

◆ NEWSWATCH ◆

NPR Curtails Sirius Feeds

WASHINGTON National Public Radio has scaled back its efforts to develop program material for two Sirius Satellite Radio channels, following word from Sirius recently of problems in securing receiver license deals from automakers (RW, May 9).

Sirius has also told the SEC it intends to charge consumers a \$12.95 a month subscription fee, up from a previously planned \$9.95 a month.

In an April memo to NPR staff, Executive President Ken Stern wrote: "Given recent indications, we cannot predict when Sirius will make a strong

entrance into the market. ... NPR2 will scale back production for our two channels for the service and resume after Sirius has set a firm launch date."

The 17-member staff of NPR2 has been placed on hiatus; some will lose their jobs, others are being re-deployed within NPR's Washington headquarters, said Margaret Low Smith, who was vice president, NPR2, who plans to oversee the unit from her new position in the program center.

Nine positions with the unit were to end May 31. Specifics were still in flux at press time.

The network kept intact the staff of "The Way In," an original morning program being developed for Sirius, even though the show is on hiatus. NPR continues to feed talk programming to Sirius.

Public Radio International, also developing program material for Sirius, said it has not devoted the same amount of resources to the satellite channel as NPR, and has not made any changes as a result of the Sirius announcement.

XM Launches Second Satellite

WASHINGTON XM Satellite Radio's second satellite, "Roll," is on its planned path toward orbit.

Liftoff occurred May 8 from Sea Launch Co.'s Odyssey Launch Platform in open waters of the Pacific Ocean on the equator.

"Roll" launched from 154 degrees



West Longitude. Its final position will be at 85 degrees West Longitude. A 200-foot Zenit-3SL rocket lifted the 10,289-pound digital audio radio satellite to geosynchronous transfer orbit.

XM's first satellite, "Rock," was launched in March. "Rock" has settled into geostationary orbit at 115 degrees West Longitude and began broadcasting XM channels in mid-May — preparing for commercial service late this summer.

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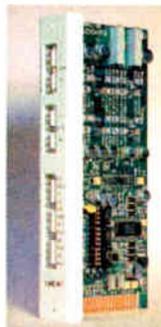
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NEWS ANALYSIS

CRL/Orban: The Business Side

by Randy J. Stine

SAN LEANDRO, Calif. With record sales in the first quarter 2001 and what company officials call the hottest-selling audio processor on the market, Circuit Research Labs Inc. officials say the company is on "solid financial footing" since its purchase of Orban Inc. in June 2000.

That's despite carrying a heavy debt load as a result of the acquisition. CRL has amassed debt of \$8.5 million because of the Orban deal, according to filings with the Securities and Exchange Commission.

The transaction has been closely watched because of the market prominence of the processing suppliers.

According to the company's annual report, Circuit Research Labs Inc. had a net loss for 2000 of \$1.96 million. The report states, "This is primarily due to the amortization of goodwill and the interest expense incurred by the acquisition of Orban."

Worth?

The annual report showed total company assets of \$13.3 million with total liabilities of just over \$11 million.

The publicly traded company reported *pro forma* earnings of \$430,567 on net revenues of \$3.3 million for fourth quarter 2000 for the combined Orban/CRL. That was followed by record first quarter

gross sales of nearly \$4.2 million.

"That exceeded last year's first quarter combined gross sales by almost \$400,000, or just over 10 percent," said Orban/CRL Vice President Jim Seemiller. First quarter earnings were due to be released in late May.

worldwide audio processing market.

Prior to the acquisition, Orban was the larger of the two audio processor makers, with 75 employees and annual sales of more than \$15 million, vs. 12 employees and \$1 million for CRL, according to SEC filings.



Bob Orban, Jay Brentlinger and Jim Seemiller are shown at Orban's 30th anniversary party at The NAB Radio Show last year, just after CRL acquired Orban.

CRL paid Harman International Industries \$10.5 million for the company Bob Orban started more than 30 years ago (RW, June 21, 2000). Orban/CRL claims it has a 70-percent share of the

Orban/CRL's obligation consists of \$3.5 million in short-term debt and \$5 million in long-term debt owed to Harman. CRL raised \$2 million in cash for the down payment through a combi-

nation of the sale of common stock, cash from CRL President and Chief Executive Officer Jay Brentlinger and a mortgage on CRL's Tempe, Ariz., office building and manufacturing facility.

According to an Orban/CRL press release issued in March, "Orban/CRL and Harman International Industries reached agreement on extending terms of Orban/CRL's debt obligations related to the acquisition of Orban, in order to allow completion of a two-year retro audit."

Fifth extension

Seemiller said it was the fourth such extension since September 2000. The extensions were necessary due to delays in completing a two-year retro-audit required by the SEC for publicly traded companies. At press time, CRL and Harman agreed to a fifth extension.

"In this case, Orban was such a small piece of the Harman portfolio, it had never been audited by an outside firm. So the SEC required us to do a two-year retro-audit," he said.

"It's important when acquiring a company that is a significant portion of your income that it be audited by an outside accounting firm," said Brentlinger.

The outside audit was filed with the SEC in November 2000.

Seemiller said the company is in negotiations to raise additional capital through conventional means. The \$3.5 million short-term note is due March 31, 2002. Another \$5 million long-term note is payable by next March.

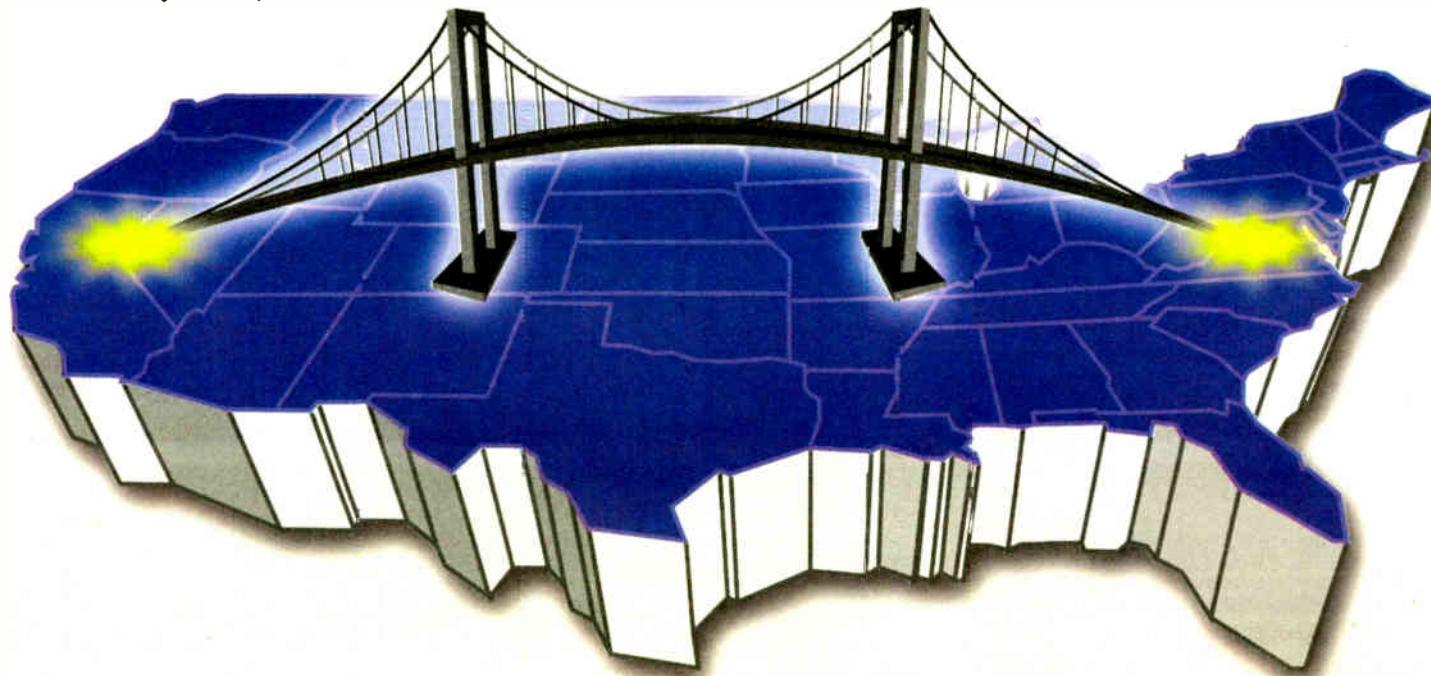
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FROM THE EDITOR

'Cool Stuff' Winners Announced

by Paul J. McLane

Radio World is proud to present the 2001 winners of our "Cool Stuff" Award, radio's most prestigious technology honor. They were chosen by an anonymous panel of broadcast engineers and industry professionals with more than 150 years of combined radio experience, from new products exhibited at the NAB2001 convention.

The winners are listed on this page. Throughout this issue you'll find their photos along with information about their exciting new products. Also in this issue, our big post-show product wrap-up provides a taste of the exhibit floor and tells you how to contact suppliers for more information.

How do we pick the winners for this highly sought-after award? Each year, I invite experts to walk the floor, looking for products they wish to nominate. They do so anonymously to avoid pressure from suppliers. Their only pay is dinner and knowledge of a job well done.

The judges this year have major - and small-group technical experience, commercial and public radio careers, engineering and user backgrounds, and pro sound and radio production knowledge. Judges, I thank you. You are a remarkable group. Your breadth of experience is reflected in the winning products and makes this award all the more useful to us the readers.

Most of the winning products are available for purchase now or will be shortly. Generally the judges wish to recognize real products, not vaporware. In a few

instances, our experts felt that a product concept was unusual enough, and the manufacturer sufficiently known to the industry, that it merited an award even though delivery is a few months away. It's safe to say, however, that the bar is even higher in such cases.

Some readers ask whether judges give special consideration to our advertisers. They do not; indeed judges are instructed to disregard any such consideration, should they even be aware of whether a company advertises in our publications. I suspect the engineers who serve on our panel would very quickly resign from the panel if they felt pressured on this point, and rightly so.

Not surprisingly, this list includes some names familiar through their advertisements in RW and other publications. That makes sense. The companies that support the industry with their marketing also tend to be those that invest in new product development and understand the importance of exhibiting those wares.

But the "Cool Stuff" list each year also includes new companies, or vendors that don't advertise with RW in particular, or that don't advertise at all.

It's apparent from looking at our list that the judges recognized not only established radio suppliers but new or less-familiar vendors. So I'm delighted that this program helps me to accomplish one of my main goals for Radio World: to introduce you to new companies and technology that might help you do your job better.

My congratulations to the winners. 🌐

Peter Polanco is the big winner of a Mackie 1604-VLZ Pro mixer, the latest giveaway in our Silver Sweepstakes.

He's the chief engineer of WWRV - Radio Vision Cristiana, in Paterson, N.J. His new mixer, which has a retail value of \$1,249, offers ultra-low noise performance, extraordinarily high headroom, 16 studio-grade mic preamps, four subgroups with left and right assigns and direct outs, 16 line inputs, phantom power, five physical configurations with a rotating I/O pod, three-band EQ and a boatload of other features.

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CBS/Infinity

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But most attendees are not panelists.

"They've made it difficult to go to the show," said one such source. "If I want to go, I have to take vacation and go at my own expense. ... It cuts off my ability to learn."

There are not that many national learning opportunities for engineers, he said. "My message to corporate management is what we do for them does not happen by magic. In order to keep proficient we need to talk to each other, to learn about new equipment and see possibilities.

"If you cut off the engineering community from what amounts to postgraduate learning, you're cutting off your nose to spite your face," he said.

By comparison, the prohibition from taking part in show panels was not apparent for CBS Television employees. At least three participated in sessions: Joseph Flaherty, Robert Seidel and Robert Hess.

A source said NAB received a call specifically stating that Infinity employees could not participate on NAB show panels. It received no such call about the TV employees, said the source.

Independent groups

When asked why the NAB pullout was apparently interpreted differently for the radio and TV divisions, a spokesman for parent company Viacom said, "These are independent operating groups within Viacom. We don't set policies across the board."

Several major radio ownership groups have expressed their continued support of the NAB, despite the Infinity resignation.

The Infinity decision "will not change Emmis' support of the NAB," said Jeff Smulyan, president and CEO of Emmis Communications, which has 23 radio and 15 TV stations in NAB membership.

"We need to work together as an industry and the NAB is the proper forum for that."

A source said NAB received a call specifically stating that Infinity employees could not participate on show panels. It received no such call about TV employees.

Bruce Reese, Bonneville International Corp. president and chief executive officer, said the Infinity pullout would have no bearing on his company's support of the trade association.

"The industry is better off when we speak with one voice, and that should be through the NAB. The NAB has always been a very important organization and it will continue to be so," he said for the group of 20 radio and two TV stations.

A Clear Channel Communications spokesman said its group, with approximately 1,170 radio stations, remains committed to NAB. "We continue to be

a member and supporter of NAB."

Cox Radio Inc. has 83 member stations. President and Chief Executive Officer Bob Neil called the pullout "unfortunate" and said, "While there may always be individual issues someone may have with NAB, it's still the best way to present a unified face to the regulatory agencies and Congress."

Neil said, "Over the years the broad-

'If you cut off the engineering community from what amounts to postgraduate learning, you're cutting off your nose to spite your face.'

casting business has been a pretty powerful voice. And I wonder about the dilution of that voice when someone as big as Viacom pulls out."

Emmis, Greater Media Inc. and Clear Channel have representatives on the NAB Radio Board. Some of the other radio groups represented include: Citadel Communications, Journal Broadcast Group and Regent Communications Inc.

Richard Ferguson, Cox vice president/co-COO, is on the executive committee as immediate past joint board chair. Susquehanna Radio Corp. President/COO David Kennedy is Radio Board chairman and Federated Media President John Dille is Radio Board vice chairman.

Work together

Bayard Walters, president and owner of The Cromwell Group Inc. and former NAB Radio Board member, intends to keep his 22 stations in NAB membership. Of the resignation, he said, "Whether CBS is in or out, it will still benefit from the efforts that those of us

who decide to participate ... put forth."

"It's better if we all work together, those of us who are members in all-sized markets ... because as far as regulators are concerned, we're all dumped in the same pot."

Greater Media has 18 stations in NAB membership. The company pays for its six CEs to attend the spring show, said Milford Smith, VP of radio engineering, who called the spring show "the ultimate venue of broadcast technologies."

The resignation, which came just before the spring show, also means neither CBS nor Infinity employees can

participate in NAB committees.

That includes the National Radio Systems Committee, said spokesman Dana McClintock.

The NAB and the CEA jointly sponsor the NRSC, a radio standards-setting body. Unlike NAB member-station committees, the NRSC is an open committee and CBS/Infinity could continue to participate if it chooses.

Digital Corp., one source suggested the companies would continue to support the NRSC process.

"Most engineers try to steer clear of politics. There are just too many things to occupy their time. It's something GMs and owners get paid to deal with. While many engineers have seemingly been caught in the middle, it's my sense they know it will blow over and be resolved."

Withdrawal

The decision by parent company Viacom Inc. to withdraw subsidiaries CBS Television and Infinity Broadcasting from the NAB centers around a dispute over the television network's opposition to a federal cap that prevents them from owning stations that reach more than 35 percent of U.S. households (RW, April 25).

The NAB supports the federal limits on station ownership. Viacom called the ownership cap "an outmoded regulatory constraint on broadcasters."

The CBS and Infinity departure leaves the NAB without radio's top-earning group in 2000. BIA Research figures show Infinity's 180 radio stations had gross revenues of \$1.9 billion. Estimated revenues for 35 CBS-owned television stations in 2000 were \$1.6 billion.

The CBS/Infinity pullout leaves ABC Television, owned by Walt Disney Co., as the only major network member of the trade association. NBC and Fox previously withdrew from the NAB over the same issue. 🌐

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CRL/Orban

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Seemiller said the payment extensions did not mean the company was having any trouble paying the short-term note.

"I think the fact that we've had the ... extension should tell you what is going on. Harman doesn't want (Orban) back," Seemiller said.

"What we've been trying to do is have Harman redo the notes that are a little more accessible to what we can get, or looking for alternative financing on the short term. We are really partners in this. It's not an adversarial relationship between us."

Adequate funding

The relationship is such that in February 2001, when Orban/CRL thought it had adequate outside funding lined up, Harman officials said no to the financing terms, Seemiller explains.

"They said, 'That wasn't going to work for either one of us,'" Seemiller notes. "It's a very cordial thing. These dates are not lines that are drawn in the sand."

It may take "three to four more months to get the actual paperwork resolved. But from my standpoint and the company's standpoint, it really isn't an issue," he said.

Seemiller said the size of Orban/CRL's debt would not affect operations such as manufacturing, development or marketing.

"In fact, we couldn't be shipping this

amount of product if this had any impact at all," Seemiller said.

Harman International officials did not return several phone calls requesting an interview.

Industry analysts said the fact that Harman was willing to finance the sale showed how eager the U.K.-based company was willing to sell the Orban division.

"There is no question that Harman wanted to sell Orban. It was just too small for Harman to deal with. It is divesting itself of companies that are not \$75-million to \$100-million-a-year companies," Brentlinger said.

Harman International's other holdings include AKG Acoustics, Studer North America and JBL.

"(Harman) wants this deal to succeed as badly as (we) do. They're basically our lender in this deal. Obviously they have to be very comfortable with whom they are loaning the money too. I'm very happy to have Harman as my lender."

Helping to offset any concern industry observers may have over the company's finances has been sales of the Optimod-FM 8400. "We have just now reached full production capacity of the 8400. As a result demand has been extremely high," Seemiller said.

The slowing U.S. economy appears to have had little impact upon sales of the latest version of the Optimod. Seemiller said back orders for the 8400 total roughly \$4 million.

"(Those are) orders in-house already. As a result, we are predicting some very

large numbers this year," he said.

Ironically, the success of the new 8400 has meant a boom in sales for its predecessor, the Optimod-FM 8200.

Cash position

"You would have thought people would look only at the 8400, but that hasn't been the case," Seemiller said. One reason could be price: the Optimod-FM 8400 is typically priced \$2,500 more than the 8200. Orban/CRL introduced an 8200 Signature Series at NAB2001 to celebrate the 10th anniversary of the 8200, which it claims is "the world's all-time, best-selling digital audio processor."

The arrival of the Optimod-FM 8400 came at a good time for the company, according to Seemiller. "It has driven a major turnaround in cash flow since the acquisition," he said.

"Financially, when we bought Orban, the revenue was at one level and is now averaging about 40 percent higher. Revenues drive your cash position, so we are in a much better cash position than last June (2000); it's like night and day," Seemiller said.

The combined Orban and CRL operation has 92 employees, said Seemiller. Some are based in Tempe at CRL's facility, but the majority works in San Leandro at Orban's headquarters.

"Our job was to make (Orban/CRL) one company. We have two product lines, but the internal management is basically one company. We've been trying to redefine the roles of the people. We've had some turnover. That's a normal evolution of any acquisition," Seemiller said.

"We've had a lot of new people join the Orban unit and it's beginning to blend together well," he said. Seemiller joined the company last fall and has primary responsibilities in sales and marketing.

Seemiller said company officials have looked at the possibility of combining the manufacturing facilities of Orban and CRL under one roof.

"The economies of scale would be tremendous," he said.

Bob Orban, who founded Orban and has stayed with the company through its ownership changes, continues to serve as chief engineer for the company. He also is a minority stockholder in CRL.

"I'm satisfied with how things have worked out," Orban said of his namesake company's acquisition by CRL. "It's been pretty much business as usual, or as close as you can get during a transition like that."

Bob Orban remains active in designing digital signal processor algorithms for new products, as opposed to writing actual DSP coding. He referred to himself as an "algorithm architect" at this

CRL Earnings Rise; Stock Price Does Not

Circuit Research Labs Inc. common stock is publicly traded on the OTC Bulletin Board (NASDAQ: CRLI). As of March 30, there were approximately 2.3 million shares of common stock issued and outstanding, with an estimated 450 stockholders of record.

CRL has seen a steady decline in its stock price in recent months. At nearly \$12 a share in August 2000, the stock price closed at \$3.20 on May 14.

CRL stock certainly is not alone in its decline with the soft economic market, said Jim Alexander, president of Los Angeles-based J. Alexander Securities, a firm that tracks small stocks.

"The positive news for (CRL) is that we have seen earnings from them that appear to show the company is back on track. The last quarter of 2000 was very strong and the preliminary earnings this year have been promising," Alexander said.

Alexander said his firm has traded CRL stock and tracked its progress the past 12 months, and company officials have reason to be optimistic.

— Randy J. Stine

stage of his career.

Orban has always been closely watched, thanks to its successes over the years. As a publicly traded company, its competitors also have access to much of its financial information. In the highly contested audio processing market, those companies are watching the financial condition of the self-proclaimed market leader.

Michael Dosch, Telos Systems managing director, said his company's Omnia line is positioned to take advantage if Orban/CRL falters under the weight of its debt obligation.

"It is very difficult to carry such a debt load. It puts tremendous pressure on cash flow. Servicing the debt must come first, before development and business expansion activities," Dosch said. "High-tech companies require constant investment in engineering and market development to remain in the game. (Orban) is facing many challenges."

"Will CRL have the resources to invest in continued technological advancement? Harman poured money into Orban. Indeed, their new product, the 8400, was developed and introduced

See CRL/ORBAN, page 7 ►

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Klotz to Expand Graham-Patten Capacity

ATLANTA Klotz Digital America Inc. gains its first manufacturing facility in the United States with the acquisition of Graham-Patten Systems Inc.

Klotz plans to expand the California facility to add manufacturing capacity for the Klotz Vadis platform and related products.

The sale of Graham-Patten Systems Inc. to Klotz Digital America Inc. closed just before NAB2001. Both are privately held companies; terms were not disclosed.

With the purchase, Klotz inherits 21 employees, bringing its global total to 124.

Graham-Patten will operate as a division of Klotz Digital America Inc. from the Grass Valley, Calif., facility. The former president of Graham-Patten, Howard Mullinack, has been named vice president, Television/Film for Klotz Digital AG and will continue to manage the Graham-Patten division.

CRL/Orban

► Continued from page 6

before the sale to CRL," Dosch said.

Telos/Omnia is a privately held company and declined to disclose financial performance.

Bob Cauthen, president of broadcast equipment dealer S.C.M.S. Inc., said the success of the Optimod-FM 8400 has had a significant impact on the market.

"As with most new products and technology, the first one to hit the marketplace is usually the most successful. The 8400 is a big improvement over the 8200," Cauthen said.

Sales

Cauthen said the Orban name is also helping sell CRL products. "(CRL) went from zero to a substantial amount of sales. The Orban name alone will ensure they retain a significant portion of the audio processor market despite the aggressiveness of Omnia, considering there are basically only two processor companies now," he said.

S.C.M.S. sells both Orban and Omnia processors.

Several other competitors of Orban/CRL and equipment dealers declined comment for this story. Privately, some distributors said that in light of the intense competition between Orban/CRL and Omnia, they did not wish to run the risk being viewed as favoring one company over the other.

Seemiller said the Internet has opened new market opportunities for Orban. "Webcasting, exchanges of digital audio and digital audio broadcasting are all very promising."

The company introduced a new processing product for the Internet at NAB2001. The Optimod-PC is an Internet audio processor on a PCI card, Seemiller said. Orban also exhibited its new Opticodec line of audio streaming codecs at the show.

Burk Buys Gentner's Remote Control Business

LITTLETON, Mass. Employees of Burk Technology and Gentner Communications Corp. are working on the transition following Burk's acquisition of Gentner's remote facilities management business.

"Burk and Gentner products are well-differentiated, offering a wide range of choice for group owners and call-letter broadcasters," stated Peter Burk, president of Burk Technology. "With the addi-

tion of the Gentner line, we will be able to expand our development efforts, bringing technological advancements to market faster."

Fran Flood, president and chief executive officer of Gentner, stated, "While RFM is the heart of Burk's business, it has become less of a focus than conferencing at Gentner and has not been the beneficiary of resources necessary to achieve growth in line with corporate objectives.

As a result, RFM revenue has been flat for the past seven quarters."

Production will be transferred to Burk's ISO-9001 certified manufacturing facility in Littleton, Mass., assuring

delivery for customers and distributors.

Burk will provide technical support for current Gentner users.

PM Distributes Svetlana SPb

MEMPHIS, Tenn. There's a new international brand name for vacuum tubes made by Svetlana SPb of St. Petersburg, Russia. PM has negotiated exclusive worldwide distribution rights for the product line.

The Svetlana plant began vacuum tube production in 1928. Tubes are available through PM of America Inc., based in Memphis, Tenn.

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Email: info@comrex.com www.comrex.com

COMREX



What's New?

Radio World editors and contributors fanned out across the massive convention floor at NAB2001 to ask exhibitors about their new products for radio. The results are in the following pages. And we'll have more about many of these products in issues to come.

Exhibitors: Every effort was made to contact you to gather your information for this section. If we did not receive it in time, let us know so we can share it with our readers. Send e-mail to radioworld@inapub.com

The following contributed to this section: Cris Alexander, Bernie Cox, Laura Dely, Ty Ford, Scott Fybus, Harold Hallikainen, Michael Hedrick, Chris Joaquim, Michael Leclair, Mike McCarthy, Paul McLane, Brett Moss, Tom Osenkowsky, Al Peterson, Sharon Rae Pettigrew, Ken R. and T. Carter Ross.

Burk Adds Gentner Line

Burk Technology expanded its remote business in a business deal with Gentner Communications Corp. Burk has purchased Gentner's Remote Facilities Management business. (See page 7.)

Production will be transferred to Burk's facility in Littleton, Mass. Existing Gentner users will receive continued technical support from Burk.

"Burk and Gentner products are well-differentiated, offering a wide range of choice for group owners and call-letter broadcasters," said Burk President Peter Burk.

Burk also touted the ARC Plus remote control, capable of monitoring and controlling up to 16 sites with 256 channels

Raise/lower buttons have user-defined labels that change for each channel. Status LEDs can illuminate red or green.

Channels are selected using a front-panel jogwheel. Screen display of monitored parameters are large, bright numerals or graphic display. The ARC Plus is Ethernet-ready.

Contact the company in Massachusetts at (800) 255-8090 or visit www.burk.com



Telos Shows Xstream, ProFiler

In addition to its SmartSurface, which earned "Cool Stuff" honors (see page 18), Telos Systems showed the Zephyr Xstream, a redesign of the Zephyr ISDN codec.

It has new features such as low-delay MPEG AAC, which reduces transmission delay and gives quality better than Layer 3, and an Ethernet port for streaming audio over IP connections and networked remote control. A portable model has a built-in mixer, the Xstream MXP.

Audioactive ProFiler has set-and-forget automatic broadcast logging and skimming. It helps users keep an ongoing record of their broadcasts on a standard PC, logging program audio to time-annotated files using industry-standard MP3 compression with a range of bitrates. Users can store the audio on a hard drive or on a webserver, LAN or WAN for remote auditioning.

For information contact the company in Ohio at (216) 241-7225 or visit www.telos-systems.com

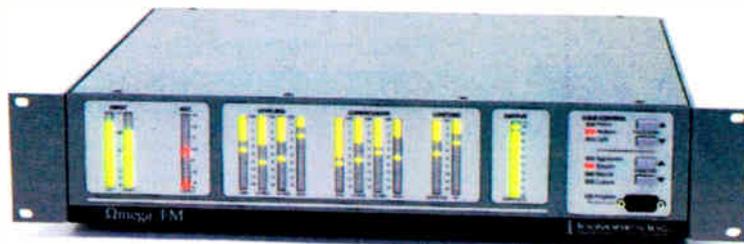


Telos Audioactive ProFiler

Inovonics FM Processor, RDS

Inovonics introduced the Omega_FM digital processor, featuring three bands of parametric equalization and multiband compression.

By keeping the program signal path short, the Omega_FM keeps audio latency to 10 milliseconds or less, allowing direct studio monitoring of the off-air signal. Boot-up time is brief at less than three seconds.



The Omega_FM can be set up via front-panel controls or using the RS-232 port with supplied software and a PC.

Also introduced this year was a new RDS/RBDS encoder, the model 711. It features easy-to-install "loop-through" or sidechain installation and works with popular hard-disk automation systems to support RDS transmission of song titles and other information.

For further information contact the company in California at (831) 458-0552 or visit www.inovon.com

An Internet STL From Energy-Onix

Energy-Onix unveiled its TeleLink studio-transmitter link system.

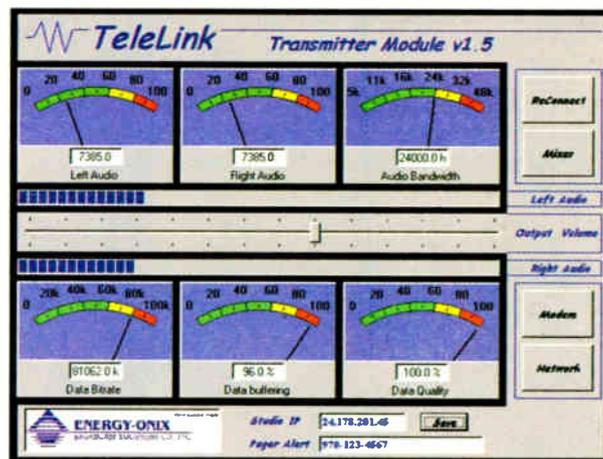
The system uses a broadband Internet connection at each end to deliver and receive two, four or eight 16 kHz audio channels anywhere a suitable Internet connection can be installed.

The TeleLink can deliver audio to up to five receive sites from a single encoder and claims a reliability level of better than 99.99-percent.

The decoder includes "smart system" backup capabilities to provide pre-recorded audio from an internal hard drive if the STL connection from the Internet is lost for more than 20 seconds.

TeleLink is supplied as part of a PC-based system, requiring only an uninterruptible power supply, a video monitor and a broadband (at least 126 kbps) Internet connection for installation. These connections should be a minimum of 128 kbps for 2-channel duplex, 256 kbps for 4-channel duplex and 512 kbps for 8-channel duplex operation.

For information contact the company in New York at (518) 758-1690 or visit www.energy-onix.com



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CLEARLY NOT FOR EVERYONE

Your Grandmother is certainly a very nice lady, but a Porsche is probably not her ride.

It's the same with processing: Some people should stick with the conservative stuff. Give them something too fast and they just won't know what to do with it.

Frankly, the new Omnia-6 is probably not for them. It's just too potent, too flexible.

On the other hand, maybe you are the sort who can run a fast machine.

Who loves the thrill of smooth power. Who revels in the admiration of others.

Omnia-6 - if you can handle it.



www.omniaaudio.com

North America: + 1.216.241.7225
Europe: + 49.81.61.42.467

Omnia is used in 4 of 5 leading stations in New York, 2 of the 3 top stations in Los Angeles and 5 of 6 of the most listened to stations in the US. It's on the leading stations in Paris, all of the BBC's FM stations in the UK, and the number one stations in Canada, Ireland, Germany, Finland, Australia, India, China, Denmark, and Sweden.



Belar DAM-1 Digital Audio Monitor

Cool products are one reason that Arno Meyer earned the NAB Radio Engineering Award this year. Add another one to his company's list of accomplishments.

The Belar Digital Audio Monitor can be used to analyze the left/right channel data of an AES/EBU digital audio signal. Peak left/right readings are normalized to 100 percent, using an adjustable dBFS reference. The signals are internally summed and differenced to display L+R and L-R peaks.

Adjustable peak and clip LEDs alert the operator to overmodulation conditions. Quality 24-bit D/As drive-balanced XLR and unbalanced BNC audio outputs. An AES/EBU XLR loopthrough allows the DAM-1 to be inserted into a digital audio chain.

The DAM-1 lets you monitor any AES/EBU datastream accurately. Judge's comment: "A very useful audio snapshot real-time camera."

Price: \$1,900. Available: 4th Quarter.

For information contact the company in Pennsylvania at (610) 687-5550, e-mail to sales@belar.com or visit www.belar.com.



Arno Meyer and the DAM-1

Dorrough TG-10A Digital Audio Generator

Dorrough Electronics introduced an audio test generator, the TG-10A, which generates both digital and analog audio tones using direct digital synthesis.

Balanced and unbalanced analog outputs are available. Balanced and unbalanced analog outputs are provided. Sample rates of 32, 44.1, 48, 64, 88.2 and 96 kHz samples are supported. The output frequency range is 10 Hz to 0.45 times the sample rate with 1 Hz resolution.

Outputs can be adjusted from 0 dBfs down to the noise floor in 0.01 dB steps. The stereo outputs can be set to various levels, and the phase between the stereo outputs may be adjusted from 0 to 180 degrees in 1 degree steps.

For more information, contact the company in California at (818) 998-2824 or visit www.dorrough.com

Aphex Unveils 2020MkII Processor

Shown for the first time was the model 2020MkII broadcast audio processor from Aphex.

Designed for FM broadcast or Webcasting, the 2020MkII features a Split-Band Optical Pre-emphasis limiter, a patent-pending Overshoot-Compensated, Low-Distortion Low Pass Filter and new processing algorithms.



See the Buyer's Guide section of this issue of RW for more on this new processor.

For information contact the company in California at (818) 767-2929 or visit www.aphex.com

Manhattan Solutions

For production directors seeking background music that sounds like a particular artist, Manhattan Production Music offers software to search its BRg, MPM and Apple Trax CD music libraries.



The Sound-Alike Database is available at no charge through the Manhattan Web site.

Manhattan also previewed several new Apple Trax CDs including "Goin' Solo," "Road Rock" and "Art of the Guitar." Each of these discs offers about 10 themes with additional variations.

Find Manhattan Production Music on the Internet at www.mppmusic.com or contact the company in New York at (800) 227-1954.

To Have and to Hold

It wasn't just business in Las Vegas for Keeley Smith and Jarrett Prior.

The employees of RCS used NAB2001 as an excuse to tie the knot at one of the famous Las Vegas wedding chapels.

Both bride and groom work at RCS World Headquarters in New York.



RadioMan Repurposes Programming

The RadioMan system from IBM and Jutel Oy handles scheduling, program planning, content production, differentiating program content for media and broadcasting several simultaneous program channels.

The system includes modules that work together under Unix on different scalable IBM platforms.

For example, integration with AP's ENPS combines an SQL database of incoming news with audio and text editing of stories for news broadcast.

The overall system "pulls" audio, text and graphics from sources and sends them for broadcast on the appropriate channel. For example, text to the RDBS; dynamic text, HTML and graphics to associated Web sites; and PAD or nPAD to DAB channels.

Jutel Oy and IBM recently won a contract from the BBC to install RadioMan and IBM technology at 26 regional radio stations.

For information, send e-mail to harri.maho@radioman.fi or karis@fi.ibm.com, or visit www.ibm.com/solutions/media or www.radioman.fi

Larcan Transmitters

Larcan-TTC, a division of the LeBlanc Group, introduced two transmitter/translators at NAB2001. Each of these solid-state FM devices can be converted into translators when an FM receiver module is inserted. As a translator, the system demodulates down to baseband, then remodulates instead of doing a heterodyne frequency translation.

The highly selective receiver module allows transmit and receive frequencies to be separated by as little as 300 kHz. The receiver includes a baseband loop-through that selects an external composite stereo source should this receiver lose its signal.

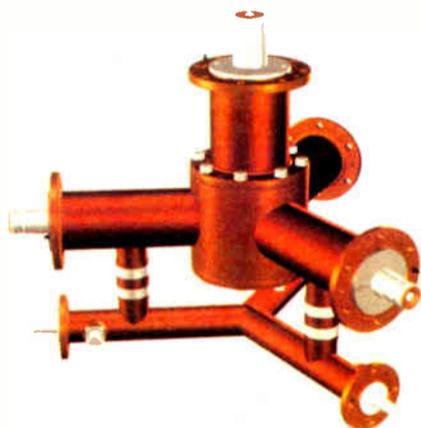
When operated as transmitters, the units accept composite stereo or L/R audio driving an internal stereo generator and limiter. Inputs for additional subcarriers are provided.

The 25 W unit is 1 RU high; the 100 W unit is 2 RU. Both units are AC-powered but can be powered by 24 V DC. They include front-panel metering of audio input levels, PA current, forward and reflected power and heat sink temperature.

For more information, contact the company in Colorado at (303) 665-8000 or visit www.larcan.com

Myat Gysel Combines Power Modules

The Gysel Power Combiner for UHF and FM applications from Myat Inc. is a fault-tolerant device that allows a transmitter to continue to function even if an internal component fails.



"The beauty is in its ability to combine odd numbers of modules, unlike a hybrid which is usually for pairs," said Don Aves, director of engineering for Myat. "The Gysel can use automatic gain controls to make up for a failed section of the transmitter."

Contact Myat in New Jersey at (201) 767-5380 or visit www.myat.com

Neutrik, Clever With Connectors

Neutrik introduced the EasyCon series, with gold IDC or solder contacts standard, to eliminate tarnished connections. The three-part design includes cable strain relief that "grips like a vise" without damage to the wire.

The new 2-pole Speakon mates with two- or four-pole Speakon receptacles and offers a combination of pozidrive and slot screw terminals.

Also new, a cable-mount Rear Twist BNC connector that can be released by twisting the rear cable boot. It comes in various colors and has a "push/pull" style.

The company showed a Tip-Ring-Sleeve patch panel to provide surer contact by using two contacts for each of the tip, ring and sleeve connections.

The EtherCon series of RJ-45 connector includes an XLR-shaped shell designed to protect the connector from damage.

For more information call the company in New Jersey at (732) 901-9488 or visit www.neutrikusa.com/index.html

Superior Broadcast Digital FM Exciter

Dallas-based Superior Broadcast Products unveiled the ESVW solid-state digitally synthesized FM exciter for 87.5 to 108 MHz. This exciter, occupying a single rack width, has an audio frequency response of 30 Hz to 60 kHz, 15 dB.

Superior also announced the FME Series FM transmitter, including a 3/5 kW model and 10,000, 12,000 and 15,000 versions.

Contact Superior Broadcast Products in Texas at (972) 473-2577 or visit www.superiorbroadcast.com

RDS Phantom II Automation

An enhanced version of the Phantom digital audio automation, Phantom II offers hardware and software improvements to the original.

AudioScience cards are available for use with the Phantom II automation system. The system is available with high-capacity IDE drives for additional storage.

Optional Snap servers can be added to the Phantom II to create larger networked systems.

Register Data Systems is a provider of broadcast computer systems for traffic, billing and automation of radio stations.

For information contact the company in Georgia at (800) 521-5222 or visit www.registerdata.com

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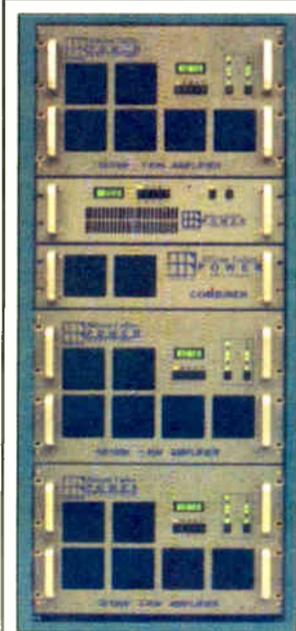
Phonetic Search software makes audio and video searchable without the cost of transcription or the inaccuracy of speech-to-text conversion. One "Cool Stuff" judge enthused, "When this one hits the next generation, it will change the way every radio news department archives and accesses audio. Right now, the technology is merely unbelievable."



Chris Birchfield, Mike Miller, Peter Cardillo,
Jonathan Goldman and Jim MacGregor

You can search through archived audio by word or phonetic spelling, and combine keywords. For instance, you might ask to find instances of audio in which "George Bush" and "China" were spoken within 10 seconds of each other. This technology is showing up in automation systems like Dalet's.

Price: Depends on application. Available: Now.
For information contact the company in Georgia at (404) 495-7220 or sales@fast-talk.com or visit www.fast-talkcommunications.com.



Silicon Valley Power

Silicon Valley Power Amplifiers use a modular approach to FM transmitters.

At the core of the system is a 1kW amplifier that weighs just 70 pounds. Power is increased by adding amplifiers and an RF combiner. The solid-state broadcast amplifiers have separate switch-mode power supplies, status indicators, front-panel LCD display and overtemp trips.

The transmitters are remote controllable through rear-mounted 25-pin D connectors. An exciter mute contact closure is provided. High-efficiency ball bearing cooling fans keep the rack cool. Connectors and cables are supplied except input and output connectors.

A 3kW amplifier with combiner (\$19,350) weighs less than 265 pounds and can be installed by one person. Plug in the exciter and antenna and turn it on.

For information contact the company in California at (408) 986-9700 or via e-mail to sales@svpa.com

Sony Automated Consoles For Radio

Sony introduced two automated moving fader audio consoles for use in radio production and large on-air applications — the Oxford and the DMX-R100.

The consoles use assignable controls to provide a lot of control on each channel without duplicating the controls for each channel. For example, a complete EQ control surface can be used to adjust one channel. Once that channel is set, settings are memorized and the controls can be released for use on another channel.

The Oxford offers 72 to 120 input channels driving a main stereo output plus many aux outputs. All I/O can handle 24-bit audio with sampling rates of 44.1 and 48 kHz. Audio is processed internally as 32-bit samples.

The Sony DMX-R100 is similar to the Oxford, but has a smaller, 48-channel control surface.

XM Satellite Radio has chosen the Oxford for live concert broadcasts and recording sessions.

For more information on these Sony consoles, call (800) 686-7669 or visit www.sony.com/proaudio

DB Elettronica FM Products

DB Elettronica SpA introduced the 30 W KCL 30 FM exciter, PM500 exciter/transmitter and KF Series of solid-state FM amplifiers.

The KCL 30 incorporates a front-panel graphic LCD display for metering and programming operations, as well as continuously adjustable power, front-panel frequency programming, digital phase-locked loop, an optional stereo coder and remote control.

The new PM 500 produces continuously adjustable power from 0 to 520 W and ColdFET technology for efficiency, protection for VSWR, over-voltage and AFC.

For high-power FM applications, DB introduced the KF Series of solid-state amplifiers with power up to 10 kW.

Visit the company at www.dbbroadcast.com or call the company in Italy at +39 049 8700588

Andrew Offers New Dehydrators

Andrew Corp. displayed two new dehydrators for broadcasters of all types.

The MT1000 and MT2000 are part of the DryLine Automatic Membrane Dehydrators line.

The MT1000 is designed for medium-volume systems of 50 to 550 cubic feet (1,415 to 15,560 liters) while the larger MT2000 is aimed at large-volume systems, 100 to 1,100 cubic feet (2,830 to 31,130 liters).

Also new: the Broadcast CD-ROM with product info on the Andrew line, including catalog pages, installation instructions, reference data and video clips.

For information contact the company in Illinois at (708) 349-3300 or visit www.andrew.com

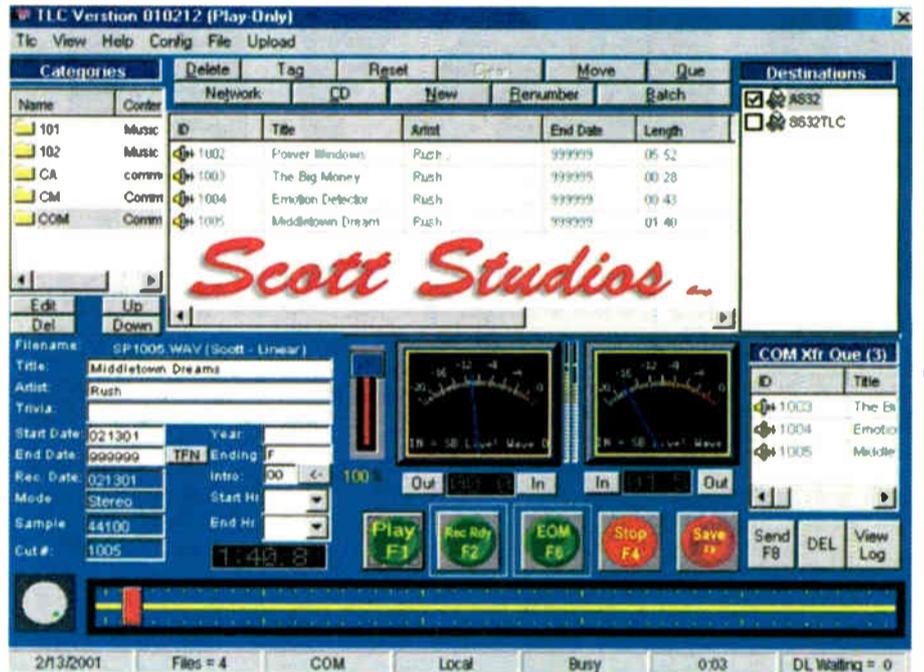


Andrew Broadcast CD-ROM

Scott's Expanded Digital Studio

Scott Studios added two modules to its Digital Studio, including a CD ripper that allows importation of any audio CD from a CD-ROM deck in less than a minute.

Trimming and labeling can be fine-tuned by the operator and fed into a LAN from any computer in the system.



"We had a CD Ripper for MPEG and for uncompressed audio for years," said Dave Scott, president. "The new version is for our 1990-1995 systems that used APT audio cards and required APT audio lines. Until now there has not been a CD ripper for apt-X encoding."

The Remote Recording Router is able to make multicity electronic transfers of audio occur automatically. "It's like e-mail for digital audio, but more dependable," Scott said. This allows spots to be sent by WAN, dial-up phone, ISDN, T1, ADSL or frame relay.

Contact Scott Studios in Texas at (800) 726-8877 or visit www.Scottstudios.com

Nicom Neptune

Nicom featured its new Neptune-series of broadcast audio consoles.

These versatile mixers are modular and have hidden, easily accessible connections beneath the meter bridge, which tilts on hinges.

The Neptune 27 will accommodate up to 18 modules for 16 audio channels, and the Neptune 39 up to 26 and 24 respectively.

Michelle DeFazio of Nicom said the Neptune-series was designed for on-air use.

Also new was the NLRFM-1 FM relay receiver, suitable for translator receiver or off-air studio monitor, NT 30 and NT 150/LCD PLL programmable FM exciters and the NT 250/LCD exciter/transmitter.

Contact the company in California at (619) 477-6298 or visit www.NicomUSA.com



Encore!

The Telos Zephyr is one tough act to follow. It revolutionized point-to-point audio by combining ISDN with MPEG coding, and quickly became the #1 selling codec worldwide — perhaps the most successful digital broadcast product ever. So what will we do for an encore?

Presenting Zephyr Xstream, with innovations like AAC (Advanced Audio Coding) for superior fidelity, a special low-delay mode, and an Ethernet port for IP audio streaming, remote control and easy software updates. There's also a rugged portable version with full-featured digital mixing.

And of course Zephyr Xstream includes everything else you'd expect from a Zephyr, like Layer-II and Layer-III coding, ISDN connectivity, a simple, friendly user interface, and bulletproof reliability.

Zephyr Xstream. Sometimes the sequel is even better than the original.

Telos
www.zephyr.com



Protect Your Online Rights.

There's been quite a stir over online rights issues lately. Here's how to protect yourself.

What's The Issue? The latest American Federation of Television and Radio Artists (AFTRA) contract provided for an extra talent fee to be paid for any commercial produced for broadcast but aired both terrestrially and on the web. AFTRA is seeking a 300% penalty if the additional talent fee is not paid. Therefore, stations have been pressured to either cover AFTRA spots or take down their internet streams completely.

What's The Solution? iMediaAdCast is uniquely qualified to solve the AFTRA issue for stations through Content Substitution. Unlike ad insertion systems which try to cover commercials from the server side, iMediaAdCast interacts with your station's programming as it encodes your web stream in either Real Audio or Microsoft Windows Media formats. Web-only content is seamlessly placed over anything that you'd like to broadcast but not webcast. iMediaAdCast also will send full titling information to your listeners, ensuring compliance with the Digital Millennium Copyright Act.

What About My Existing Equipment? iMediaAdCast is compatible with most automation systems. iMediaAdCast software is economically priced at \$995 per station.

What's On The Horizon? More online rights issues are certain to pop up in the future. Today commercials are the issue, tomorrow may be music. iMediaAdCast's Content Substitution System is designed to substitute anything in the web stream, so the next time there is a crisis, you'll already be covered.

iMediaAdCast is available from

MediaTouch

(888) 665-0501

www.imediatouch.com

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Broadcast Tools Time Sync/Time Sync II

From the wizards of efficiency at Broadcast Tools come these devices for synchronization of automation systems and station master clocks.

"Around \$1,000 cheaper than the next guy," wrote one "Cool Stuff" judge. "Now, just about any station can have their computers time-locked in for around \$430."

Time Sync provides three GPS time-referenced outputs. The first SPDT relay pulses once every 15 minutes, at certain intervals after each hour. The second pulses at the top of the hour; the third is an open collector with a 100 ms pulse every second.



Time Sync II adds a 4800-baud, RS-232 serial port providing UTC time in HH:MM:SS format. Both models have loss-of-signal relays and Garmin 12-channel GPS receivers.

Price: \$419 and \$429 respectively. Available: Now.

For information contact the company in Washington state at (360) 854-9559, e-mail to bti@broadcasttools.com or visit www.broadcasttools.com.

Fairlight Digital Broadcast Console

Fairlight On Air introduced the Fusion digital console, designed for on-air broadcasting.

The console offers significant design flexibility and can handle up to 96 digital or analog inputs per unit and can be scaled up to a total of 264 x 264 I/O per DSP frame.

Featuring a modular fader control surface, the console is easy to learn and has quick access to DSP features. Windows-based configuration and routing software is available.

Fairlight On Air also demonstrated its CoSTAR radio automation system software package.

For information contact the company in California at (323) 465-0070 or visit www.fairlightonair.com

iBiquity Goes Mobile

iBiquity Digital Radio displayed a prototype of an IBOC digital Kenwood car radio, mounted in a 2001 Dodge Caravan. Listeners could tune into local stations KNWR(FM) and KSFN(AM) to hear IBOC digital on the show floor.

Demonstrations of IBOC transmissions could be heard on receivers tuned to transmitters at the Nautel and Broadcast Electronics booths.

Mobile demonstrations of the digital signals on AM and FM were available in the iBiquity test van.

In addition, a kiosk displayed an example of wireless data that could be transmitted along with the IBOC FM digital signal, including sports, traffic and weather with graphics.

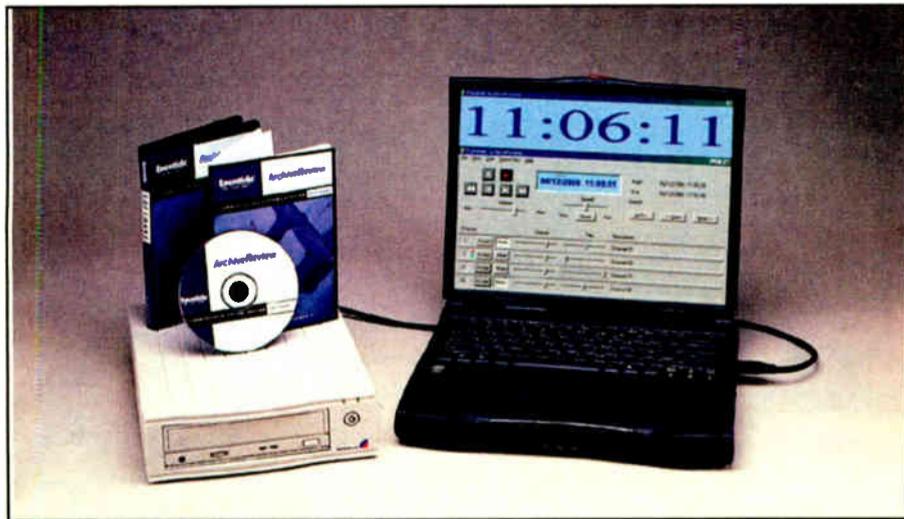
iBiquity is a technology company working to develop and commercialize digital radio for the AM and FM bands.

For information contact the company in Maryland at (410) 872-1530 or visit www.ibiquity.com

Eventide Eclipse, Logger Software

Eventide introduced the Eclipse, its latest digital effects processor.

Intended to replace the legendary H3000 series, the Eclipse offers pitch shift, reverb and other effects in a dual-engine architecture, configurable in stereo, dual-mono series or parallel operation; it features 24-bit digital conversion, 96 kHz sampling and a signal-to-noise-ratio exceeding 104 dB.



Eventide ArchiveReview

Also, the company offers ArchiveReview software for the PC. Original archive media recorded on an Eventide logger can be searched and played off-site with no physical connection to the recorder or need to re-record the data to another format.

Also new is the BD960 broadcast obscenity delay, which features a section of NVRAM that can store up to 8 seconds of audio to replace dumped word(s).

Visit the company in New Jersey at (201) 641-1200 or visit www.eventide.com

Sigma Portable Mixers

Making its first appearance at NAB, Sigma System Engineering highlighted the SS-T2000 three-channel location audio mixer, which runs on four AA batteries for five hours.

Also available is the modular SS-342 portable mixer, a four mic/line input stereo mixer that runs on eight AA batteries or NP1. All channels are equipped with HPF, PFL, phantom and A-B mic power. Channels 1/2 and 3/4 each have stereo fader link switches.



SS-T2000

The SS-342 has multiple outputs, master gain controls and returns and an adjustable compressor on the output. An additional add-on chassis is available.

The SS-6002 option adds four channels of two-band, fixed Q equalization and threshold-adjustable compression. The SS-6001 is a 4-x-2 add-on chassis.

For information send e-mail to the company in Japan at Riond@kamesan.co.jp, call +81-3-3204-2611 or visit www.kamesan.co.jp

CartWorks Adds Chunk Support

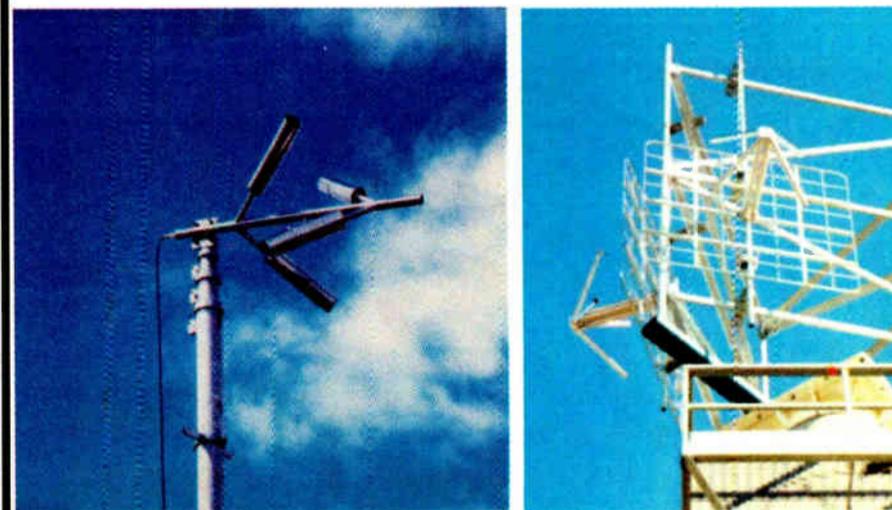
CartWorks enhanced its CartWorks digital audio line, adding the CartChunk standard to the system.

This addition will provide interchangeability with other platforms, transferring text and other database information in the audio file header.

For more information on CartWorks, contact dbm systems in Mississippi at (800) 795-RADIO, e-mail to gthomas@cartworks.com or visit www.cartworks.com



RADIO FREQUENCY SYSTEMS RFS Broadcast



Total Systems Solutions for FM Radio



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North Haven CT, 06473

tel +1 203 239 3311
fax +1 203 239 9260
info@rfsbroadcast.com

APT WorldNet Milano, Rio Codex

Belfast-based Audio Processing Technology launched a digital audio codec, WorldNet Milano, which replaces the DSM 100 Pro Link and the BCF 256 and 384.

Milano features standard and enhanced apt-X, an upgraded data compression algorithm that provides better audio quality and reduced delay time. It is supplied with or without SMPTE time code and features several ISDN interfaces.

A similar product, WorldNet Rio, is a duplex multichannel, multi-algorithm audio codec that can interface with previous APT products.

Contained in a 1 RU box, the Rio offers 20- and 24-bit operation driven by a single Motorola DSP563xx device to provide increased stereo and mono audio channel capability and simultaneous full duplex operation.

Sir Christopher Meyer, the British Ambassador to the United States, visited the APT booth while in town for another convention.

Contact APT in Northern Ireland at +44-28-9037-1110 or visit www.aptx.com



British Ambassador Sir Christopher Meyer, left, visits APT Managing Director Noel McKenna.

StudioHub Enhanced by Radio Systems

Several new modules for the StudioHub line were on display at the Radio Systems booth.

The system uses standard RJ-45 connectors and shielded CAT-5 wiring from the computer network industry to interconnect studio audio equipment and features a range of user modules, including switcher panels and mixers.

New is a panel with a built-in microphone pre-amp, push-to-talk button, phantom power, a VU meter panel and a headphone amplifier panel with 8 watts of output power.

The system recently was used to wire the audio, IT and telecomm facility at XM Satellite Radio. StudioHub features four-layer PC board construction that allows support for 100base-T communications.

Also on display was the new DI-2000 dual line telephone interface, which lists for \$1295, and the Silence Sensor, with a list price of \$425.

For more information contact Radio Systems in New Jersey at (856) 467-8000 or visit www.radiosystems.com

Audio Precision Improves Software

Audio Precision has a stable hardware platform for its audio analysis equipment and is making improvements in both the DSP analysis software and the user interface software.

At NAB2001, the company introduced APWin 2.14 software, which makes several improvements including an improved PCI driver and improvements in the individual harmonic analyzer for the DSP-equipped Cascade analyzers.

For more information contact the company in Oregon at (800) 231-7350 or visit www.audioprecision.com

Clark Wire Custom Panel Design

Clark Wire & Cable highlighted a new service that allows users to custom-manufacture panels for standard, 19-inch racks.

The custom-panel program lets users design a panel from their Web browsers. Specify the type of connectors desired; how many and where they should go; and how everything should be labeled.

The data is submitted to Clark for a quotation, order entry and fabrication.

For more information contact the company in Illinois at 1-800-CABLE-IT or visit www.clarkwc.com

Caltron's Stronger, Lighter Cases

Caltron Packaging Group, the manufacturer of Anvil and Calzone Cases, is starting to use a new cellular composite material called XLT-1, which it says makes cases more durable and lighter.

Caltron manufactures a line of standard and custom cases that protect equipment during transportation to remote broadcasts or other events.

For more information on Caltron Packaging Group cases, call the company in Connecticut at (800) 243-5152 or visit www.calzonecase.com

RIZ Solid-State AM Line

RIZ Transmitters of Croatia highlighted new solid-state AM transmitters with power levels of 5 kW to 100 kW.

Deputy General Manager Oliver Sabcic said the company could manufacture solid-state AM units up to 300 kW. RIZ also offers shortwave transmitters from 5 kW to 500 kW.

Sabcic said RIZ is a member of the Digital Radio Mondiale consortium and that its transmitters are digital-ready.

Contact the company in Croatia at +385 1 2310 684 or visit www.riz.hr

Beyer DT 297 PV

The newest product from beyerdynamic arrived just in time for NAB2001 — the DT 297 PV.

This is a headset system with built-in condenser microphone, capable of reproducing 10 Hz to 30 kHz.

It offers a cardioid polar pattern that beyerdynamic bills as best noise cancellation. The headphones are "closed," and the mic is supported by a gooseneck.

"This headset is equipped with a bigger capsule and improved bass response," said Alexis Kurtz, applications engineer.

Contact beyerdynamic in New York at (800) 293-4463 or visit www.beyerdynamic.com

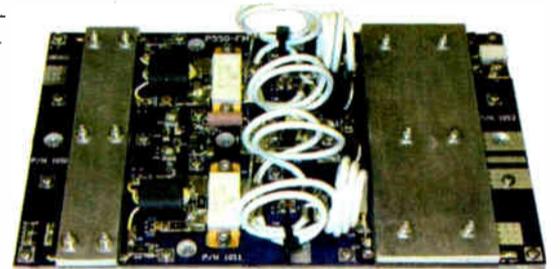
P550-FM Designed For Do-It-Yourself'ers

The P550-FM broadcast amplifier from Delta RF Technologies is designed for those building their own transmitters.

The P550-FM is a 600 W output FM, Class C pallet in a compact building block offering 16 dB typical gain and requiring approximately 15 W to drive the pallet to 550 W.

"It is perfectly suitable for 1 kW and higher power levels, and is part of a product line that includes a variety of power levels and frequency coverages," said Sarkis Kazarian, CEO and vice president of sales and marketing for Delta RF Technologies.

Contact Delta RF Technologies in Nevada at (775) 335-8273 or visit www.drft.com



ATI Headphone Amps

The HDA400 from Audio Technologies Inc. (ATI) is a stereo headphone monitoring system with balanced quarter-inch TRS stereo line inputs, stereo/mono switching and a clipping indicator.



It has four adjustable stereo outputs, each of which drives 32- to 600-ohm headphones to in excess of 100 mW each.

The HDA600 is a six-output version. The XLR and TRS balanced stereo master line inputs allow loop-through capability and front mono/stereo selection. Headphone connectors are duplicated on front and rear panels.

Contact ATI in Pennsylvania at (215) 443-0330 or visit www.atiguys.com

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Remote Starts, Muting, Tally

5 Stereo Channels
10 Stereo Inputs

2 Stereo Buses
1 Mono Bus

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RDL: Little Boxes For Big Jobs

The FP-ALC1 is only about 1 inch by 3 inches, but this automatic level control device from Radio Design Labs can provide consistent levels from variable sources, split-band AGC for less obvious level manipulation and self-adjusting attack and release times. It is a mono module featuring a detachable terminal block input and output.



The FP-ALC2 (shown) is the stereo version, with phono jack I/O. The automatic level control circuitry maintains a consistent -10 dBV output for input signal variations as great as 25 dB.

Contact RDL in Arizona at (800) 281-2683 or visit www.rdl.net

SETEL

Italian supplier Società di Elettronica per Telecomunicazioni (SETEL) fabricates routing switchers, remote control panels and software for operating hardware devices for radio and television stations.

The digital MD Series and analog CM Series of audio and video routing switchers, both of which can be implemented over 256 x 256, can be controlled by the following remote control panels: the full-matrix FMC 256, the single-bus SBC 256 and TICSP programmable keyboards.

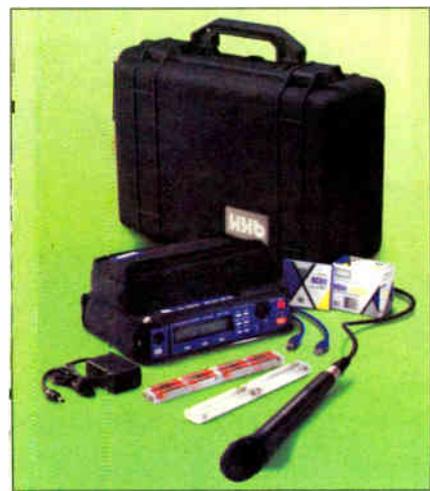
The whole system can be assembled to handle more than 32 devices, connected through single serial coaxial line. The system is configured and controlled by a PC and it is interfaced with under monitor displays.

For information contact the company in Italy via e-mail to market@setel.it, call +39 011 994 11 66 or visit www.setel.it

HHB on the Way Of the Disc

HHB showed the PortaDisc MDP500 Reporter's Kit, packaged in a water- and dust-proof Pelican case. It contains the MDP500 portable MiniDisc recorder, a Sennheiser MD46 mic with cable, a universal charger/AC adapter, two battery caddies, a USB cable and six HHB MD80 80-minute MiniDiscs.

For information contact HHB in California at (310) 319-1111 or visit www.hhbusa.com



Version 1.6 for SonicStudio HD

The latest from Sonic Solutions is SonicStudio HD version 1.6, a 24/96 recording and precision editing, surround, DVD-Audio prep, Internet music workstation.

Signal processing uses SonicClarity, an internal 48-bit signal path. To reduce word length, there are five output dither algorithms from which to choose: flat, 2nd order, turbo bit mapping, Sony bit map 1 and Sony bit map 2.

Editing, equalization, gain changes, manual NoNoise functions and RealTime DeNoise are segment-based or area-based and are done within one window. Fades are done in real time, and the changing waveform indicate those level changes.

For information send e-mail to james_anderson@sonic.com, call (435) 425-3830 or visit www.sonic.com

Genelec Digital Audio Monitors

Genelec featured three lines of digital speaker systems with amplification built in.

The S30D, 2029A and 2029B were selected for monitoring at the XM Satellite Radio facility in Washington.

For a master production studio, Genelec recommends 1029A two-way, bi-amped active monitors and 1091A matching active subwoofer. Powered by 40 W amps, the 1029A offers a frequency response of 68Hz to 20 kHz, ±2.5 dB, from a 5-inch woofer and 3/4-inch dome tweeter.

The 1029A features front-mounted volume control and rear-panel bass and treble tilt controls. Each is EM shielded for protection near computer monitors.

Contact the company in Massachusetts at (508) 652-0900 or visit www.genelec.com



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Telos Systems SmartSurface Studio Controller

Controlling audio in radio stations is handled differently these days. Instead of consoles and audio sources, users talk about routing engines and computer-based audio applications.

SmartSurface is a control system for this new environment. Looking like a traditional mixer, this "Cool Stuff" winner provides comfortably familiar controls to operators. However, SmartSurface isn't an audio device; it's a networked controller for those sophisticated outboard mixing/routing engines and computerized audio systems.

By building an open architecture that will accommodate the record, play, edit, remote and other functions of router/mixers, computerized audio apps and other



Frank Foti and Mike Dosch are behind the SmartSurface all the way.

peripherals, Telos says it hopes to provide the spark for a new way of thinking about radio studio design.

Judges speak: "Slick design and open-ended flexibility. Gear that talks to other gear is the way to go today." ... "The future blueprint for radio control consoles."

Price: \$16,900. Available: 3rd Quarter.

For information call the company in Ohio at (216) 241-7225, e-mail info@telos-systems.com or visit www.telos-systems.com.

'Searchtrack' Speeds Music Selection

Royalty-free production music is available on 65 CDs from the Fresh Music Library.

The company now also has 12 CDs of sound effects and production elements, all of which can be auditioned on a cross-platform CD-ROM called "Searchtrack."

Themes can be cross-referenced by emotion, use or style and heard in compressed mono audio files before final selection. Music categories include contemporary, corporate, country/folk, drama, ethnic, kids/novelty, lifestyles, new age, period/big band and sports.

Contact Fresh in New Hampshire at (800) 545-0688 or visit www.freshmusic.com



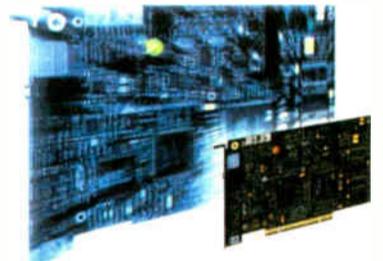
Merging Technologies Low-Cost Digital Audio Editor

New from Merging Technologies was the Pyramix Broadcast Pack, consisting of the Mykerinos PCI soundcard, Pyramix LE software, CD mastering and CD import, video and TC synchronization and machine control.

Also new is version 4.0 of Pyramix Virtual Studio software and the high-performance PCI Mykerinos board for DSD recording and editing.

The software now supports an HDTDM system with up to eight Mykerinos boards in one PC, providing up to 64 I/Os and "massive" processing power.

Contact the company in Illinois at (847) 272-0500 or visit www.merging.com



SWE DISH Launches Mobile Units

SWE DISH, a broadcast terminal supplier, introduced mobile satellite broadband terminals that allow any vehicle to become an on-board editing and play-out environment for remote broadcast/Webcast operations.

They include the IPT Suitcase, a satellite terminal that allows live video and audio IP-format streaming up to 2 Mbps from a case that can be handled by one user and fits into the trunk of any car.

The IPT Drive-Away allows 10 Mbps live IP-format and/or 60 Mbps DSNG-format live transmissions. And the SWE DISH IPT Fly-Away is a satellite system that offers the same transmission rates but can be hand-carried and flown by services such as by helicopter or installed in a light vehicle.

The systems range in cost from \$80,000 to \$120,000.

SWE DISH also offers satellite capacity.

For more information contact SWE DISH in Stockholm, Sweden at 011-46-8-5879-5000 or e-mail to sales@wase.se

Belden Brings Out New Cables

Cable builder Belden showed two new cables for broadcasters.

Top of the list is the 7884A Series, a flexible quad snake for mic- or line-level uses. Each quad is made up of four 26AWG wires with color-coded polyethylene insulation wrapped in a French braid jacket with a copper-tinned drain wire, all in a PVC jacket. Snakes are available in 2, 4, 8, 12, 16 and 24 quads.

Also for line-level audio tasks is the new 9451D dual-pair cable. The 9451 consists of a tinned copper conductor with color-coded polyolefin inside of a Beldfoil shield and PVC jacket. A 22AWG drain wire is included.

For information contact the company in Indiana at (800) BELDEN-4 or visit www.belden.com

New Patriot Package

Satellite Export and Engineering is a one-stop shop for satellite transmitter and receiver hardware.

Designed for Galaxy IX, V, XR, 3R and XI satellites, the new Patriot package includes a 3.8 meter antenna with ± 500 kHz digital C-band LNBS and a fixed Az-EI fixed mount.

Also new were three sizes of center feed for 2.4 meter dishes, as well as combo dishes for 1, 1.2 and 1.8 meters.

Contact the company in Michigan at (517) 629-5990, e-mail to info@sepatriot.com or visit www.sepatriot.com



KD Majestic

KD Kanopy Inc. introduced the KD Majestic 100, a portable canopy that sets up in seconds.

The commercial strength aluminum frame with Dynidiom fittings weighs 48 pounds, and collapses into a carry bag roughly the size of a golf bag.

The top, back panel and rail curtains are made of a tough polyester that is fire-retardant, water-resistant and UV-protected. Silk-screen logos can be heat-cured into the fabric.



The KD Majestic comes in 5x5, 8x8, 10x10 and 10x20 versions.

Also new: an attachable banner pole that helps increase visibility. The visible verticals are available in nine colors; the flag is 10 feet long.

Contact the company in Colorado at (800) 432-4435 or visit www.kdcanopy.com

In 1956



ROCK 'N' ROLL
changed the world

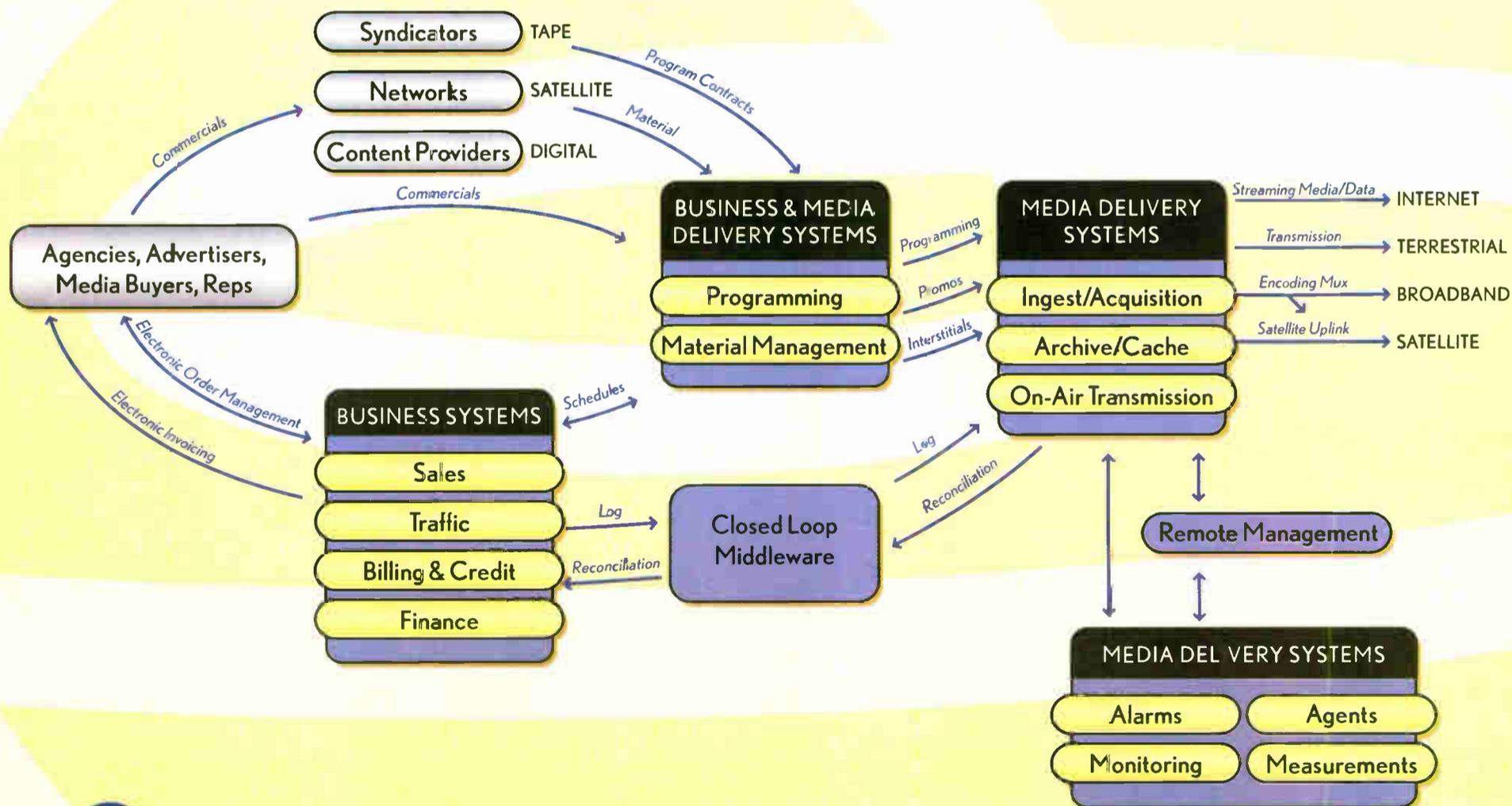
In 2001

XM SATELLITE RADIO
orbited the world with ROCK and ROLL

Encoda Systems congratulates **XM Satellite Radio** on the successful launch of their satellites, **Rock** and **Roll**

Encoda Systems, Inc. is a key provider of large, multichannel, centralized radio sales & traffic and audio automation systems.

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For more information, call USA headquarters at 303/237.4000 or visit www.encodasystems.com

World Radio History

TieLine Intros The I-Mix

TieLine declares itself to be the next generation in POTS and POTS/ISDN codecs.

Unveiled in Las Vegas was the new I-Mix, an Intelligent Portable Studio with POTS or POTS/ISDN codecs built in. The I-Mix features five mic/line inputs, four headphone jacks, four remote relays, mix-minus, local PA out and 12V operation.

TieLine POTS codecs are stable, deliver 15 kHz bi-directional FM-quality low-



Gary Hoppe won a pair of TieLines worth \$7,200.

delay audio, can be upgraded via software and hardware, and are remote-controllable.

In a drawing held at NAB2001, Garry Hoppe, vice president of operations for Tri-County Broadcasting in Sauk Rapids, Minn., won a free pair of TieLine POTS codecs.

For more information contact the company in Indiana at (888) 211-6989, send e-mail to sales@buytieline.com or visit www.buytieline.com

Self-Standing Whip Antennas

Valcom introduced the model V330112-CL2 coil-loaded 112-foot fiberglass self-standing whip antenna intended for AM broadcasters.



The V330112-CL2 is self-supporting, requiring no guy wires, making it ideal for rooftop installations or locations where guy wires are impractical. Its construction is of high strength, filament-wound epoxy/fiberglass.

Call the company in Ontario, Canada, at (519) 824-3220 or visit www.valcom-guelph.com

Radio Lantern Generates Interest

Aimed at the developing world and at outdoor recreation markets, the LUFO Radio Lamp from non-profit Vocalux consists of a kerosene lamp topped with a hotplate and thermocoupler.

At the base of the lamp are an AM/FM radio and a 3 V DC power jack that can power a mobile phone. LUFO also has plans for an L-band satellite receiver and plug-in dish for reception of WorldSpace digital satellite radio signals.

For information call toll-free at (877) 862-2589, call the company in Belgium at +32 2 538 6350 or visit www.vocalux.org



BSW Delivers Mackie Consoles

Broadcast Supply Worldwide is now distributing Mackie digital consoles.

The Mackie D8B digital 8-bus console with version 3.0 software includes support for third-party plug-ins, 999 levels of undo, a 48-channel overview screen and enhanced surround sound mixing features.

The D8B can handle up to 72 input channels and is complemented by the HDR 24/96 recorder, which offers 24-track, 24-bit hard-drive recording capability.

Contact BSW in Washington at (800) 426-843 or visit www.bswusa.com or www.mackie.com

Superior Electric Debuts TVSS

The Stabiline TVSS Series surge suppressor made its debut this year from Superior Electric.

Designed for facility-wide surge protection, the TVSS Series is installed in service entry panels, large distribution panels and non-service entrance distribution panel boards.

Models are available up to 300,000 amp surge capacity and feature fail-proof MOV protection fuses that cannot be opened by a transient voltage spike.

The standard monitor indicates presence of individual three-phase power legs; the Advanced Diagnostic Monitor has programmable alarms and can store voltage and surge information in non-volatile memory.

The ADM can indicate neutral to ground voltage or current and percentage of protection status to identify failing MOVs.

Prices range from \$1,375 to \$8,100.

For information contact the company in Connecticut at (860) 585-4500 or visit www.superiorelectric.com



Altronic Cools Off Its RF Load

Altronic Research Inc. displayed its 9700 series of water-cooled RF coaxial load resistors. The product line ranges from the model 9705, which can handle up to a 5 kW continuous load at frequencies from 60 kHz to 800 MHz, to the model 9780, which can dissipate up to 80 kW at the same frequency range.

All use ceramic film-type cylindrical resistors, which can be replaced without being returned to the factory and can be mounted in any position at a transmitter site.

For information contact the company in Arkansas at (800) 482-562 or visit www.altronic.com

Simple • Effective • Reliable



Con/Air Switcher

eliminates delay from headphone monitor
monitor audio can be individually tailored
immediate warning on air signal failure
air signal is not altered in any way
optional rack mount panel available

model cas-1



Telephone Announcement System

digital message storage - no moving parts
variable outgoing message format
inactive or defective line indicator
resettable incoming call counter
temperature in Fahrenheit or Celsius
battery backed AC synchronized clock
low cost system - no leased equipment

model tas-1



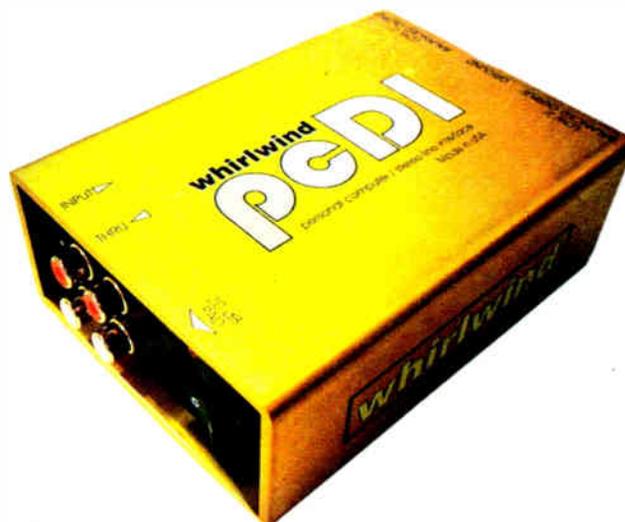
Message Board Controller

converts status inputs to LED display data
15 prioritized logic-level signaling inputs
momentary or maintained signal inputs
fully programmable display with graphics
pre-programmed "starter" messages
multiple displays from one controller
(display device shown not included)

model mbc-1

Direct Box Connects

Whirlwind Digital, a new division of Rochester, N.Y.-based Whirlwind, released the pcDI, a direct box that interfaces an unbalanced stereo line source with professional balanced low impedance equipment.



The unit contains two separate direct-ins with color-coded RCA phono input and through jacks and color-coded XLR outputs. Each section features a ground lift switch to help eliminate hum as well as a 20 dB pad option for connecting to hot signals.

Contact Whirlwind in New York at (716) 663-8820 or visit www.whirlwindusa.com



Standard equipment on every model.

If any digital audio delivery system could have a “trust” button, DAD_{PRO32} is it. Live assist or automation, single radio station or regional cluster, you can trust DAD_{PRO32} to deliver 24/7/365. Put your mind at ease, choose DAD_{PRO32}—from ENCO Systems.

Smarter. Faster. Better.



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World Radio History

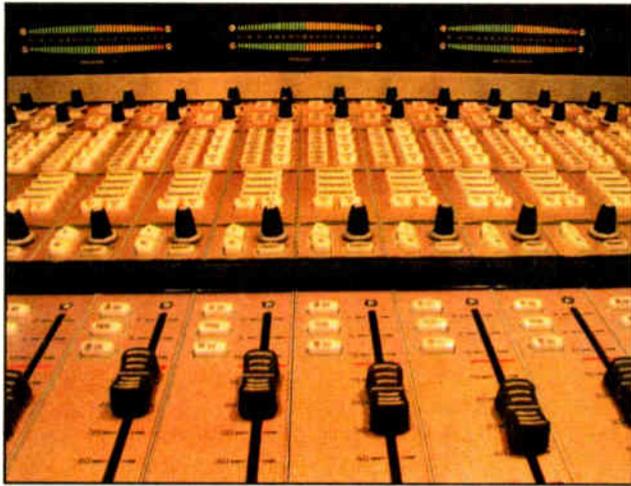


Harris BMXdigital Modular Digital Audio Console

BMX is back with a stunning high-end digital console for serious radio applications. It earned "Cool Stuff" honors at the show.

This is the first BMX product to come out of Pacific Research & Engineering since Harris took it over, and the results are lovely.

Just consider the number of busses: four stereo program, four stereo utility and two stereo send, each with D and A outputs; two off-line mix feeds for telco and remote use; and telco mix record bus.



Features include independent analog and digital inputs for both A and B inputs on each module; frame sizes up to 38 input modules; up to six telco/codec input modules; and router/remote switcher control input module. The board is fully modular and allows hot-swapping. Lots of cool features on this one, and it's sweet to look upon.

Price: Approximately \$28,000 to \$48,000. Available: July
 For information contact the company in Ohio at (513) 459-3400, send e-mail to broadcast@harris.com or visit www.harris.com.

A-T Wireless, Shotguns

Audio-Technica premiered its ATW-T73 wireless microphone transmitter.

This high-end handheld wireless joins the 7000 Series of UHF wireless equipment, which A-T improved at NAB2001 by adding 600 MHz band capability, opening up a new range of available channels for use in spectrum-crowded areas.

Capping off the lineup are the ATW-DA600 and ATW-DA700 antenna distribution amplifiers and the ATW-62P/ATW-72P powered dipole antennas.

The company also featured new stereo shotgun mics, shown. The models were used during coverage of the Olympics in Sydney.

Contact the company in Ohio at (330) 686-2600 or visit www.audio-technica.com



A-T Stereo Shotgun Mics

Dielectric Acquires TCI International

Dielectric Communications completed acquisition of fellow antenna and RF systems company TCI International. TCI shareholders approved the purchase in March.

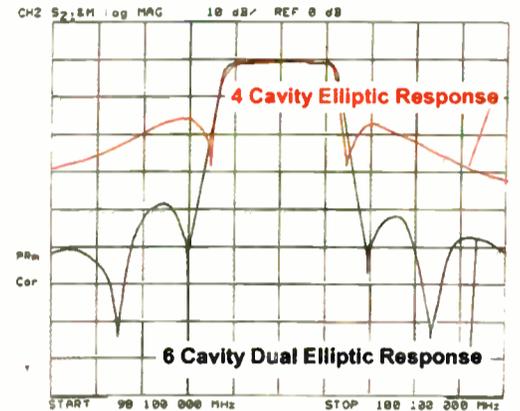
Lewis Kling, president of Dielectric, said, "TCI products broaden our offerings to our traditional markets in the broadcast industry as well as providing advanced technologies in other bands of the RF communications spectrum."

John Ballard, III, president and CEO of TCI said, "The merger between TCI and Dielectric combines the scientific, technical and commercial expertise of two companies that are pre-eminent designers and manufacturers of RF products and systems."

Last fall, Dielectric signed a deal to purchase Central Tower and Ryan Construction.

Among its products on display was an IBOC FM Combiner, and an IBOC FM Bandpass Intermod Suppression Filter.

For information contact the company in Maine at (866) DIELECTRIC or send e-mail to dcsales@dielectric.com



IBOC FM Bandpass Intermod Suppression Filter

Broadcasters General Store & SBS

Broadcasters General Store exhibited a line of products from SBS, which the dealer distributes in the USA.

SBS products include FM10 (10-watt) and FM30 (30-watt) FM exciters, which can be used as low-power FM transmitters; the MPX5 stereo generator and MaXiM audio processor; PA125 and PA250 FM power amplifiers; and TX400 and RX400 studio-transmitter link system, which operates from 48 MHz to 1300 MHz.

BGS also is offering the Audemat FM_MC4 FM field strength meter and baseband analyzer, which allows engineers to make up to 25,000 readings an hour on up to 99 frequencies while driving.

Contact the dealer in Florida at (352) 622-7700 or visit www.bgsfl.com

SADiE RADiA

SADiE highlighted the RADiA Platinum, a four-in, four-out turnkey digital editing system that includes a rack-mount 667 MHz Pentium III, 10 GB drive, 48x CD-ROM drive, 15-inch LCD panel display and RADiA Master Control Panel with edit and scrub controls and motorized faders. It has analog, AES/EBU and S/PDIF I/O and 24 tracks of 24-bit, 4- kHz audio.

Also new: SADiEnet audio networking, which uses ATM via CAT-5 or OC 3 connections to share project files and audio data for multiple projects, using Storage Area Networking (SAN), and the CD-R Tower, available in four- or eight-bay models.

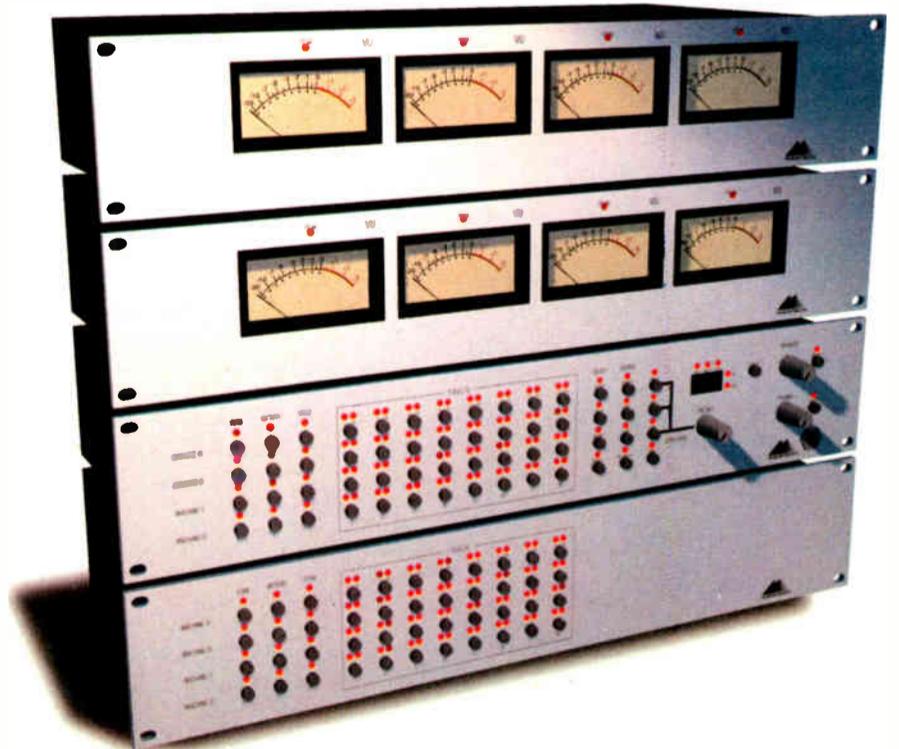


SADiE highlighted its move to the AES31 digital audio standard, which aims to provide a common interchange format for disks, files and crossfades.

For information contact the company in Tennessee at (615) 327-1140 or visit www.sadie.com

RecordistMax Monitoring Matrix

The RecordistMax is a 32-input audio monitoring system from Martinsound that provides programmable headphone, monitor and VU meter monitoring. The main unit (\$6,995) can be augmented by slaves (\$4,000) for a total of 128 channels.



Master and slave panels communicate via serial connections, permitting distributed placement and allowing multiple master panels. Serial control permits the use of a roving control panel to allow the controls to be near a particular source. Store button can be used to save up to 32 snapshots of source, meter and speaker outputs. Store also will save oscillator frequencies and levels from the digital sinewave oscillator and pink noise generator.

Contact the company in California at (800) 582-3555 or visit www.martinsound.com

Denon. Heard around the world in perfect clarity.

Advanced CD and Mini-Disc technology for broadcast.

In 1995, Denon introduced the world's first family of professional MiniDisc products. Since then, the industry has looked to Denon to take this medium even farther. The DN-M1050R does just that. With recording and editing features that are faster and easier than before and options that include a PC compatible keyboard, SMPTE, FS Converter and Hot Start, this MD recorder is a must have. And when paired with the DN-C680, Denon's best CD player

technology for studio and broadcast production applications, you have a reliable and uniform operating environment ready to deliver superior sound quality using innovative, easy-to-use controls. The DN-C680 features dedicated buttons instead of dual purpose scroll menus, a wide range of connectivity options, easy-adjust output levels, and options like SMPTE — and that's just the beginning. Hear Denon for yourself. After all, the rest of the world has.



DENON
The first name in digital audio



www.del.denon.com • Denon Electronics, 19 Chapin Rd., Pine Brook, NJ 07058
(973) 396-0810 • Denon Canada, Inc., 17 Denison St., Markham, Ontario, Canada L3R 1B5
(905) 475-4385 • Labrador, S.A. de C.V., Zamora No. 154, 06140 Mexico, D.F. • (52) 5-286-5509

World Radio History

MediaStation, AirControl NT For Digital Audio

German supplier mediatron introduced digital products for live-assist, automation, Webcasting and other applications, including MediaStation, for smaller stations, and AirControl NT 2000 Professional. Both are 32-bit applications for Windows NT 4.0 and Windows 2000; audio I/Os are handled by Digigram or SoundBlaster soundcards.



New AirControl NT plug-ins include an automatic time announcement module; virtual voicetracking; station Web site, WAP, RDS and DAB capabilities; database search and browse; and automatic soundfile and format conversion.

NewsEdit NT is content management for news recording and editing on notebook computers with a link via Outlook Express and Internet Explorer.

NewsPrompter software for the newsroom is used to access content on the station server via a database. The system runs via a central automation system or live assist.

For information contact the company in Germany via e-mail to stein@mediatron.com, call +49 8131 8305-0 or visit www.mediatron.com

Seratel New Exciter, Transmitter

Seratel released its FM Digital Exciter and 1 kW Handymitter Series FM transmitter.

The FM Digital Exciter has an optimized 32-bit NCO that creates a distortion-free signal. Its modular, plug-and-play interfaces allow the user to configure the equipment with particular interfaces. Features include illuminated display, serial dataport and independent 16 BIS controller.

The Handymitter Series transmitter features a 1 kW module wideband amplifier, integrated fans, foldback protection, automatic control power and gain, modularity and wideband design.

For information contact Seratel in Madrid, Spain, at +34-91-656-75-65 or visit www.seratel.com

FM Simplified

"David-II" - \$2000

A SIMPLE, YET REMARKABLY COMPETITIVE FM PROCESSOR/GENERATOR

Even 'Goliath' audio processing can't make you Number One in your market. Market share is dictated by attention to demographics and selection of a format and air personalities. Your station's 'signature' is not its 'sound,' it's embedded in its programming.

Each day, the world over, hundreds of "David-II" users prove that a strong, clean, non-fatiguing sound is the best companion to successful programming. With rock-solid PWM processing and digital-synthesis baseband coding, "David-II" more than holds its own against complex and far more expensive FM alternatives. Contact your preferred supplier for a demo at your station.



Inovonics
1305 Fair Ave. • Santa Cruz, CA 95060
TEL: (831) 458-0552 • FAX: (831) 458-0554
www.inovon.com • e-mail: info@inovon.com

Broadcast Richardson Virtual-Station, Radio Illustrator

Broadcast Richardson emphasized its Virtual-Station and the Radio Illustrator product for enhancing radio capabilities.

Virtual-Station features an integrated system with rack-mountable CPU, dual 15-inch flat-panel displays, two audio cards and a choice of several software packages.

The Radio Illustrator's BMS/updater program allows radio to broadcast and stream on the Net at the same time. Radio Illustrator lets the user determine what video, picture or text to display on the Web site during any type of broadcast from BMS. The point is to allow broadcasters to display content on the site that is appropriate to what's on the broadcast at a given moment.

For information contact the company in Indiana at (800) 348-5580 or visit www.radiotvnet.com

Autogram Consoles

The Model PM-218 and PM228 audio consoles from Autogram employ dual-mode processing that allows them to output analog and digital signals separately or use a solely digital output.

This avoids unnecessary conversions and maintains high-quality audio. The 218 sports six AES/EBU or S/PDIF



stereo digital inputs and two outputs and have two high-quality Bittware Audio-PMC embedded processor boards. The 228 can support two upgrade cards for a total of 12 digital inputs and four digital outputs.

The 218 can hold up to 18 front-panel modules and the 228 can use up to 28 modules and up to 60 stereo inputs. Both consoles can be bought in an analog-only format and be upgraded to digital later.

For information contact the company in Texas at (972) 424-8585 or visit www.autogramcorp.com

New PPT Patchbay

Switchcraft introduced the Professional Punchdown Terminal (PPT) patchbay system, which incorporates a split-barrel design and thicker housing to minimize the impact of repeated punch-downs while remaining compatible with industry standards.

This punchdown design distributes pressure evenly across both sides of the terminated wire for better wire retention and more reliable connections.



The MTP48K Series is AES/EBU digital-ready with 48 MT-style jacks in a 1 or 2 RU box. The MTPFA/TPFA is a series of patchbays with front access in a slide-out tray.

Contact Switchcraft in Illinois at (773) 792-2700 or visit www.switchcraft.com

Videoquip Debuts Stereo Corrector

The SC-2A Stereo Corrector from Videoquip is designed to monitor phase relationships on stereo audio signals and make corrections if a problem is detected.

If a phase reversal is detected it will correct the phase of the offending channel automatically. In the event of a channel loss, the SC-2A will substitute the active channel for both left and right until the failure ends.

All inputs and outputs are balanced analog and the gain of each channel is independently adjustable.

For information contact the company in Ontario, Canada, at (888) 293-1071 or visit www.videoquip.com

AKG Introduces Studio Mic

Nationally syndicated talk show host Jason Jarvis broadcast live from the NAB exhibit floor at the Sands Expo Center, using the AKG Acoustics large-diaphragm condenser microphone, the C 4500 B-BC.

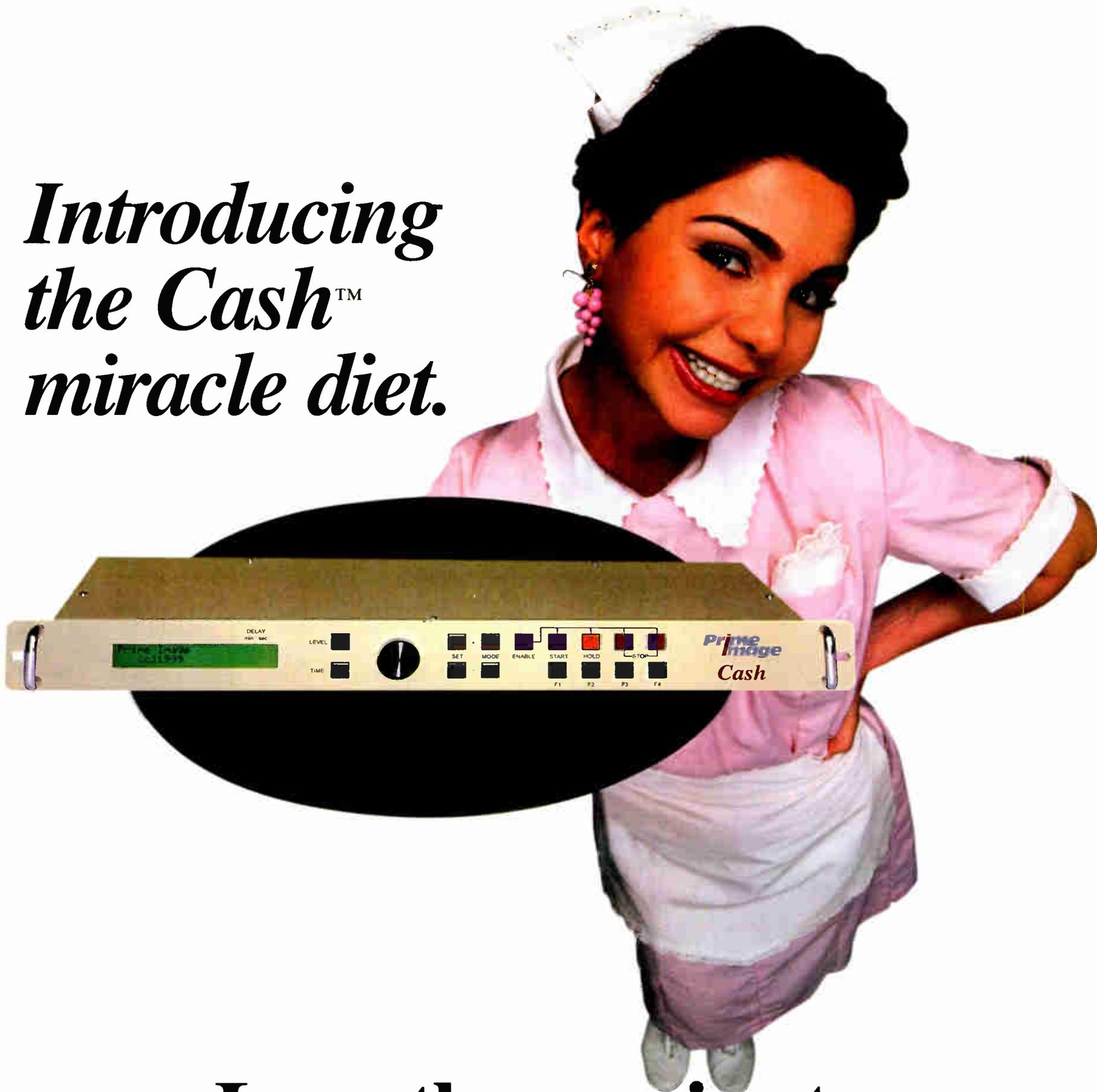


The C 4500 B-BC features a front-end firing capsule position, electro-magnetic screening and internal pop-filter. AKG says the mic does not require additional outboard processing.

The retail price is \$665, which includes a shock mount.

For information contact the company in Tennessee at (615) 360-0291 or send e-mail to ssewart@Harman.com

Introducing the Cash™ miracle diet.



Lose three minutes in an hour!

Gone are the days of hunt-and-cut editing, warbling time compression, and sped-up chipmunk audio. Now overstuffed, overtime audio productions can be reduced through a real-time, undetectable process that can cut up to one minute of audio from every twenty without reducing program content.

The Cash audio time machine from Prime Image is a fully digital, easy-to-operate device that utilizes a patented system of random "micro-edits" to reduce the length of any production, whether voices, sound effects, or music. And Cash works automatically, in one pass, with no additional processing. Simply enter the amount of time you want to lose and the period of time over which to lose it. Then push the start button and find

something more important to do. Like kicking back and enjoying a cup of coffee—but, in the interest of your waistline, take a pass on the donuts.

For specifications, information, or orders contact Prime Image:
www.primeimageinc.com
408-867-6519

**Prime
Image**

The Digital Video People
Tel (408) 867-6519 Fax (408) 926-7294
www.primeimageinc.com



Roland VS-2480 Digital Studio Workstation

Here's a self-contained hard-disk recorder with full 24-track/24-bit digital recording, onboard effects processing and optional CD recording.

It's a 64-channel mixer offering 24-track simultaneous play and 16-track simultaneous record with 384 V-Tracks.



Roland's Laura Tyson and the VS-2480

Features of this "Cool Stuff" winner include 17 automated, motorized faders; two stereo FX processors, expandable to eight; VGA monitor output and a mouse for easy drag-and-drop editing plus an input for an optional keyboard. Pro connections include eight XLR with phantom power and 16 balanced TRS inputs plus 16 channels of configurable 24 bits and up to 96 kHz digital I/O.

There's more: check it out for yourself.

Price: \$4,495. Available: May.

For information contact the company in California at (323) 890-3700 or visit www.rolandus.com.

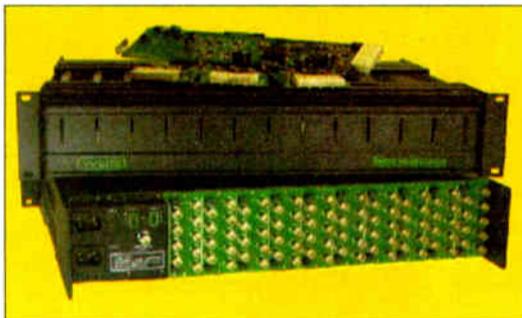
Ward-Beck Debuts Serialboxx

The Serialboxx from Ward-Beck Systems is a rack-mounting card frame and a series of plug-in amplifier modules.

The modules are designed to handle analog and digital audio and video signals. Several are available.

Also at the show was the DMS1 digital monitoring system. The unit enables users to monitor stereo analog audio, AES digital audio and serial embedded audio.

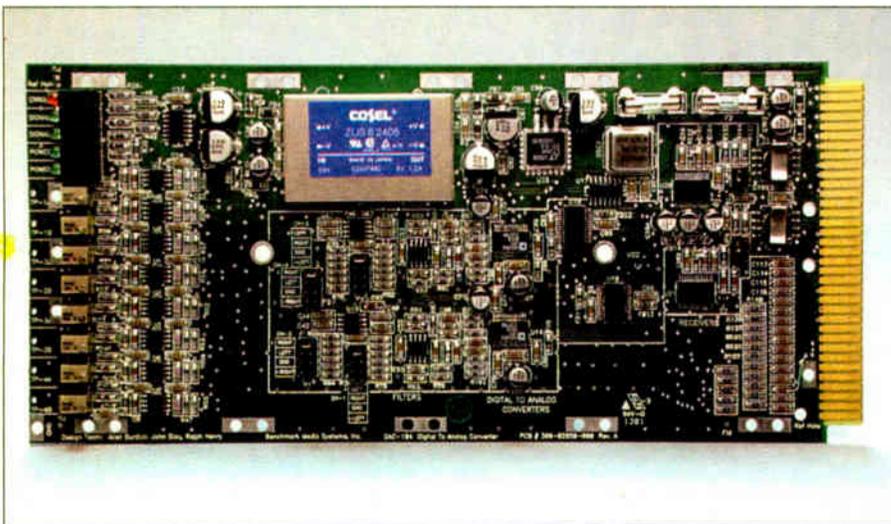
For information contact Ward-Beck Systems in Oregon at (866) 771-2556 or visit www.ward-beck.com



Benchmark Four-Channel Converter

Benchmark showed its new DAC-104 four-channel D-to-A converter module, designed to complement the System 1000 mainframe.

The DAC-104 has 24-bit, 96 kHz D-to-A conversion; two balanced audio outputs per



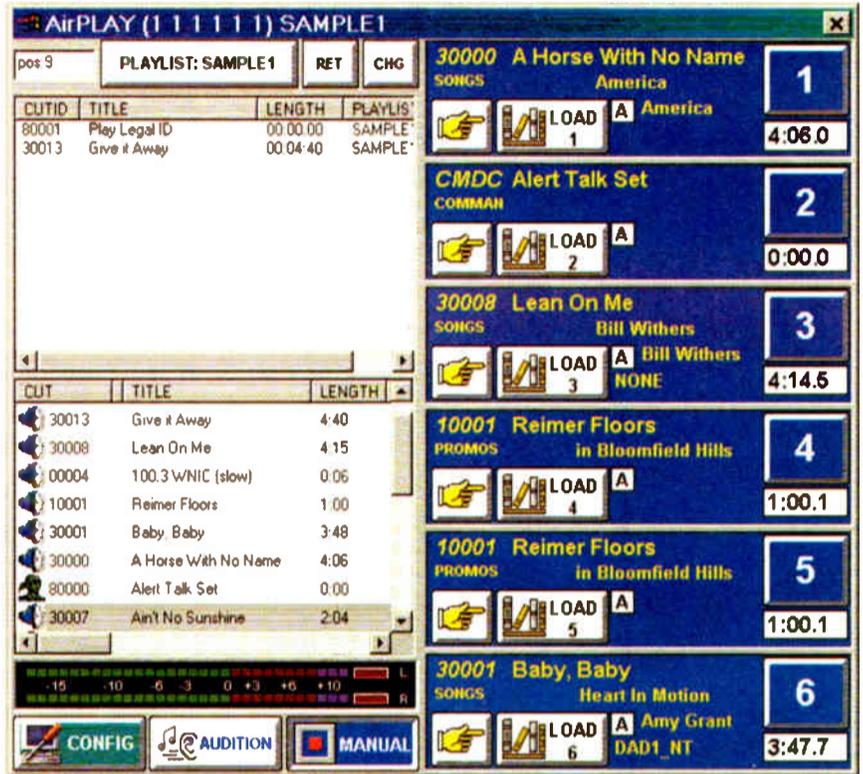
channel (eight total); adjustable output levels with one 20 dB range trimmer per output; L/R, L+R, L-R swap and sum jumper selections; and jitter immunity thanks to proprietary digital UltraLock Technology system.

Call the company in New York at (800) 262-4675 or visit www.benchmarkmedia.com

ENCO AirPlay and I²E

ENCO Systems Inc. released AirPlay, a software module and user interface for DADPRO32. It is a virtual machine intended for live-assist and live on-air applications, incorporating features suggested by clients.

Most functions can be customized by the user, from the number of playback slots to the colors of slots in play or ready modes. AirPlay takes advantage of the screen resolutions of large monitors and can be used on its own or with other DAD machines such as Mini-Array or Script.



ENCO also promoted I²E, its Intelligent Insertion Engine, a hardware and software product that works with DADPRO32 and other automation systems.

President Gene Novacek said, "Streaming ad insertion technology has suddenly become a much hotter topic with the new AFTRA agreement causing many advertisers to restrict Internet streaming of certain commercials. While we've been shipping this technology for some time, it seems that now we should name it and announce it."

In one Windows 2000 workstation, the user can replace offending commercials, split Internet streams and sync a streaming playlist with the playlist in the DADPRO32. It contains the software and hardware needed to begin streaming using Windows Media Encoder. Systems start as low as \$6,995.

For information contact the company in Michigan at (800) 362-6797 or visit www.enco.com

Shure SM7B Shields Computer Hum

Because of the growing presence of computer screens in the typical studio, Shure developed the SM7B dynamic microphone, which shields against electromagnetic hum generated by monitors and neon lights.

"It has a smooth, flat, wide-range frequency response and comes with a standard windscreen as well as the oversized A7WS windscreens for close-talking air personalities," said Sandy Schroeder, director of corporate market development.

The SM7B features a cardioid polar pattern and adjustable response, and provides good rejection and minimum coloration of off-axis sound.



P4800 System Processor

Shure also introduced the P4800 system processor with Soundplex digital signal processing. It uses a drag-and-drop graphical user interface to offer control over any processing function in a system that requires audio routing and distribution.

The unit offers a 4-x-8 matrix mixing section that enables the user to assign any of the four inputs to any or all of the eight outputs, with the ability to adjust levels and signal polarity.

The company is also now shipping its new FP24 portable mixer.

Contact Shure in Illinois at (847) 866-2279 or visit www.shure.com



Countryman E6 Lightweight Isomax EarSet

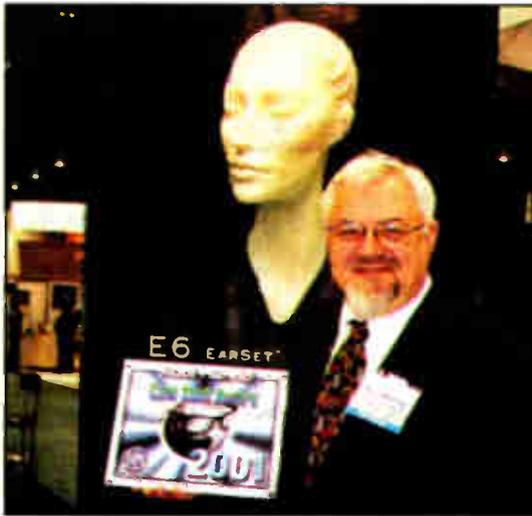
Countryman Associates demonstrated the lightweight Isomax EarSet Microphone, designed to be convenient and unobtrusive for users in any audio market.

"It's nice for mic-shy talk show guests and announcers who haven't figured out mic technique," our "Cool Stuff" judges wrote. "Lightweight and accurate ... almost an invisible mic for the very mic shy."

The microphone clips directly to the ear and can be worn without upsetting eyeglasses, hairstyles or hats. The cable attaches with a quick connect connector. Available in several skin tones, the mic has a 50 Hz to 20 kHz response, handles up to 145 dB SPL, and comes in three 1 kHz polar response variations.

Price: \$450 typical.

For information contact Countryman in California at (800) 669-1422 or visit www.countryman.com



Carl Countryman

PSi Develops NexGen, Sirius Deal

Prophet Systems Innovations introduced an entry-level NexGen Digital NS automation broadcast system, priced under \$20,000. The system is a programming control center that stores and processes audio data for radio stations.

Additionally, PSi announced equipping Sirius Satellite Radio with the NexGen Digital Broadcasting system. The system will store and process content for up to 100 channels of programming.

Audio used in the NexGen system is AES digital and contacts are embedded in the AES stream using AES3-18 specifications.

For information contact PSi in Nebraska at (877) 774-1010 or visit www.prophetsys.com

Hafler Shows Compact Monitors

Hafler brought to NAB its latest monitor offering, the diminutive M5 passive monitors.



Aimed at project studios, the two-way M5 features a 5.25-inch polypropylene woofer and a 1-inch soft dome tweeter.

Added features include magnetic shielding and a tweeter/contour switch.

For information contact the company in Arizona at (480) 517-3056 or visit www.hafler.com.

Symetrix Debuts AirTools Line

Symetrix debuted the first of a line of processors aimed directly at radio, the AirTools line.

First is the 6100 Broadcast Audio delay, an upgrade of the venerable 610. The 6100 offers higher specs (full 20 kHz bandwidth) for FM and satellite broadcasting along with 24-bit performance for handling computer and Internet Netcasting duties. It offers up to 20 seconds of delay buffer and has a network control interface.

The company also earned a Radio World "Cool Stuff" Award for its AirTools Audio Routing System, available later this year. (See page 72.)

For information contact the company in Washington state at (425) 787-3222, send e-mail to [crrump@symetrixaudio.com](mailto:crcrump@symetrixaudio.com) or visit www.airtoolsaudio.com

The Perfect Arrangement for Your Audio

Digital doesn't have to mean difficult. With Logitek, your studio wiring and configurations are beautifully simple - and completely flexible. Combine analog and digital sources easily and control them from anywhere. Centrally locate all of your audio sources, share them throughout your facility, network your audio with high speed optical connections and easily manage your audio distribution, routing and mixing.

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Logitek



GoldenEagle FM Remote Monitoring Solution

What's really going on in your market — or a market across the country?

GoldenEagle is a multiple FM receiver that monitors automatically, in real time, the quality and continuity of up to 40 FM programs — yours and the competitions. The embedded Web site with Linux OS allows remote communication.

Check RF, modulation, audio, SCA level, analog and digital input. Visualize the RF level of the entire local FM baseband with the awesome 3D scanning module software (this alone will leave you drooling). Record and store measurements and events.



It's golden times for Christophe Poulain, Benoit Galopin, Helen Miller, Nicolas Moulard, Sophie Lion and Bruno Rost, from left.

Receive alarms of relays and e-mail. Communicate via Internet Explorer to check levels, listen to audio and download the system's event log. "Cool Stuff" indeed.

Any group, major-market station or network would find a use for this system. The judges speak: "Using mostly off-the-shelf PC hardware with a lot of specialized cards, the GoldenEagle monitors every station in town with unerring accuracy."

Price: \$6,000 with TCP/IP option. Available: Now

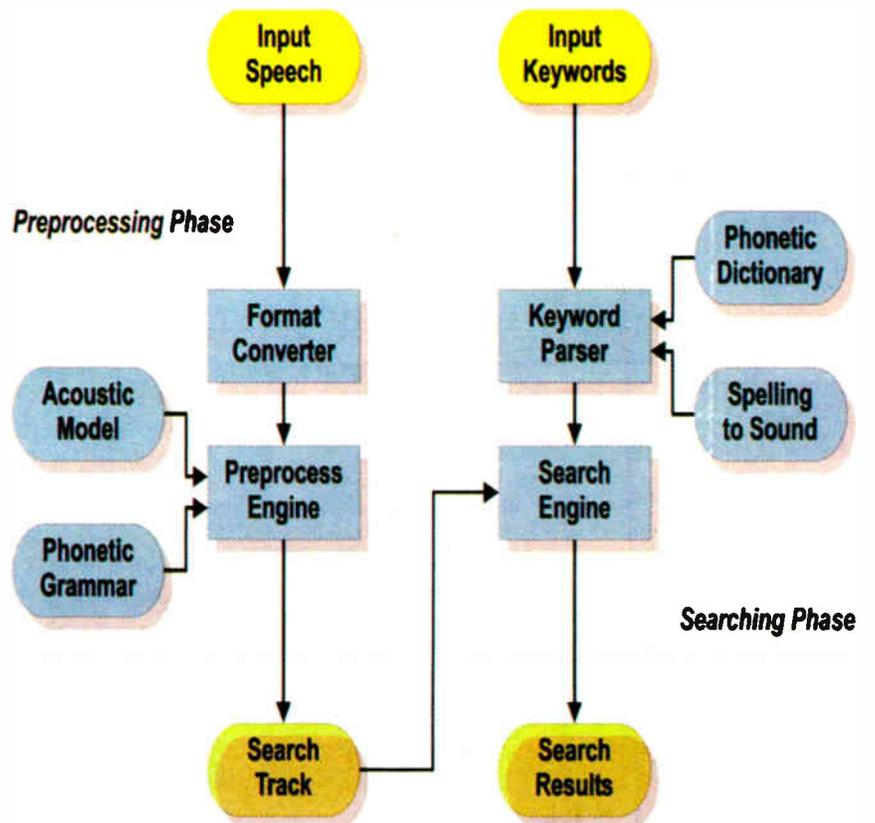
For information contact the company at (866) AUDEMAT, send e-mail to info@audemat.com or visit www.audemat.com.

Dalet Integrates Fast-Talk PSE

Dalet now offers an enhanced search engine for its Dalet Plus software, with the integration of Fast-Talk's Phonetic Search Engine.

The Fast-Talk PSE, which won a Radio World "Cool Stuff" Award this year, allows users to pre-process both live feeds and digital audio/video to create a searchable phonetic track.

The system uses the search engine to enable customers to search processed media to find



Fast-Talk Architecture

words, phrases and quotes without the need to convert audio into text.

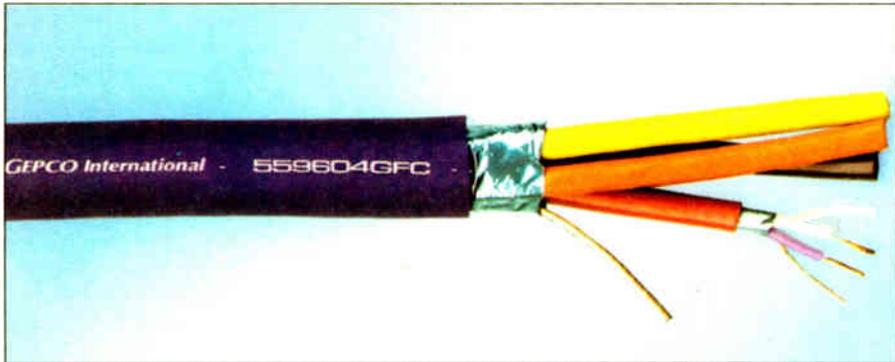
This approach improves access time and allows searching of audio files where transcription is unreliable or does not exist.

For more information contact Dalet in New York at (212) 825-3322 or visit www.dalet.com

New Cable Pair From Gepco

Gepco International continued to expand its AES/EBU-compatible digital multipair line with the debut of the 5596GFC series.

Available in four, eight or 12 pair, the 5596 family is optimized for 96 kHz signals and is well suited for long runs of 44.1 or 48 kHz audio signals. Specifically, the 5596 family has an extended bandwidth of 12.3 MHz and 110 ohm impedance. It meets UL's CM requirements.



5596GFC Digital Audio Multipair Cable

On the construction front, the cable consists of 24-gauge oxygen-free copper insulated by a new T165 dielectric compound. Each pair is color-coded, alphanumerically listed and wrapped inside of foil shield and jacketed by Gepco's Gep-Flex outer jacket.

For information contact the company in Illinois at (800) 966-0069 or visit www.gepco.com

Spotdata EI Electronic Invoicing

Encoda Systems announced the availability of Spotdata EI electronic invoicing, which provides an interface between the station's billing system and the advertising agency's accounts payables system.

Encoda uses file formats developed by advertising and broadcasting industry associations to ensure interoperability.

The traffic system generates invoice files that are sent to an industry clearinghouse at Encoda. The invoices from various stations are sorted by agency and made available for the agency to directly download into their accounting system.

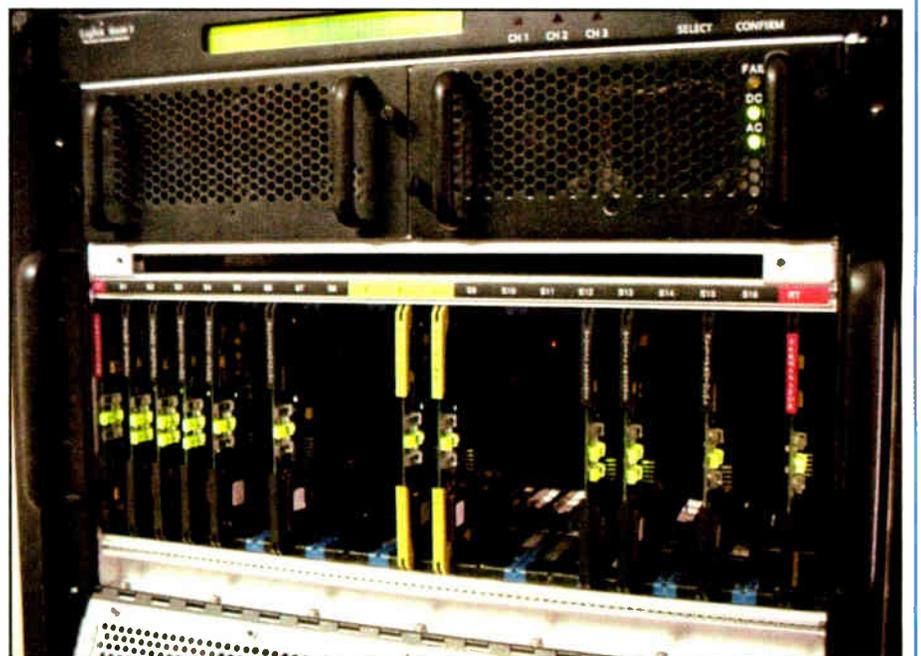
For information call Encoda in Colorado at (303) 237-4000 or visit www.encodasystems.com or www.spotdata.com

EpiCenter 'Studio Engine'

Computer Concepts Corp., recently acquired by Scott Studios, promoted its "studio engine."

Dubbed the EpiCenter, this hardware- and software-based system is, according to Scott President Dave Scott, "the center of audio activity."

The EpiCenter can use the Telos SmartSurface or Logitek control surfaces to control inputs, outputs, levels, routing and the like. The system will accommodate up to 1024 x 1024 channels and operates over a LAN.

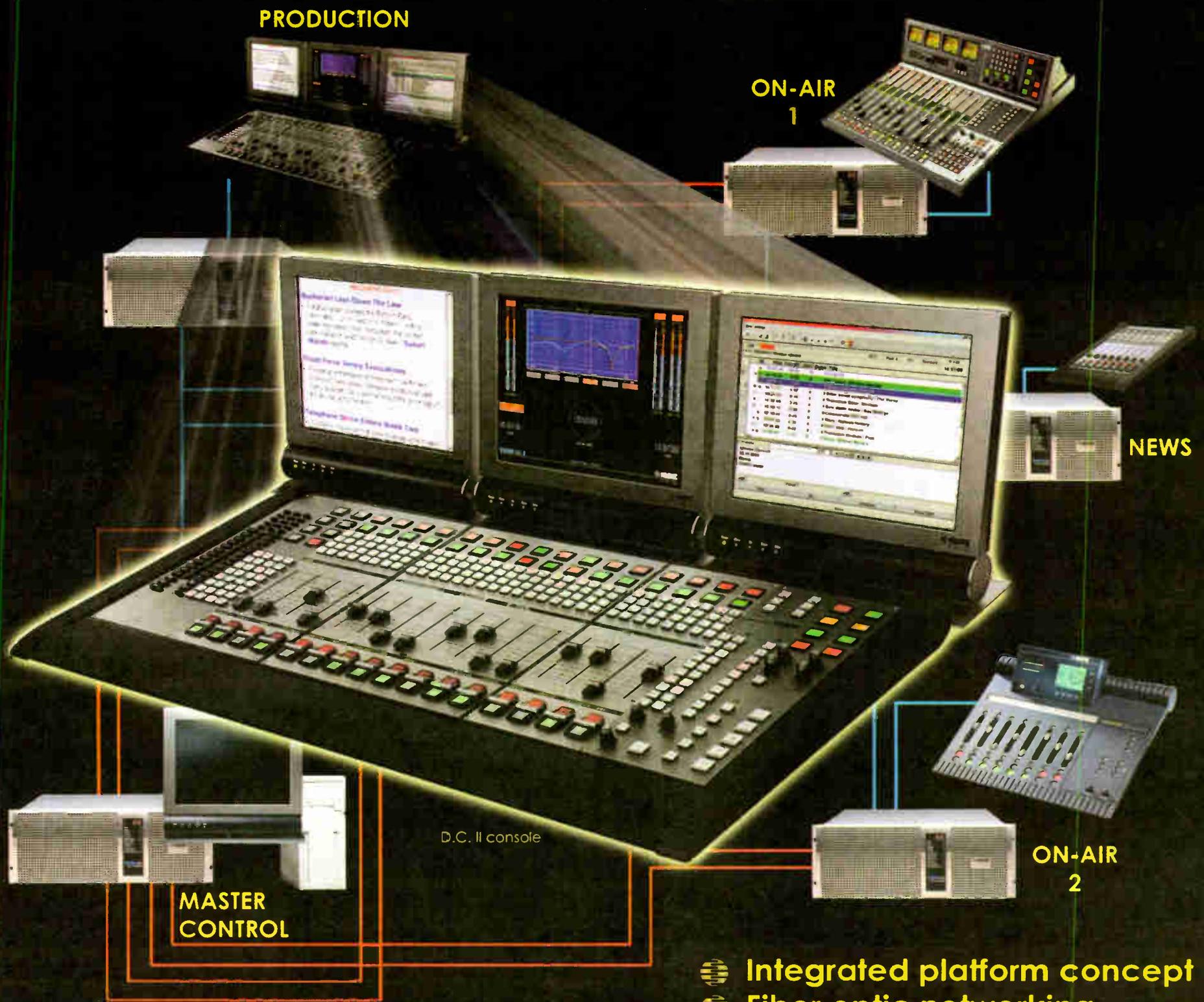


Scott said the idea is to do away with dedicated hardware in a radio studio, giving users flexibility to reconfigure and make changes at the software/system level without rewiring.

CCC rolled out its new Visual Traffic 32-bit application, which will allow sales reps to enter orders via the Internet, let advertising agencies schedule insert advertisements and allow clients to access accounts online.

Contact the company in Kansas at (800) 255-6350 or visit www.ccc-dcs.com

Our Secret is Behind the Scenes!



- Integrated platform concept
- Fiber optic networking
- Any audio source, anywhere

KLOTZ DIGITAL's unique VADIS Platform provides the perfect solution for facilities searching for the ultimate in digital audio integration. From single studio build-outs to new mega-facility operations, KLOTZ DIGITAL provides a cost effective and time saving option to traditional analog and digital facility installations. *Our secret is behind the scenes.* Fiber optic based, the VADIS Platform integrates all audio functions, combining operator tasks, reducing the need for

traditional wiring, and paving the way for effortless future expansion. And, the elimination of a central router means distribution of "any audio source anywhere at any time!"

Compare the costs for yourself. When it comes to savings, quality and performance...nobody even comes close. That's why the most sophisticated and technologically advanced facilities throughout the world choose KLOTZ DIGITAL.

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**KLOTZ**

DIGITAL



Omnia-6fm Digital Audio Processor

The judges were well aware of the Omnia-6fm when it showed up at NAB last year, but felt it still needed some tweaks. The FM processor has changed significantly since, and now Omnia-6fm, the newest in the company's line of all-digital audio processors, is shipping to purchasers.



Jeff Keith and Frank Foti

Telos President Frank Foti called it the most successful product launch in his company's history. He said Omnia-6 is the first broadcast audio processor to use 96 kHz sampling and 24-bit resolution, and the first to come with user-adjustable crossover settings. Features include five bands of AGC and six bands of limiting, twin active-matrix color control screens and an Ethernet port for remote control.

"A worthy warrior for any loudness war," said one judge.

Price: \$10,900. Available: Now.

For information contact the company in Ohio at (216) 241-7225, e-mail to info@omniaaudio.com or visit www.omniaaudio.com

BE AudioVault Utilities

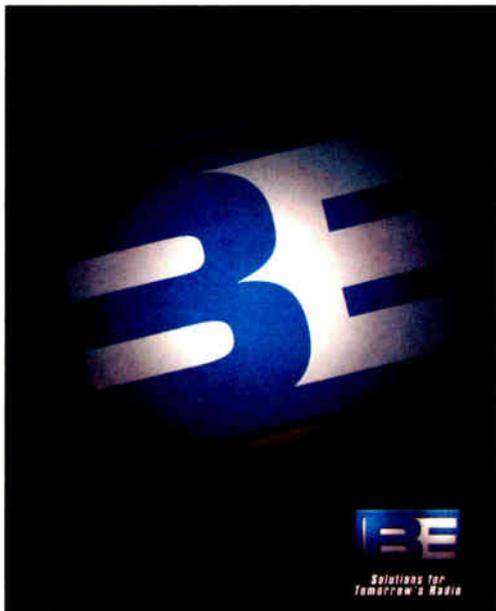
In addition to a transmitter that won a Radio World "Cool Stuff" Award (see page 57), new from Broadcast Electronics were wide-area network remote control and programming utilities for AudioVault digital storage and automation systems.

According to Ray Miklius, vice president of studio systems, these utilities permit centralized control and scheduling within a group of stations.

BE announced a partnership with everstream, an enterprise software and systems provider for the management of media content. BE said everstream products may help broadcasters address online developments such as the recent AFTRA-fee issue.

BE also is integrating Audion VoxPro as an editing feature into AudioVault systems. Its Marti division added a PNP-1000 to its low-power FM line, and rolled out new Cellocast remote broadcast products.

Contact the company in Illinois at (217) 224-9600 or visit www.bdcast.com



Comrex Wireless Matrix Codec

Comrex showed a wireless application for its Matrix codec. Using a Nokia 7190 cellular telephone, the Matrix can operate as a wireless POTS codec.

Tom Hartnett, vice president of engineering, said there is a quality tradeoff due to the reduced bitrate available over the wireless connection, but that this approach does away with the need for a telephone line, making quality remote broadcasts possible from anywhere with wireless service.

The company promoted the Matrix, which works on a variety of circuits to handle outside broadcasts. The base unit is a POTS codec for 15 kHz, full-duplex audio on a plain phone line. Optional modules allow ISDN or GSM wireless services.

Contact Comrex in Massachusetts at (978) 263-1800 or visit www.comrex.com



Moseley 450 MHz Remote Data Link

Moseley touted a new 450 MHz digital remote data link, the Aries 400S.

The company said the unit will provide 64 to 128 kbps data rates over 25 or 50 kHz bandwidth channels, respectively. Simply connect a codec and the Aries 400S is ready to go.

It works simplex or full duplex, providing a one-way or bi-directional link. A 9,600-baud data channel is provided for control or other functions.

Moseley also showed its new 4710.4790 data link, which provides 9.6 kbps throughput on a 10 kHz P-channel for telemetry return functions. It can be used full-duplex, half-duplex or simplex.

Subsidiary Microwave Data Systems was recently chosen to supply LEDR series point-to-point radios for installation in the network of the Brazilian telephone company, Telemar. The two contract awards were worth approximately \$15 million.

Call Moseley in California at (805) 968-9621 or log onto www.moseleysb.com

Upgraded Calrec Mixer

Calrec unveiled an upgraded version of the Minimixer 3, in response to customer requests for an "in-between" console — something with fewer features than its larger C2 but with more channels than the smaller M3.

The expanded M3 offers 42 modules, allowing for 36 channels, four groups and two main outputs.

For information contact the company in the United Kingdom via e-mail to jimw@calrec.com or visit www.calrec.com

Delco Does Digital

Delco Wire and Cable carries audio and video cables. The company recently signed a deal with ADC to supply it with connectors.

Radio stations moving from analog to digital may consider Delco 110-ohm AES/EBU cables, as well as new lines of shielded and unshielded CAT-5 and CAT-6 cables for equipment interconnects and hub-based routers.

Contact the company in Florida at (800) 714-9473, send e-mail to geoff@delcowire.com or visit www.delcowire.com

Crown FMX Line

Crown Broadcast introduced the FMX line of rack-mounted transmitters, from 30 W to 500 W. The FMX line is broadband and frequency-agile, with an extended menu driver control system and built-in audio processing.

For transmission within a building, such as in a church, auditorium or other closed



venue, Crown also promoted the Nearcast system, a PC card low-power (250 mW) FM transmitter.

For more information call the company in Indiana at (219) 262-8924 or visit www.crownbroadcast.com

DAWNco

DAWNco makes satellite hardware including dishes, amplifiers, filters, splitters and dividers.

It offers a catalog and extensive Web site, and can assist radio stations with older mesh dishes and analog receivers improve their use of digital signals.

The site www.dawnco.com includes photos, prices and specs for hundreds of products.

Call the company in Michigan at (248) 391-9200, e-mail to johnj@dawnco.com or visit www.dawnco.com

FastChannel Expands Its Reach

FastChannel Network, with its SpotTaxi service, is adding applications to its Internet spot production, traffic and delivery system.

It announced an agreement with Interep's RadioExchange, an Internet-based communication service that links ad agencies, national rep firms and client radio stations.

The partnership will allow online access to avails and other pre-buy information and will accommodate confirmed order transfers.



FastChannel

NETWORK

Users may register and use the RadioExchange at FastChannel's Web site free of charge, in the SpotTaxi area.

Also, SpotTaxi joined DigiProNet.com from the DigiDesign Production Network, which provides Internet-enabled audio production services via their ProServices.

This lets ProServices users traffic produced spots to station clients, ad agencies or account managers via the Net. Once received, users can sample the spots on their desktops and transmit approvals or edits to the agency, production house, sales department, client or traffic department.

For information contact SpotTaxi in Seattle at (206) 753-3926 or visit www.fastchannel.com





On The Air

A Monthly Newsletter from Broadcast Software International

Issue 4

Quote of the Month

"WaveCart is really an awesome tool. When I trained our weekend board-ops, who had no radio experience, it took only about 15 minutes before they had a real grasp on it."

Clive Millett
KKVV - Las Vegas, NV

News

First Professional MP3 Audio Cards

BSI and AudioScience have teamed up to create soundcards that play four MP3 files simultaneously without a software CODEC. The \$2095 ASI4344 and the \$2795 ASI4346 were available on May 1st, exclusively at BSI.



This is the first time a professional audio company has created devices specifically for the MP3 format. The two cards decompress audio files on their own hardware so the processor doesn't have to. With these cards, the skipping and slowness that plague broadcasters with MP3 files have been eliminated.

The concept of decompressing audio on an audio card has been used with other formats, however the Fraunhofer Institute has controlled the CODECs for the MP3 format. Putting the CODEC on the card vastly improves PC performance, so playing multiple MP3 files simultaneously will be no different to your PC than playing multiple linear files.

"Our corporate mission is to respond to customer requests. AudioScience has a record of leadership in the digital audio market. When BSI and AudioScience formed the concept of combining our hardware with MP3 technology it made sense for both of us," says AudioScience President Richard Gross.

"The radio industry has been heading towards an audio card like this one ever since the MP3 format became popular. Broadcasters wanted to use MP3 files, but could not get the consistent sound they needed," says Ron Burley, BSI President. "We were happy to have AudioScience as a partner in this because of their record of creating products users want, rather than finding customers for the cards they decided to make."

BSI will be the exclusive distributor of the new audio cards. And only BSI will distribute the upgrades to two other cards, the ASI4334 and the ASI4336, allowing them to play triple MP3 files. The \$200 upgrades allow you to buy the earlier card with upgrade for the same cost.

Tip

Online Tech Data

If the net clock for your station is locked in the PD's office or you can't find the wiring diagram for your audio switcher, you'll probably find the info you need at www.bsiusa.com/support. The BSI web support area has a database that includes wiring instructions for connecting to external devices, whether or not you're using BSI software! It also includes network program & tone clocks. You'll also find complete online manuals for all BSI programs.

Calendar

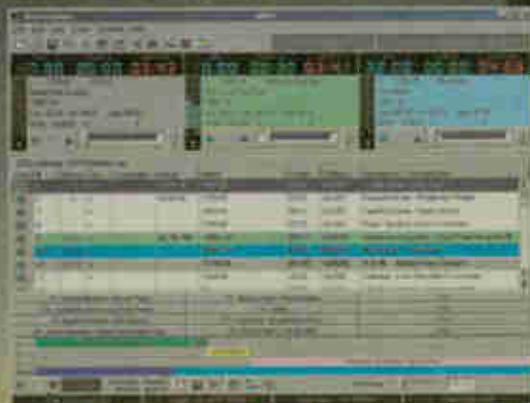
Aug 16-18: WaveStation Weekend Training Session

Birthdays:
June 18 1942: Paul McCartney
June 19 1903: Lou Gehrig

Affordable Digital Automation

Our WaveStation 3.0 has all the features of the too-expensive systems, but is priced reasonably like software, not gold-plated broadcast hardware. We often hear, "It can't be true!" Over 3000 satisfied users prove the contrary.

WaveStation uses linear or compressed audio files. Features include WebCast ability, on-screen voice-track editing, time-shift recording and serial port control. Offers full automation, satellite, voice-track and live-assist. Works with Windows 2000, 95, 98 or NT.



Get one for only \$1499

www.bsiusa.com

User File

WJIL - Dan Kolenda

Dan Kolenda visited BSI for WaveStation Weekend in February. "I thoroughly enjoyed it. It's so good to be able to see BSI President Ron Burley demonstrate things. Reading the manual is great, but being able to see him do it, the lights just all come on. He really wants to help us, instead of just trying to sell a product. Ron kept saying that BSI was a user-driven company, and you can really feel that from what he says to you."



Dan has been using WaveStation for a while now. Although he was familiar with the product, there was more to learn. "I've always had a little bit of reluctance to try new things because I might go off the air. WaveStation Weekend really raised my confidence level. I don't mind experimenting more now. And the technology has changed so much that this really brought me up to date. I also think it's good to ask for a roommate," he says, "I planned to go, not for a vacation, but to learn. My roommate and I sat in our room and just bounced ideas off each other."

The thing Dan liked most about the \$1499 WaveStation Weekend was the personal aspect. "I really enjoyed talking to the different technicians. I've talked with them before over the phone, but being able to sit down and pick their brains was worth its weight in gold."

Send us your story.

888-BSIUSA1 WWW.BSIUSA.COM
Broadcast Software International

Netia Radio-Assist Version 7

Netia upgraded its multifunction Radio-Assist system to version 7.

At the core of Radio-Assist 7 is a database that creates automated playlists to speed the creation of each day's programming. It can track a variety of information and displays data with a user-customizable interface.

A scheduling tool handles the creation of ready-to-load models, template editing and the automatic generation of playlists. Audio files can be dropped directly into playlist time slots.

The Music-All music management tool keeps track of the music schedule to ensure consistency.

Radio-Assist is self-monitoring and can alert users to problems. The programs can be controlled from a computer via the Web, publish sound files to Web sites, as well as stream audio and video.

For information contact Netia in New Jersey at (973) 575-9909 or visit www.netia.fr



New Armstrong Control System

Armstrong Transmitters introduced a control system for its FM series of transmitters.

The LCD Controller is an installed feature for new 25 kW and higher FM transmitters, and supplements the standard main controller. The controller is an added option on transmitters up to 20 kW.

Features include advanced diagnostics and monitoring, dial-out capabilities to alert the user of alarms, and automated logging of all or selected parameters in addition to nominal function control.

A special feature is "black box" recall of transmitter operating parameters seconds prior to a major fault event. Software allows for remote polling and control of the system.

For information contact the company in New York at (315) 673-1269, send e-mail to info@armstrongtx.com or visit www.armstrongtx.com



Bird Takes Flight With DigitalAir

Bird Electronic Corp. brought its DigitalAir series of high-power forced air loads for VHF and UHF broadcast applications.

New to the line are 10 kW and 25 kW DigitalAir VHF loads, which operate at frequencies from 0 to 240 MHz.

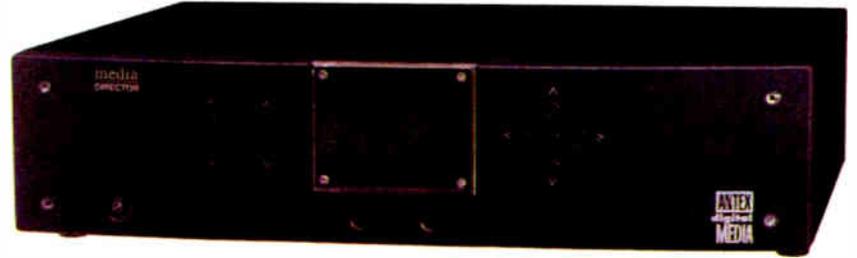
The DigitalAir loads present VSWR of less than 1.05:1 across their rated frequency range without requiring the pump and plumbing system of liquid-cooled loads. The loads remain cool to the touch on the exterior and feature exhaust systems that can be ducted to the outside of transmitter sites.

Bird also introduced a new series of oil-free filter/combiner loads for use in building VHF and UHF combiners. The new 1kW load offers a 10:1 peak power handling ratio and a maximum VSWR of 1.1:1. It can be mounted in any position.

Contact the company in Ohio at (440) 248-1200 or visit www.bird-electronic.com

Antex Manages Digital Content

Antex Electronics launched Media Director, which it calls a digital broadcast appliance. It includes an Internet- and network-ready device with local hard-disk storage that can be controlled locally or remotely.



Its applications include local ad insertion playback, automated recording of network feeds, playback and recording functions, performed on time or by Serial/GPI command.

The Media Director is compatible with playlist logs generated by music schedulers and traffic systems.

Media Director audio-only workstations are approximately \$1,000.

For information contact the company in California at (310) 532-3092 or visit www.antex.com

THE SOURCE FOR SOLUTIONS

For the last 30 years QEI has supplied innovative FM transmission solutions

HIGHLY RELIABLE SINGLE TUBE GROUNDED GRID FM TRANSMITTERS

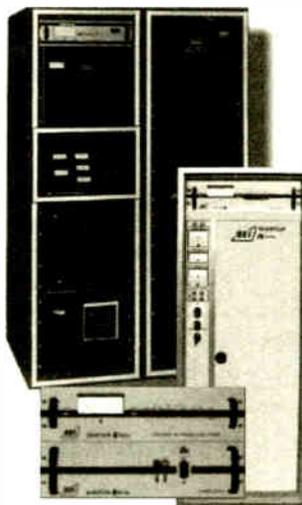
For 15 years QEI has manufactured a line of technologically advanced grounded grid FM transmitters that provide outstanding performance and reliability.

SINGLE PHASE HIGH POWER FM TRANSMITTERS

QEI was the first broadcast equipment supplier to offer high-power FM transmitters able to operate from single phase AC power sources. These products allow the development of many transmitter locations where providing 3 phase power would be cost prohibitive.

COST EFFECTIVE SOLID-STATE FM TRANSMITTERS

QEI has been manufacturing solid-state FM transmitters since 1975, longer than any other US manufacturer. The QUANTUM Series FM transmitters are power efficient and very competitively priced. They are designed in 600-watt increments so you can buy precisely the amount of power output needed.



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QUALITY

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INNOVATION

Azden Receivers, Shotgun

Azden Corp. added two diversity wireless microphone receivers and a wired shot-gun microphone to its line.

The 1000URX system is a true diversity UHF Part 74 wireless microphone receiver featuring 121 channels between 723 MHz and 735 MHz. The receiver outputs either microphone- or line-level audio.

The smaller 5000UDR diversity receiver is for applications where space and weight are concerns. It has the same 63-channel capability and features of the 400UDR and is compatible with existing 63-channel transmitters.

The SGM-2X shotgun condenser microphone package includes two pattern barrels, a shockmount and foam windsock.

For information contact the company in New York at (800) 247-4501 or visit www.azdencorp.com

Hiwire Adds MusicMatch

Ad insertion company Hiwire Inc. will add the streaming network MusicMatch to its affiliate list. The alliance brings the Hiwire system service to 9 million hours of streamed content per month, with the ability to serve tens of millions of ads each month.



Hiwire CEO Warren Schlichting

Hiwire promoted its ability to work with all three streaming formats — Windows Media, RealPlayer and MP3, which increases a broadcaster's ad insertion capability, according to the company.

Other benefits to broadcasters include the ability to target ads based on age, gender, format or location; the services of a worldwide sales team to sell spots to out-of-market listeners; and real-time reporting that confirms delivery of spots to the advertisers.

For information contact the company in California at (213) 489-3900 or visit www.hiwire.com

AEV Xtreme Processor

Italian company AEV offers the Xtreme FM processor.

Features include: five-band, 100 percent digital audio processor; nine DSPs for powerful radio algorithms; 20 format presets; digital stereo coder and daypart automation. The unit is available in FM, AM and TV versions.

For information contact the company in Italy at +39.051.663.47.11 or visit www.aev.net

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- Parts are precisely machined, not diecast for rugged reliability.
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ChainCast Reduces Cost to Stream

With a promise to provide streaming media delivery at half the cost of other providers, ChainCast Networks launched at the NAB.

The ChainCast Content Delivery Platform is a scalable, open service based on the company's proprietary "chaining" technology.



The CCDP uses consumer's unused uplink or LAN bandwidth to send streams to additional users, reducing streaming costs for customers.

The key to the technology is the ChainCast Player, a customizable player or proxy that is compatible with third-party players that multiplies and replicates an incoming stream and sends it out to other ChainCast players/proxies.

For information contact ChainCast in California at (408) 467-4049 or visit www.chaincast.com

Fraunhofer: MPEG-7 and Low-Delay AAC

Fraunhofer IIS-A, an audio engineering research lab based in Erlangen, Germany, has been involved in the development of advanced audio coding schemes like MP3 and MP2.

It promoted its work to develop the MPEG-4 standard with a MPEG-4 AAC scalable encoder and decoder embedded with content protection technology.

The labs also showed a watermark embedding system compatible with compressed and uncompressed audio material, combining audio coding and watermarking into one step.

Also demonstrated was the lab's real-time MPEG-2 AAC stereo coding system running at 96 kHz sampling rate and a MPEG-4 compliant, real-time implementation of a new audio coding scheme, the Low-Delay AAC. Both are firsts in audio engineering achievement, according to Fraunhofer.

The labs demonstrated real-time music title recognition, based on an MPEG-7 technology. The lab predicts that the upcoming MPEG-7 standard will become the underlying technology for audio content verification and will eliminate the need for special pre-processing and watermarking for automated music systems.

For more information call Harold Papp in Germany at 011-09-1-3177-6134 or visit the Web site at www.iis.fhg.de/amm

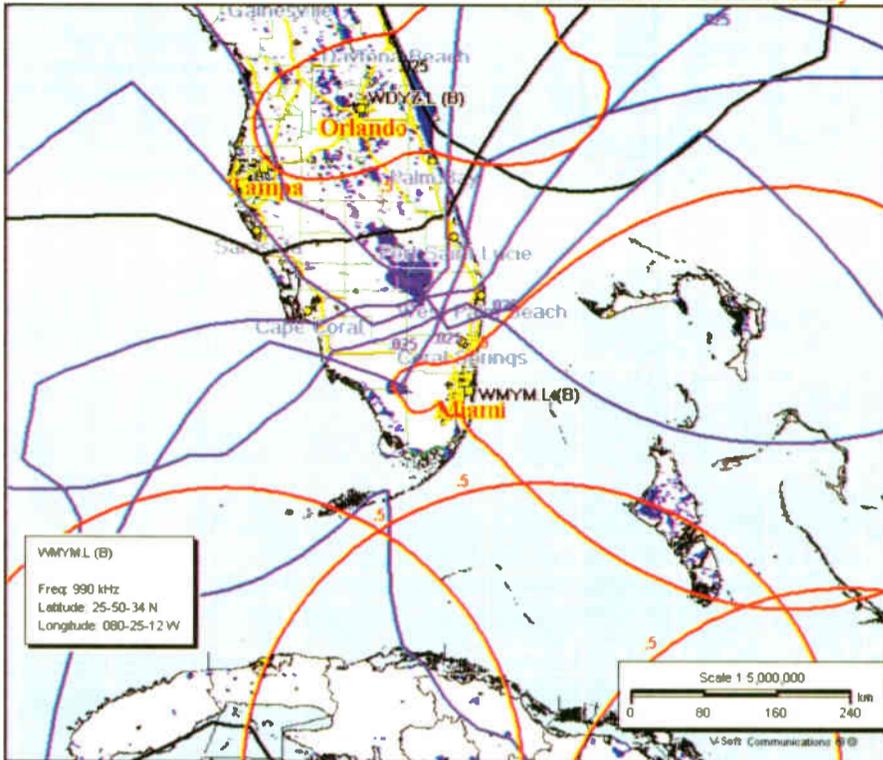
V-Soft AM Mapping, Allocation

V-Soft debuted an AM mapping, pattern and allocation program.

Featuring a graphical display of the coverage pattern of an AM station employing user-definable contours, AM Pro also displays adjoining stations and associated coverage and interference contours.

AM Pro allows a design engineer to design multiple tower patterns by showing theoretical patterns based on tower height, spacing, phase and ratio in addition to calculating coverage based on the FCC M3 ground conductivity database.

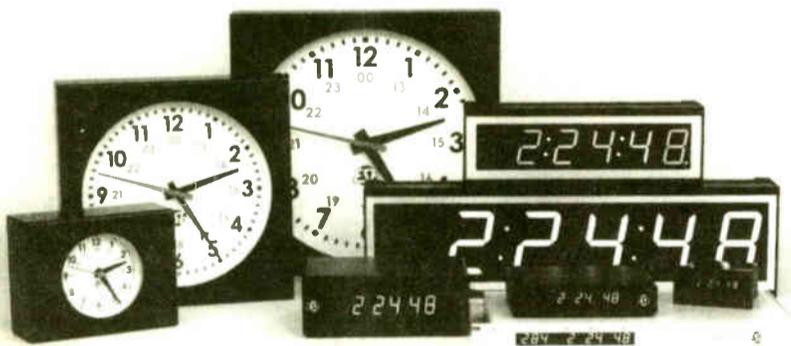
Co-channel Allocation Study



Users may enter their own conductivity data based on measurements for more accurate coverage modeling. The program is in beta test now and will be available in May 2001.

For information contact the company in Iowa at (800) 743-3684 or visit www.v-soft.com

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Shively Shows IBOC Filter-Injector

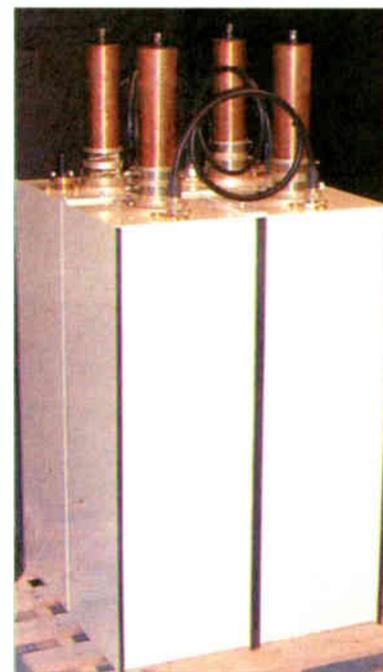
Seeking to combine the best of FM analog with the future of digital broadcast, the new IBOC Filter-Injector debuted from Shively Labs.

Designed for seamless integration of analog and digital, the product has been tested at iBiquity Digital test sites to confirm its compatibility with IBOC broadcasts, once a DAB system is implemented in the United States. It is certified by iBiquity.

The filter-injector uses a feedback loop design for improved performance and overall efficiency. The digital section is designed to be scalable to meet future specs; the FM combiner is built on Shively's established combiner product.

On the technical side, the standard unit handles up to 30 kW, with higher capacities available. Units can be stacked, hung or rested on the floor. The package is smaller than typical filter-injector systems. Weight is 110 pounds.

For information contact the company in Maine at (888) 744-8359 or visit www.shively.com



Syntrillium Upgrades Cool Edit Pro

Some 40 sound effects, ability to record, edit and mix up to 64 audio tracks and click and drag operations are features of Syntrillium's latest update to Cool Edit Pro radio production software.

Cool Edit Pro 1.2 features up to 32-bit resolution and 10 MHz sampling, amplitude and pan envelope controls, DirectX plug-in support, beat finder, wave grouping, cue/play lists, crash recovery, 30-band graphic EQ and noise reduction capabilities supported with a graphic interface. An MP3 encoder/decoder is an available option.

Cool Edit Pro 1.2 costs \$399.

For information contact the company in Arizona at (888) 941-7100 or visit www.syntrillium.com





Orban Optimod-PC 'Processor on a Card'

Optimod-PC is an audio processor on a DSP-based PCI card that can be installed in a standard PCI slot. It delivers Orban processing for streaming audio at what the company promises will be an affordable price.

This card, which uses the WAV protocol to move audio in and out from the PCI bus, contains hundreds of MIPS of DSP computing power to prepare the audio signal for Internet transmission or, by using multiple cards, to the various streams in an Eureka-147 multiplex. It has analog and AES/EBU inputs and outputs independent of the computer, and will continue to process audio if the OS crashes on the host processor.

Price: TBD. Available: November.

For information contact Nima Hammond at (510) 351-3500, send e-mail to nhammond@orban.com or visit www.orban.com.



Jay Brentlinger, Nima Hammond, Bob Orban and Dean Tiernan celebrate their two "Cool Stuff" Awards this year.

360 Systems Enhancements

The popular Short/cut 2000 digital audio editor from 360 Systems now offers substantially increased recording capacity, providing 12 hours of stored audio. The system records to both internal hard disk and optional external Zip disks. Upgrade kits are available for existing units.

Also new is editing capabilities for the company's Instant Replay, including head and tail trim, fades and level corrections.

For information contact the company in California at (818) 991-0360 or visit www.360systems.com

TWR High-Intensity Lighting

The TWR Lighting Division of o2 Wireless Solutions is awaiting a patent on its new HILS product (High-Intensity Lighting System), a powerful white side beacon for towers and other aerial obstructions.

The HILS light is constructed in a modular way, so servicing a blown light or circuit board becomes a matter of minutes instead of hours. The flashhead is constructed of stainless steel and has three methods of lightning protection.

For information contact the company in Texas at (713) 973-6905 or visit www.02wireless.com

Studer Debuts Console

Studer showed the On-Air 1000 digital mixing console for the first time in the United States. It brings the company's digital technology and Touch'n'Action GUI operating concept to a wider market.

To suit different needs, the mixer is available in two versions, one for predominantly analog environments, the other for digital situations. Both incorporate 10 input faders, 20 inputs and two master faders.

Mixer settings can be personalized for each operator. Management of access rights reduces the risk of human error. Access can be set up to suit the experience and skills of the operator.

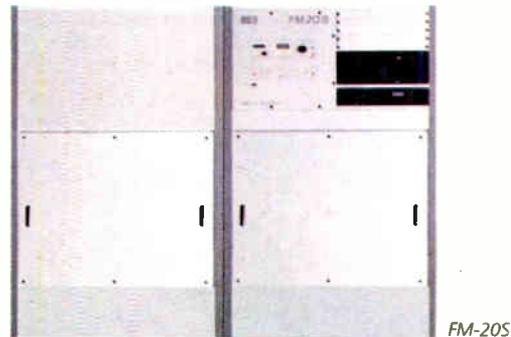
Also on display was the VCS dira! radio broadcasting solution, designed for computer-assisted broadcasting. It is based on open architecture and interfaces, allowing for modular integration with existing facilities.

For information contact Harman International at (800) 336-4525 or visit www.studer.ch



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FM-20S

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<p>HOT-PLUGGABLE IPA/PAs</p>	<p>MAXIMUM Power Control</p>	<p>REDUNDANT Power Supplies</p>
<p>Go ahead and mess with it. PA modules can be removed while on the air without damaging the module or perceptible carrier interruption.</p>	<p>Regardless of AC line voltage, RF drive level, or antennae loads as poor as 3 to 1 VSWR, our sophisticated proportional feedback system will keep you on the air.</p>	<p>Four standard modular PA power supplies, (a fifth is optional) will keep you on the air, as long as one supply is online.</p>

Among all solid state FM transmitters, our new FM-20S is the most innovative, most reliable, and easiest to service. From 10 to 20kW, the new FM-10S and 20S guarantee big performance at a great price. And they're engineered

to the same exacting standards that every Broadcast Electronics transmitter must meet. We wouldn't deliver anything less. **Only one company delivers radio like this...**



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www.bdcast.com

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Orban Opticodec Streaming Audio Codecs

This new line of streaming audio codecs includes three models. All are compliant with Layer II and III; two models also are TCP/IP- and UDP-addressable for Internet use.

Opticodec reduces the bandwidth required to transmit audio between the source and remote, studio or other TCP/IP, ISDN or UDP receiver location.



For us, the most notable model includes a digital audio recorder and editor for MPEG-2, which transmits MP3 over ISDN in a portable unit. It'll be great for remote work. Price: Starting at \$3,950. Available: Summer.

For information contact the company in California at (510) 351-3500, send e-mail to nhammond@orban.com or visit www.orban.com.

RadioScape Offers DAB Receiver

A partnership between Texas Instruments and Radioscape Ltd. demo'd a low-cost board design based on the digital radio baseband, the TMS320DRE200.

It includes TI programmable DSP technology and RadioScape software, and has the components needed to design a receiver, including the baseband, analog parts and RF circuitry.

The companies said the DRE200 is a platform to create portable digital consumer receivers, and costs about 40 percent of competing designs. They called it the first solution to achieve low power consumption for DAB digital radios. The baseband consumes 60 percent less power than similar solutions.

The board was able to record and store radio programs, play stored MP3 files from a Flash card and decode a data stream that contained a Web page broadcast by the booth's digital radio station.

A product based on this technology was shown, the Psion WaveFinder. It allows users to download Web pages over the airwaves and download and record music in MP3 format for playback via Wireless MP3, a RadioScape technology for DAB.

Radioscape said the WaveFinder, which uses the predecessor to DRE200, has been a sensation in England. It is meant for the DAB portable, home and automobile markets.

For information, visit www.radioscape.com or www.ti.com/sc/digitalradio.com



Making WAVES

RealNetworks Deploys Ad Insertion

Following AFTRA's notice that it would collect triple payments for radio commercials streamed online, RealNetwork's Real Broadcast Networks said it provides broadcasters with an option to replace the terrestrial commercials in their streamed Webcasts.

The service is part of a suite of streaming services, RBN's Radio Business Application.

In addition to the new, targeted ad insertion service, the Radio Business Application features real-time "now-playing" information on a station-branded player with localized, real-time links to sports, news and weather.

Stations can provide an integrated, branded CD "store" that is available to the audience as they listen online and integrate with existing digital automation systems.

RealNetworks announced that RealPlayer surpassed 200 million unique, registered users in April. Jupiter Research recently reported that RN's RealPlayer is the most popular media player.

For information contact Real Broadcast Networks in Seattle at (800) 444-8011 or visit www.realnetworks.com/rbn



Furman Sound's New Toys and Tools

Furman Sound MS Series Confidence Monitors are designed to be the next-to-final link in an audio chain.

They provide assurance that analog or digital audio signals are present and meet quality standards before being distributed.

Furman displayed analog and analog/digital models that differ primarily in the types and number of signals they monitor. Each is housed in a single-space chassis.

Monitoring is accomplished audibly (through speakers or headphones) and visually through meters. All models share many features including a pair of shielded stereo speakers, speaker mute switch, TRS output for headphone listening and a speaker and headphone



amplifier volume slide control. Also included is a phase indicator and meter brightness dimmer control.

Analog I/Os are high common-mode rejection XLR balanced; each has a rear-panel signal indicator.

Digital input(s) can accommodate stereo digital signals sampled at up to 96 KHz, in AES/EBU format, via rear-panel BNC inputs.

The confidence monitors range in price from \$1,049 for the two-channel analog confidence monitor, the MS2A-1, to the four-channel analog and digital monitor, the MS4A/D-1, which lists for \$1,499.

For information contact Furman in California at (707) 763-1010 or visit www.furmansound.com

Stern Puts Mackie to Work

Mackie Designs said Howard Stern uses two 1604 VLZ Pro mixers for many live broadcast band appearances and remotes.

"When you hear all the various 'deep voice bumpers' that bring the Stern Show into or out of commercial breaks, those 'bumpers' are all recorded by Paul Turner Productions, with Paul's Mackie d8b and various VLZ Pro mixers," Mackie stated.

Mackie also upgraded its SR24.4 and SR32.4 Sound Reinforcement Consoles to VLZ PRO Series status. These sound reinforcement mixing consoles offer features which were introduced in 1999 on the 1202, 1402, 1642 and 1604 VLZ PRO professional compact mixers.

For information contact the company in Washington state at (425) 487-4333 or visit www.mackie.com



Lightningcast Is AFTRA 'Compliant'

Targeted advertising company Lightningcast can remove ads from a terrestrial broadcaster's stream before they reach the Internet, and replace the ads with Internet-ready ads or PSAs, station promos or other non-revenue content.



Lightningcast also provides an in-house media sales team to secure ads for streaming customers who do not have Net-ready commercials for their streaming content separate from their terrestrial inventory. Revenue is shared between Lightningcast and the stations.

At the NAB, Lightningcast also announced a partnership with AccuWeather, which will provide localized, streamed forecasts to Internet users based on their ZIP codes.

The agreement will enable the Lightningcast sales team to approach weather-sensitive advertisers to sponsor or buy commercial time within the forecasts. The company plans to add news and financial data information soon.

For information contact the company in Virginia at (703) 535-5806 or visit www.lightningcast.com

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HARRIS

ERI Hires Beeler, Offers iBox

Electronics Research Inc. unveiled the iBox series of analog-plus-digital combiners for in-band, on-channel DAB.

These combiners allow for simultaneous digital and analog transmission at an affordable price. The filters meet or exceed the published IBOC transmission requirements for FM.



Scott Beeler of ERI

ERI also premiered its new iSample remote transmission line monitoring system that, in effect, connects a directional coupler to a LAN or the Internet to permit on/off-site monitoring of all critical transmission line parameters.

Right after NAB, the company named Scott Beeler director of worldwide sales. He began his career with Allied Broadcast Equipment, serving most recently as director of North American radio sales for Harris Broadcast.

Contact the company in Indiana at (812) 925-6000 or visit www.ERInc.com

iBeam Builds on Big Events

Fresh off an announcement that it had served 1 billion streams, iBeam reported a two-year deal with SportsLine.com Inc. to provide streaming services to the online sports media company.

iBeam streamed SportsLine.com's NCAA's Men's Basketball Championship live game with audio and on-demand video highlights in March.



The company cited a report from Keynote Systems, a Webcast performance measurement service, that rated iBeam's 300K stream of the NCAA "March Madness" tournament to be almost twice the quality of any other content delivery network.

iBeam also worked with SportsLine.com in the production of the NFL's Super Bowl XXXV Web site, and the company streamed the 73rd Academy Awards. Oscar site traffic was up 69 percent this year.

iBeam streamed these Webcasts at 2 Gbps during peak demand, which the company cites as evidence that it provides the bandwidth required for large-scale Internet streaming.

For information contact the company in California at (408) 523-1634 or visit www.ibeam.com

BSI to Sell 'First-Ever MP3 Audio Cards'

Broadcast Software International and AudioScience announced soundcards that play quadruple MP3 files without a software codec. The ASI4344 and the ASI4346 will be available exclusively at BSI.

The companies said this is the first time a professional audio company has created devices specifically for the MP3 format. The cards decompress audio files on their own hardware. The processor is not using its time to decompress the files.

"With these cards, the skipping and slowness that plague broadcasters with MP3 files have been eliminated," BSI stated.

BSI signed an agreement with AudioScience to be the exclusive distributor of the cards, which earned Radio World "Cool Stuff" honors (see page 42). BSI will also be the exclusive distributor for upgrades to two other AudioScience audio cards, the ASI4334 and the ASI4336, allowing them to become triple MP3 devices.

For information contact BSI at (541) 338-8588 or visit www.bsiusa.com or www.audioscience.com

Harris Looks to DAB

Harris Corp. agreed on terms of a license of iBiquity Digital's IBOC technology. Harris will integrate iBiquity's iDAB technology into AM and FM IBOC transmitters and exciters.

On the global DAB front, Harris said it has completed testing of its DX transmitter family to Digital Radio Mondiale modulation standards for international digital broadcast in the AM bands below 30 MHz. The line features transmitters from 10 kW to 2 MW, including the new 3DX-50.

And the company entered into a deal to acquire Hirschmann Multimedia Communications Networks, a provider of Euro-standard digital radio and TV transmitters.

Meanwhile, Harris signed a digital systems distribution agreement to represent Computer Concepts' Maestro and a new digital audio line to U.S. broadcasters. And the company took home a "Cool Stuff" award for its new BMXdigital console (see page 22).

For information contact the company in Ohio at (800) 622-0022 or visit www.harris.com

Sennheiser Cardioid Interview Mic

Sennheiser showed its new MD 46 cardioid interview microphone. The handheld mic was born out of needs expressed by Bob Dixon, NBC's project manager for sound at the 2000 Sydney Olympics, as well as Sennheiser executives Rolf Meyer and Scott Schumer.

"Bob was interested in developing a cardioid interview mic with all of the features found in today's interview mics, but with real studio quality sound," said Schumer.

That, he said, meant a traditional long handle and excellent wind attenuation and off-axis rejection, but also extended response, warm lows and clean midrange.

An omni version will be available later.

For information contact Sennheiser in Connecticut at (860) 434-9190 or visit www.sennheiser.com



MediaTouch iMediaAdCast Online Content Substitution

Talk about timing the market.

With all the attention given lately to AFTRA costs and music licensing, MediaTouch came to the show fully prepared. Its iMediaAdCast promises to substitute Web-only content into broadcast Web streams seamlessly. It combines its substitution technology with simultaneous audio encoding in Real Audio and Windows Media formats.

MediaTouch says the system is superior to ad insertion technology because it interacts with the station's programming before the audio is encoded. This, it says, avoids delays that accompany Web-server-based ad insertion.

Sayeth the judges: "An amazingly affordable and practical software solution from OMT for iRadio."

The system is designed to work with most automation systems.

Price: \$995 per station. Available: Now.

For information contact the company toll-free at (888) 665-0501, e-mail to omt@omt.net or visit www.omt.net.



The MediaTouch staff salute their winning product.

Digigram miXart

As the demands on soundcards and audio interfaces become more intense, Digigram has kept up the pace with its miXart multichannel soundcard platform.

The miXart is based on Motorola PowerPC processor technology, has PCM resolutions of 8, 16 or 24 bits, and is capable of time stretching and audio scrubbing. Now available in an eight-channel form (miXart 8), the next model will be the miXart 16, with eight stereo inputs and eight stereo outputs provided on ADAT optical connectors.

MPEG encoding and decoding will be standard on the miXart 16, but is optional on the current miXart 8.

Also, Digigram and Peak Audio formed an alliance that will result in new audio networking.

Peak Audio's CobraNet, a technology for distributing uncompressed real-time digital audio over a Fast Ethernet network, will be implemented into Digigram-branded products.

For information contact the company in Virginia at (703) 875-9100 or visit www.digigram.com



SAS 32KD Digital Routing

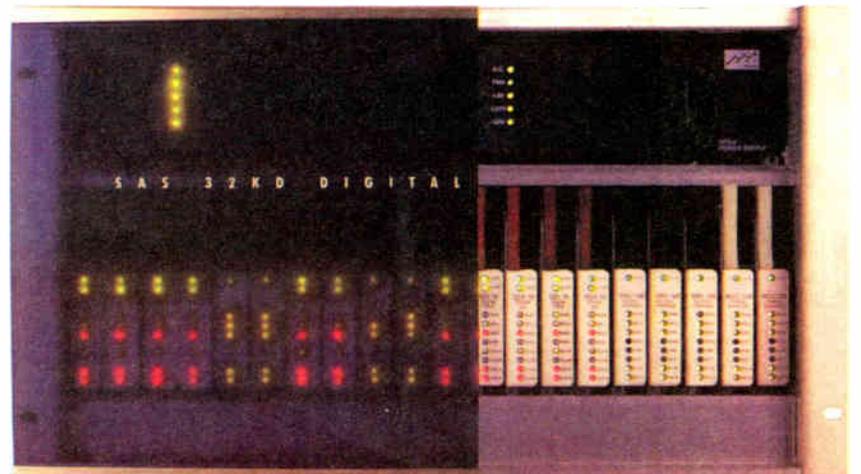
SAS introduced the 32KD digital routing switcher and mixer, offering customized mixing arrangements in addition to standard cross-point latching.

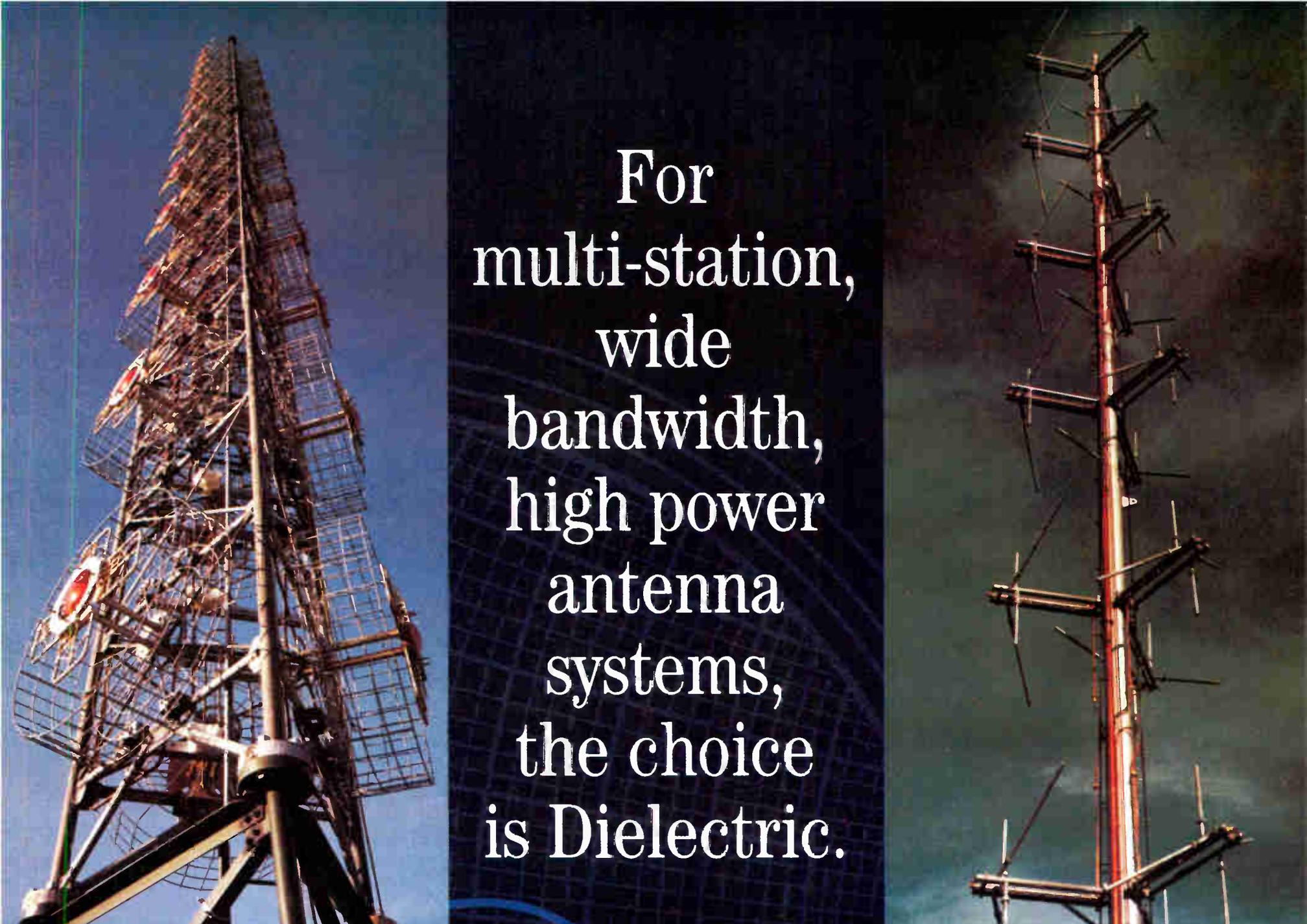
It is available in sizes from 8 x 8 to 256 x 256 stereo analog or digital I/O. Mainframe units can be located remotely and interconnected by fiber links, simplifying off-site multilo-cation wiring schemes.

The 32KD supports 5.1 and 7.1 surround channels and is compatible with existing controllers offered by SAS for its line of switchers.

Also new at SAS is pending release of Windows software for 32000 and 16000 series routing switchers.

For information contact the company in California at (818) 840-6749 or visit the Web site at www.sasaudio.com





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World Radio History

Hannay Reels Keeps Cable Neat

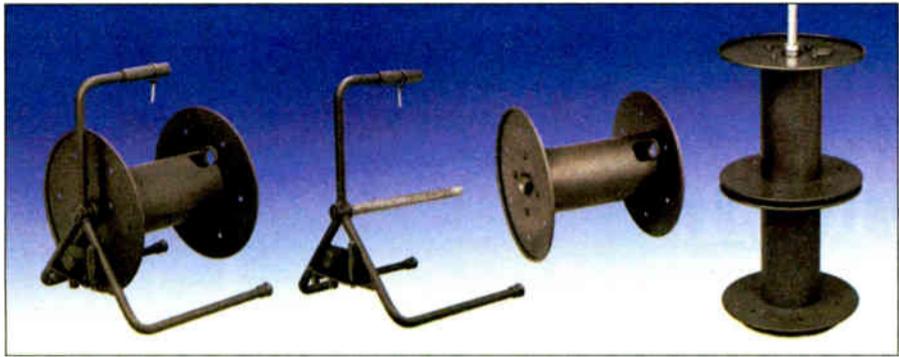
Hannay Reels has developed a portable, removable cable reel, the AVCQ 20-14-16.

The AVCQ reel, with a non-reflective black matte finish, features a self-storing removable rewind crank, quick release spool removal and an adjustable friction brake.

The unit can store multiple spools on one frame on customer-specific vertical or horizontal spindles.

The AVCQ 20-14-16 lists for \$189.

For information contact the company in New York at (518) 797-3791 or visit www.hannay.com



New IPA Module For Continental 816R

Continental Electronics showed a new IPA upgrade for the 816R Series of FM transmitters.

The upgrade easily replaces the original IPA module in transmitters currently equipped with solid-state IPA modules.



The module combines two separate RF amplifiers providing additional reliability through redundancy. One module can fail without taking the transmitter off the air.

The new IPA module also offers improved AM noise and subcarrier (stereo and SCA) performance.

Continental's Chile division also promoted its Bossa BS30W FM transmitter (shown above), Dixie FM processor and Techno RDS coder.

For more information, call (800) 733.5011 or visit www.contelec.com

Wicks on the Mind

Wicks Broadcast Solutions, owner of radio traffic software providers CBSI and Datacount, exhibited SalesMinder (formerly SalesSCAN) customer relationship management and sales intelligence system

SalesMinder is an account management and sales tracking system that interfaces with CBSI and Datacount traffic and billing systems and the Tapscan proposal system to provide access to stations' on-air accounts, billing history and contract details.

Wicks promoted its RateMinder revenue management software system, which allows radio management to track inventory levels and trends, enabling them to make better pricing decisions. And the company demo'd Deltaflex III enhancements, including a more flexible Programmable Avails feature, Program Log format overlays and several powerful new features.

For information contact the company in Oregon at (800) 547-3930 or visit www.wicksbroadcastsolutions.com

Klotz VADIS 880

Klotz Digital released the VADIS 880 digital/audio media platform for radio, production and Webcasting. It also acquired Graham-Patten Systems Inc. (see page 7).

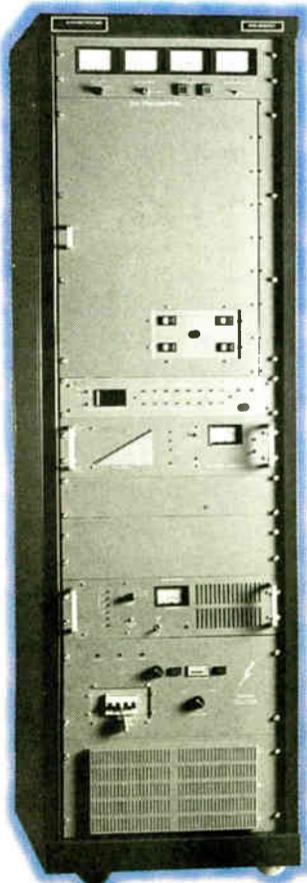


The VADIS 880 platform provides an integrated approach to a range of audio and program-associated applications. Multiple control locations can share data and transfer commands via Ethernet.

The platform is scalable and can fit up to 21 modules in a frame. Multiple frames can link to utilize the 150-plus modules Klotz Digital produces. A new module is the Solid Time switching software, which can switch any part of the system according to a time signal.

For information contact Klotz in Georgia at (678) 966-9900 or visit www.klotzdigital.com

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Tascam Updates Controller

Tascam showcased expanded features of its US-428 digital audio workstation controller.

The US-428's features include compatibility with Windows ME and Windows 2000 and with MOTU's Digital Performer; and offers control of Native Instruments' B4 virtual synthesizers. The US-428 now ships with BIAS' DeckLE multitracking software for the Macintosh.



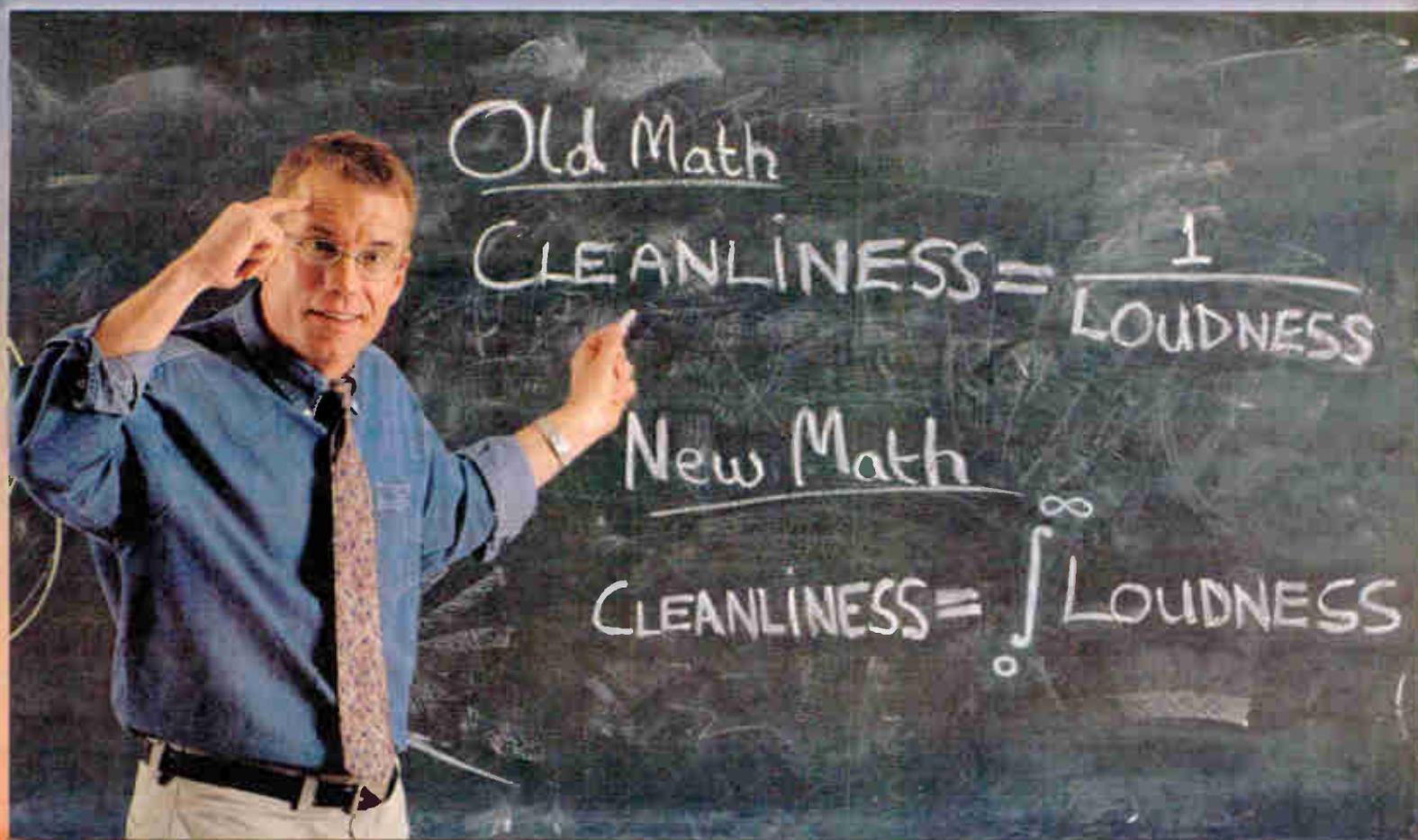
Tascam US428 Workstation Controller

The US-428 combines a hardware interface with computer functionality to interface with Windows- and Mac-based sequencing platforms via a USB port. Retail is \$625.

The company also showed Version 2.0 software for the MX-2424 24-track, 24-bit hard-disk recorder, previewed the MX-2424's upcoming MX-View graphic editing software. The main feature of the 2.0 software release, 96kHz/88.2kHz recording, allows for recording and playback at the higher sampling rates needed for DVD authoring.

For information call the company in California at (323) 726-0303 or visit www.tascam.com

Process This!



Introducing

The NEW Aphex 2020MkII



The original Aphex Model 2020 audio processor set the standard for audio quality, loudness and extended coverage. Not content to sit on its laurels Aphex continued to research ways to improve performance even further. The result is the 2020MkII.

New processing algorithms and circuit designs, in addition to the fifteen proprietary circuits* from the original, allow even greater loudness without sacrificing a clean, natural sound. The MkII's increased flexibility also gives a station the ability to create its own unique sonic signature. New features include a split band optical high frequency limiter, a low distortion overshoot compensated low pass filter* (with no spurs), improved remote control interface, RDS, and dual composite outputs.

Audition the new 2020 MkII on your station and you'll find that Aphex has really done its homework— creating a processor with performance and features unmatched at any price. The 2020MkII—in a class by itself.

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* (patented or patent pending)



AudioScience ASI4344 and ASI4346 MP3 Audio Cards

The ASI4344 and ASI4346 are soundcards that play quadruple MP3 files without a software codec. Made by AudioScience, they will be distributed exclusively by Broadcast Software International and BSI's distributors.

ASI and BSI say this is the first time a pro audio company has created devices specifically for the MP3 format. The cards decompress audio files on their own hardware. The processor is not using its time to decompress files. Problems of MP3 speed and skipping are eliminated.

"The result of putting the MP3 codec on the audio card is vastly improved PC performance," stated BSI in a press release. "Now playing multiple MP3 files simultaneously will be no different than playing multiple linear audio files."

Price: \$2,095 and \$2,795 respectively. Available: Now.
For information contact AudioScience in Delaware at (302) 324-5333, e-mail to sales@audioscience.com or www.audioscience.com; or Broadcast Software International in Oregon at (888) BSIUSA1, e-mail info@bsiusa.com or www.bsiusa.com.



Kea Ross of AudioScience

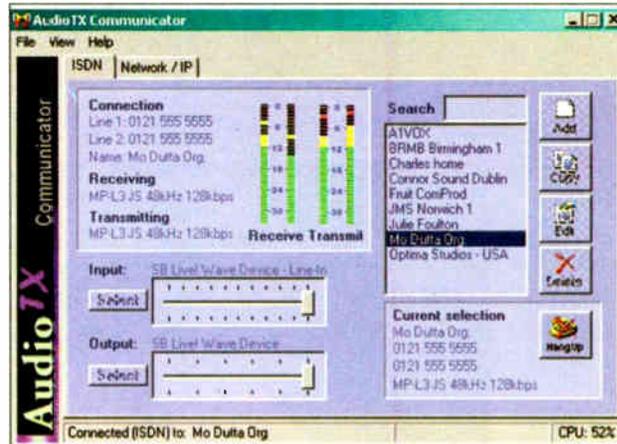
Musicam USA Software Codec

Musicam USA released the AudioTX Communicator, an all-software, multiformat codec for use in sending audio across the Internet and ISDN.

The AudioTX can connect via an ISDN line to another codec and send bi-directional audio using ISO/MPEG Layer II and Layer III, G.711 or G.722 coding. It can recognize and synchronize with a calling codec from another PC so the users do not have to agree on a format.

It also can connect bi-directionally across an IP network. This allows two locations to share audio in real time. Musicam USA claims that audio transmission via IP saves money on telephone bills and gives users access to DSL, ATM, LAN, WAN and IP-based networks.

For information contact the company in New Jersey at (732) 739-5600 or visit www.musicamusa.com



Logitek Audio Engine Add-Ons

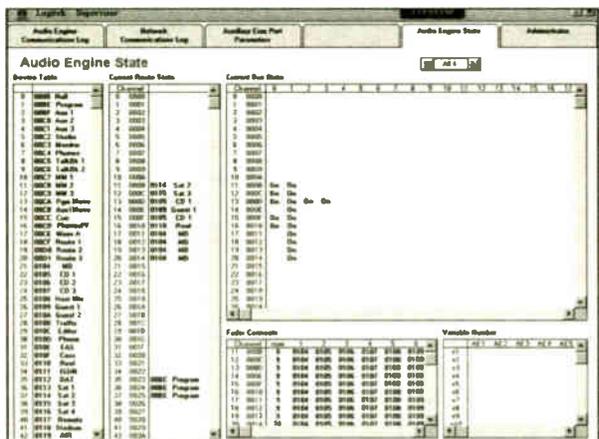
Logitek introduced accessories for its Audio Engines, the heart of Logitek Digital Consoles.

Supervisor is a PC-based computer program for the digital console line. It coordinates operations and commands between Audio Engines. The software is used to monitor and distribute serial data connections among Audio Engines and other devices. Supervisor includes Command Builder, a scripting tool for creating custom control functions, as well as software implementations of new controllers.

Also new is a series of router controls for the engines, including Route3, a rackable controller that gives input selection control for three devices with an easy to learn interface, and the Button12 Panel, a rack-mounted, programmable button panel that provides operational control of an engine or other external device. Both are also available as software.

Logitek intro'd enhancements to the Numix Console Control Surface, an ergonomic, modular surface for its engines. They include a Euro-version surface, which provides layout, labeling and control functions popular in that market; also a 24-button Wedge, and blank Wedge panels that permit customization by the user.

For information contact Logitek in Texas at (713) 664-5870 or visit www.logitekaudio.com



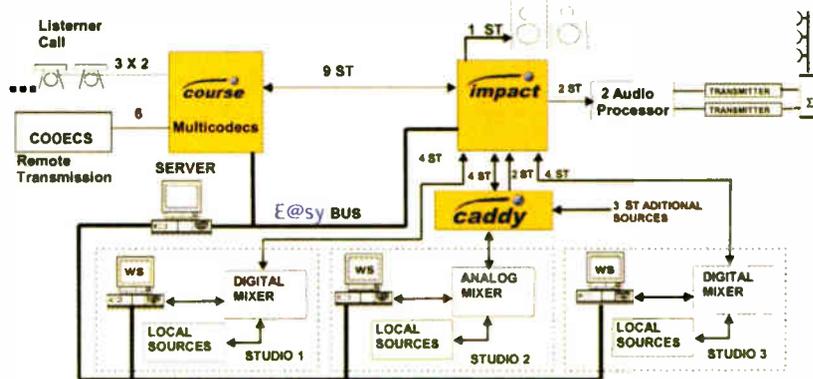
Logitek's Supervisor Screenshot

AEQ Makes PC Digital Audio E@sy

AEQ launched its new E@sy family of audio products, including the Impact digital switcher, which offers 12 AES/EBU inputs, each of which can be assigned to any or all of 12 AES/EBU outputs. Impact units can be cascaded to create a 60 x 60 stereo or 120 x 120 mono matrix.

The Eagle dual-channel ISDN codec can connect to U.S. and European ISDN networks. The Ranger broadcast audio codec-multiplexer be connected to the E1 and T1 protocols.

IMPACT matrix combined with other E@sy equipment items for three-studio radio station.



This configuration is set up with two IMPACT modules, one CADDY and a COURSE with nine dual boards.

AEQ showed the Swing portable audio codec, which offers four channels of audio input and three channels of audio output (two headphones and an auxiliary output). The Swing, too, can interface with Euro and U.S. ISDN networks and can be controlled remotely by the E@sy software.

The company also demonstrated new modules for its Mar4Win Automation System. For information contact AEQ in Florida at (954) 424-0203 or visit www.aequk.com or www.aeq.es

To see what's new in RF you have to look at Bext

Back on the air – from anywhere Change frequency, change power, assign audio input and check operating status via remote PC from wherever you are, with Bext's new series of FM exciter. Software-based peace of mind, from the company that brought you the first frequency-agile exciter in 1985.

Introducing the world's most powerful FM exciter A carryable kilowatt in three rack spaces, with a revolutionary cool-running design ensuring a longer service life. The new XT 1000 makes an ideal backup, or a very reliable main transmitter.

Small and powerful: 2 kW in 6 rack spaces Bext introduced compact amplifiers back in the days when 250 watts came five feet high. Now we are announcing another breakthrough in compact design: the new FC 2000 ultra-compact two-kilowatt RF amplifier.

Bext has more innovative choices than ever from hot-pluggable solid state to cost-effective tube-type with up to 60 kW of output power. Call today for information or a quote, direct from Bext.

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OMT Touches Adcasting, Automation

OMT/MediaTouch introduced iMediaTouch, an automation system for \$995.

It is made up of four components: on-air, production, voice tracking and log tools. All run on one workstation.

The on-air component includes automation and live-assist capabilities. It will interface to satellite networks and accept contact closures. It supports bi-directional console start and stop.

The system also plays PCM, ADPCM, MPEG-II, MP3 and Windows Media files on any Windows-compatible sound card, and can interface to Broadcast Tools switchers and Wheatstone digital consoles.

Also debuted was iMediaAdCast, which won the 2001 Radio World "Cool Stuff" award. (See page 38.)

For information contact OMT Technologies Inc. in Manitoba, Canada, at (204) 786-3994 or visit www.omt.net or www.imediatouch.com

Lighthouse Digital JOZ

JOZ is a "second generation" TDM digital audio router by Lighthouse Digital Systems that supports audio sample rates from 29 kHz to 108 kHz and offers maximum size of 2,048 x 2,048, and up to 8,192 x 8,192 with a hub.

DSP power is provided by a second-generation SHARC. Functions include test signal generation (sine tone, noise and square wave), test measurements (signal level, gain, THD, noise and crosstalk), clickless switching and stereo-to-mono mixing.

For information contact the company in California at (800) 323-8289 or send e-mail to jbemrose@lighthouse-digital.com

Sonifex Net-Log Audio Logger

Sonifex debuted its Net-Log audio logger for tracking what radio stations play in order to help salespeople.

Net-Log uses a 30 GB or larger hard drive to record music on four mono or two stereo audio streams for playback over an Ethernet connection.



Audio is encoded as ISO/MPEG Layer II, which can be sent over the Web. The files are Windows Media Player-compatible.

The channels can be configured with different sample and bit rates, which allows for low-quality recording for simple fact-checking needs or high-quality, long-term archival purposes.

Net-Log was designed for compliance with U.K. program-recording requirements, but the company said it is useful in keeping an audio log for advertisers, as well as other applications.

For information contact Sonifex in Maine at (207) 773-2424 or visit www.sonifex.com

AETA's Growing Scoop

The AETA Audio Scoop Reporter telephone codec of a few years ago has a new sibling: The Scoop E-Z portable for live remote broadcasts.

The field codec comes with an integrat-



ed two-channel mixer and phantom power, double headphone outputs, an uncluttered front control panel and responses of up to 7 kHz on a POTS line and up to 20 kHz MPEG Layer II on an ISDN line.

Another element in this year's AETA lineup is the HIFIScoop 3 ISDN field codec, capable of negotiating with a station-based codec automatically and making the connection when incompatible MPEG Layers are set at each unit.

For information call the company in New Jersey at (973) 659-0555 or visit www.aetausa.com

Denon CD Burners

From Denon Electronics comes a pair of CD burners for the production room.

The DN-C550R is a dual-disc CD recorder/dubber that can copy CDs in real time or at 2X speeds. The playback deck accepts pro and consumer CDs, CDRs, CD-RWs and supports HDCD encoded high-definition compact discs.



Similar in operation is the CDR-W1500P dual-drive, dual-tray recorder, priced about \$100 less than the C550R.

For information contact Denon in New Jersey at (973) 396-0810 or visit www.del.denon.com

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BROADCAST SUPPLY

Take Control with Broadcast Tools Products



DSC32/64

Flexible Satellite Control

The DSC-32/64 allows complete remote control of two StarGuide II/III, Wegener Unity 4000 or ComStream receivers. An encoder control with a 16x2 LCD display provides local control and program descriptions, while external control may be in the form of serial or 32 contact closures. Sixty-four, thirty-two character ASCII character strings are provided for each receiver port. The unit also provides preset memory location for most networks. Custom programming is accomplished with a NON-DEDICATED computer!

The DSC20 has only 20 memory locations per receiver and no front panel LCD display.

The Connect O' Pad (COP) problem solver provides an effective way to connect and adjust the audio levels on your StarGuide II/III receiver. No more soldering to terminal pins!

- Broadcast Tools DSC32/64 Mfr. List \$399.00 **SALE \$369.00**
- Broadcast Tools DSC20 Mfr. List \$309.00 **SALE \$259.00**
- Broadcast Tools COP Mfr. List \$24.00 **SALE \$21.00**



DSC20



COP



Take Control of Up to 199 Events!

The PSCII can store and control up to 199 events allowing control up to two RS-232 serial devices; 16 SPDT relays; auxiliary serial ports and relays - all in a single rack space. It utilizes a GPS receiver time base and can be programmed with hour/minutes/seconds; day/month/year or day of week formats.

- Broadcast Tools PSCII Mfr. List \$869.00 **SALE \$799.00**



GPS Time Referenced Outputs

Fresh off dual awards at NAB2001, the Time Sync II provides four separate GPS time referenced outputs (3 relay and one serial port). The first relay pulses once every 15 minutes. These times are programmed for 13:00, 28:00, 43:00 and 58:00. The second relay pulses at the "Top of the Hour" (00:00). The final output is an open collector with a 100 ms pulse every second. The 4800-baud, RS-232 serial port provides UTC time in HH:MM:SS format.

- Broadcast Tools TIMESYNCCI Mfr. List \$429.00 **SALE \$399.00**



Switch or Route 16 Stereo Signals

The 16X1 passively switches or routes any one of 16 stereo inputs to one stereo output or vice-versa. It features local and remote control and status via contact closures and RS232 serial ports and balanced I/O.

- Broadcast Tools 16X1 Mfr. List \$699.00 **SALE \$639.00**



New Look to a Classic BTI Switcher

The 6X1 passively switches or routes any one of 6 stereo inputs to one stereo output or vice-versa. It features programmable power-up selection, safety lockout, programmable step-through input, local and remote control and status via contact closures and RS232 serial ports plus removable screw terminals.

- Broadcast Tools 6X1 Mfr. List \$419.00 **SALE \$389.00**



Easily Route Serial Data

The SDD8 performs RS-232 serial bi-directional data routing of up to 8 RS-232 serial ports from a single computer or control device's communications port. Applications include controlling multiple audio switchers, StarGuide and other satellite receivers. 1RU.

- Broadcast Tools SDD8 Mfr. List \$399.00 **SALE \$369.00**

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State-of-the-Art CD Recorder

The exciting new CDR-W33 is the first CDR-W Recorder from Sony for professional music applications. It features high-quality, 24-bit AD/DA converters, DSP functions and CD-TEXT support. It's an excellent choice for your project studio or radio production facility. Features: selectable DSP functions available on the analog inputs including: Super Bit Mapping® recording (providing high quality recording and noise reduction), 3-band mid-parametric EQ and limiter; high-quality 24-bit AD/DA converters and a 32 kHz-48 kHz sampling rate converter; Control-S for supplied remote and PS/2 (for PC keyboard) allowing basic control and text entry; CD-TEXT support Disc/Track name can be displayed and entered with alphanumeric characters; 2 times Finalize; fluorescent display; supplied wireless/wired remote control unit; digital and analog record level control; coaxial digital, optical digital and unbalanced analog phono jacks.

Sony CDR-W33 Mfr. List \$799.00 Call for Sale Price



Space-Saving Pro MD Recorders

Sporting a 1U high design, the MDS-E10 packs a lot of performance in a small package. Features: "Hot" starts, pitch control, long play/record mode, PC keyboard input for title entry ±12.5% variable speed; buffer records the first 6 seconds of a recording, even before you press "Record"; unbalanced RCA analog I/O, coaxial and optical digital I/O.

The new MDS-E12 replaces the long successful MDS-E11 as the high-end staple, professional MD model, which will find its way into the hands of radio and production professionals. It includes all of the features and functions of the MDS-E10 and adds control interface capability (RS-232C and DB-9 for broadcast remote control capability), plus record/play relay control I/O and balanced analog XLR I/O.

**MDSE10 minidisc recorder with RCA I/O
Mfr. List \$599.00 Call For Sale Price**

**MDSE12 minidisc recorder with XLR I/O
Mfr. List \$899.00 Call For Sale Price**



**Studio CD Player
in a Single Rack Space**

The CDP-D11's up-to-date design includes instant start, auto cue, variable speed operation (±12.5%), an IR wireless/wired remote controller and connectors for both RS-232C and programmable parallel remote control. Superb audio performance is guaranteed by high-density linear 20-bit D/A converters. Outputs are balanced XLR and unbalanced RCA, plus there are optical and coaxial digital outputs.

**CDP-D11 CD player Mfr. List \$700.00
Call For Sale Price**



**Sony
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The Sony MDR-7506 headphone delivers a surprisingly wide frequency range (5 to 30,000 Hz) in a comfortable, sealed ear format providing maximum isolation from external sound. Collapsible for storage.

The 7502 is a favorite economy headphone with surprisingly clear and rich sound.

Both models include a mini-plug connector with 1/4" adaptor.

Sony 7506 Mfr. List \$176.00

Sony 7502 Mfr. List \$77.00

Call for Sale Price



Interview Grabber

The compact MZB50 is an excellent choice for broadcast journalism. Features: built-in stereo flat mic records separate left and right channels; built-in speaker to monitor playback; easy search function allows for easy FF or Rewind to find a specific location for playback; voice operated recording; battery operation; includes remote control.

SONY MZB50 Mfr. List \$599.95

Call For Sale Price

SONY

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Arrakis Digilink-Free No-Cost, Hard Disk, On-Air Software

"We are tired of seeing broadcasters pay many thousands of dollars for software that is no more complex than a spreadsheet or word processor."

So proclaimed Arrakis when it hit the NAB floor and began to give away software with on-air and automation capabilities for use with off-the-shelf PCs.

Sure, it has pop-up ads. Sure, Arrakis is using the giveaway to promote its product line. Sure, you have to pay for customer service calls via a 900 number.

But Arrakis got the industry talking by following in the steps of AOL and Digidesign and trying a new approach to marketing its wares.

All of which just proves how competitive the automation market has become.

Of the Digilink-Free, one judge said, "Functional, attractive and fun to use. In spite of its bare-bones operation and absence of advanced features, the coolness of the Free is its price: nothing. How other manufacturers respond to this will make for a very interesting NAB2002."

Price: 0. Available: Now.

For information contact the company in Colorado at (970) 224-2248 or visit www.arrakis-systems.com



Gloria and Aaron Palmer pose freely.

LPB Silent Boom, Sky Transmitters

"We simply built a better mousetrap," said John Devecka of LPB Communications, about the company's new Silent Boom.

Most mic booms will "twang" and echo through the hollow stock of their frames, LPB said, and don't allow the user to thread a pre-connected cable.



Wes Dooley of Audio Engineering Associates hung a 7-pound RCA 44BX microphone on the Silent Boom at the show.

The Silent Boom is built from custom extruded solid aluminum stock, eliminating echoes. The channel is sized for cables to be dropped into the outside edge, allowing easy threading of a cable with connectors. Clips secure undersized cables. Special "flocked" springs have a soft black felt-like coating that hides springs and deadens twang.

Each boom includes a multi-weight spring set to accommodate different mics easily.

LPB also promoted its new FM stereo broadcast transmitters. The Sky line initially is offered in 1-watt to 300-watt configurations, and includes on-board processing, stereo generation, on-screen software and a 1RU housing.

In the past year, LPB also expanded its studio and RF lines by purchasing two familiar suppliers: Fidelipac and Omnitronix.

For information contact the company in Pennsylvania at (877) LPBCOMM or visit www.lpbinc.com

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Mager Systems Computer Pull-Out

New this year from cabinetry supplier Mager Systems is a computer hard-drive pullout. The hard drive sits in a carriage, which pulls out of the cabinet and rotates 180 degrees, to give full access to computer wiring. The cabinet is insulated with sound acoustic treatment and baffling, and is ventilated.



Also new: a modular headphone pot/jack box, making wiring more accessible; a solid-surface product that looks like granite; and furniture solutions including chairs, desks and cubicles.

Mager Systems offers connectors, switches, components and turnkey prewiring. It has adjustable flatscreen arm mounts, allowing for more versatility. The company also promoted its 10-year warranty on solid-surface tops, and all plywood 13-ply construction in conjunction with engineered lumber on studio furniture.

For information and samples visit www.magersystems.com or call the company in Arizona at (623) 780-0045.

In the Spotlight!

The Broadcast Richardson name may be new to you, but its ideology is not...servicing the customer

With the acquisition of turnkey distributor Broadcast Richmond in the Spring of 2000, Richardson Electronics realized the combined strengths of each organization would result in a very dynamic product and service offering.

The Broadcast Richardson name signifies an expanded direction for the company. By combining the technical, integration and consulting expertise of Broadcast

Richmond with the wide product offering, unsurpassed service levels and logistic strengths of Richardson Electronics, Broadcast Richardson is prepared to lead the way in the broadcast industry.

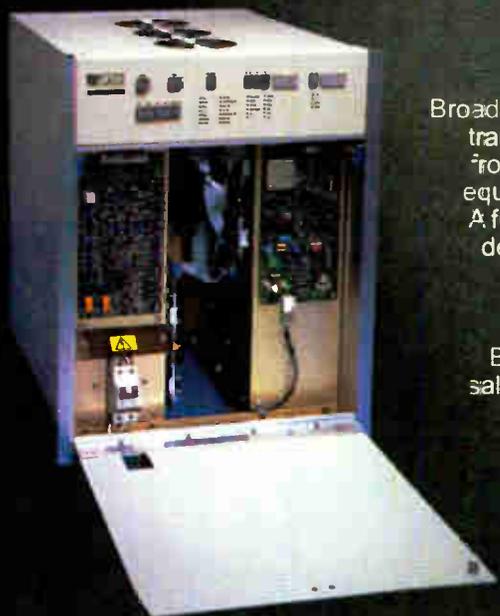
Complimenting its specialized, value-added services, Broadcast Richardson draws from its over 200 franchised product lines to offer you true inter-product integration.

Turn to us for your next component, equipment or system need!

A Featured Presentation...

From one of our 200 product lines!

**AT1K5
AM Transmitters**



RFCAST

**MT1K
FM Transmitters**



Broadcast Richardson offers a wide selection of AM and FM transmitter solutions. Responsive delivery is available from our factories. Exceeding FCC requirements, our equipment offers great reliability...at affordable prices! A full offering of power levels is available. For modular designs, RDS and stereo capabilities, ease of use, low operating costs, and reliable operation—make sure to ask for RFCAST!

Broadcast Richardson understands that the initial sale of the equipment is only the beginning. We back our products with full warranty protection, immediate spare parts availability and strong technical support.

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TC Powercore DSP-Turbo

The TC Powercore DSP-Turbo accelerates signal processing for VST-compatible audio workstations. The card employs five discrete processors — one PowerPC and four Motorola 56K DSPs providing up to 24-bit/96-kHz audio. This provides DSP processing capability of 2800 MHz.

The card supplies the user with 400 DSP MIPS (million instructions/second). One DSP instruction, or cycle, is capable of loading two data items, fetching the next processor instruction and performing a combined multiplication and addition at the same time.

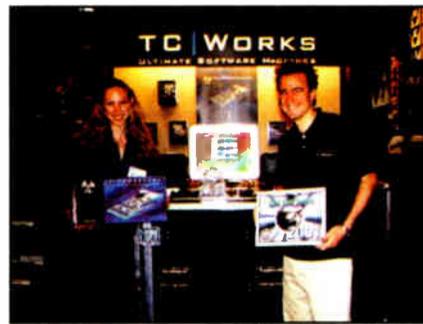
The unit works with VST/MAS-capable applications such as Logic, Nuendo, Spark, Digital Performer or Cubase and any sound system supported by the software.

The TC Powercore includes TC Tools/96K — TC Mega Reverb, TC Chorus/Delay and TC EQSat Plug-Ins — and SparkLe mastering software. The card is an open-development platform enabling manufacturers to offer software for it.

The setup enables users to assemble a heavy-duty DAW on a Mac G3 or G4 for much less than it would cost for a turnkey solution.

Price: \$1,295. Available: June for Mac; Q4 for PC.

For more information contact TC Electronic in California at (805) 373-1828, fax (805) 379-2648 or visit the Web site at www.tcworks.de.



Jennifer Crowe and Fred Koras in the TC Works Booth

Scott Studios' New CD Ripper Saves Time and Money for Stations using APT-X on Older SS, AXS and DCS Digital Systems

At Last...A CD Ripper for APT-X

Now...your stations with classic digital systems like Scott Studios' SS, Electric Works' AXS, or Computer Concepts' DCS air studios can now save time by eliminating dubbing of music CDs and multi-track production editors like Vegas, Sound Forge, Cool Edit, SAW, Sadie and Audicity.

Regardless of the age of your digital system, TLC transfers 5-minute songs to hard drive in about 15 to 20 seconds and uploads 1-minute spots in a few seconds. Multi-hour syndicated CD shows now transfer to hard drive in a fraction of real time, which can save you real money!

Scott Studios' recent customers have been ripping CDs and doing fast no-dub exports from multi-track editors to MPEG or uncompressed Scott Studios systems for years.

Now Scott Studios honors customers of our legacy systems with our new TLC 4 APT. TLC stands for Trim, Label and Convert. Now that we've added APT-X capability, TLC 4 APT is now compatible with older SS, AXS, DCS and Maestro air studio systems!

Audio quality is awesome because you get a direct digit-for-digit transfer from compact disc to hard drive.

TLC also imports and exports BWF (Broadcast Wave Format) audio as well as the upcoming AES Cart



Scott Studios now offers time saving CD Ripping and no dub multi-track production to stations using older Scott, AXS, DCS and Maestro digital audio systems. It's TLC, which stands for Trim, Label and Convert. TLC 4 APT imports and exports between APT-X, MPEG and uncompressed WAVE audio. TLC also converts MP3 audio to any other format.

Chunk standard that virtually every major digital audio vendor promises to support.

TLC is available either with a Scott 1.4 GHz, Pentium 4 1RU slim rack mount computer, or as software only for use on your PC.

CD ripping time varies according to processor and CD ROM speeds, so the faster and newer your Pentium and CD ROM, the faster your music rips onto hard drive.

Stations interested in a free trial of TLC 4 APT can download a test version from scottstudios.com or

tlc4apt.com. The free trial lasts 10 days or allows 20 APT-X exports for quality evaluation.

TLC 4 APT handles APT-X, MPEG and uncompressed import and export as well as MP3 import. TLC 4 APT is only \$1,500 per copy including 90 days of toll-free phone support. This small investment pays for itself in a few months by ripping show CDs to reduce weekend board operator payroll. On-site installation and training is optionally available. Pay by check, Visa, MasterCard or American Express. Order by

phone, mail or Internet.

For copy or sales office computers that want to audition spots but do not need to rip CDs or import spots, a Play-Only TLC 4 APT is only \$500 per copy.

For stations wanting to expand APT-X systems to triple-overlap or add Scott's Voice Tracker, a few APT audio cards are still available.

TLC 4 APT clients who later upgrade to new SS32 or Computer Concepts' Maestro systems can continue to use TLC with the latest digital studio equipment.

Scott Studios
13375 Stemmons Freeway, Suite 400
Dallas, Texas 75234 USA

24/7 Technical Support: 888-SCOTT-411
(972) 620-2211 FAX: (972) 620-8811

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888-GET-SCOTT

IDT Storms the Processing Market

IDT's DVP@NET is based on FFT technology and its Digital Virtual Processor@FM. This unit processes 96 kHz, 40-bit floating-point audio for Internet streaming. It can be controlled by modem or optional IP and runs on Windows 95, 98, NT or 2000.

The Virtual Voice Processor applies FFT to voice processing. It features processing at 96 kHz, 40-bit; a noise and sibilance gater; additional effects plug-ins; multiple user selectable parameters and flash card memory.

The company promoted its Digital Encoder Plus, DVP@AM and Digital Band Processor. The latter is based on traditional band processing and does not use FFT technology. It features AGC, four-band processing and limiting, optimizer and final limiter, and upgradable architecture through plug-in software.

For information contact IDT in France at (33) 472 18 19 20 or visit www.idt-fr.com

SystemBase Backs Up Digital Codex

The SystemBase ABU Master/Slave Backup System is designed for monitoring and automatically backing up analog audio circuits via ISDN.

The system comprises an ABU slave unit installed at the audio source and a ABU master unit installed at the transmitter. The ABU master will monitor continuously the left and right audio channels and implement a back-up scheme determined by the type of fault detected.

In event of a total failure at the signal source the ABU master can switch automatically to a local program source.

For information contact SystemBase in the UK at +44 1256 882797 or visit www.systembase.com

Nautel XL Series AM Transmitter

Nautel was at NAB2001 with its XL-60 IBOC-ready solid-state 60 kW AM transmitter.

It features high efficiency (84 percent typical), hot-pluggable power modules and redundant RF drive chain, modulation encoding circuits and low-voltage power supply circuits with automatic changeover.



It was designed for simultaneous digital transmission while maintaining full-power AM analog service. Also on display was the Nautel XL-12, the 12 kW rig in the XL-series with the features of its big brother.

Nautel also offers ND-series solid-state AM transmitters from 1 kW to 5 kW. The company touts its AM transmitters for their excellent audio response and transparency.

For information contact the company at (902) 823-2233 or visit www.nautel.com

Wheatstone Consoles, Wiremax

Wheatstone earned a Radio World "Cool Stuff" honor for its new Bridge 2001 router (see page 53). It also exhibited Wiremax panels, wiring interface modules that make connecting studio equipment easier and solder-free. They mount in a studio's wiring bay and eliminate the need for 66-type punchblocks and their documentation requirements. The face of each panel contains the type of native connector required for each piece of studio gear.



Auditronics 2600

Also new: The Wheatstone A-2000, a streamlined, modular console with dual phone caller support, two stereo and two mono busses (one pre and one post fader) for easy back-feeds or on-the-fly mix-minus. Control room and studio monitoring, talkback, headphone and cue speaker functions are provided.

The Auditronics 2600 series countertop console fits in 25 x 26 inches of space. The modular design uses gold contact connectors that plug into motherboard sockets and features 12 input channels, an output module that provides program, audition, pre and post mono fader outputs and a flip-up meterbridge to access I/O connectors and other set-up functions. And the company rolled out an \$8,300 digital Auditronics mixer, the ALM-12d, and promoted a new line of studio cabinetry.

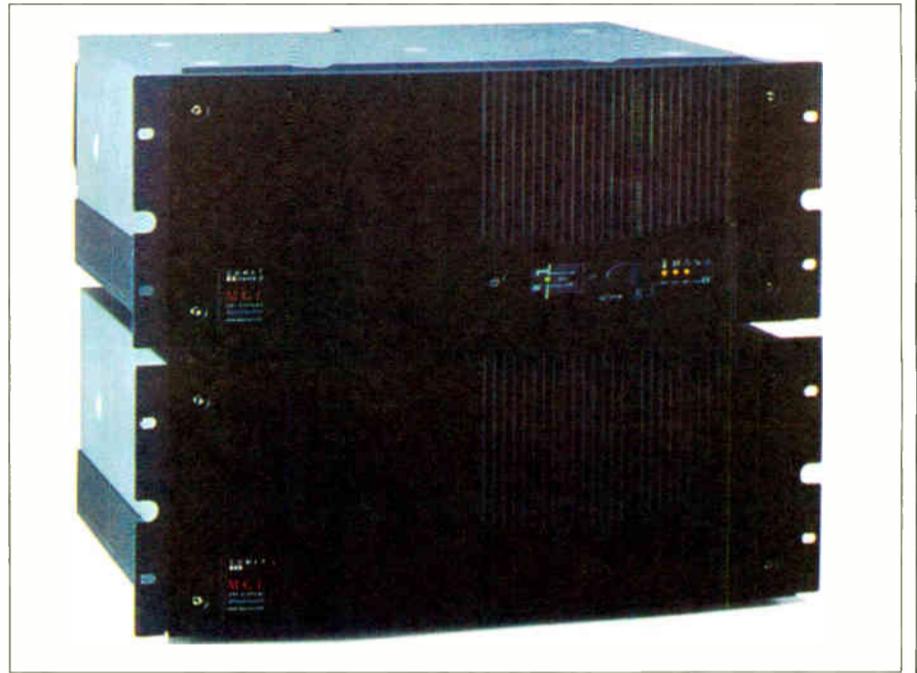
For information contact the company in North Carolina at (252) 638-7000 or visit www.wheatstone.com

MGE UPS Keeps the Power On

The Extreme UPS from MGE UPS Systems features an online double conversion technology that offers a wide input voltage window to maximize battery power available and extend battery life.

The unit is available in models up to 12 kVA and in tower or rack configuration. It allows cold starts to enable the UPS to start without utility power if required.

The Extreme UPS will be available June 30; list price will start at \$6,230.



MGE UPS Systems Extreme UPS

MGE also has a server protector, the Galaxy 3000 online UPS, which can protect up to 40 servers for up to eight hours. It features a small footprint, hot-swappable batteries, cascade-redundant configurations, network protocol support, battery testing module and load surge stabilization technology.

The Galaxy 3000's list price starts at \$18,200.

For information contact the company in California at (714) 513-7363 or visit www.mgeups.com

RCS Rips Into Web With iSelector

RCS unveiled its iSelector Internet player, a branded player that creates individual playlists for each Web listener.

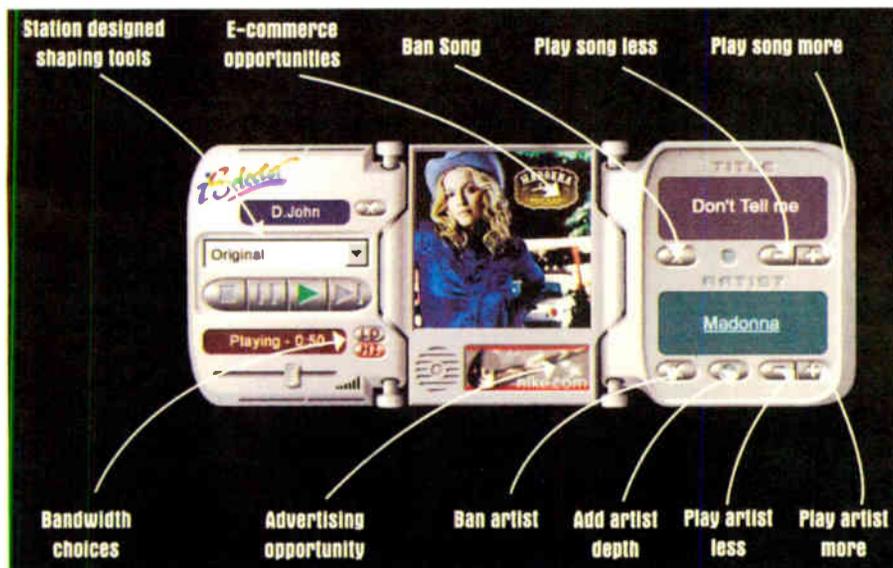
Users can customize their Webcast by choosing "play more," "play less" or "ban this artist" when each song is played within the playlist created by each radio station.

The system gives stations ad-insertion capability and displays a chosen graphic to accompany the song while the music is being played. Listeners can purchase the CD with one click or the iSelector button.

Streaming for the service is offered through a partnership with Activate.

RCS also released Selector Smart Ripper. In addition to creating an audio file, Smart Ripper logs each song's timing, tempo, energy level, beats per minute and key automatically.

And it released MC Net software, an Internet version of its Master Control product designed to allow station managers to program and monitor multiple stations from any computer with an Internet connection.



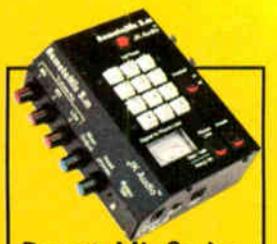
With its "virtual audio card," MC Net can run on an off-the-shelf PC with no additional audio hardware.

For information contact the company in New York at (914) 428-4600 or visit www.rcsworks.com

Born free.



Remote broadcasts over a cell phone? No problem. This little black box converts the 2.5 mm headset jack on your cell phone to a modular RJ-11 jack, which connects directly to any JK Audio RemoteMix series mixer. Use your wireless phone to dial or answer the call—use the microphone and headphones plugged into your RemoteMix during the call. It's never been so easy to be so free.



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JK Adapts Remote Broadcasting

JK Audio released a series of remote wireless mixers and adaptors. The Daptor One wireless phone adaptor converts the headset jack on most cell phones to a standard RJ-11 modular phone jack, allowing audio from JK Audio's Remote Mix telephone interface to be sent over a wireless connection.

JK also introduced the new RemoteMix Sport model, which includes the Daptor One's wireless interface circuit. The RemoteMix Sport accepts three mic inputs and a phone-line cue input and connects to both standard phone lines and wireless phones with 2.5mm headset jacks.

The company showed the Voice Path telephone handset audio tap, which connects between the handset and base of a telephone to send audio in and out of a PC.

For information contact the company in Illinois at (800) 552-8346 or visit www.jkaudio.com



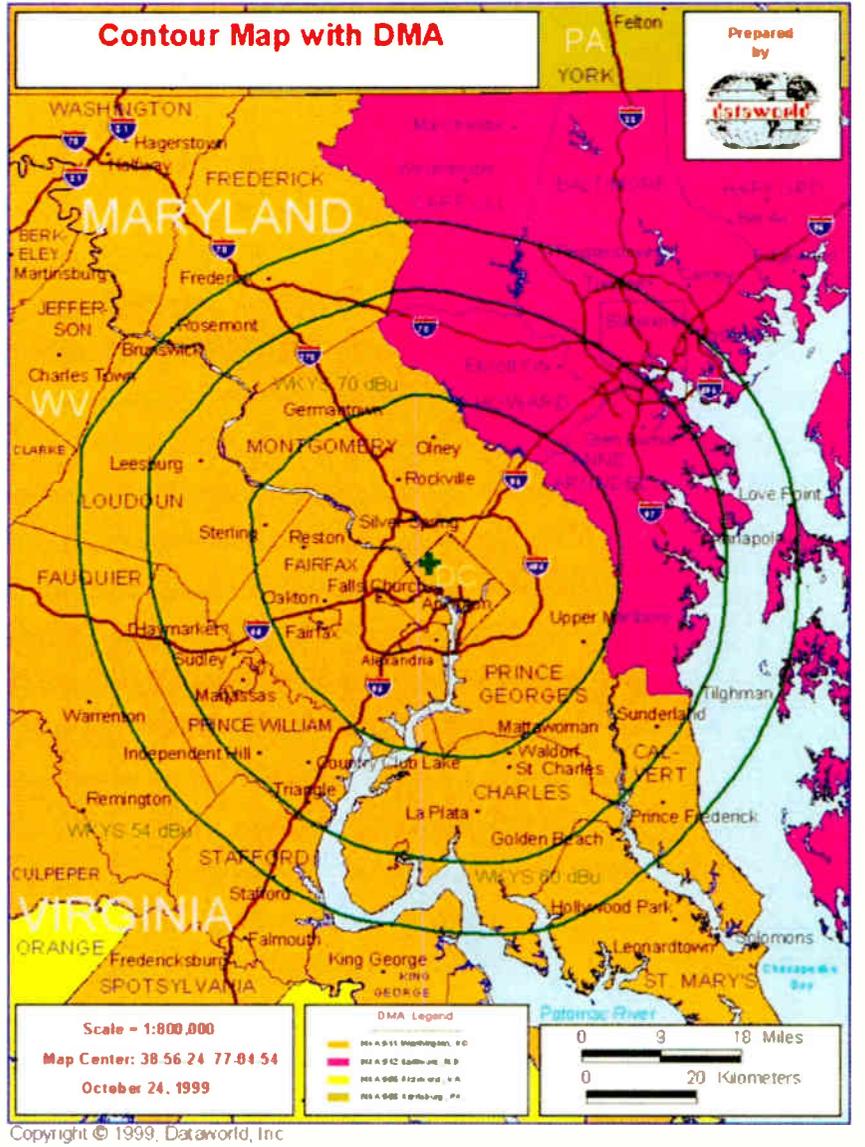
The Daptor One

Data Xpert Database Interface

Dataworld is an authoritative source for database information on broadcast stations. At NAB2001, the company introduced its new Data Xpert database interface for the Internet.

Nancy McCall of Dataworld said that once a user is enrolled as a subscriber, only a Web browser and Internet connection are needed to retrieve data from the Dataworld online database.

Contact the company in Maryland at (301) 652-8822 or visit www.dataworld.com



Dataworld offers customized mapping and other services.

Smarts Live-Assist Plug-In

Smarts Broadcast Systems debuted a live-assist plug-in for its Smartseater G2000 station automation system.

It auto-detects the voiced-over section and cues the main playback system to dim music or other program audio in order to make program transitions and segues sound natural and live.

Smarts also introduced a hardware platform that it says combines the reliability of DOS and the graphical user interface of Windows. The X-2 Dual Operating System is built in an Industrial Computer rack frame for ease of installation using a plug-in card platform.

One processor runs the audio playback function via DOS with the user interface and logging through Windows through the other processor. Both processors operate on a shared ISA bus in the one rack frame.

For information contact the company in Iowa at (800) 747-6278 or visit www.smartsbroadcast.com

Digital Audio Just Got Easier!

CartWorks
File Edit Scripts Options Recorder Help

346	Marines	:30	1	Stop
218	Coca Cola	:60	2	Rdy
398	Pizza Hut	:60	3	Rdy
			4	Stop
			5	Stop
			6	Stop

00:02:03 Loop Trip Unload

Music Log [06-06-2006]

Time	Cart	Title	Artist	Length	Intro	End	Type
12:13:07		Turn of Mind		04:54	:22	F	MUS
12:13:12	M1012	Photograph	Def Leppard	04:54	:22	F	MUS
12:18:06	M2174	Friends	Elton John	02:20	:05	C	MUS
12:20:26	M1732	Dance The Night	Van Halen	02:47	:13	F	MUS
12:23:13	V026	Voice Track 26		00:12			VTK
12:23:25	DALIVE	SPOT SET		03:00		I	COM
12:26:25	J011	Jingle / Fast		00:06			Jin
12:26:31	M0713	Listen To Her Heart	Tom Petty	02:48	:11	C	MUS
12:29:19	V027	Voice Track 27		00:15			VTK
12:29:34	M2214	Black Friday	Steely Dan	03:40	:12	F	MUS
12:33:14	M0015	All Day Music	War	04:04	:19	F	MUS
12:37:18	L015	Liner # 15		00:15			LC

00:03:23

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TransLanTech Sound Ariane Stereo Audio Leveler

There must be something in the water cooler at Z-100 in New York that makes its engineers design neat processors. This one is from former CE David Reaves (who named it after his wife).

The Ariane is like three processors: a wide-range level controller; a dynamic EQ that can correct for deficiencies in the spectrum; and a multiband stereo enhancer/controller. Its inventor says, "It's almost as though you have a board op who knows every song and every level, and knows how to compensate for the tonal balance, levels and stereo spread, and never makes a mistake."

It places wide-ranging levels within a user-defined dynamic range, without drawing attention to itself. It uses RMS signal detection, coupled to a "windowing" type release circuit that cuts down on processing activity. The more dense the incoming material, the less the Ariane processes it, to guard against doing too much.

Price: \$3,599. Available: Now.

For information or demo units, contact dealer Broadcasters General Store at (352) 622-7700, e-mail to sales@translantech.com or visit www.translantech.com



David and Ariane Reaves With Dealer Dave Kerstin of Broadcasters General Store

On Air Linux-Based Audio Storage System

On Air Digital USA displayed the RadioSuite HD, its Linux-based digital audio hard-drive storage system.

RadioSuite HD is the first in a series of new products. The company touts the reliability and access to open-source information that marks the Linux OS. It supports a variety of sound cards and supports linear WAV, and MPEG Layer II and III files.

The initial release is driven by On Air Digital's legacy UDS II system for control. Simple recording, timed network recording and simple router control for network recording will be handled by RS-HD. Everything else is done by the UDS II.

For information contact the company in Texas at (972) 481-8700, send e-mail to info@onairusa.com or visit www.onairusa.com

G-R Enhances EAS

Gorman-Redlich displayed its Emergency Alert System Encoder-Decoder EAS-1. It is available with an optional telephone interface for inserting an emergency message from a remote location with a DTMF telephone keypad.

The EAS-1 with CG has a dedicated character generator that will put a crawl on the TV screen for a cable system or TV station. In the TV mode the unit will display the station ID on the hour. It has five bidirectional RS232 inputs/outputs and six audio inputs that are all transformer isolated from the encoder-decoder board. Another feature allows automatic interruption of stereo program lines when a preselected header code is received.

For information contact the company in Ohio at (740) 593-3150 or visit www.gorman-redlich.com

DSP All-in-One Post

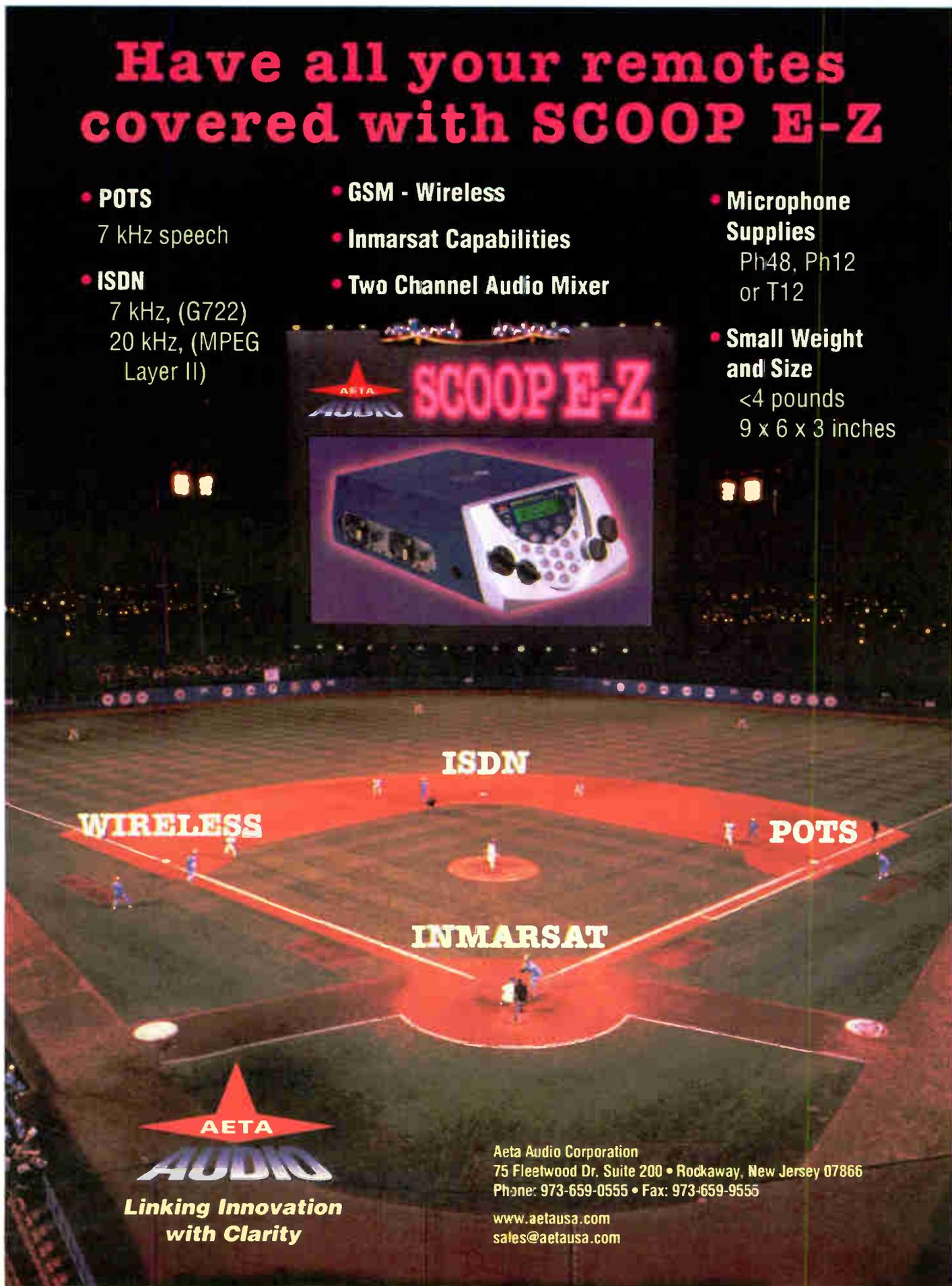
DSP Media displayed its Audio Postation II all-in-one audio post production center, which uses a combination of dedicated hardware controls and touchscreen interfaces to create an integrated solution for post production.

Also on display was the DSP Media Desktop System compact audio workstation. Also sold for television with the Vmotion nonlinear video editor, the radio version is sold without the Vmotion module. It includes the DEP 24-bit digital editing processor and Speed II console.

Call DSP in Los Angeles at (818) 487-5656 or visit www.dspmedia.com

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World Radio History



Wheatstone Bridge 2001 Digital Network Router

The importance of sophisticated digital network routing is apparent when companies like Wheatstone invest considerable resources in offering a product for this market.

One optical interconnect between your studio and rack room can handle 64 channels of bidirectional digital audio plus lots of data and communication — saving plenty on wiring costs and headaches. The “star” topology is designed to be less vulnerable to failures than “ring” systems.

Stackable to allow expansion, the system is built around compact digital routing cages, each of which can accommodate 512 simultaneous audio channels on its backplane. Features include digital-domain AES switching, bidirectional fiber-optic or CAT5 connectivity, analog or digital inputs, A and D outputs, as well as serial control and display with Wheatstone consoles.

Graphic interface software, tabletop or rackmount controllers and convenient connector design make this a winner. And it's about time the company built something that recognizes the 19th century circuit from which it gets its name: the Wheatstone bridge.

Price: Varies by configuration; typically \$20,000 to \$60,000. Available: Now.

For information call (252) 638-7000, e-mail sales@wheatstone.com or visit www.wheatstone.com



Andrew Calvanese, Jim Peck, Phil Owens, Paul Picard,
Jay Tyler, Darrin Paley and Bob Groome

GUEST COMMENTARY

Leave the Auctions To eBay

*A Would-Be Broadcaster
Sits Through an FCC
Seminar, Hoping to
Make His Auction Bid
Soon. He's Still Waiting.*

Many readers know that the long-awaited FM Auction (No. 37) had been scheduled for Feb. 21, 2001. It has only been three or four years since the comparative hearing process was shelved for good, but hey, these things take time.

And they apparently take even a little more time. A public notice released in January postponed the auction until last month. But still, progress was being made and the FCC even published an entire pre-auction list of dates with the January notice.

Among those items was the Pre-Auction Seminar, held in Washington for the purpose of indoctrinating auction neophytes in the finer points of bidding.

Bear in mind that this is no “scratch your nose and touch your hat” kind of auction. Nope; we are talking Internet here! An “Online, Simultaneous, Multiple Round” affair.

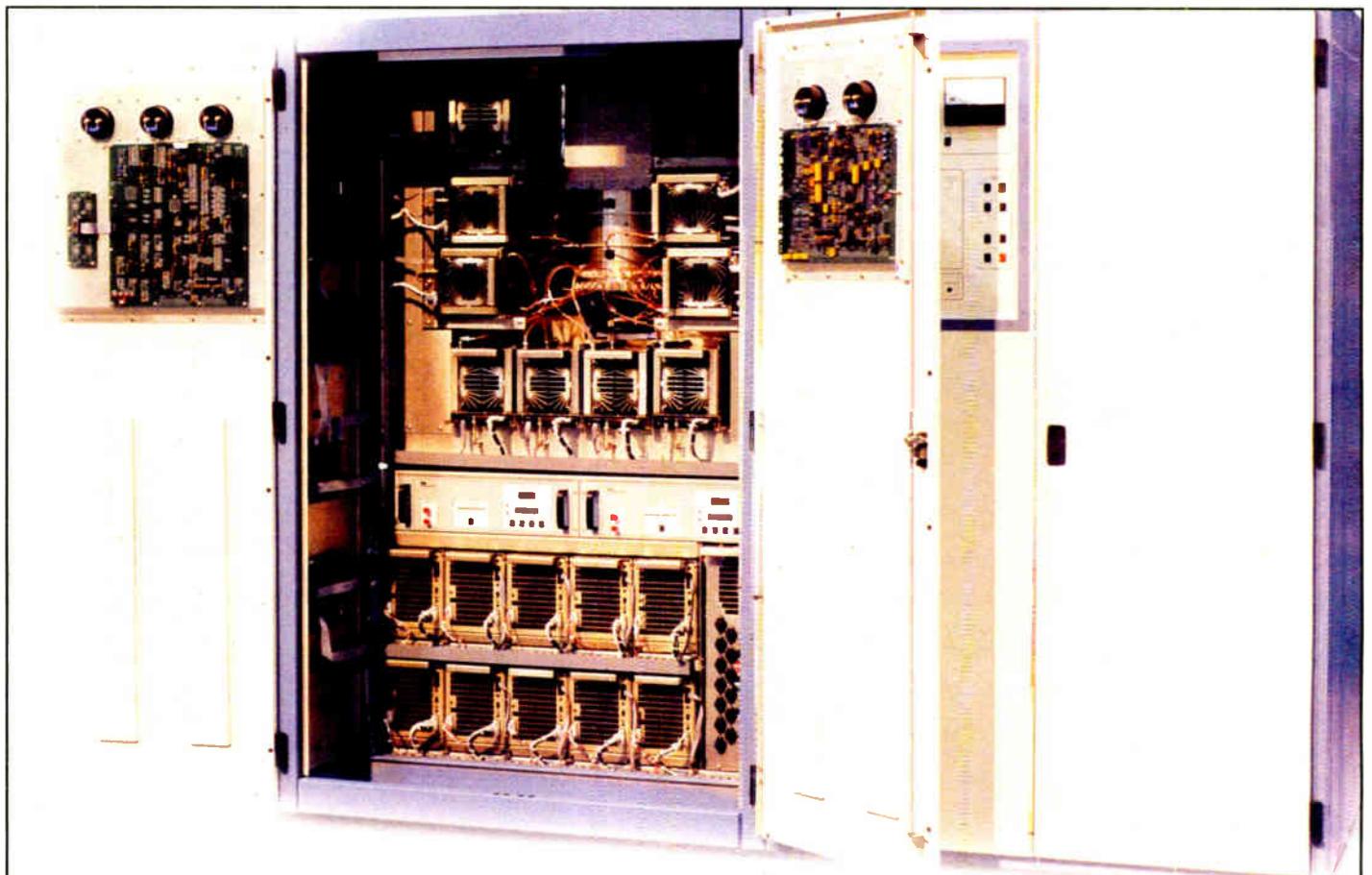
Just the name was enough to convince me I had to attend. There was absolutely no way that simple instructions (“don't scratch your nose unless you want to bid”) would suffice; I needed a *Seminar*.

Process questions

Somewhere around 350 allocations are on the block, so you can imagine that there was a fair amount of interest in the well-publicized seminar.

The gathering was held at FCC headquarters in the Portals building, and a couple hundred registrants duly presented themselves for scanning and metal detecting at 9:30 a.m. on the prescribed date. We filed into the Commissioners' Hearing Room and waited for the festivities to begin.

The chief of the Auction Operations
See AUCTION, page 60 ▶



40,000 Watts Solid State FM Power.

The Nautel Q20/20 comprises two 20 kW stand-alone FM transmitters fully integrated to operate as a 40 kW active reserve transmitter system. For more than 30 years Nautel has built the best radio transmitters by blending solid state technology and innovative engineering design. The Q20/20 provides reliability and peace of mind through built-in redundancies — in all the world you won't find its equal.

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- dual IPA & Power Supply
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Simply the best engineered transmitters.

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Workbench

Radio World, June 6, 2001

2 Rms, 20 kW, Meter Brdg Vu

John Bisset

If you have responsibility for multiple sites, you may find it hard to make regular visits.

But summer is upon us. If it's been a while since you paid the shack a visit, you might find the building overrun with field mice. Spring nesting season may have turned your transmitter building or AM coupling units into nurseries.

★★★

made great nesting material for his FM20H3 rodent condo. Turns out that when the condo is booked with field mice "residents," they lodge in the FMIC next door — preferring the meter bridge with a view!

Dining for both consists of a smorgasbord of paper towels and manuals at the supply shelf café, or a visit to the trash barrel diner. Tim tried filling every hole, crack and crevice with expanding urethane foam, with no luck. The mice chewed right through.

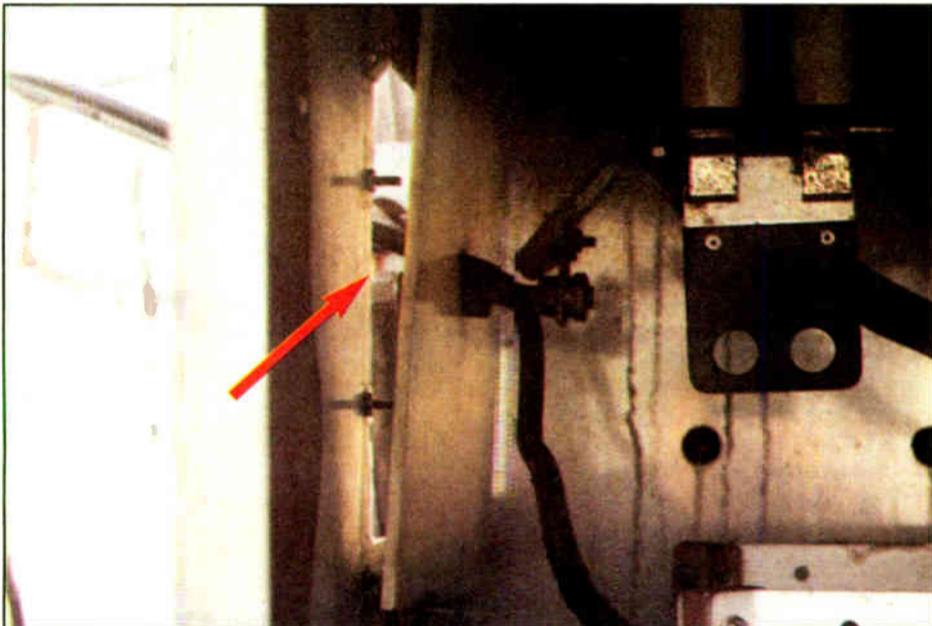


Fig. 2: Arrow points to gap.

A case in point was one of Tim Backer's transmitter sites in Syracuse, N.Y.

Tim is the director of engineering for the Clear Channel stations there. His post on Dave Biondi's *broadcast.net radio-tech* page was humorous.

Mice found that the attic insulation

It's time for the mothballs, and as several engineers recommended, steel wool.

But before you treat the building, mow or get rid of the grass around the building. Ken Sleeman, CE for WWZZ(FM) in Washington, has a remote transmitter site in the middle of a field, just like Tim's. The site suffered from rodents for

years. Ken reduced the problem dramatically by removing the grass around the building and replacing it with crushed stone in a perimeter of about three feet. Mowing the grass regularly is an inexpensive alternative.

Mice prefer the shelter of the high grass; when it's gone, they go elsewhere. Ken reports a similar effect with regard to insects — filters on the air intake are cleaner after going the crushed stone route.

Buy moth balls to fight the problem inside. They repel not only rodents but snakes. Throw several in the base of antenna coupling units.

As for steel wool: plug the crevices and holes to keep rodents from turning your transmitter into a condo. In older facilities with floor trenches, I stacked the steel wool in the base of the trench, effectively blocking the use of the trenches as freeways to the condo.

Finding all the holes can be another challenge, as several engineers point out. Light the inside of your building with flood or trouble lights one evening. Walk around the outside of the building, in the dark, looking for light sources.

This also is a good way to plug all the old screw holes or misfit conduit or coax runs into AM coupling networks. Keep these network boxes insect-free to avoid a nasty sting when you surprise a nest of wasps or hornets in an effort to read a base current meter.

Inspect the entire box. Ill-fitting insulators, or output panels, as seen in Figure 2, permit not only rodents and insects but water damage, with corrosion of parts.

★★★

Holes in the walls aren't the only point of entry. Steve Schoon of the University



Fig. 1: These can be an engineer's best friend in the fight against pesky mice and other intruders.

of Northern Iowa stations reports that a mouse managed to squeeze through a 3/8-inch gap between the plywood wall and the floor of one of his remote transmitter sites. The mouse then decided to christen the STL receiver, taking it off the air — at 5 p.m., of course, and with a blizzard rolling in!

When Steve returned with the repaired receiver, he took some metal drywall corners. He nailed them to the corners of the plywood, covering the gaps. Then he flattened several with a hammer and nailed them along the floor.

Steve admits the solution is not the prettiest in the world, but it is effective; he hasn't had a mouse problem at the site in five years!

★★★

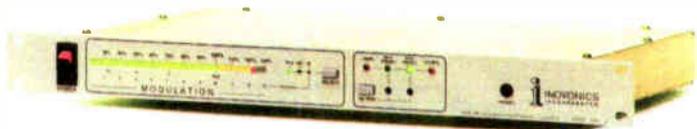
So many sites, so little time. Make the time to inspect your transmitter sites.

A few years ago, we accompanied a See WORKBENCH, page 56 ▶

Dependable Modulation Monitors for AM & FM

520 AM Mod-Monitor

- Built-in, tunable preselector for accurate off-air measurements
- Easy-to-read, peak-hold modulation display
- Alarm and RS-232 data outputs
- Companion active antenna option



530 FM Mod-Monitor

- Off-air operation with 8 station presets
- High-resolution displays for deviation, audio, pilot, RF signal and multipath
- Accurate and affordable



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Contract Engineers: Pain and Gain

Ken R.

Many broadcast engineers who are employed full-time by a single station or group have entertained the notion of leaving the security of a regular paycheck for the world of contract engineering. Radio World talked to five such entrepreneurs to learn more about the pitfalls and rewards of taking that risk.

"Actually, the days of retiring with a gold watch after 40 years are gone; there is no real security," said Jim Stitt, president of Cincinnati-based JMS & Associates.

"As with any startup business, you face some uncertainty but I would rather be in control of my own destiny than leave it in the hands of someone else."

Retainer advantages

Stitt described two basic types of client relationships into which a contract engineer may wish to enter: the ongoing retainer and the per-project model. In the former, the engineer generally is obligated through an agreement to a certain number of station visits per month and generally "24/7" on-call availability.

Routine duties are spelled out on paper and usually include transmitter and studio maintenance. The upside of

the retainer agreement for the station is that the management gets many of the advantages of a full-time engineer without paying benefits or worrying about holiday relief or additional overhead.

Contracting engineers who work alone typically arrange with associates in the area to cover for them during vacations and illnesses. A contract engineering firm doesn't have this worry because it maintains adequate staffing.

Your job is on the line every time you work for someone.

— Mark Persons

"The retainer is more cost-effective because the station has the expertise available without paying someone to sit at a desk from 9 to 5," said Stitt. "And if the station is working with a contract engineering firm, management has access to expertise it wouldn't necessarily be able to afford with a solo

engineer."

Stitt advised, however, that contract engineers should avoid entering into a relationship with a station that wants that 24/7 availability but doesn't want to pay a retainer.

The project basis

Stitt said most of his business is conducted on a project basis and he is often called to consult on acoustic and spe-

cialized electrical specifications during the early stages of new construction.

Mark Persons operates his own contract engineering firm, Radio Broadcast Technical Consulting and Sales, based in Brainerd, Minn. Persons doesn't believe in retainers; he feels they are a crutch.

"I work with about 40 stations on a regular basis, but I do not have a contract," said Persons. "If you have a retainer, someone is going to win and someone is going to lose."

Persons is a believer in the project-based relationship, partly because it allows him to retain the option of saying "no" to any potential client.

Any aspiring contract engineer must realize that he or she now must wear two hats: engineer and business manager. There's many a slip 'twixt sending out those invoices and getting the checks back in the mail.

"I learned that you have to go out and do the collecting yourself, or you just won't survive," said Al Fromm, owner of Jalco Communications, based in Bartlesville, Okla.

Jack Layton, owner of Layton Technical Services in McMurray, Pa., stressed the need to be organized and set rates that are competitive. He also noted that it is vital to keep equipment purchase receipts for later reimbursement.

"I use Quicken as our accounting software and I always keep the original invoices and receipts and attach copies with the bills," said Layton. "I charge by the project plus expenses, or occasionally I quote a job on a per-day basis."

Rate card

Layton doesn't use a rate card, but his long-time clients are given preferential rate treatment. Even though many of his stations have a good payment record, collecting from slow-payers is always a concern.

"I have been very careful, and in nine years I haven't gotten stuck," said Layton. "But I start calling the clients every other day when they're over 60 days."

Layton said late payments are caused
See CONTRACT, page 57 ▶

Workbench

▶ Continued from page 55

well-known consulting engineer, the station engineer and the station owner in a pre-sale site inspection. Imagine the embarrassment of the station engineer, when the coupling network cover was removed to display a mess such as that shown in Figure 3!

The engineer thought the coupling networks were in better shape. It took some convincing that "transmitter visits" weren't a synonym for "vacation days" — which was the owner's impression.



Fig. 3: Check coupling networks before the boss shows up!

The problem was that the engineer was overworked and had no assistant. He spent his time putting out bigger fires. The site inspection was a surprise to the engineer, but if it had been a due diligence inspection, this could have cost the seller plenty — and perhaps the engineer his job.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.

Submissions for this column are encouraged, and qualify for SBE recertification credit. Fax your submission to (703) 323-8044, or send e-mail to jbisset@harris.com. ●

It's All About Personality.

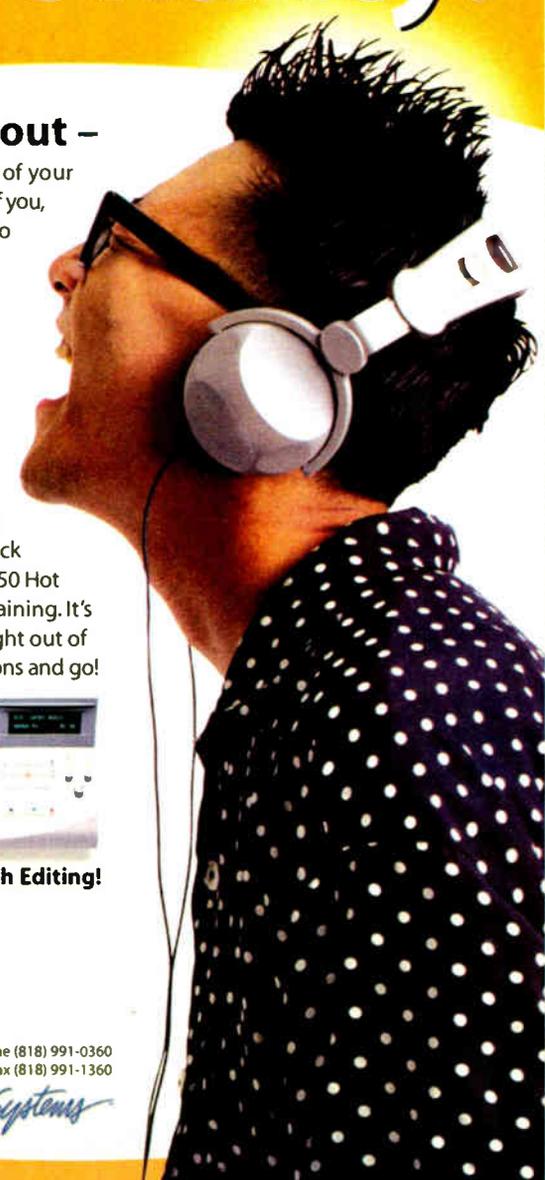
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Contract

► Continued from page 56

by bureaucracy more frequently than by malice. Even so, he tells his clients that their accounts must be current before he is willing to do additional work for them. He is also careful when he structures the payment schedule for each job.

"If it's someone I haven't worked with before, I will get at least half of the projected budget before I start. Then I bill as the project proceeds," said Layton. "I think it's much better for the client to see smaller invoices as we go along than one huge bill at the end."

The rules that apply in any business relationship apply here. These include timely and helpful communication with the client, solving little problems before they become huge problems and providing a good value for the dollar.

Layton said that he bends over backwards for his clients and tries to accommodate them in every way.

Spousal support

Anyone who runs a one-person shop out of the home is aware of the importance of including the spouse in the business.

In the case of Layton Technical Services, Layton counts on his wife to proofread the engineering books he writes and publishes. Fromm's wife holds an amateur radio license and accompanies him as a safety person on some service calls.

Persons said that when the home phone is used as the business phone, it is vital that a client never hear the words "I don't know where he is or when he'll be back" from the person taking the call. In his case, clients call the office number and his wife is the only one who is able to reach him by cell phone and communicate messages back to the client. She always knows his whereabouts.

And then there's the issue of — gulp — sales.

Consider. A station engineer finally decides to leave that big broadcast group and go forth into the world as a contract engineer. The shingle is hung, business cards are printed. But the phone isn't ringing on its own. The engineer has to face the fact that he or she must now become a salesperson.

There are good and bad ways to present oneself to a potential client.

Persons suggested that an aspiring

contract engineer dress neatly and avoid facial hair. He said employers want to see someone who represents the establishment sitting across the desk from them.

"It's a case of perception," said Persons. "If you can't look like a business person, you won't get the kind of money you want."

Persons also suggested that contract engineers set an appointment by phone with a potential client. And while references are not usually required at the resulting meeting, a specific hourly rate will be requested.

"The truth is that anyone can get a job in engineering, and it's unfortunate because some stations have to put up with less than great talent," said Persons. "The job you get hired for will probably take a couple of hours, and you'll either get asked back or you won't. Your job is on the line every time you work for someone."

Stu Albert of Albert Broadcast Services recommends that the contract engineer always have a good insurance policy in place. Engineers may work late at night when they are tired or do something experimental on a test or repair, and liability could become an issue.

"It's common sense in this litigious society," said Albert. "You have to make sure you're not the reason the station loses advertising revenue, because they will try to get you to pay for that."

Go to the top

Our expert contract engineers had a number of other helpful suggestions. Persons cautioned engineers to deal only with the individuals at the station who make the decisions. He said that if another station employee, lower down the totem pole, requests a service or a piece of equipment, the general manager may not necessarily feel obligated to pay for it when the invoice arrives.

Stu Albert suggested that engineers learn as much as they can from their peers, who are almost always willing to share experiences and knowledge.

"And be willing to make a modest investment in specialized test equipment," said Albert. "A well-stocked toolbox, multimeter and oscilloscope are only the beginning."

Albert said a little money for the right tools can help keep troubleshooting time to a minimum. He mentioned his spectrum analyzer, which he uses to find harmonic energy content problems, to diagnose poor or water-damaged STL

microwave antennas, and for making NRSC-2 compliance measurements. Albert said that the instrument paid for itself quickly.

Layton said that his clients don't like to hear an answering machine when they call, so he makes it a point to use "call anywhere" service through his cell phone so that callers hear a real voice on the other end.

Keeping it legal

And there are tax and legal aspects to any business.

The Society of Broadcast Engineers offers members a free sample agreement between the contract engineer and client station. It's available from Angel Bates at SBE (abates@sbe.org) and covers topics such as independent contractor status, indemnification, purchasing power, non-disclosure and additional tricky items the new entrepreneur might not discover until too late. Several sources recommended that engineers join SBE

and continue their education.

Albert said his business is set up as a "sub S" corporation. Layton Technical Services is a sole proprietorship. Depending on the number of employees, the method of billing and other factors, there are a number of ways to set up a contract engineering business. A good CPA and attorney will come in handy.

Stitt said the proprietor of such an enterprise must be both a good engineer and a good businessperson.

"Unfortunately, some stations view engineering as a necessary evil rather than an asset," said Stitt. "But ironically, it's the really successful stations that believe engineering is important. They know that if the station is off the air or the signal sounds crappy, their success disappears."

Got a tip for would-be contract engineers? Drop us a note via e-mail to radioworld@imaspub.com

Ken R. is a former broadcaster who now devotes full time to writing.



Broadcast Electronics

FM 20S 20 kW Solid-State FM Transmitter

Broadcast Electronics — radio's "Big Blue" — impressed our judges with this sophisticated system, designed from the start as a 20 kW solid-state rig. The internal combiner and single integral controller help make this a most cost-effective system.

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Richard Hinkle gives thumbs-up to a winning transmitter.

Judges had this to say: "The days of tubes in high-power FM are really numbered now." "Using switching power supplies at this power level will save a tremendous amount of transmitter weight."

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GUEST COMMENTARY

New Zealand Plans DAB Allocations

For insight into how a country plans digital audio broadcasting, we reprint the following exchange from Internet discussion forum RADIO-L.

A group participant asked for informed industry comment about New Zealand's DAB channel plan. Gerald Chouinard, senior adviser on broadcasting, Communications Research Centre, Ottawa, Canada, responded.

The replies are Chouinard's.

Q: The New Zealand Ministry of Economic Development has released a draft DAB spectrum plan for discussion, and has asked interested parties to make submissions.

The proposed band is 1461.5-1490 MHz for broadcasting and broadcasting satellite (fixed linking is already established either side of this band).

In accordance with the proposal to adopt Eureka-147 as the DAB standard for New Zealand, it is proposed that the channel plan for New Zealand be based on a channel roster of 1.744 MHz (as outlined in ITU-R BO.1114-1) with guard bands of ~3 MHz to protect adjacent fixed-service band assignments. A similar plan has been adopted by the Canadian administration and similar centre frequencies are proposed here to facilitate the supply of receivers. It is proposed that extra channels not be created by interleaving centre frequencies.

Is this a viable plan?

Centre Frequency in MHz

1	1465.024	8	1477.232
2	1466.768	9	1478.976
3	1468.512	10	1480.720
4	1470.256	11	1482.464
5	1472.000	12	1484.208
6	1473.744	13	1485.952
7	1475.488		

Chouinard: This is indeed a viable plan. Using the channel roster originally developed in Canada allows you to have a regular channel spacing that maximizes the channel separation. Although the original roster was optimized for the whole 40 MHz band, it seems to fit well with your more restricted 28.5 MHz band resulting in 13 blocks rather than the total 23 blocks.

Q: If the plan has to accommodate both terrestrial and satellite, what channel separation is required between the services?

A Canadian expert comments on plans for digital in New Zealand.

Chouinard: This depends on a number of factors. It is possible that a guard band of one or two blocks would be needed between the terrestrial band and the satellite band, depending on the channel selectivity and linearity of the RF front-end of the DAB receivers to be used.

The need for such a guard band could be minimized if terrestrial repeaters are used for city coverage in order to reduce the signal level differential between the channel carrying the satellite programming and the channel carrying terrestrial programming.

This can be done either by using on-channel terrestrial repeaters (requiring the use of COFDM over the satellite) or ter-

restrial repeaters using different frequencies (different modulation such as TDM-QPSK could be used on the satellite).

Another factor of lesser importance is the satellite receive antenna discrimination toward the terrestrial signal emission. This could reduce somewhat the signal differential between satellite and terrestrial signals.

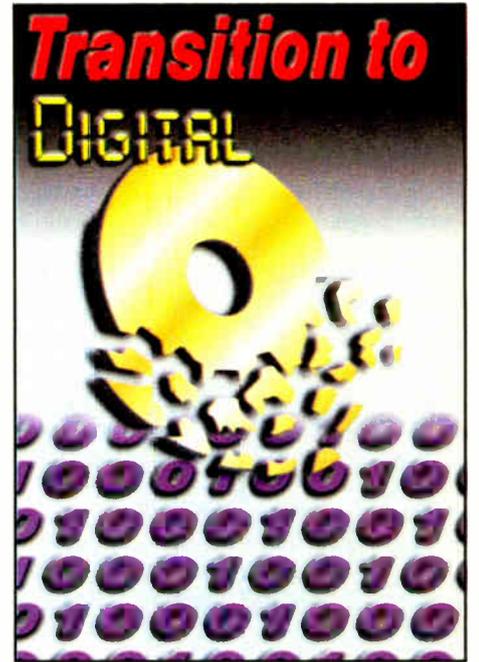
Q: Is anyone making mobile receivers capable of both terrestrial and satellite reception in L-band?

Chouinard: At this stage, only WorldSpace is considering using receivers that can receive from both satellite and terrestrial transmitters. Although the signal format is unfortunately not compatible with Eureka-147, the terrestrial portion is very similar, using COFDM-DQPSK as in the case of Eureka-147.

Q: If all channels were to be used on one terrestrial site, is it practical to build a combiner for this purpose?

Chouinard: Transmitting all channels from the same site has the major advantage of reducing the differential between signal levels to a minimum everywhere in the service area, therefore allowing the use of adjacent channel in the same service area.

Since the radiated power levels are not extremely high, it should be possible to combine the various channels to feed the same antenna. However, we have found that the antennas at L-band are not very expensive and it may cost less to use different antennas than putting in a combiner. More work would need to be done on the effect of multiple antennas on the coverage pattern. Feed loss is also a major factor at L-band and locating the HPA (high-power amplifier) as close as possi-



ble to the antenna should be considered.

Q: What base powers would one expect to use to cover a medium-sized city from a prominent site?

Chouinard: It depends very much on the geographical extent of the city and the local topography.

The simple rule is that it requires a lot of power at L-band to try to reach beyond the RF horizon. Assuming that the antenna has an omnidirectional pattern to cover all around the transmit site, reasonable-size antennas at L-band can provide some 10 dBi gain. In such case, the required RF power seems to be less than 1 kW to carry one frequency block (typically five stereo programs).

As an example, metropolitan Toronto is covered by 800 W HPAs. I also know that Paris is covered by a single-frequency network of three synchronized transmitters using 400 W HPAs.

Reprinted with permission from Gerald Chouinard and Ted Ledingham, moderator of RADIO-L. 🌐

Audion VoxPro PC Digital Audio Editing Software



Long overdue, the PC version of Audion's VoxPro popular digital audio editor for the Mac will be welcome in many a radio station and online Web studio.

The software is compatible with Windows 98, Windows Me and Windows 2000. Also new is a smaller, lighter optional control panel with shuttle wheel and hot keys.

VoxPro PC can import and export WAV, AIFF, MP3 and other formats. It offers unlimited Undo, has a larger expandable sound window, and provides a tally on-air light with output closure in record mode. It's super for the fast voice-editing work that is part of morning radio shows.

The judges were pleased: "This will be in every control room within five years." "CartChunk capability is a huge plus to interface to many hard-drive systems."

Price: Depends on bundle. Available: June.

For information call (206) 842-5202, send e-mail to infor@audionlabs.com or visit www.voxpro.net



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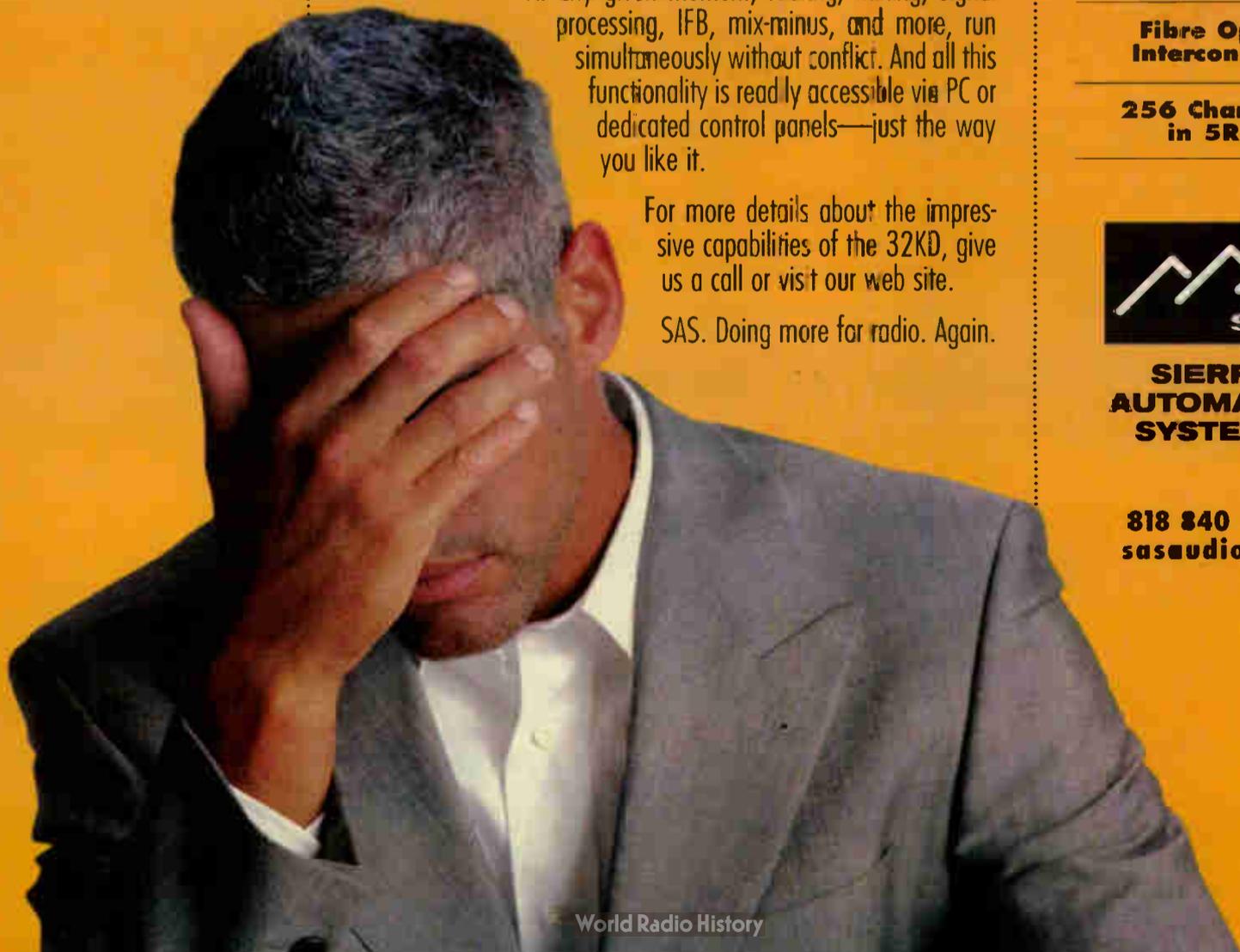
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Auction

► Continued from page 53

Branch gave the kickoff speech, replete with metaphors about filling the bases, spring training and hitting home runs, all of which leads to filling out our Form 175 correctly. Lots of Dos and Don'ts.

After the baseball stuff, it seemed pretty straightforward. On to the auction software. This got a little dicey, as the first question — "Do I have to order multiple copies of the software in order to bid for multiple entities?" — was simultaneously answered "Yes!" by the speaker and "No!" by some other, apparently less-well-informed FCC staffer in the back of the room.

(The ultimate answer was "Yes, you must order — and pay for — multiple

copies, but may use only one copy to bid, if desired. Excuse me?)

In any event, one topic segued to the next, and before I knew it, it was lunchtime.

Call everyone to Washington, rent a big barn for a day, start with 'Bethel, Alaska' and eight hours later bang the gavel on 'Zekes, Wyoming.'

After lunch, we all settled in for a demonstration of the software in action. I don't know; maybe it was my overindulgence at the Chinese buffet, but I got a little fuzzy at this point. Dollars are con-

verted into bidding credits. Bids are registered in bidding units, and bidding units and credits must be reconciled with your bidding activity after each round and for each permit.

But don't take any of this as a Post-Pre-Auction Seminar Tutorial; as I say, I was a bit woozy from the MSG.

Still, even excusing my goofed-up state, this seemed awfully complicated,

and I suppose it is. Progress toward actually auctioning off anything seems to be, shall we say, elusive? Freeways are built quicker than this. Remember the TV commercial from the 1950s? All these tobacco farmers gathered in a barn spitting on each others' shoes while an auctioneer yaba daba's his way to "Sold, American!"

I mean, what's wrong with that? Call everyone to Washington, rent a big barn for a day, start with "Bethel, Alaska" and eight hours later bang the gavel on "Zekes, Wyoming." Not very high tech, but it's quick.

Or how about letting e Bay do it? Put up your AMEX number to qualify, and away you go, instant station ownership. This "Online, Simultaneous, Multiple Round" thing is pretty tough. Set up to run over many days, the "rounds" are variable in length, so each bidder must stay glued to an Internet connection pretty much non-stop. And don't even think about the "Telephonic Bidding Procedures."

Honolulu vs. hoarfrost

Also, no permits will be awarded until bidding is completed on all permits, so if you are burning up to freeze your buns in Bethel, you can't; not until the big guys are through bidding for Honolulu.

This is known, I guess, as the "all-or-nothing" auction concept and, is I think, an FCC original. Auctions are conducted every day, and for things that cost a lot more than an FM permit in Zekes. Is it really that difficult?

In any event, we meandered through credits and units and activities and waivers, and before we knew it, school was out! And I still had enough time to hotfoot it over to the Air and Space Museum for a couple of hours.

So, the bottom line: Submit the electronic Form 175, pay for the software (remember: multiple copies, for all of you who want to bid for more than one entity), wire in the upfront payment, convert dollars to credits to rubles or something, log on, and Let's Bid!

Well, not quite. As it turns out — and I know this is hard to believe — the FCC was just kidding!

The final slide had not faded from the screen when a followup Public Notice, hot off the copier, was handed out to everyone.

"For administrative convenience," (as opposed to the convenience of those of us who traveled halfway across the country) the auction previously scheduled for Feb. 21 and rescheduled until May, had been postponed *again!*

Imagine the shock to the staffers giving the seminar! I, for one, am certain that the Mass Media folks were outraged, and immediately went to find the person responsible for their embarrassment, because they all disappeared. A Siegfried and Roy deal. Poof, gone.

So, as of now, the auction is to be held on Dec. 5 of this year, subject of course to immediate, last-minute, administratively convenient postponement.

We will, of course, ultimately get to bid and fatten the federal coffers. In the meantime, though, the planets surely will spin out of alignment and necessitate another, Pre-Postponed Auction Seminar. And I suppose I will trudge out to the airport and spend another night in a \$300 hotel to attend.

Oh, well. It could be worse. The seminar could be held in Bethel, Alaska — and they don't have an Air and Space Museum.

RW welcomes other points of view. 🌐

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Traffic & Billing Come Together

Consolidation, Electronic Invoicing Change the Way Business Is Done in Radio's Back Office

Ken R.

Station traffic and billing software is a little like a parrot: If it doesn't communicate with you, it isn't much fun.

Just as carts and turntables have morphed into computers, the old paper systems stations formerly used to schedule and bill commercials have become automated too. The key is to find a system that will talk to the studio equipment and still provide enough flexibility to make last-minute changes.

Clients drive the features

Oregon-based Wicks Broadcast Solutions purchased two giants in the industry in February 2000: CBSI and Datacount; in the same month, the company acquired Australia's Rate Minder and Media Systems Inc., which make software tools that interpret ratings information to create sales proposals.

"All of these products integrate together so that stations can build contracts, maintain pricing control, generate proposals, export them into traffic systems, schedule the spots and generate a bill," said Jeff Kimmel, Wicks' director of sales. "The systems can then pump the information out for budget tracking."

Kimmel, whose sales office is in Melbourne, Fla., said that his clients asked for a paperless system to place and track commercials. But the software offered by Wicks does a lot more than just log spots.

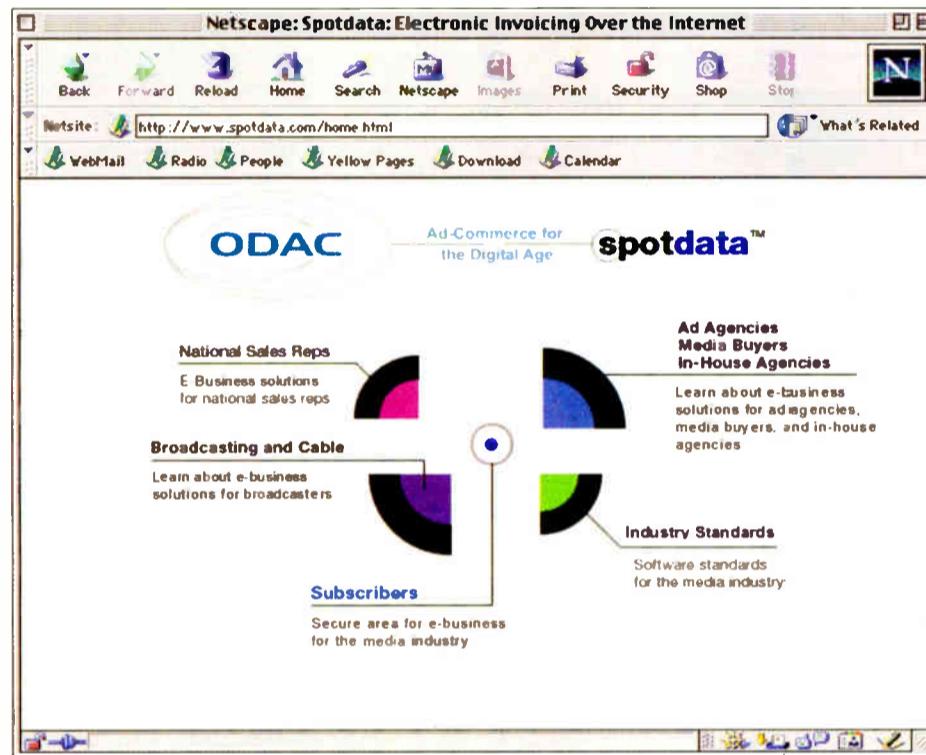
DARTS is a package that the Datacount acquisition brought into the Wicks fold, which currently boasts 4,300 station clients. It is DOS-based and schedules commercials, generates rev-

enue projections, handles accounts receivable and invoicing.

From CBSI, Wicks acquired the Windows-based "dynamic scheduling"

enters a contract into the system, spots are allocated to the correct flight on the correct days, but the system doesn't place them in specific spot sets until the operator generates the log and is sure there are no more changes.

"Some of our competitors' systems require three to four hours a day in manual



Encoda includes electronic invoicing services with its SpotData service.

DeltaFlex system in February 2000.

"This means that DeltaFlex doesn't have to pre-schedule the commercials," said Kimmel. "It waits until the last possible minute to make sure the station gets the highest revenue from each spot," said Kimmel.

Here's how this revenue maximization works: When the traffic coordinator

log editing," said Kimmel. "With DeltaFlex, the computer does it all, taking that time down to about 30 to 45 minutes."

Wicks systems also interface with Tapscan and Strata, a radio sales presentation system, completing the link with the world of station ratings and research. A ratings-based proposal created using

See TRAFFIC, page 62 ▶

E-Invoicing: Time and Money Saver

Big Agencies Now Guarantee Payment Within 30 Days on Electronic Invoices — Is It Time for Radio to Convert to E-Invoicing?

Steve Sullivan

One major advertising agency executive recently evaluated electronic invoicing with this sweeping statement:

"There's simply no downside."

Electronic invoicing, or EI, is part of a snowballing technological trend in the radio industry. The snowball is gaining momentum thanks in large part to increasing advertising revenues in the industry.

According to the Radio Advertising Bureau, radio brought in close to \$20 billion in combined local and national ad sales last year, up 12 percent over 1999's total.

But more ads sold means more invoices generated. That means more time (and money) on the station's end: printing, stuffing and mailing the bills and more time on the other end processing all the paperwork.

In March last year, RAB's board of directors passed a resolution to encourage the rapid development and

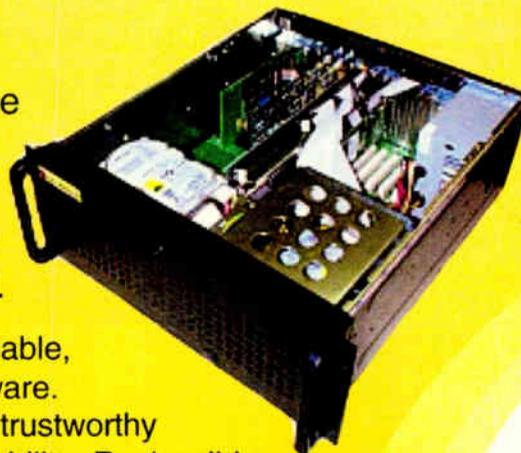
See E-INVOICING, page 66 ▶

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Traffic

► Continued from page 61
one of these products can be converted to a contract file and entered into the commercial log based on cost per point or any other criteria.

wanted a system that was reliable and had 24/7 support. When we call Wicks, we don't get a computer programmer talking about code, we get a traffic-oriented person who can walk us through our problem."

Heminger described how the DeltaFlex 2, soon to be upgraded to DeltaFlex 3, operates.

The screenshot shows the 'Clients Management' window. At the top, there are fields for Client Key (DKP), Main Salesrep (Jim), Status (Active), and Client Separation (10). Below this is a tabbed interface with 'Client Details' selected. The client information includes: Client Name (DK Pools), Trade Name (DK Enterprise), Address (3215 Old Comy Road), City (Pensacola), State & Zip (FL 32506), Telephone (850-555-1212), Fax (850-555-1214), Internet Site, E-Mail (dk@pools.com), Product (POOL COMPANIES), and Key Word. At the bottom, there are navigation icons and a summary box showing 'This Year' (1200) and 'History' (3600).

RCS NetCom is an all-in-one traffic and billing system.

"All our products are built upon client demand," said Kimmel. "Our users get two software updates a year which are based on what our customers suggested."

User's voice

Kurt Heminger is broadcast business manager for Findlay Publishing in Ohio. The company owns eight radio stations in Ohio and Indiana and seven of those stations use DeltaFlex from Wicks Broadcast Solutions.

"We wanted a system that would interface with our (Broadcast Electronics) AudioVault and Wicks had experience with that," said Heminger. "We also

"First we go out and get that \$100,000 order, which happens every day," Heminger said with a grin. "The sales person comes back to the station, writes up the contract including the advertiser address, flight details, spot rate, dayparts, etc. Then the traffic person enters it into the computer which handles everything from there."

The DeltaFlex can schedule as far as 14 months in advance, but Heminger prefers to schedule just a day or two ahead. He said that while some software available had more "bells and whistles," this one met his needs. Recently his stations had to convert from an in-house-

designed system to the new software from Wicks.

"It was overwhelming, but our traffic people learned a lot by going through it. They've gotten very quick at it," said Heminger.

Because the Findlay Publishing stations are not sold to advertisers as a group, Heminger does not currently network his stations via computer with respect to billing and invoicing.

Wicks Broadcast's state-of-the-art system is called D-32 and it runs on a Microsoft SQL server database engine. D-32 can be configured either as a prescheduler, a dynamic system or a blend of the two.

"This is a new product with 24 stations using it presently," said Kimmel. "The advantage is that it's designed for people who are familiar with the Windows drop-down menus and drag-and-click style."

System working 24/7

Control Tower is the latest product from Wicks. It was launched at NAB2001 in Las Vegas. While most stations previously entered sales data manually into a spreadsheet and then e-mailed it to the corporate office in Excel format, Control Tower handles all that in the background at the station level.

"People at the local stations don't have to do anything other than their regular jobs," said Kimmel. "Human beings no longer have to re-key everything."

Stations define parameters that the Control Tower system applies to its reports, which can be sent via a Web-enabled cell phone, fax or e-mail to anyone. Control Tower extracts its information directly from station billing data.

Kimmel said that local or regional sales managers typically use Control Tower to flag under-performing or over-performing stations.

A newcomer to the shores of the



Tom Hultquist

United States is a product called NetCom from White Plains, N.Y.-based Radio Computing Services. The product has been in use for 20 years in Europe, according to Lora Colley, product manager for NetCom.

"The major concern for larger broadcast groups is the ability to use one traffic and billing system for all their radio stations, Internet streaming, cable company insertions and television stations," said Colley. "With NetCom this can be accomplished."

"A client of ours in Russia wanted a media-planning feature," said Colley. "They wanted to be able to enter the budget, length of the commercials, start and end dates, an average spot rate ... and have the computer give them a schedule based on ratings data or yield management."

This feature, called Media Planner, has been incorporated into NetCom, along with the ability to have sales people access and play any spot for a client at any time.

"Another feature is filler management," said Colley. "If you're in a satellite or automated network with specified length

See TRAFFIC, page 64 ►

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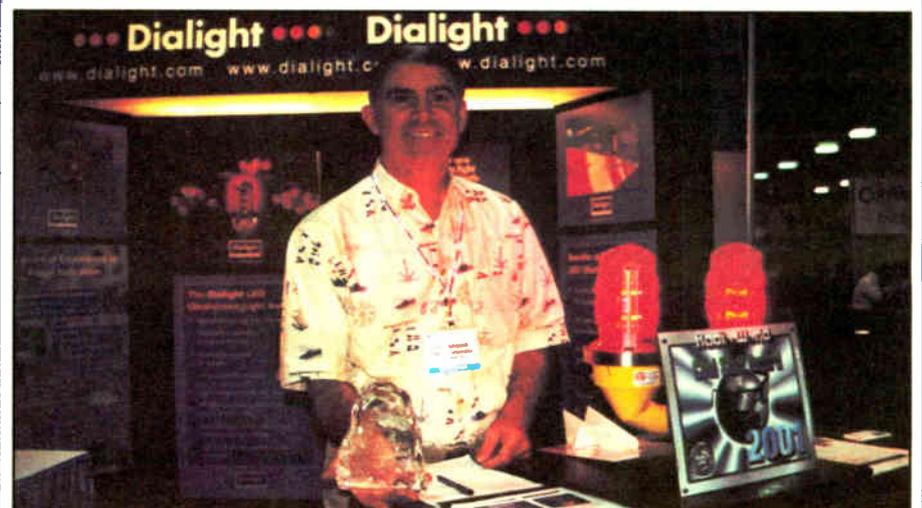


Dialight 860 Series LED Obstruction Light

Hey, if traffic lights can put LED technology to work, why not tower lights?

This one has been popping up at SBE chapter meetings and regional shows, with lots of positive comments. The Dialight 860 Series red light is the

first ETL-certified, LED-based L-810 obstruction light. It can be operated in a steady state or flashed.



Rich Altopiedi lights up the hall.

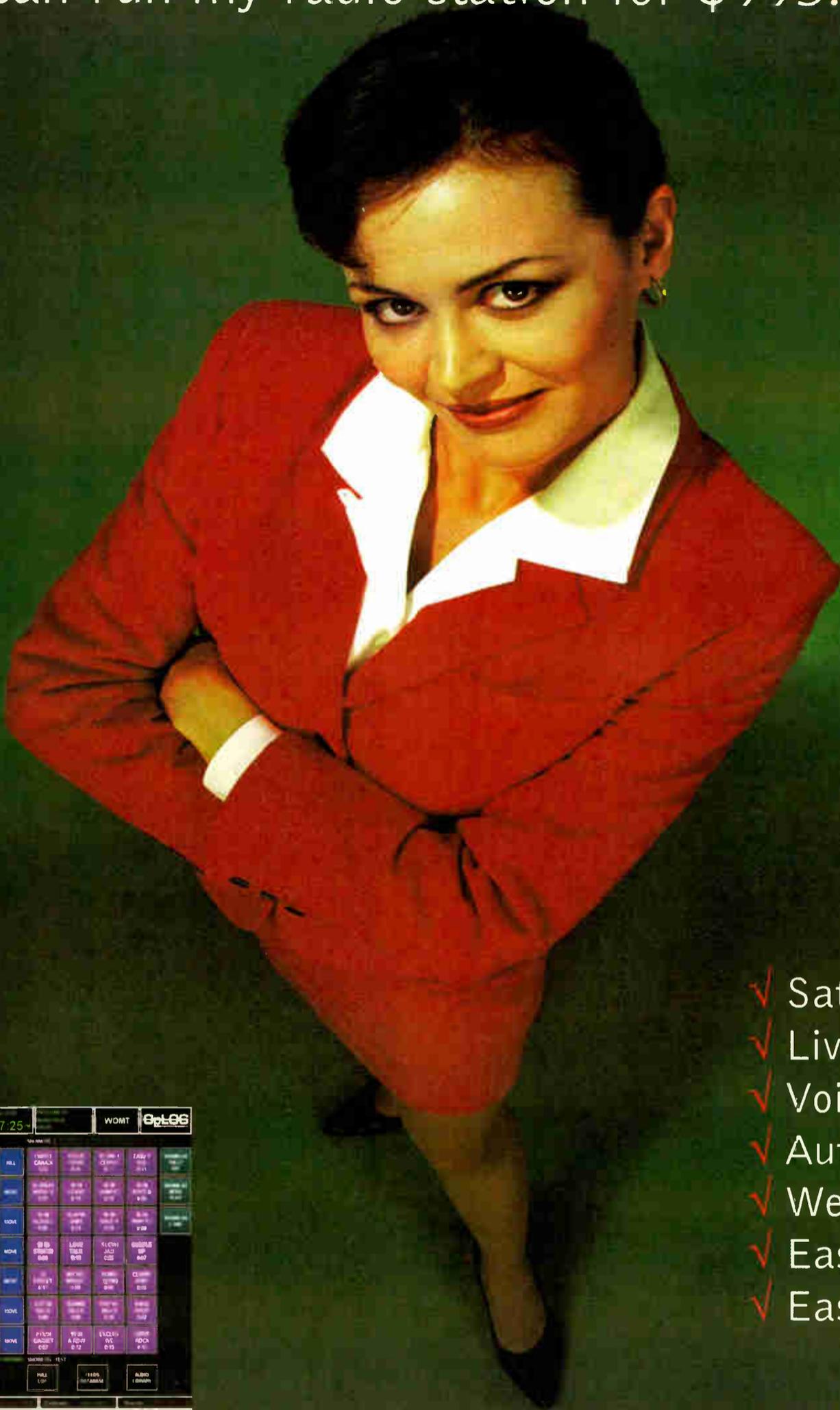
Available as a single or dual unit, the system has a unique lens designed to enhance LED operation and provide full visibility. The company says it will last years longer than an incandescent, and it uses 90 percent less energy.

One judge wrote, "I want to see some on my towers!"

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Traffic

► Continued from page 62
breaks, the system can fill those stopsets from the material available."

Also included in NetCom is a prospect management system that can pull up reports detailing sales staff itineraries, advertiser proposals and commercial continuity.

NetCom also offers electronic invoicing services.

Another merger of competitors, Columbine JDS, Enterprise and England-based Drake Automation, formed a new company called Encoda Systems last fall. Tom Hultquist, product marketing manager, said that the new conglomerate currently offers two somewhat similar

sales/traffic/billing software packages: Columbine and JDS 1000.

"Columbine operates on the AS400 platform, but portions are Windows-based," said Hultquist. "Of the approximately 500 users out there, most are major-market broadcasters and many are news/talk or sports format stations."

Hultquist said that the reason these formats gravitate toward this package is that the format clocks are very flexible, logs can be customized and Columbine has specific plotting rules.

"That means, for example, that billboards and sponsorships can be placed very specifically within the format," said Hultquist. "You can also set up

criteria for revenue maximization including spot priority, when the spot was booked, the length of the spot or even the per-second rate of the spot."

Columbine software has no limits on the number of "events" per hour and clocks can be copied from one portion of the day to another or even from one station to another.

"You can network easily between stations in the same market or in different markets," said Hultquist. "You don't have to do a lot of retyping because you can share format clocks and client information among

stations, too."

Another feature of Columbine allows sales data to be compiled on an individ-



Kurt Heminger

ual station basis or as a group. Electronic contracting and invoicing are included as well.

"We have one more handy feature called Sales Analysis Plus," said Hultquist. "This allows managers to gather 12-month revenue reports, pacing reports, average unit comparisons, even three-year trends. There are many ways to look at revenue, including by agency, by product category, by station, by sales rep, by sales office, by demographic, by daypart, gross or net."

Or this

The Encoda Systems JDS 1000 package is very similar to Columbine, but Hultquist said that he recommends software to clients based on their experiences. JDS 1000 has something called "The Map" which is a way of managing inventory.

"You can move spots from day to day, week to week, daypart to daypart," said Hultquist. "Both our software packages interface with all the major automation software including Scott Systems, AudioVault and others."

Encoda recently announced that XM Satellite Radio selected a new sales/traffic/billing package, the Encoda Paradigm system, for its 100 channels.

"Paradigm is designed for larger, more complex radio operations and it allows you to keep track of an unlimited number of stations," said Hultquist.

Some of the features of this new package include an integrated proposal/post-buy analysis system, an onscreen log editor and the ability to drag and drop spots within the same day. The software allows traffic personnel to "look ahead" as many months or even years as desired. Paradigm also provides a number of features for international broadcasters.

"It can translate from one currency to another and has some multi-language support," said Hultquist.

Paradigm has the ability to generate alternate logs. Sports stations, for example, would be able to use one log if a baseball game is played as scheduled and an alternate logs. Sports stations, for example, would be able to use one log if a baseball game is played as scheduled and another log if the game is rained out.

"The large multi-channel operation that XM has envisaged wouldn't be possible without the type of automation and management system that Encoda offers," stated Tony Masiello, XM vice president of operations. "It is radio on a whole new level, requiring advanced systems to make it happen."

Washington-based FastChannel Network is a company that sends commercials zipping through the Internet from agencies to stations and from stations to other stations.

"We don't actually deal with traffic, but we work with Encoda and other companies to integrate our system with theirs," said Peter Barnes, FCN executive vice president. "The whole workflow process is even more important than speed or cost when it gets down to it."

FastChannel Network, the result of a merger between SpotTaxi and adDirect, delivers audio that is compatible with 95 percent of the on-air systems.

Ken R. was a broadcaster in the '70s when crabby people were sliding strips of cardboard into a huge metal grid of prepared station logs. He now works with his parrot, Oscar, who communicates enthusiastically whenever Ken R. talks to his RW sources or editors. 🌐

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E-Invoicing

► Continued from page 61

implementation of electronic invoicing and electronic data interchange (EDI) for the radio industry.

Mary Bennett, executive VP for National Marketing for the RAB, is spearheading the group's EI initiative. She said the radio industry is under tremendous pressure to adopt the technology.

"I was in a meeting with a huge national radio advertiser who said they've been getting electronic invoices from the agencies for ages," Bennett said.

Agency pressure

"They said the holdup has been at the station end. They said when they're doing a campaign it prevents them from judging market to market whether or not radio is helping them move product."

Bennett said the most direct pressure is coming from the agencies.

"The agencies can no longer handle the volume of paperwork, the amount of staff people and the amount of time it takes to process invoices manually. It actually takes inside a large agency, four to six weeks to manually handle the paper invoices. This is before anything gets paid. They're talking about a staff of 20 to 25 people handling all this paperwork."

Howard Nass, executive director of local broadcasting for TN Media, an advertising agency within the True North Communications group, agrees with Bennett.

"The overriding factor is there's just

too much damn paperwork. A company our size, particularly when you're talking about thousands and thousands of radio stations, needs to be paperless. If we place a buy in 70 markets, that could be seven stations deep. That's about 500 invoices coming in during a month. And that's just for one client. (If) you've got another client doing a similar campaign (then) you've got nearly 1,000 invoices. We're faced with as many as 15,000 invoices in a given month."

The overriding factor is there's just too much damn paperwork. We're faced with as many as 15,000 invoices in a given month.

— Howard Nass

Many of the best-known providers of traffic and billing systems have developed or are developing electronic invoice modules to integrate into their systems. Among the companies offering EI applications are Encoda Systems, Marketron, Wicks Broadcast Solutions, MediaOcean, TimeBuy, Mediapassage, BuySellBid.com and Pathfire.

The companies are integrating the EI modules into their new traffic and billing systems, as well as offering an add-on module for their older systems still in use by stations.

Typically, electronic invoicing works like this: A station uses the system to

create and save electronic invoicing files. The system then uploads the invoice files to the vendor's Web site, where they are formatted for and uploaded into agencies' EDI systems.

Kristen Fechner, vice president and general manager for BuyMedia.com, which owns Marketron, said the goal of its EI system is not only to reduce administrative costs and costs due to errors, but also to reduce the time it takes to get paid.



Howard Nass

er markets.

Entercom Senior Vice President and Chief Financial Officer Steve Fisher, sees the need to adopt EI as a matter of offense and defense.

"Defensively, other media are moving forward with it, so we need to stay up with our peer group, whether it's television, print or cable," said Fisher.

Offensively, Fisher said, EI allows agencies, reps and stations to have more back office efficiencies.

"We all spend a lot of time printing invoices, mailing invoices, receiving invoices, opening envelopes, putting them in piles — just moving paper around. The whole world is moving electronic and it makes a lot of sense for us to follow suit."

Jack Hernvall is controller for Entercom's Portland cluster. He said even though the trial has been ongoing for six months, it's still too early to tell exactly how much time and cost-savings they've realized.

"We're dealing with 30 clients and the paperwork can really bog things down. But our goal is to automate the billing process to make things operate more efficiently and hopefully help us get paid quicker."

The money

Getting paid quicker is certainly one beneficial outcome of EI. The hope is that EI will also make it just plain easier for agencies and advertisers to buy radio time. Bob Leighton, director of development for Wicks Broadcast Solutions, agreed.

"Ultimately, I think the advantage for the radio station is that it will make it easier to buy radio and buy deeper into a market. So more dollars will go to radio overall."

That is what the RAB's Bennett is hoping. She warns of a possible scenario that could develop if EI is not adopted.

"So many of these companies — the radio stations, agencies and advertisers — are publicly held these days," Bennett said.

"When decisions are being made about what medium to buy, they look at radio and say, 'It's hard buying upfront. It's even worse trying to account for the backroom.' We don't want to get to a point where the dollars will stop coming into our medium because of a decision made so high up in the food chain at the agency that we won't even know we've lost their allegiance and support."

Steve Sullivan, co-founder of the Advanced Interactive Media Group LLC, lives near Austin, Texas.

Reach him at (512) 260-3313 or send e-mail to sullicom@aol.com

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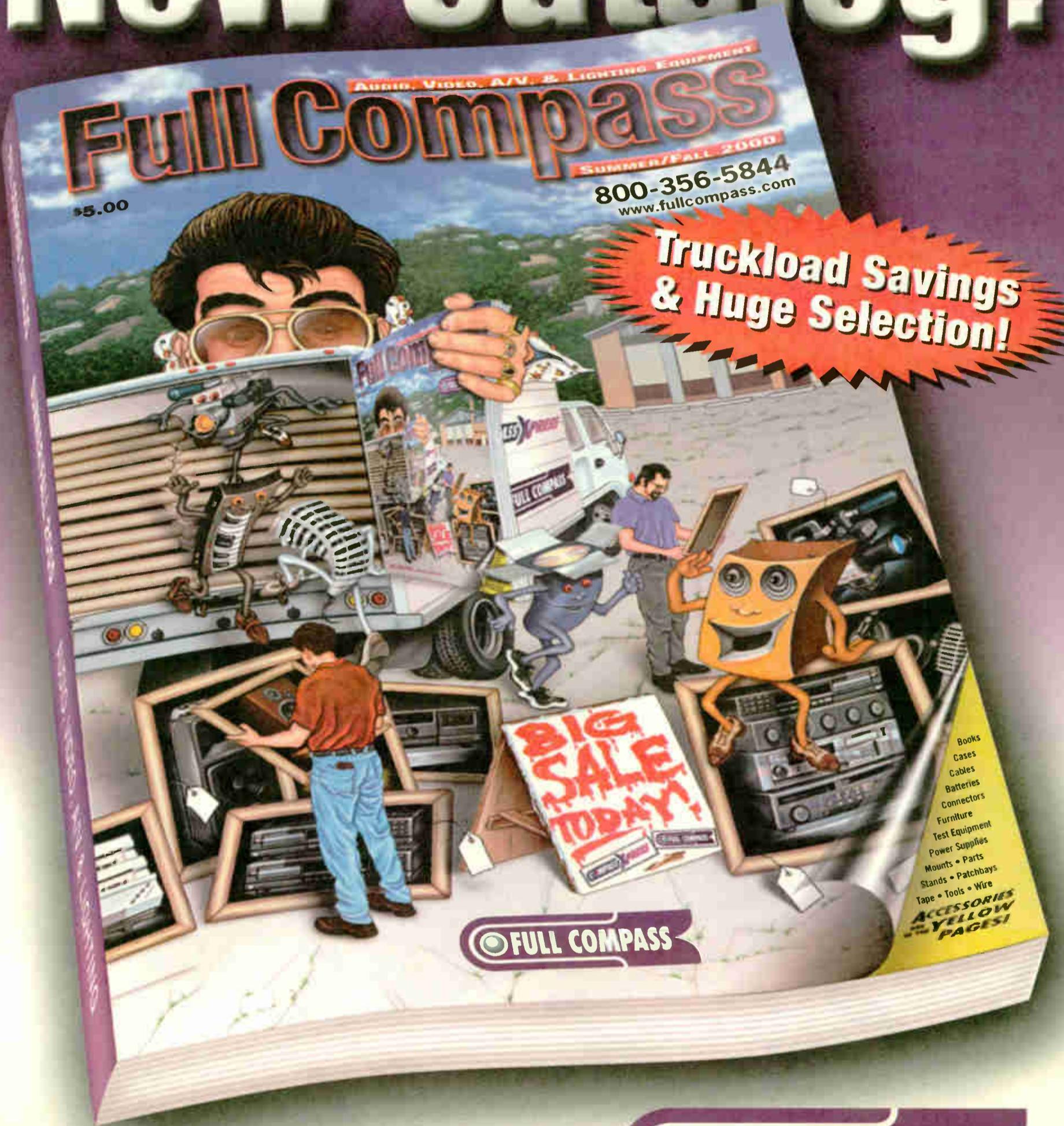
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PRODUCT EVALUATION

Yellowtec Simplifies Audio Flow

Alan R. Peterson

I recently had the opportunity to try out the Intellimix three-fader, 14-channel digital and analog audio mixer from Yellowtec, list price \$3,000. For its intended purpose — routing audio into digital workstations — the Intellimix performs its task quite well.

However, I have found it to be an equally capable performer in the radio newsroom, for reasons that I shall describe in due time.

An audio professional's first thought might be, "Haven't I heard of this device before?"

It may well be possible, but it is likelier that the name is what is familiar. Despite trademarking and registering, the "Intellimix" title also graces the automated mixing feature found in some Shure mixers, and Canadian RW readers may be aware of "Intellimix" as a distributor of sound reinforcement and DJ equipment.

While the attorneys sort that one out, we shall take a closer look at the Yellowtec Intellimix pictured here.

Big boards need not apply

Because most mix decisions in production are done inside the workstation nowadays, an expansive multichannel, mukibus console originally designed for eight tracks of tape is redundant.

Computers permanently changed the dynamics of the production studio and an interface unit that is easy to use and does not take up a huge footprint on the studio work surface often is a smarter choice than the monster production consoles of yesterday.

With three faders and a cluster of rubberized rotary encoders, the control head of the Intellimix takes up no more room than an AT&T Merlin-sized telephone instrument and actually stands up like one. Tethered to a serial data cable, the

control unit is free to move around the work surface to make room when you need it.

The Intellimix solves the knotty problem of dedicating an entire mixing con-

interesting assortment of connections to move audio through. For simple voice and music transfer, there is a pair of XLR mic inputs and a stereo pair of RCA jacks on the front panel.



Yellowtec Intellimix Three-Fader Control Surface

sole to the purpose of moving audio in to and out of a DAW.

It mixes analog signals along with AES/EBU, S/PDIF and TosLink optical digital audio, adds mix-minus capabilities and a threshold-adjustable limiter to the equation, manipulates the mix all in 24-bit form then outputs everything as a digital or analog mix.

Personal console layouts and configurations can be saved to a Yellowtec "Smartcard," a credit card-sized piece of RAM that slips into a slot on the control unit.

The IRU mixer "brain" itself offers an

The real jazz happens on the back panel: Reverse the unit and you are face to face with an array of DB-9, DB-15 and DB-25 connectors, much as you would find on PCs.

For the uninitiated, D-sub-type connectors seem out of place on audio connections — "Where are my nice, safe, spade-lug terminal strips?" — but these are becoming more familiar each day on broadcast gear.

Logitek has used them on its Audio Engines for a few years now. Many soundcard companies place D-sub on

See YELLOWTEC, page 73 ▶

DIGITAL DOMAIN

Note Subtle Changes in Audio Data Compression

Mel Lambert

Audio data compression is a topic that has become more relevant than many broadcasters realize.

I have been spending time listening to a number of MP3 codecs. Again, I am on the trail of the best-sounding algorithm to provide enhanced data capacity for an array of spoken-word and music-related files.

I was surprised at how similar these codecs sound at reasonable rates, but how dramatic the differences can be at low data rates.

After a massive amount of information has been eliminated, I should be pleasantly elated at how unaffected some codecs leave the sound when there is little information left at all!

My picks

At data rates of 128 kilobits per second stereo and above, my current favorites for the Apple Macintosh OS platform — 9.1; X when it arrives — and Windows 9x/2000/ME are, respectively, Casady & Greene's SoundJam MP Plus and RealNetwork's RealJukebox Plus.

I have experimented with 96 kbps stereo data rates and lower on both platforms but am still unhappy with the results. On some material these codecs can sound acceptable, while on others the results are, quite frankly, horrible.

Our attention here in the adult world of

See DIGITAL, page 71 ▶

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2. Your own air staffs usually know when they're being recorded and react accordingly.
3. By the time you get an air-check in the mail, it may be too late to respond to the competition.

The TeleRadio beats those problems by letting you listen to both your station *and* the competition in **real-time**. If you have a TeleRadio, you simply dial it up from any phone. As soon as it answers, the internal radio begins playing down the phone line to you. You can control the radio by using the buttons on your phone. It's just like being there!

The TeleRadio even has a DTMF selectable external audio connection so it can be used as a standard telephone coupler too. An optional call progress decoder is available for using the TeleRadio on PBX analog lines and in areas that don't support CPC.

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Digital

► Continued from page 69

radio — as opposed to the hobbyist and consumer markets — is focused on discovering a suitable compression scheme whereby we can digitize and store more data files per gigabyte than uncompressed file formats — WAV, AIFF, SND.

A 44.1 kHz/16-bit stereo file consumes close to 1.4 Mbps — MP3 data compression at 128 kbps stereo, for example, will offer a close to 11-times enhancement in data capacity. Even at data rates of 160 or 192 kbps stereo, these enhanced storage capacities are equally useful.

But it is not all good news. While experimenting with the audible results of single-stage coding, I forced the envelope by listening to tandem or sequential coding.

Here, as I suspected — and it should be readily apparent to anyone who has performed similar evaluations — the results become far more mired.

Depending on the signal content, I found that, on average, a 128 kbps signal sounds decidedly “funky” after three sequential encode/decode stages — analog-to-digital through to analog and back again.

Once I increased the data rate to 320 kbps the system allowed between four and six stages to be performed before the audio degraded. Again, these results are highly dependent upon the source material.

And let's not forget that recording to/from a hard-drive storage system is just one stage of data compression. I

came across a case recently of a college station that was receiving uplinked radio programs via a compressed 128 kbps stereo satellite channel for eventual time-shift using a second 128 kbps satellite channel.

Apparently, the results sounded okay at downstream stations that were using analog STLs, but not too wonderful at stations utilizing digital STL links. As I suspected, the already heavily compressed signal was unable to survive one

more another digital encode-decode stage. An increase of the satellite channel's data rate from 128 to 256 kbps solved the problem.

An apt codec

If uncompromised flexibility is the goal, readers of this column will be aware of my fondness of the APT apt-X100 algorithm and its variants.

The algorithm uses a sub-band Adaptive Differential Pulse Code Modulation technique. This technique performs a complex time-domain analysis of the program material. The apt-x100 offers a fixed 4:1 data compression ratio

that is free of processing artifacts to a remarkable degree and can survive multiple encode/decode stages with minimum impact on sound quality.

Additionally, ADPCM techniques result in a lower encoding delay of 2.9 milliseconds, asynchronous operation and compatibility with existing PCM systems. The lower encoding delay allows the system to perform a complete encode/decode cycle at a sampling rate of 44.1 kHz.

Of course, the advent of all-digital radio receivers and an all-digital radio production/broadcast signal path might make these considerations less important. But I don't think that I'll hold my breath waiting for either of these developments.

A final note

I await with eager anticipation the first showing of APT's WorldNet Rio at NAB convention.

WorldNet Rio-X21 is described as a full duplex multi-channel, multi-algorithm audio codec designed to meet the requirement for a universal codec. The unit also has the ability to interface with previous APT products.

Aimed at the broadcast and post-production markets, the new system is said to offer “far superior enhanced audio quality, reduced delay, improved reliability and full backward compatibility with NXL 384A, the NXL 384D and DSM X21.” The Rio-X21 is designed to replace the DSM X21.

Interestingly, WorldNet Rio-X21 is the first commercial product to incorporate the apt-X technology, which offers 20- and 24-bit operation as an extension of its original 16-bit algorithm.

A single Motorola DSP563xx DSP IC provides increased stereo and mono audio channel capability, plus simultaneous full-duplex operation. Available audio bandwidths will range from 3.581 to 22.856 kHz for mono operation; input/output data rates range from 64 through 576.6 kbps.

For more information visit www.aptx.com

If uncompromised flexibility is the goal, readers will be aware of my fondness of the apt-X100 algorithm and its variants.

Contrast this to other techniques based on Transform Coding, during which the signal is analyzed in the frequency domain, and which are more prone to tandem-coding artifacts.

Although apt-X100 and its variants are not as data-efficient as MP3, AC-2 and other techniques, the trade-off between storage/broadband capacity and operational flexibility might be worth examining — particularly if the fate of data-compressed material is uncertain now or in the immediate future.



Bext XL 1000 FM Transmitter/Exciter

Frequency-agile FM performance in a compact 3RU package. “The smallest 1 kW FM transmitter package out there.”

Modular, rear-panel design allows easy configuring. Modules and cards include stereo generator,

RDS, STL receiver, FM receiver and audio limiter. A low-pass/harmonic filter is included. Frequency and other parameters are set via the front-panel menu. Power is adjustable from 5 to 1,000 W; a sister product is available for 500 W operation.

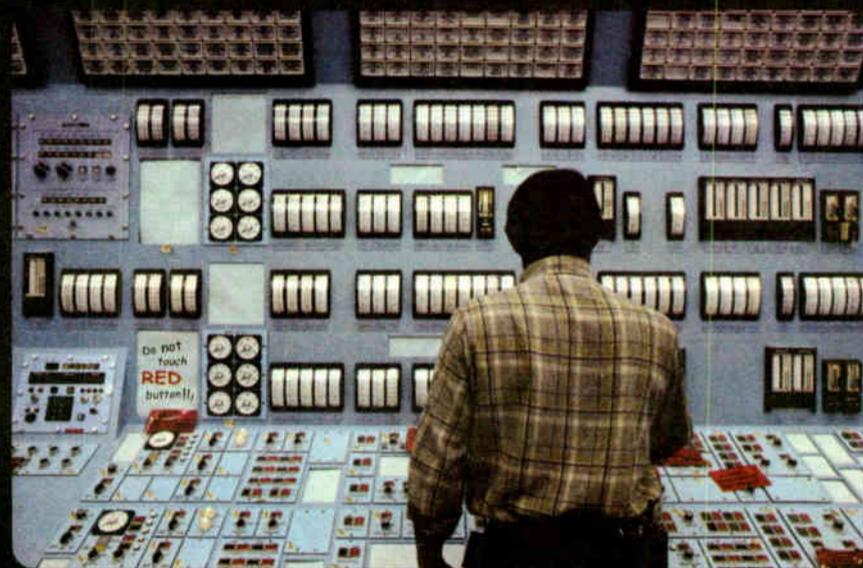


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PRODUCT EVALUATION

Mini-Tester Proves Big Performer

Carl Lindemann

Meet the Neutrik Minilyzer, a cost-effective, multifunction audio testing instrument that drops a large selection of diagnostic tools into your hand at \$595.

Somewhat larger than a Palm Pilot, the battery-powered unit joins the company's Minirator signal generator, introduced a few years ago. The unit covers most basic needs for audio professionals.

Too often, setting up and maintaining a station studio is a play-it-by-ear situation. When things go wrong or if a component needs upgrading, putting things together can be a matter of trial and error.

The cost of guessing wrong typically has been less than the price of having an array of test equipment to do the job right. As a result, shortcomings are addressed only when they are so bad that they cannot be ignored.

The Minilyzer changes this cost/benefit analysis.

In the palm of your hand

The simple menu-driven controls are manipulated with a set of seven buttons. These toggle through the pallet of measurement choices, including level RMS or relative, total harmonic distortion + noise, VU and PPM (peak program meter), frequency, polarity and signal balance error.

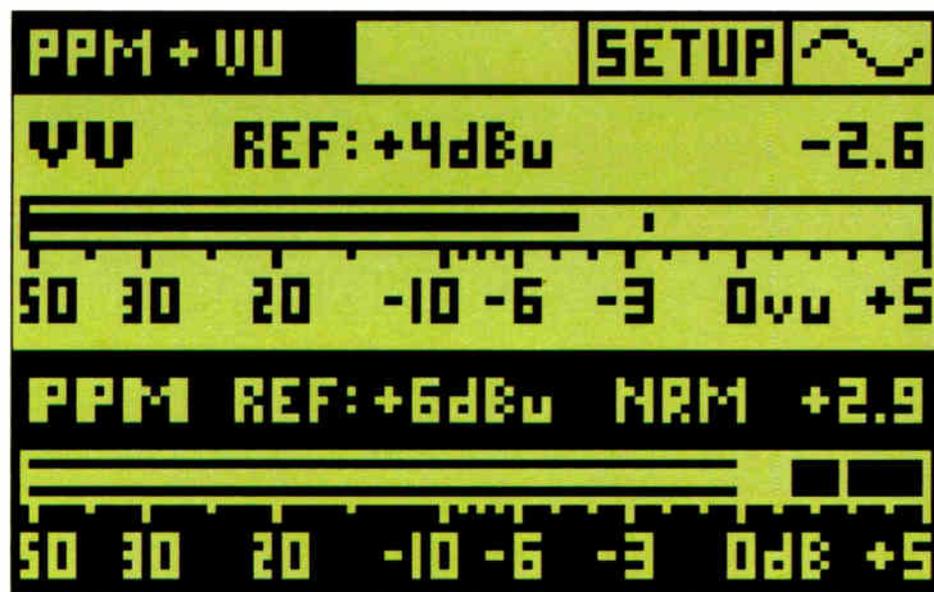
The LCD screen displays readings in a number of modes including meter mode with numerical results plus bar graph, sweep recording vs. frequency or



Neutrik Minilyzer ML1

metering options. These choices break into submenus accessed with cursor controls.

Navigation of the controls was self-explanatory. The system is as easy to use as a Palm Pilot; just swap cursor controls with the Palm's touch screen.



Minilyzer PPM and VU Window

time, third-octave spectrum and scope mode — a range of input filters also are built in.

On the top of the unit, XLR and RCA jacks provide input choices while a 1/8-inch headphone jack allows monitoring. A built-in mic lets you test signals without having to create an electrical connection.

Operation of the Minilyzer was simpler than expected, given the capabilities. The Power On button boots up the computerized components and brings the small but adequate LCD screen up.

The backlighting on the screen is handy, but, as with most such devices, is a major drain on the batteries.

After the few moments of loading the programs, the center button brings up a drop-down menu to choose between the

Reaction time to the audio input was fast. The LCD jumped to life and responded in real time. The ability to switch between tests to get different perspectives on a signal was quick and easy.

Shortcoming

A shortcoming here was the lack of any storage capability. There were no means to save readings to do A/B comparisons after making changes.

For some tests, this is unimportant. The output signal polarity testing is strictly an all or nothing response — either it is in phase or it is not.

But for readings of the signal balance error or looking at a signal through the third-octave screen, it would be nice to be able to do an A/B comparison against previous results. The only way to "store"

Product Capsule: Neutrik Minilyzer



Thumbs Up

- ✓ Small and light
- ✓ Easy to operate
- ✓ Wide range of functions



Thumbs Down

- ✓ No storage capability to record reading

The suggested list price is \$595

For more information contact Neutrik in New Jersey at (732) 901-9488, fax (732) 901-9608 or visit the Web site at www.neutrik.com

results is by resorting to pencil and pad.

This may be a bit picky on my part. In real-world use, the need for going after most things in such detail is limited — like faulting a thermometer for not storing the last readings. Also, additional capabilities such as storage would likely multiply the unit's price.

The real deal with the Minilyzer is that it is an easy, useful tool at a price that could be called unimaginable not too long ago. It even comes equipped with a clip for the belt, making this a desirable fashion accessory for the well-appointed studio engineer. 🌐

Symetrix AirTools Audio Routing System



Symetrix says small- and mid-size broadcasters should be able to afford sophisticated routing. The components in its new Audio Routing System can be combined to create a 64 x 64 router or smaller variations. Designed for analog and digital applications, ARS can link studios using CAT5 cable while promising 108 dB dynamic range and low distortion.

A unique feature is onboard DSP for dynamics processing (AGC, EQ and compression), gain and routing functions, which are configurable by a Windows-based PC running ARS Designer Software.



Chris Crump and Ana Lopez of Symetrix celebrate their award with Dave Burns of Allied AirNet Services.

Bonus points for cool classical names: The system includes the Homer 2x4 Studio Break Out, the Iliad 8x16 HomerLink Router, the Odyssey 16x32 HomerLink Router, the Icarus 8X Analog Router, the Ulysses 8X Analog Output Router, the Narcissus 8X Digital Input Router and the Oedipus 8X Digital Output Router.

HomerLink proprietary wiring protocol allows for six channels of audio to be passed through a single CAT5 for distances up to 100 meters. Analog and digital input/output modules can be linked in pairs and used as standalone units or combined with the HomerLink Routers for added capacity.

Price: Approximate retail ranges from the low thousands for a simple 8 x 8 router, to \$15,000 for a more comprehensive system. Available: Fall.

For information contact the company in Washington state at (425) 787-3222, send e-mail to ccrump@symetrixaudio.com or visit www.airtoolsaudio.com

Yellowtec

► Continued from page 69

back panels. And there is no better way to make logic and remote-start connections to the workings of a Radio Systems broadcast console.

The tail end of the operations manual shows pinout tables for each D-sub connector. It may be seen here just how flexible this three-channel mixer really is. There are two analog mic inputs, six analog line inputs and six digital inputs (one selectable between S/PDIF and TosLink). The ins and outs share common connectors, so it is not unusual to find the input for Line Source 8 and the output for Analog Mix C on the same plug. Remember this when wiring up those teensy little DB-9s.

A pair of balanced mic inserts resides on two D-sub connectors. This means you do not have to give up your favorite mic processor or compromise the wiring of the unit into your studio. The external processor can be run in and out of the insert connection.

This way out

A word about the outputs: Lots.

Four main analog Mix Outs carry the same signal. This may obviate the need for a distribution amp, as there would be enough outputs to feed all other recording and on-air devices in the studio. Likewise, five digital audio outputs exist for the same purpose.

Yellowtec saw fit to put 44.1 and 48 kHz sample rate converters on all digital inputs.

given them.

Because the controller does not actually handle audio, there is no reason one fader or another must always be the microphone input — console tradition once dictated that only one or two channels had mic preamps and all the rest were line-level.

The unit has plenty of sub-features, such as pan, phase reversal warning on stereo signals and phantom power for condenser microphones. The interactive Windows Help feature that gets moved to the computer from the CD-ROM describes how to access these.

There are plenty of sub-features, such as pan, phase reversal warning on stereo signals and phantom power for condenser microphones.

Tally and pulse signals can also be assigned in software and come out as open collectors on D-sub connector 10.

Momentary pulse signals can be used to trip CD players, MD decks or cart machines, while tally signals can mute speakers and turn on warning lights outside the studio. When a fader is ramped up, it becomes active without having to deal with On/Off buttons.

I could not find anywhere in the documentation just how much juice the control I/O circuits could handle, but I would

as there are too few features and faders available simultaneously. But for its intended purpose in the modern digital production room, it performs better than what one might expect on first glance.

If Yellowtec plans to target the Intellimix to news users, I might suggest moving one set of digital inputs to the front panel. This way, reporters and producers using the new breed of solid-state recorders and MD decks with AES/EBU or S/PDIF outputs can patch directly to the front panel without having to fish behind the rack.

The CD-ROM for version 1.08 (the

one I tested) needs some attention also. References are made to an online handbook accessible by typing *imx_manual.pdf* on the computer. In spite of my best efforts, I could not locate this file on the CD-ROM or on my hard drive after installation. Only the Windows Help file was available to me.

Product Capsule: Yellowtec Intellimix Digital Mixer

Thumbs Up

- ✓ Simple and clear to use
- ✓ Sample rate converters on all digital inputs
- ✓ Easy to reconfigure with PC software
- ✓ Lots of inputs and outputs

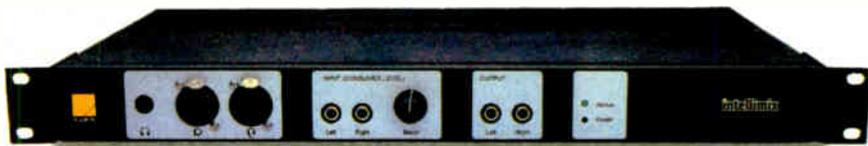
Thumbs Down

- ✓ Early version of CD-ROM lacks online handbook
- ✓ A digital input on front panel would be handy
- ✓ Suggested list price \$3,000

For more information contact dealer
Harris Corp. in Ohio (800) 622-0022;
or visit the Web site at
www.yellowtec.com

If you are thinking about laying out the money for a production console you may not *really* need, the Yellowtec Intellimix makes a compelling alternative, especially where space and versatility in combining digital and analog signals is a consideration.

Alan Peterson splits his time between the Connecticut School of Broadcasting, WAVA/WABS in Arlington, Va., and writing *The World According to ARP for RW*. Reach him via e-mail at alanpeterson@earthlink.net



Yellowtec Intellimix 14-Channel Base Unit

One input, Line 12 Digital, locks the Intellimix to an external clock for running fully synchronized digital houses.

One other D-sub connector, labeled "No. 9 RS232," couples the Intellimix to a remote PC for configuring and labeling the inputs, setting remote starts and fine-tuning levels on all inputs stages. Software on CD-ROM is loaded onto any Win95 or higher computer and communication is via the serial port.

Again, the settings the operator chooses can be saved to Smartcard RAM media for each producer using the mixer.

The control interface is as simple as it gets.

Three faders take care of levels heading through the mixer section and the three rotary encoder knobs allow you to select the desired source for each fader. A fourth knob sets headphone and monitor levels, switched by pressing down on the knob until it clicks like a button.

If your CD and MD decks can output a digital signal, run them directly into the digital inputs. That old cassette deck that refuses to give up is connected to an analog input. Feed the telephone hybrids and bridges through the Mix-minus lines (four lines — two analog and two digital). And remember, all input levels are set in software, so no resistive pads are ever needed on the inputs.

Once you have labeled the inputs via PC, the display over each fader shows the available sources and the names you have

not try to pump 120 VAC through it for warning lights.

Given the CMOS circuitry comprising part of the Intellimix, I would not venture above 5 V and would leave the big current demands up to an external relay.

This just in to the news desk ...

Even though the Yellowtec Intellimix is primarily intended for production room use, I believe it to be an ideal solution for the newsroom as well as cramped on-air news studios.

Those stations still providing news broadcasts occasionally do so out of very tiny, narrow studios or even prefab audio cubicles where space is at a premium. These micro-studios often are so small that you have to step outside of one just to change your mind.

A simple five- or six-pot board would eat up precious desk space. But an Intellimix controller, combined with whatever playback machines or computers are racked up in the booth, make a potent combination.

The space will have plenty of room left for copy and carts. The audio unit can be rack-mounted along with other audio hardware. And the set of front-panel RCA jacks means a portable ENG cassette or MD deck used in the field can be patched right in to the unit for offloading audio for broadcast.

The Yellowtec Intellimix should not be a consideration as a main on-air console,

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Inside

Radio World

Audio Processing

June 6, 2001

USER REPORT

Smooth Processing With Omnia-6fm

by **Cornelius Gould**
Senior Staff Engineer
Infinity Broadcasting, Cleveland

The one thing I've always loved about Omnia audio processors is their ability to sound the way you want them to sound, instead of locking you into the way the manufacturer thinks your station should sound.

With the new Omnia-6fm audio processor, the company seems to have made impressive sonic improvements that give you a much louder and much cleaner audio presentation than the original Omnia.fm, which I already thought was as clean as you could possibly get.

The Omnia-6fm continues the Omnia tradition of clean, loud audio without digital "grunge." A battery of comprehensive controls helps you tailor your on-air sound until it's just the way you want it.

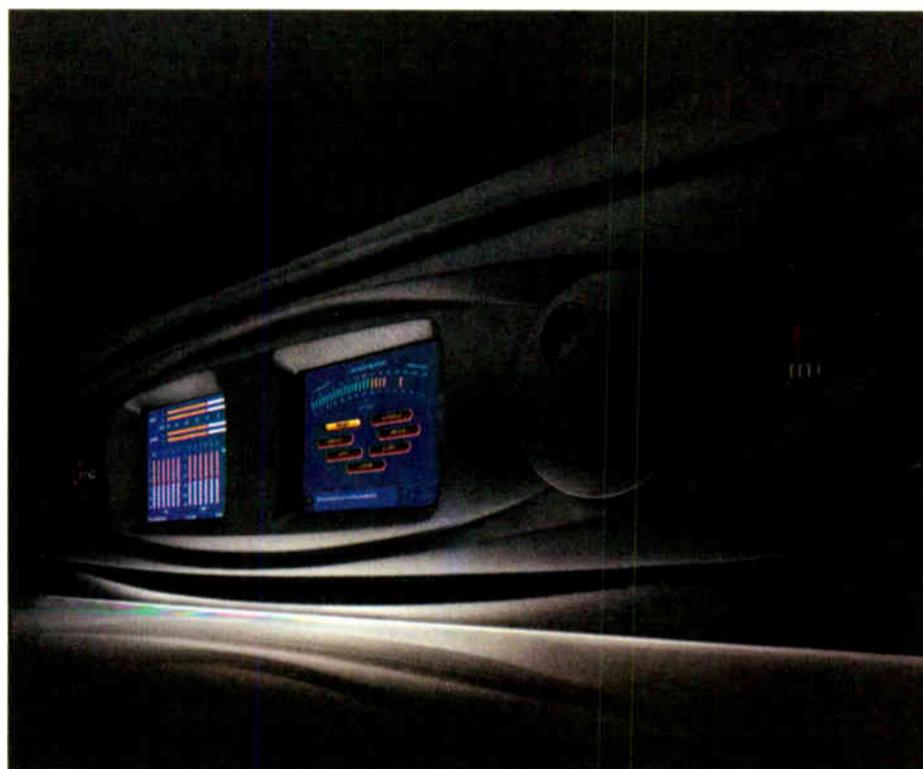
Stereoscopic

Out of the box, I saw that the unit has two screens; upon boot-up, I discovered why. One screen is dedicated to all gain-control metering — in full color, I might add — while the other is dedicated to user controls and system utilities.

I found this useful, as I can now adjust the controls, *see* exactly what my changes are doing and almost instantly get a "feel" for that control.

After a couple hours, I had the unit blowing away my trusty old Omnia unit. Where the abilities of the "Omnia Classic" taper off, the Omnia-6 effortlessly picks up and takes flight.

The next thing in the chain is a five-band leveler/AGC with adjustable crossover points. There are some familiar controls here: Attack, Release, Make Up, Gain, along with the gate.



Each band still offers Freeze, Slow, Medium and Fast gate options. You can also set the quiescent gain state of each band to have 5 or 10 dB of attenuation whenever there is no signal in that particular band.

The "Slow," "Medium" and "Fast" set-

an optional plug-in for the Omnia.fm, comes standard in the Omnia-6. I thought this feature was way cool.

Things start to get interesting here.

Omnia places a summing mixer after

six-band limiter, I was able to precisely get the texture I was looking for and the consistency between cuts was impressive.

The six-band limiter has its own summing stage and that feeds the clipper system.

Stop the clipping

The clipper system seems to be refined greatly over the original Omnia. The system consists of the following controls: Bass Clipper, which is handy to have; Clipper Drive; Composite Clipping and something called Silk.

I'm not sure exactly what this last control does, but hope to pursue this control at some future date.

I should note that the stereo pilot is fully protected from composite clipping artifacts. Even when driven to extreme levels (to my ear), my mod monitor showed no contamination of the stereo pilot tone.

The Omnia-6 also has a 53 kHz low-pass filter, similar to the original, to protect subcarriers from hash due to composite clipping. Nice and handy for me since one of my stations still supplies that wonderful elevator music to many retail outlets here in Cleveland.

There are other features worth noting, such as the ability to set the sample rate of the AES outputs for 32, 44.1, 48 or 96 kHz. This should help folks who are using 32 kHz sample rate STL systems.

All in all, I was impressed with the Omnia-6fm. It is by far the best audio processing unit I've heard.

For more information contact Telos/Omnia in Ohio at (216) 241-7225, fax (216) 241-4103 or visit the Web site at www.telos-systems.com

After a couple hours, I had the unit blowing away my trusty old Omnia.

The user interface is quite elegant, and it operates in a fashion similar to the original Omnia, so there isn't much to relearn. Most common control items I needed were no more than one menu deep, so the learning curve was quite low.

The sound of the unit was incredibly smooth and the loudness was impressive, too.

The topology of the unit is much different than that of the original Omnia.

The first stage of processing is the wideband AGC, which appears to have some added "beef" to it and greater control range. This stage can be as transparent as you want it to be. At more aggressive settings, you are able to hear it work.

tings determine the amount of time it takes to reach the quiescent gain state. This is useful particularly on classic rock material.

For example, I was able to set the quiescent gain state of the upper bands so that the annoying tape hiss in much of the material in that format is attenuated during quiet passages.

Another great feature is an adjustable crossover system for the five-band AGC. This is a new feature for the Omnia family and, to be honest, the factory presets worked just fine for what I was doing, so I didn't mess with them much. But it is nice to know the control is there.

The Space EFX algorithm, which was

this stage, and allows you to mix the five bands to your taste. The bass equalizer controls follow, and then another crossover to split the audio into six bands for a six-band limiter.

Between the five-band AGC and the

TECH UPDATE

Broadcast Technology Modernizes Ultramod

Broadcast Technology has introduced the updated version of the Hnat-Hindes Ultramod.

The Ultramod FM incorporates the clean split-band compressor-limiter of the original model along with an ultra-transparent stereo generator. Low-pass filters have been added along with an input AGC to ensure that the levels into the compressor-expander are consistent.



Bass enhance allows the unit to be tailored to any format with the adjustment of one control. Broadcast Technology's "smart clipper" enhancement increases loudness of the audio without creating excessive distortion. It looks at the audio and determines if clipping or limiting is appropriate.

Finally, the composite processor adds loudness and is adjustable from 0 to over 3db.

The Ultramod FM provides two composite outputs, a pilot output and an SCA input. An economy model that does not include composite processing or the "smart clipper" is available.

For more information contact Broadcast Technology in Colorado at (719) 336-3902, fax (719) 336-9473 or visit the Web site www.hnat.com

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SRC-1616L Serial Remote Control

Equipped with 16 opto-isolated and CMOS/TTL compatible inputs and 16-Relay (Form C) outputs that may be controlled from a host computer, or a pair of units can be used in a stand-alone configuration (relay extension cord).



MC-16 Telephone Hybrid/Coupler

Full featured telephone line coupler/hybrid provides 32 programs; 32 ASCII strings (DTMF to ASCII); 64 macros; 16 relays; auto answer; 4-digit access codes and much more.



BOS, ROS & PBB-24 Switch Panels

The BOS offers 12 N.O. dry contact switches with status LEDs in a desktop panel. The ROS is similar, but in a single-space rack unit. The PBB-24 provides 24 momentary buttons that can be programmed to output ASCII character strings.



SRC-8 Serial Remote Control

The SRC-8 provides a means of adding 8 channels of remote control to RF, wireline and fiber type STL systems and may also be used with dedicated modems (full & half duplex models).



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The PX1 was designed to fill the needs of the low power or community broadcaster. Set-up and use is fast and simple with just 5 buttons to access all parameters – power, frequency, modulation, and more. The 2-line vacuum fluorescent display gives you "at-a-glance" verification of all important functions. The micro-controller continuously monitors frequency, temperature, deviation, etc. and makes subtle adjustments on the fly-like a "virtual" station engineer.

Two balanced inputs (XLR) are provided, as are inputs for SCA and RDS (BNC) RF Output connection is type "N", output power is adjustable from 1 to 35 Watts.

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USER REPORT

Aphex Systems Sets the Mark

by **Andy Laird**
 Director of Radio Engineering
 Journal Broadcast Group

MILWAUKEE I am a big Aphex Systems fan and closely follow the company's developments with an ear toward broadcast applications.

Over the last few years I've installed a large number of the original 2020 FM Pros.

What I like about the 2020 is its big, clean sound, great stereo generator, great D/A and A/D converters, short group delay through the unit, repeatable settings and same sound unit-to-unit, excellent remote-control software and the price.

Old bugs

The 2020 did have some quirks that I put hours into trying to work around. The leveling would sometimes punch holes in the audio if it got hit with a high-level transient.

The 2020MkII is much more than a revision; it's a whole new processor. When the processor was pushed for loudness, it didn't 'crash the voices.'

When the unit was pushed hard to achieve loudness, the music would stand up but the voices could get distorted. This also depended upon the type of mic processing being used.

At the recent NAB I walked over to the Aphex booth to take a listen to the new 2020MkII. It sounded similar to the original, only more open.

Marvin Caesar, Aphex president,

assured me that all the quirks that I had been bothered by were now gone. But the real test was to put it on-air.

"Okay," Marvin said, "you'll have a unit by Friday."

He also said Radio World needed its *Buyer's Guide* review by May 11. Nothing like confidence.



The 2020MkII is much more than a revision; it's a whole new processor.

The biggest changes are the split-band pre-emphasis limiter and the overshoot compensated low-distortion low-pass filter. Because these are so

The multiband compressor and the split-band peak limiter are also updated. The stereo generator now has dual outputs and RDS interface.

The software has been updated as well with the same feel but with nicer graphics.

Functionally, the front panel and the

remote-control software are the same as the original with the addition of Dual Mono/Stereo operation, Density and Brilliance. Gone are the Brightness and Hardness controls.

The test

I received the unit on May 4 and was concerned, considering the time I invested in using the original model. Could the new MkII "be tamed" in time to draw conclusions and finish by May 7 when my prior commitments would kick in?

The station format for the on-air audition is hot AC with lots of news, traffic, phones, etc. The input to the MkII is analog directly from the main studio console — this station is collocated at the transmitter site; no STL.

The unit's digital output — set at 48 kHz — is fed into the main transmitter and the output of the stereo generator fed to the aux transmitter.

The basic setup configuration is saved to the Global preset, and this configuration is loaded into all the factory presets.

My 2020 startup routine first made use of the headphone jack on the front panel, comparing input to output as I worked through processing settings.

Second, with the unit on-air, I checked the air monitor against the input. Then third, I made remote adjustments away from the site with my favorite receivers to learn to control the effects.

It was immediately obvious that my "issue" with the leveler has been fully fixed. Consistent levels were maintained from event to event — live stuff with phones to jingle to music to promo, no problems.

When the 2020MkII was pushed for loudness, the unit did not "crash the voices."

Clean and clear

The big, clear sound is even better than the older version. Dare I say clearer than and as loud as a new all-digital processor also in this station? The operations manager said that the high-end fuzziness is gone and the low end is so much more extended. He wants the MkII to stay as his main processor.

The Density control does just what you would expect and solves the difficult balancing of the multiple settings necessary to achieve the same thing in the original.

The difficult balance between the old brightness and HF limiter hardness controls has been solved with the Brilliance control.

With the prior digital processor on the air I could not listen for any length of time; with the MkII I can listen for hours without being annoyed.

This is a great revision. If you are currently using a 2020, install the MkII revision — it makes a big difference.

Are you considering one of the new digital processors to replace an older digital processor perhaps? I would recommend that you also audition the 2020 MkII.

Are you still running older analog systems because you don't like the sound of the digital processors? I'll bet that with the Aphex 2020 MkII, the wait is over.

For more information contact Aphex Systems in California at (818) 767-2929, fax (818) 767-2641 or visit the Web site at www.aphex.com

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TECH UPDATES

Eventide Stamps Out Obscenity, Upgrades DSP4000-B+

Eventide Inc. has developed a new broadcast delay, the BD960, which replaces the BD941/942 units. The new model not only provides a delay but replaces naughty words with a station's own "zapper."

In the past it was necessary to wire the delay Dump switch to a cart machine and relay to terminate the call and let the recorded filler do its work. The latest unit, named the "AutoFill Broadcast Delay," does the job on its own.



Eventide BD960

Included in the 1 RU mount is a section of nonvolatile memory — NVRAM — that will store up to eight seconds of filler of the station's choice. Because it is nonvolatile, it is secure even if there is a power failure.

Storage is nonmechanical, so it will not be necessary to replace or rerecord the zap cart.

Meantime, the Eventide DSP4000B+ Ultra-Harmonizer is replacing the DSP4000-B effects processor.

The DSP4000B+ is based on the DSP7000 professional audio effects processor, but it has a set of software programs created for radio, TV and postproduction by sound designer Jay Rose.

With the press of a button, the unit can create the voice of an airplane captain from the cockpit, a cashier at a fast-food drive-through window, the sound of a computer voice chip, the TV in the next room or a cellular phone. Dozens of audio environments are available.

Sound effects and audio backgrounds are built into the unit.

A six-line graphic LCD screen lets users choose effects by accessing categories organized into groupings such as "Science Fiction Voices," "Commerce & Machines" and "Backgrounds."

The Eventide DSP4000B+ comes with analog and digital inputs and outputs. The digital I/O provides 24-bit AES/EBU and S/PDIF for an all-digital signal path along with simultaneous XLR-type analog inputs and outputs.

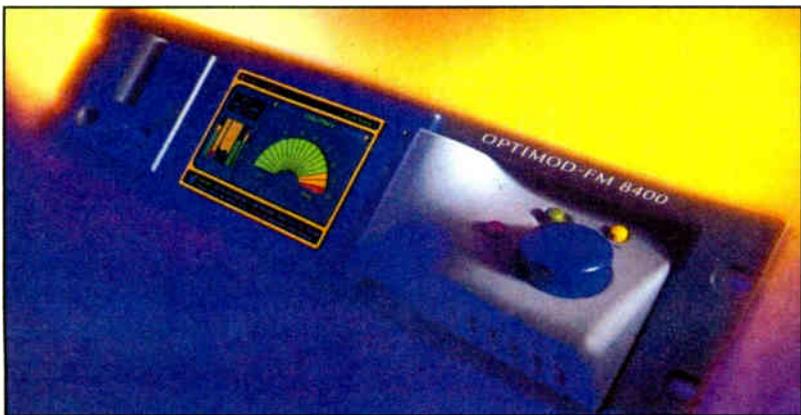
For more information contact Eventide Inc. in New Jersey at (201) 641-1200, fax (201) 641-1640 or visit the Web site at www.eventide.com

Orban Optimod-FM 8400

The Optimod-FM 8400 from Orban has five times the processing power of its predecessor, the Optimod-FM 8200.

The 8400 has features for crafting a signature sound, including two modes of stereo enhancement — one emulating Orban's analog 222A — as well as three bands of parametric EQ, a sweepable bass shelf with selectable slopes and windowed dual-band AGC. Digital I/O comes standard with units and Motorola DSP engines power the processing algorithms.

The 8400 retains the five-band, two-band and protect processing structures of the 8200, enhanced by updated factory preset options. The two-band structure now includes look-ahead limiting. Intelligent peak limiting ensures defined bass and crisp highs.



At the back end, the system has a digital stereo encoder plus a patent-pending composite processing technique to protect the stereo pilot tone and RDS/RBDS subcarriers from interference.

The unit's interface architecture is user-friendly. Three levels of control allow a range of tweaking options, from a simple less/more adjustment to a set of modification parameters.

The 8400 is plug-and-play-compatible with industry-standard STLs and exciters; the company says it will not introduce overshoot when used over a 32 kHz uncompressed link. PC Remote Management software incorporates TCP/IP protocol for PC control and supports development of networked control options.

For more information contact Orban in California at (510) 351-3500, fax (510) 297-2730 or visit the Web site at www.orban.com

CRL Finds a Friend With Amigo FM

The Amigo FM from Circuit Research Labs is a stereo audio processing system for FM broadcast.

The user sets the input and modulation levels, and the system is on the air. The Amigo's processing controls can be used to customize a station's sound.



The unit includes a digital stereo encoder. The Amigo FM is a "set-and-forget" system that monitors audio levels automatically, increases a signal's perceived stereo image and ensures station loudness.

A wide-range, dual-band AGC ascertains consistent station loudness by monitoring and adjusting audio levels.

A multiband limiting system gives the signal a natural sound. The Amigo's digitally synthesized multiplex generator provides a maintenance-free stereo signal.

For more information contact Circuit Research Labs in Arizona at (800) 535-7648, fax (602) 438-8227 or visit the Web site at www.crlsystems.com

Yamaha Follows the Digital Echo

The Yamaha SREVI digital sampling reverb is a multichannel, digital sampling effects system for the studio, live production, broadcast, post-production and systems integration.

The system reproduces standard and specialized sound fields in stereo or surround, while enabling the user to sample and create custom sound fields.

It includes the SREV 24-bit/48kHz 3 RU rack-mount mainframe, RC-SREVI remote controller and DB-SREVI DSP expansion board.

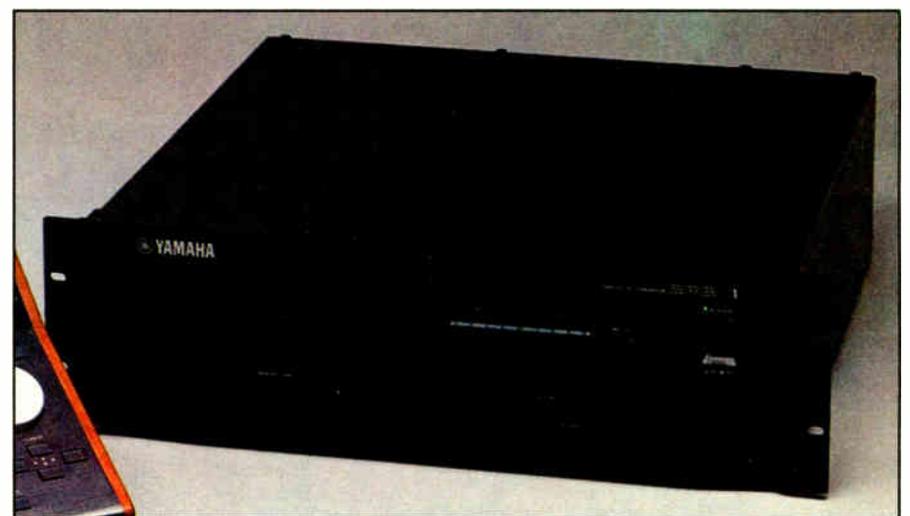
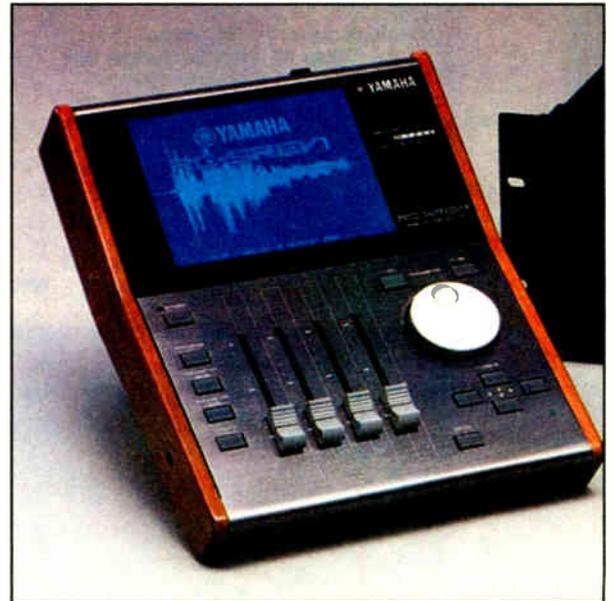
A selection of editable reverb programs on the SREVI simulates environments, from room ambiances to stadiums, each offering control of pre-EQ, post-EQ and Reverb parameters. The unit operates in two-channel mode, up to 5.46 seconds per channel; four-channel mode, up to 2.73 seconds per channel; or two-channel x 2, up to 5.46 seconds per channel for each processor.

With the DSP expansion board, reverb time in each mode is doubled, producing reverbs of up to 10.92 seconds.

The SREVI, using proprietary Convolution sampling technology, manipulates impulse response samples of actual acoustic environments, rather than the generated algorithms.

The unit may be operated with the RC-SREVI interface. Up to four units may be controlled via one remote-control device.

For more information contact Yamaha at (714) 522-9011 or visit the Web site at www.yamaha.com/proaudio



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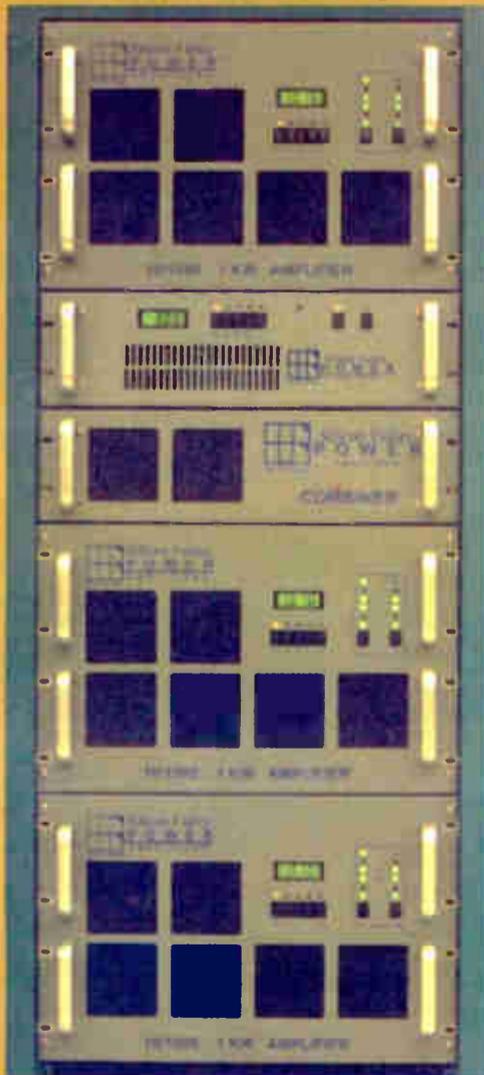
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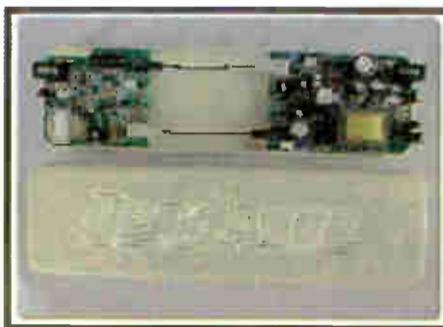
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TECH UPDATES

Symetrix Networks DSP With SymNet

The Symetrix SymNet is a modular DSP installed sound system. The audio mixing, routing and processing system encompasses control software and rack-mount hardware units, which provide processing and audio I/O.

SymLink allows a direct connection between the system hardware. Additional hub hardware, interface cards and unused DSP and I/O typical of other systems are eliminated by SymNet's networked building blocks.

Three hardware units form the core of the system: an 8 x 8 I/O unit, an eight analog input unit, and an eight-analog-output unit. The processing inside the I/O units comes from 32-bit SHARC floating-point processors.

The 64-channel SymLink interface appears on all SymNet hardware. This direct connection between units permits a variety of system configurations. Although it can be as small as one 8 x 8 unit, system design is expandable for installations with much larger I/O requirements.

SymNet Designer, a Windows-based control application, gives the installer CAD-style "drag and drop" control over audio processing modules. Its processing features include many algorithms from Symetrix signal processors: AGC-levelers, voice processors, SPL computers, crossovers, limiters, gates and delays.

For more information contact Symetrix in Washington state at (425) 787-3222 or visit the company Web site at symetrixaudio.com

Waves, CMBE Make Universal Processor

Waves Ltd. and CMBE Inc. have partnered to bring what they call the next generation of integrated audio processing solutions to broadcast.

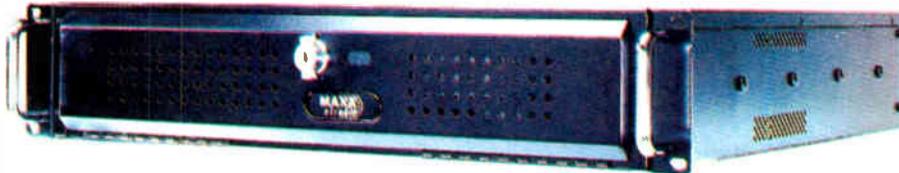
The first product of this partnership is the MaxxNet Universal Broadcast Processor for radio and TV.

MaxxNet coordinates and automates audio processing including microphones, telephone audio, studio mastering to storage media, streaming processing, monitor processing, STL pre-processing and network sweetening. The system is designed to optimize system sound quality while eliminating operator errors and re-dubbing requirements.

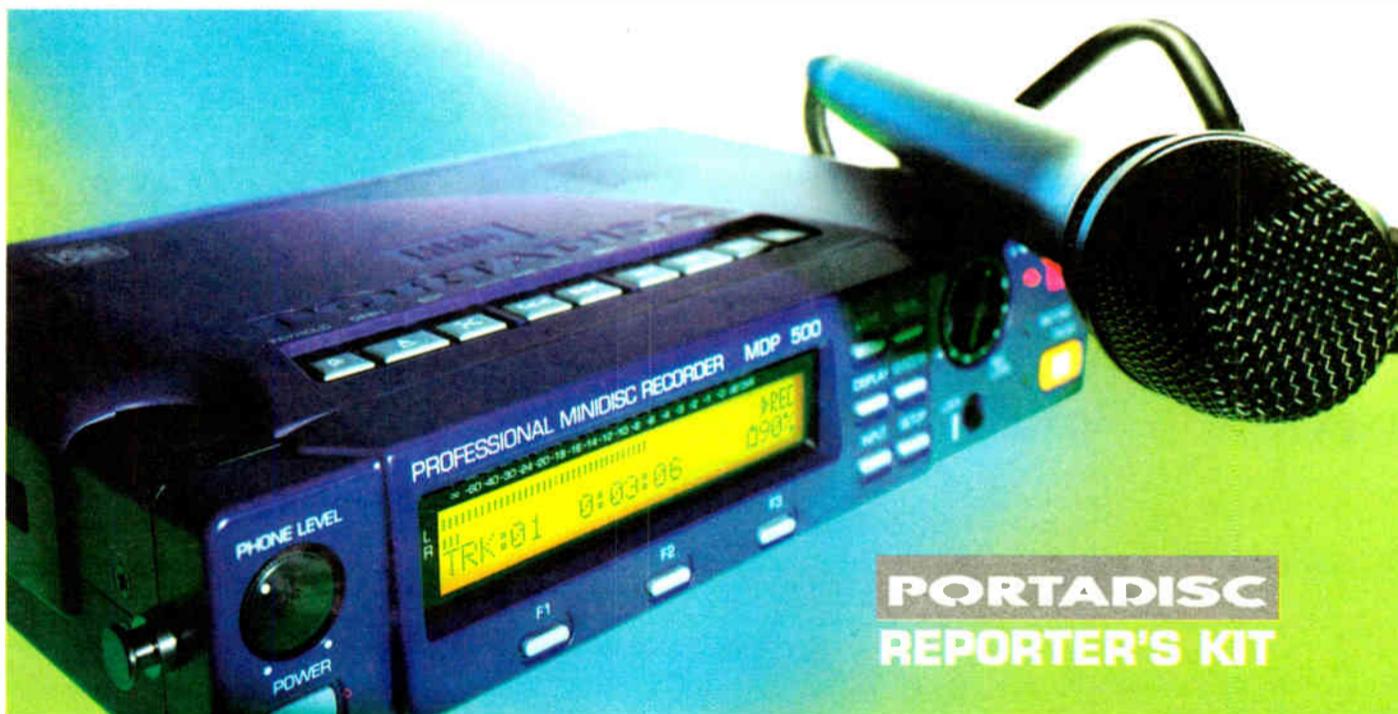
MaxxNet supports analog and digital input and output needs as well as custom presets for each facility based on operating levels and house standards. The system uses Windows2000 for control, but audio processing is independent of the operating system using DSP accelerators.

MaxxNet supports the station's favorite final processing for transmission as well as feeds to STL, satellite uplinks and phone lines.

For more information call (865) 546-6115, fax (865) 546-8445 or visit www.maxxstream.com



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RCA 1970's antenna, bays tuned to 94.1, in working condition when removed after frequency change. Walter Stair, WCTU, POB 215, Tazewell TN 37879. 423-626-7145.

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AUDIO PRODUCTION

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Russco 5055 audio board, needs work, \$250. Eric or James, Adelman Comm, 731 N Balsam St, Ridgecrest CA 93555. 760-371-1700.

Presonus ACP22 stereo compressor/limiter/gate, new, \$235; Audiotronics stereo sliders model 340-560 +extender boards 110EX6-2-A & 110-EX9-2-A, BO; Fostex line amp model 5030, 8 channels, \$195; Aiwa cassette deck model AD6900 MK II, \$750; Otari auto locator CB111, \$195; Altec AM-FM receiver M-725A, \$195. J Price, 214-321-6576.

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Andrew L44-N 1/2" connectors (8), new, \$20 ea; Andrew 87-R 1-5/8" connectors (24), \$125 ea. Cliff Bryson, 93 Robinhood Dr, Cranberry Twp PA 16066. 724-776-5204.

Antenna/transmitter switches, EF Johnson #145-102-13, 40 amps, used, BO. Cliff Bryson, 93 Robinhood Dr, Cranberry Twp PA 16066. 724-776-5204.

Arrakis Digilink II automation system with connections for 2 workstations, includes CD controller, \$2500. John Russin, The Keyed Up Communications Co/WIIS-FM, 3808 W Park Road, Hollywood FL 33021. 954-966-9040.

Vacuum capacitors (various), fixed & variable, call for values, BO. Cliff Bryson, 93 Robinhood Dr, Cranberry Twp PA 16066. 724-776-5204.

DCS Dos-based digital audio system. Great for audio storage & playback. Would make a great simple replacement for carts at a small, limited budget operation. Dwayne Forbis or Chris Jessie, WLOC, POB 98, Horse Cave KY 42749. 270-786-4400.

Digilink III Systems (2) complete with cables & manuals, currently operating & will be avail on 5/15/01, BO. Angie Sugalski, WCN, POB 444, Spartanburg SC 29304. 888-989-2299.

UDS On-Air Digital System. Upgraded in 2000 with OAS software for log generation & automation interfacing. Would make great back up for existing UDS system or would be great, light automation system for station on small budget. Dwayne Forbis or Chris Jessie, WLOC, POB 98, Horse Cave KY 42749. 270-786-4400.

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Sony MDS-JE320 mini-disc player, like new, \$150. Al Campagnone, WNRK, 496 Walther Rd, Box 8152, Newark DE 19702. 302-737-5200.

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Radio Systems RS-18 with power supply A+ condition, very little use, extra engraved buttons, lamp & connectors, \$4000. Casey, Iron Dog Productions, 620-727-1177.

Vestax PMC-15mklI; Autogram 8 channel on-air console. Don Noordyk, WSHN, 517 N Beebe St, Fremont MI 49412. 231-924-4700.

Want to Buy

Soundworkshop 40 for parts. Art Polhemus, Excalibur, 750 8th Ave, New York NY 10036. 212-302-9010.

Audiotronics Airmaster 90 console. Parts needed, Wheatstone part number is 390-003A. Dave Bear, KUBA, PO Drawer 232, Yuba City CA 95992. 530-673-1600.

MCI processor board PCA 2500-0611. J. Price, 214-321-6576.

Check out our web site!
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CRL PMC 300 peak mod controller, APP 300 audio preparation processor, SEP 400 special energy processor, BO. Cliff Bryson, 93 Robinhood Dr, Cranberry Twp PA 16066. 724-776-5204.

M.S.I. CP-803 composite clipper, \$685. Steve, Bay Country Bdct Equip, POB 523, Chase MD 21207. 877-722-1031.

Macromod Panaxis compressor/limiter, works well, \$100. Gene Whittenberger, Whittenberger Studio, POB 396, Mexico IN 46958. 765-985-2224.

Marti STL-10, 2 transmitters, 1 receiver, like new, \$2250 or will separate; Celljack, \$125; Motorola bagphones, \$20 ea. Dan Smith, KANR, 2120 N Woodlawn #334, Wichita KS 67208. 316-652-9275.

Orban 9100A Optimod-AM, \$500. Al Campagnone, WNRK, 496 Walther Rd, Box 8152, Newark DE 19702. 302-737-5200.

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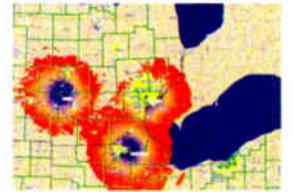
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Recent broadcasting graduate looking for a new adventure. Interested in California, Florida, Texas or Oklahoma. On-Air production or promotions. Tenisha, 405-206-3395.

Cool, refreshing & extremely satisfying. That's Me! Hard working, goal oriented radio grad looking to raise your rating & explode into the business. Sterling, 918-245-6545.

Interested in an easy going personality who can attract & keep listeners? My name is Shaun Gant, I'm hard working & dedicated to broadcasting. 918-481-0468.

Radio Announcer! Will work any shift in any state to get On-Air. Interested in Jazz, Blues or News. Charlie, 918-599-9964.

Recent grad from American Broadcasting School looking for On-Air/production. Experienced in Cool-Edit Pro. Willing to relocate. Bobby, 405-737-0694 or 580-444-2627.

Willing to relocate. Extreme confidence. There's nothing I feel that I cannot do. Natural talent. Trained & ready. On-Air or production. Terry, 405-751-0335.

Yes I'm exciting, Yes I'm talented, Yes you want me! Fresh young radio grad seeking a position in music, production or promotions. Darrell, 918-830-6004 or 918-591-9426.



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ACTION-GRAM

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Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations only. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

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While the products that cover the pages of RW may seem important to your radio operation ... what really matters is trade show SWAG! We thought we'd take you behind the scenes at RW and use some of the folks who make things happen to show off our NAB2001 Stuff We All Got.

Photos by Alan R. Peterson



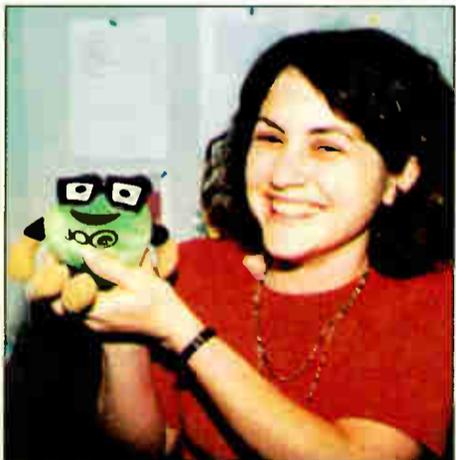
Production Department Manager Annette Linn looks puzzled at the appearance of a Williams Slinky in the midst.



Computer Support Specialist Roger Turner assures us that despite the Mackie pocket-protector paraphernalia, he is *not* a geek. Roger also sports a Telos cap.



RW Business and Internet Radio Editor Laura Dely has her hands full with production company CDs and a ball-bearing game from Orban.



Administrative Assistant Shannon Allen has a new friend from NAB.



IT Director Deb McKeeman, with goodies from Avid, Shure, AEA and Steinberg, is almost too happy to be at work.



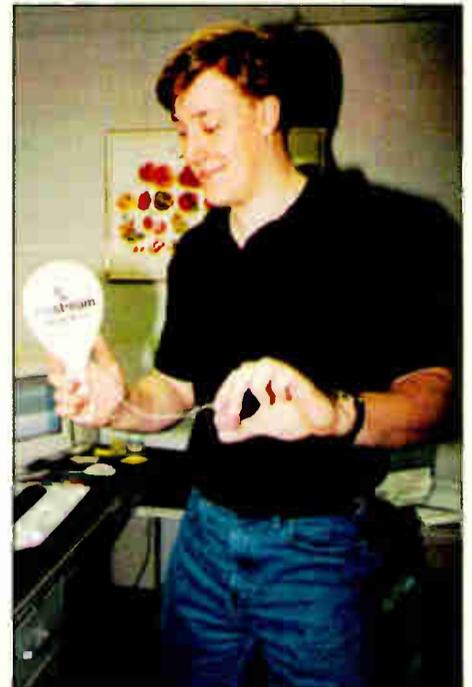
RW Managing Editor Sharon Rae Pettigrew may be in need of one of these Neumann microphone mints if she keeps her mouth open much longer.



RW Associate Editor/Studio Sessions Bernie Cox isn't holding his Hemphill playing cards close to the vest.



RW Sales Administrator and self-proclaimed KOAT (Knower Of All Things) Simone Mullins says her SWAG from Keystone and Opticomm is 'all good!'



Editorial Assistant Mike Hedrick shows us it's good to have a hobby. Paddle courtesy of Anystream.



We couldn't find a human member of the staff to model these boxers from Veil Interactive.

Write to Us

RADIO WORLD
READER'S FORUM

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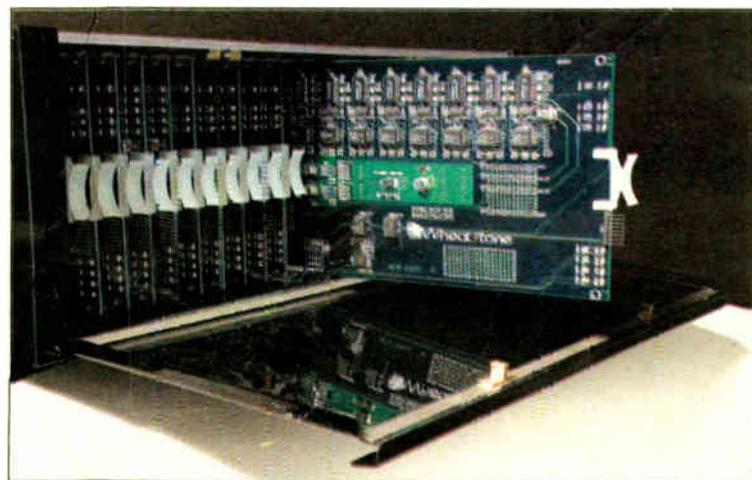
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