Not only has Sage Alerting Systems brought the ENDEC to the 21st century but it is expanding its availability through a number of the broadcast industry's best distributors. This will make it easier for broadcasters to purchase the Digital ENDEC along with other studio and transmitter equipment they buy from their favorite distributor.

The new Digital ENDEC supports the existing CAP 1.1 spec, and Sage will provide a downloadable software update when FEMA certifies CAP 1.1 as part of the EAS standard and the new FCC requirements kick in. In the meantime, broadcasters who need a replacement for their 12-year-old ENDEC, who want the improved LAN access, remote control and automation interfaces, or who are in areas that are already adopting CAP will want to take a look at the Digital ENDEC.

Sage Alerting Systems works closely with state and national broadcaster associations to ensure ease of purchase and on-time delivery. Jerry LeBow and Harold Price will continue to be available to attend state broadcaster association meetings.

See the Digital ENDEC at NAB at the Harris booth (N2502) and at the Google booth (N6607).

Sage Alerting Systems, Inc. The tradition continues.

SAGE Alerting Systems, Inc

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NAB Show Booth N2502 (Harris) and N6607 (Google)

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World Radio History

Telos Zephyr/IP: Sophisticated Technology in IP Audio

The new Zephyr/IP brings an effective package of sophisticated technology to the world of IP audio codecs. Optimized for operation over the public Internet and mobile phone data services, the Z/IP delivers when others can't.

Zephyr/IP utilizes ACT–Agile Connection Technology, which combines state-of-the-art loss detection and concealment with dynamic buffering and auto-varying bitrate functions — to continuously adapt to network conditions, minimizing the effects of packet loss, varying bandwidth and jitter that occur on real-world networks.

Z/IP also introduces another technology leap: AAC-ELD, a new codec based on low-delay AAC. With its excellent fidelity at low bitrates, nearly inaudible loss concealment, and auto bitrate and jitter tuning, AAC-ELD delivers superior audio for two-way IP applications over non-controlled networks.

The Z/IP family includes both a studio codec and a PC-based server that addresses firewall and NAT (Network Address Translation) issues. Firewalls and NAT devices often found at the edges of LANs can prevent audio streams from flowing, but Telos Z/IP Server technology solves this problem, keeping track of users' online status and IP address information so that making connections is as simple as selecting from an onscreen list.

The Z/IP works directly with high-speed mobile phone data networks; a USB connector accepts standard EVDO USB modems.

The Zephyr/IP Features:

- New AAC-ELD (Advanced Audio Coding — Enhanced Low Delay) Codec.
- New Telos ACT (Agile Connection Technology).
- Effective Packet Loss Concealment.
- Audio I/O via AES/EBU, analog and an Axia Livewire IP-Audio interface.
- Studio-grade 24-bit A-to-D and D-to-A converters.
- Ethernet and USB connections.
- Works directly with high-speed mobile phone data networks via an EVDO USB modem.
- WiFi connectivity: Connect to any WiFi hotspot.
- Transmission bitrates from 18 kbps to 256 kbps.
- High-resolution, information-rich interface with context-sensitive on-screen help.
- Full-VGA display screen displays network conditions in an intuitive color-coded graphics format.
- Support of select wireless devices, as well as UMTS devices.
- Telos-hosted Z/IP Server enables lookup of and connection to other Zephyr/IP users worldwide, even through firewalls and Network Address Translation (NAT) devices.
- Dial by name regardless of the currently assigned IP address.
- Compatible with Telos Zephyr Xstream and supports SIP, G.711, G.722, MPEG Layer 2.
- Web server for remote configuration and remote control.

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E-mail: info@Telos-Systems.com
Web: www.Telos-Systems.com
NAB Show Booth N7620

Color-keyed map: Pages 16 & 17

World Radio History

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simple, but god ... attached a picture in white contact me for more info. big_plans #221542

STEADY SEEKING LADY

I am looking for a male partner (38-50)who is willing to be exclusive with me for a long term relationship. Not asking for marriage. I am of average build, dark hair, brown eyes and am an Indian female. I have a wonderful job and attend some classes a couple of nights a week. I have two kids who stay at home with me. They are very precious to me. And they are not going to be a hindrance to our dating. I have a full and busy life. Therefore, the expectation is to see each other on a steady basis, and at the same time, being flexible. precious_me #331252

I LOVE MUSIC. YOU LOVE ME

I'm an indie/hipster girl who adores music and going to clubs and shows. Some of the bands that I'm into are Interpol, The Arcade Fire, Blonde Redhead, Bauhaus, The Smiths, Morrissey, etc. I'm into indie rock, electronica, punk, pretty much anything. I drink and smoke occasionally. I'm 21, 5'8", light-skin, dark brown hair/eyes. I work, am well-educated, funny, spontaneous, nice. #2215234

299685

HANDSOME RAKE

Out of work leaf raker/bagger seeks whimsical beauty with un-kempt auburn or chestnut hair, cool coarse hands and a penchant for whistling. mellow_mo, 28, #101318

LET'S CONNECT

Radio engineer seeks stable long distance relationship. Need to connect immediately. Everywhere I go, I see broadband internet, but I just never hook-up. I need to meet that special someone that will plug me in so I can be heard. Must be reliable, connect easily, forgive errors and adapt to change. Should come from a good family. easy_going #101352

SIMPLICITY HERE

Simply put, I'm looking for a fun, casual relationship with only one person. That means one person for me and one person for you. :-) Every woman wants to feel safe with a partner, whether it's serious or not. It's key to her feeling comfortable to express her more intimate nature. I don't ask for much other than to hang out, enjoy your time with me and be available to chill.

MR. RIGHT

I'm actually posting this on behalf of a friend. Since she's been single she hasn't found the right guy and I'm doing this in hopes of helping her find Mr.Right. After you and I talk, if you are chosen then you will get to go on a date with her and who knows, it could be the perfect date and start of a new ...

...also
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...with hint of red. Sorry bus
...name.... (hee). #166778

for women 5'4"...

IN LOVE

Visiting LA this ... to meet a Clas... must be easy ... Please send ... response :) #...

CALL ME

Hah are you ...

Connect with Zephyr/IP: The World's Most Advanced IP Codec

The new Zephyr/IP brings an effective package of sophisticated technology to the world of IP audio codecs. Optimized for operation over the public Internet and mobile phone data services, the Z/IP delivers when others can't.

NEW "AAC-ELD" (ADVANCED AUDIO CODING-ENHANCED LOW DELAY) CODEC: Z/IP introduces a new codec technology invented by the experts at Fraunhofer Institute, the people who brought us MP3 and AAC. Optimized for interactive IP applications, AAC-ELD combines features from MPEG AAC-LD and the Spectral Band Replication technology used in AAC-Plus. It's the most powerful audio coding tech on Earth, offering outstanding bitrate efficiency, low delay, and support for packet loss concealment.

NEW TELOS ACT (AGILE CONNECTION TECHNOLOGY): Z/IP brings automatic on-the-fly bitrate adjustment to IP codecs - a first. The Z/IP constantly monitors the network and sets its bitrate to the optimum value. A dynamic adaptive receive buffer also responds automatically to network conditions, minimizing the effects of the varying bandwidth and jitter that occur on real-world networks.

EFFECTIVE PACKET LOSS CONCEALMENT: The Internet usually has packet loss on audio streams, often ranging up to a few percent. The new AAC-ELD codec combined with ACT can conceal this loss, making for smooth audio even with rough network conditions.

TELOS-HOSTED Z/IP SERVER WITH DIRECTORY SERVICES: Enables you to look up, view the status and connect to other Zephyr/IP users worldwide, even through the toughest firewalls.

A STATE OF THE ART USER INTERFACE: And so you don't feel like you are on a blind date, we give you all of the status information you need on a sharp-looking color LCD which shows live network statistics and trace-route maps in an easy-on-the-eyes graphical interface.

Telos
AUDIO | NETWORKS

Telos-Systems.com

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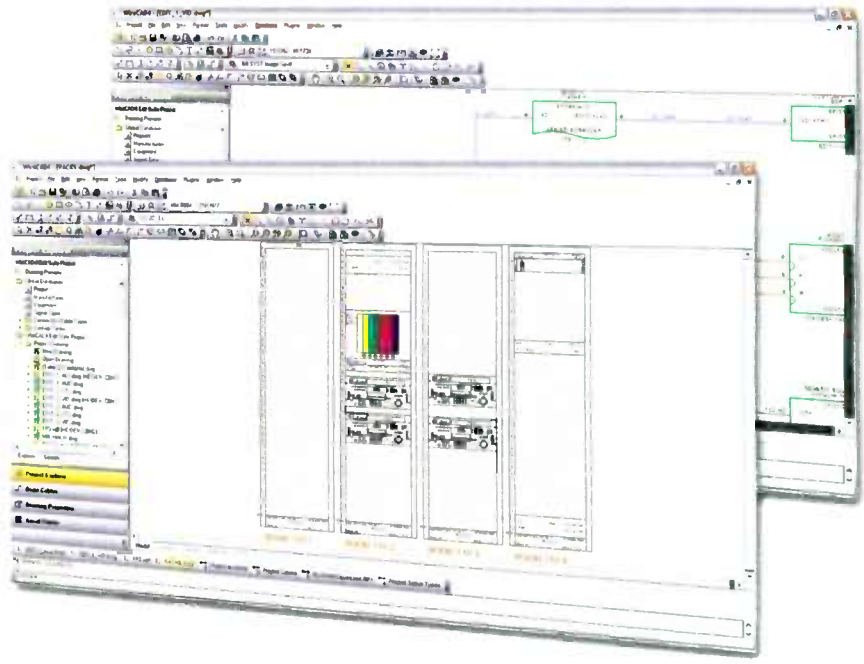
World Radio History

WireCAD

Because Genius Ain't Easy!



So a while back I was out walking my dog Hiccup when the thought occurred to me that what the planet really needed was a way to avoid the tedious, time-consuming, mind-numbing, error-prone process of single-line documentation and all of the associated reports that need to accompany it. I thought there must be a better way than the manual data entry I was doing and having to maintain synchronization between changes I made in the drawings and those in the databases. It occurred to me that we needed to make documentation so easy that it actually got done!

Silly thought, I know, but that is what we set out to do.

WireCAD is the result of years of focus on the problem of creating accurate, detailed documentation without having to learn drafting.

We use a data-driven approach. What that means to you is that you don't have to learn how to draw functional blocks in a CAD program, you just describe the equipment, who made it, what's it called and what I/O does it have. WireCAD does all the heavy lifting for you. And now with version 5 you can share our new Community Server. Upload and download equipment definitions to share with your peers.

We automatically assign cable numbers, do error checking and print all the reports you might need like, cable labels, run sheets, bill of materials, and power consumption and heat-load reports. We automatically create your rack layouts and jackfield designation strips too!

And let's talk about support. We know that WireCAD is a tool that you use and depend on; so support is key. We are not just saying that. We mean it! Whether you just need online chat, e-mail or a full remote diagnostic session, we are here to help.

Anyway this is a really long way of saying: Come see me at the NAB show booth N3635 and tell me the name of my dog, and I'll give you 10 percent off the really cool show specials that we will be running there.

Thanks for taking the time to read this whole thing.

— Christian Holbrook, President

WIRE CAD

WireCAD
4286 E. Amity Ave., Suite 102
Nampa, ID 83687
Phone: (866) 273-5298 toll free
Int'l: 1 (661) 253-4370
Fax: (208) 468-8797
E-mail: sales@wirecad.com
Web: www.wirecad.com
NAB Show Booth N3635

Color-keyed map: Pages 16 & 17

Need WireCAD???

World Radio History

Radio/Audio Exhibitors

Selected exhibitors of interest to radio attendees. Check on-site program for changes and full list. Booths preceded by N are North Hall of the LVCC, C indicates Central, SL is South Lower, SU is South Upper, OE is Outdoor, R is RTNDA at Hilton

25-Seven Systems	N7935
Abaltat	SL9610
AccuWeather	C6428
Acoustical Solutions Inc.	SL2417
Adobe Systems	SL3220
AEQ	N5429
Aeta Audio Systems	N4624
AEV S.P.A.	C12219
AKG Acoustics	N8229
Aldena Telecomunicazioni	C4521
Altronic Research	N5523
American Tower Corp.	N7238
Anritsu Co.	N7320
ANT Group Srl	C3335
Anvil/Calzone	C5611
Aphex Systems	N5617
APT	N8811
(See our Product Preview, page 4)	
Armstrong Transmitter	N8814
Arrakis Systems	N6129
ARRL	Lobby 1
Associated Press/ENPS	C161
ATI	N5229, N5129
Audemat	N7932
Audio Precision	N6125
AudioScience	N5230
Audio-Technica U.S. Inc.	N4529
(See our Product Preview, page 5)	
AVT GmbH	C9619B
Axel Technology	N6629
Axia Audio	N7620
(See our Product Preview, page 6)	
Azden Corp.	N4924
AzEP Arizona Engineered	C7037
Barix AG	N8036
Beat the Traffic	R326
Belar Electronics Lab	N7629
Belden	C8828
Bext	N5620
beyerdynamic	N7917
Bid4Spots.com	N8038
Bird Technologies	N6138

Actual, unsolicited email from one happy Ariane Sequel customer...

"...At the station site we use the Ariane Sequel in front of an C[redacted] with its internal agc turned off. The Sequel works in matrix mode.

This chain ... oh baby ... it is MAGIC !!!

We sound louder, more punchy AND way less distorted than all other stations in the market. It is really unbelieveble. I would not have imagined this big a difference. The smooth non-distorted sound all over the spectrum is so different from other stations. The difference is actually easy to hear on any playback system. Small kitchen radio, big reference speakers, car radio etc.

...Well I know I sound excited and I really am! Just wanna share - the Sequel really is the magic ticket for being loud, punchy and non-distorted!"

-- B. R.

Sound too good to be true? Try an Ariane Sequel for yourself. Hey, who knows? Maybe you'll be writing our next ad!

See the Ariane at NAB 2008 booth N6124

The Ariane Sequel ...There Is NO Equal!

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New York: (212) 222-0330 • Europe: +49 2361 9049 649

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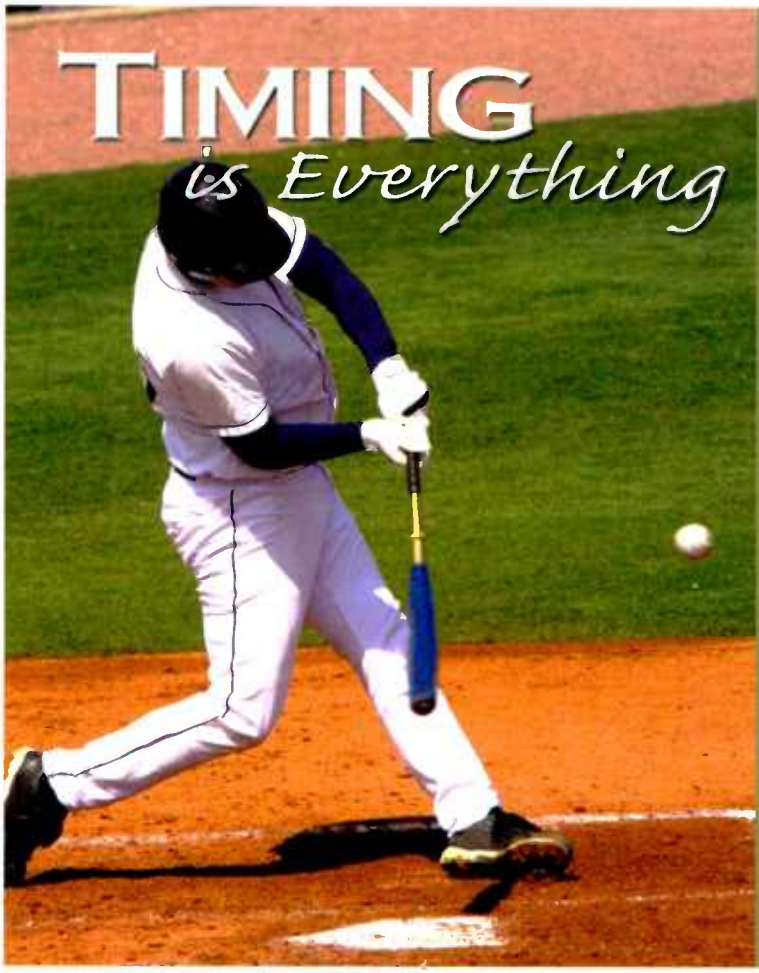
World Radio History

Bose Corp.	C3448
Broadcast Bionics	N9024
Broadcast Electronics	N7007
Broadcast Software International	N9111
Broadcast Tools	N8120
Broadcasters General Store	N8120
Burk Technology	N6920
Burli Software	N5838
Burst Electronics Inc.	C9032
C Crane Co.	N9124
Calrec Audio Ltd.	N8723
CGS InfoGraphics Automation	R316
Chyron	SL3713
Circuit Research Labs/Orban	N8536
Clark Wire & Cable	C7519
Clear Channel Satellite	OE316
Clear-Com Communication Systems	C5908
Coaxial Dynamics	N4626
Comrex	N2125
(See our Product Preview, page 8)	
Continental Electronics	N7607
CPI	N7220, C2611
Crown Broadcast	N6912
CTE International	N8125
D.A.V.I.D. Systems Inc.	SL6129
Dalet Digital Media Systems	SU8520
Dan Dugan Sound Design	N4217
Davicom, a div. of Comlab	N6935
DAWNco	C7237
DaySequerra	N5229, N5129
DB Elettronica Telecomunicazioni	N8233
Denon & Marantz Professional	N4833
DG FastChannel	SU10213
Dialight Corp.	N3222
Dielectric Communications	C1918
Digigram	N9025
DK-Technologies A/S	N1533
Dolby Labs	N1814
Dorrough Electronics	N8211
DPA Microphones	N730
DSI RF Systems Inc.	C4537
Econco	N7220
Ecreso, an Audemat Co.	N7932
Elber S.r.l.	C3327
Electrosys S.r.l.	C3331
Elenos	C12124
Elettronika s.r.l.	C1311
Empire State Building	C2844



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ESE

See us at NAB Booth # N3121

World Radio History

rubicon

"WE HAVE TO BE EVERYWHERE AT ONCE. SAS MAKES IT HAPPEN."

"At Westwood One, thousands of radio stations count on us for a vast range of audio content—from music, to talk, to sports, to the latest news from CBS, NBC and CNN. We manage multiple studios in New York, LA, and DC. It's a big job. We have to be everywhere at once. That's why we work with SAS.

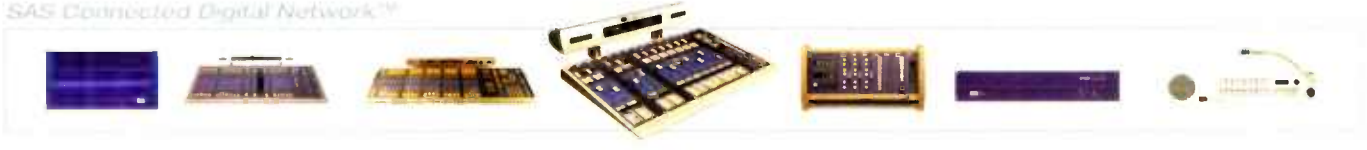
"SAS gives us a system that easily handles our complex audio and control demands, a system that integrates seamlessly with our computer content and satellite delivery systems. Their hardware is absolutely dependable, intuitive for our talent, and modular and scalable to handle our needs—for portable systems for the political conventions on up to core routing for our New York distribution and uplink facility.

"They are ready to develop products based on our needs and those of our partners, at a price that's fair and equitable. With SAS, no job has been too small or too big. Plus, their customer service has always been great and very reachable.

"We see that SAS faces the future with confidence, applying the right technology for the job of delivering content across multiple formats: terrestrial radio, satellite, IP, and web streaming.

"SAS lets us be everywhere at once. And stay that way."

SAS Connected Digital Network™



See Us at NAB Booth #N6520

SAS SIERRA AUTOMATED SYSTEMS

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EXHIBITOR LISTING

ENCO Systems	N6512
Energy-Onix	N8708
ERI Electronics Research Inc.	N6929
ESE	N3121
EV Microphones	N9325
Eventide	N6914
E-Z Up International	N9318
Fanfare	N6912
Federal Communications Commission	N9114
Flash Technology/SPX	N3114
Fraunhofer IIS	SL7424
Gefen	SL2312
Genelec	SL9220
Gepco Intl. Inc.	C6918
Global Security Systems	**N9307**
(See our Product Preview, page 7)	
Google	N6607
Hamlet	N1531
Harris Broadcast Communications	N2502, N4202, N4206
HD Radio	N6724
Heil Sound/Transaudio Group	N7039
Henry Engineering	**N9023**
(See our Product Preview, page 10)	
HHB	N8207
Hitachi Kokusai Electric America Ltd.	C5018
HME	C3022, SU10626
Holophone	N6438, N6435
IEEE Broadcast Tech. Society	Lobby 29
Independent Audio	N4920
Inovonics Inc.	**N5829**
(See our Product Preview, page 11)	
International Datacasting	C8437
ISIS Group Inc.	N602
Jampro Antennas	**C2607**
(See our Product Preview, page 12)	
JBL Professional	N8229
Jetcast	N8336
JK Audio Inc.	**N7929**
(See our Product Preview, page 14)	
JLCooper Electronics	N3118
Junger Audio Studiotechnik GmbH	N2636
Kathrein-Werke KG	C5508B
Kintronic Labs Inc.	N6816
Klotz Digital Audio Systems Inc.	**N5925**
(See our Product Preview, page 15)	
Kowa Optimed	N6938
LARCAN USA	C2618
Lawo North America Corp.	N8720
LBA Technology Inc.	N8733
Linear Acoustic Inc.	C2151
Linear s.r.l.	N4831
Liquid Compass	N7938
Logitek Electronic Systems	N7124
Masstech Group Inc.	SU13813
Mayah Communications GmbH	C10619D
Microsoft Corp.	SL14500MR
Microwave Radio Communications	C1807
Middle Atlantic Products	SU10205
Minnetonka Audio Software	N3215
MOG Solutions	SU7530
Moseley Associates	N7112
MultiDyne Video & Fiber Optic Systems	SU3411
Musicam USA	**N5825**
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Myat Inc.	C2215
Nagra USA Inc.	N3214, R203
Nat'l Assn. of Tower Erectors	C1431
Nautel	N7116
NDS	N6812
Netia	N5433
Neutrik USA	N9029
NewBay Media	N4930, SL10229, C11837MR
NKK Switches	N2633, N203DMR
Non-Stop Music	SL10615, R306
NPR Satellite Services	C4237
OConnor	C6418
Oldcastle Precast Services	N2532
OMB Sistemas Electronicos	C3024
Omnia Audio	**N7620**
(See our Product Preview, page 19)	
Omnirax Broadcast Furniture	**N4517**
(See our Product Preview, page 20)	
OMT Technologies	N8420
Orban/CRL	N8536, C3447
P+S Technik GmbH	C10319
Patriot Antenna Systems	OE103
Phillystran	N5132
pinta acoustic	N6814
Potomac Instruments	N6226
Power Module Technology	N9109
Pristine Systems Inc.	N8831
Propagation Systems Inc. (PSI)	C2324
PTEK	N9008
QEI Corp.	N6223
Qualcomm/MediaFLO	C2946
Quintech Electronics	C8737
Radio Advertising Bureau	Lobby 2
Radio Frequency Systems	C2321
Radio Systems	N6516
Radio World	N4930
RadioSoft	N7736
RadioTraffic.com	N6123
RCS	N5917
RDL Radio Design Labs	N6429
rfSoftware	N8829
Richardson Electronics	C1724
Rohde & Schwarz	C1933
Rohn Products	C2632
RTNDA Showcase	R311
RTW GmbH & Co. KG	N3223
RVR Elettronica S.P.A.	N5220
Rycote	N8511

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Rymsa/Micro Communication	C2624A
S.W.R. Inc.	C1133
Sabre Towers and Poles	N5938
Sage Alerting	N2502, N6607
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Sennheiser	N8207
Shively Labs	N6424
Shure Inc.	N2830
Siel Broadcast S.p.A.	N9323
Sierra Automated Systems SAS	N6520
SIRA Srl	C1328
Society of Broadcast Engineers	Lobby 27
Sonifex Ltd.	N4919
Sonnet Technologies	SL13808
Sound Devices	N7235
Sound Ideas	SL9616
SoundField	N7037
Spinner GmbH	C9619A
SRS Labs	N4824
Staco Energy	N4218
Stantron	SU5613
Studer	N8229
Studio Network Solutions	SL8208
Summit Traffic	N8831
Superior Broadcast Products	C1107
Superior Electric	N8807
Switchcraft	C7508
TASCAM	SL10328
TeamCast	C3020
Tektronix	N2520, C1051
Telcast Fiber	SU4227
Telos Systems	N7620
(See our Product Preview, page 22)	
Teracom Components	C1318
TFT Inc.	N7617
Tieline	N8817
TransLanTech Sound	N6124
Transradio SenderSysteme Berlin	N9123A
Trilogy Communications Ltd.	C8122
TSL SU	14615
TV Magic Inc.	N2136
Valcom Mfg. Group	C2539
Volicon	N2514
V-Soft Communications	N5835
Ward-Beck Systems	SU7420
Wegener	SU7911
Westar Music	SL9612
Wheatstone Corp.	N7612
Whirlwind	C7733
WhisperRoom	SL10220
Will-Burt	C7922
WinMedia Software Inc.	N4623
WireCAD	N3635
(See our Product Preview, page 24)	
WireReady	N3835
Wireworks Corp.	C7924
Wohler	N1314
Xytech Systems	SL4326
Yamaha Commercial Audio	SL5710
Zaxcom Inc.	N4533

World Radio History

GREAT RADIO IS AN ART FORM

MOSAIC - ART MEETS TECHNOLOGY

Logitek helps your talent bring that art to life with the Mosaic digital console. This versatile, flexible control surface for our powerful Audio Engine router can manage your most challenging on-air or production requirements while providing the reliability and ease of maintenance that your busy operation requires.

Mosaic consoles are available in a variety of frame sizes to accommodate studios of all dimensions, and useful interfaces are available for guest stations and simple router control.

World Radio History

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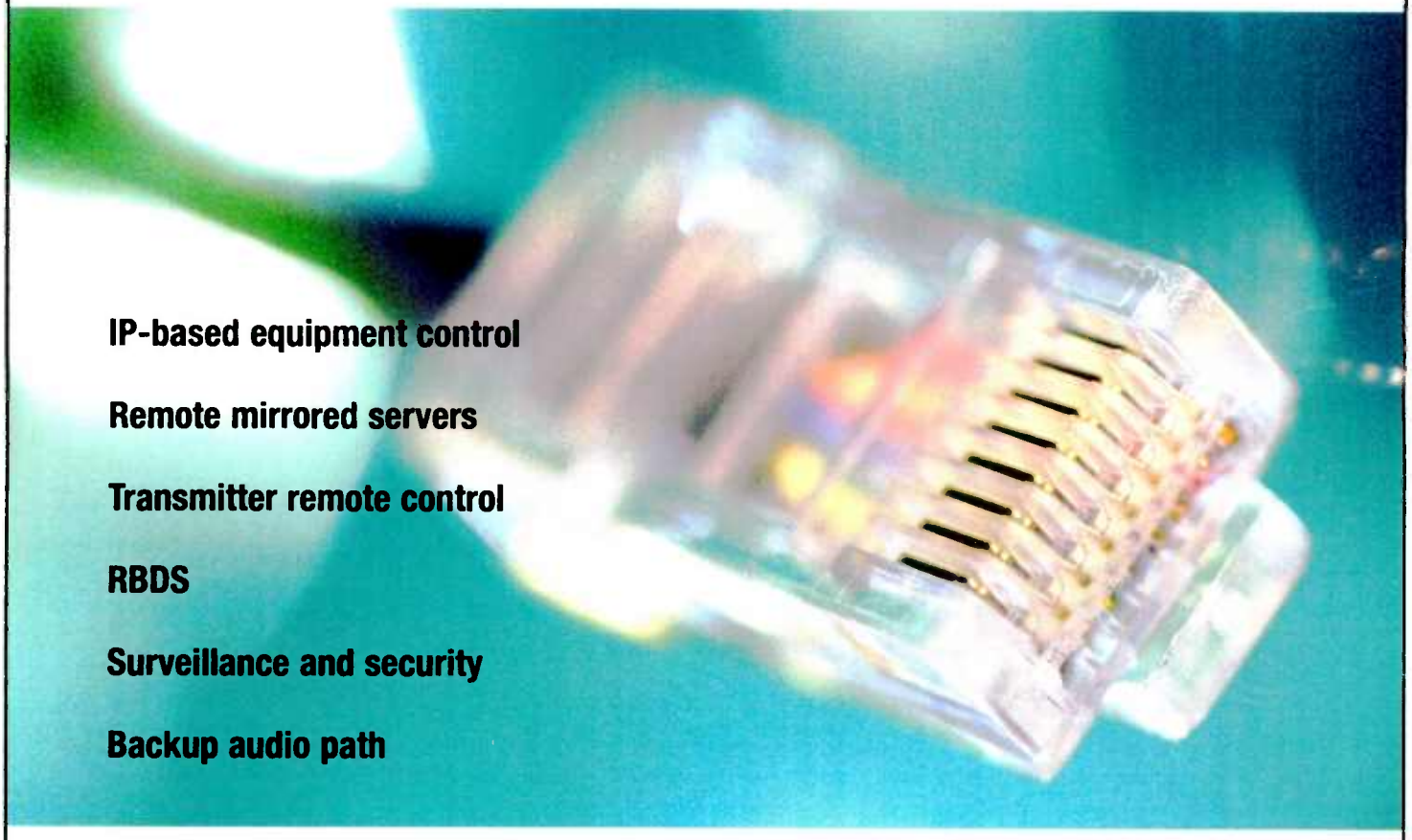
Ethernet path...



IP-based equipment control

Remote mirrored servers

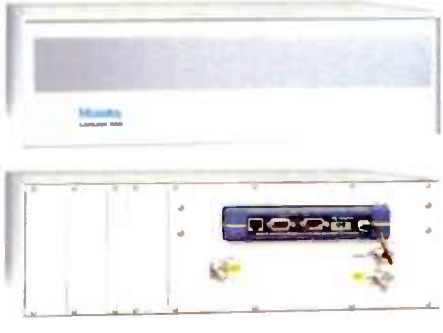
Transmitter remote control

RBDS

Surveillance and security

Backup audio path

to the transmitter site.



Innovative IP-based applications save money, save time and protect valuable station assets. But how to get IP connections at remote transmitter sites?

LanLink HS-900 provides IP Ethernet and RS-232 data where no wires or cables exist. And without licenses, leases or new antennas.

Ask the digital STL experts today.

See Us at NAB Booth #N7112

Moseley

Dave Chancey 805.968.9621 Bill Gould 978.373.6303 www.moseleysb.com

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