

Radio



THE RADIO TECHNOLOGY LEADER

July 2008

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FIELD REPORT

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MEET THE SQUARE

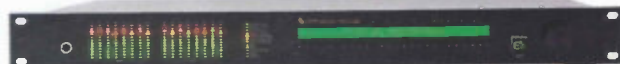
The Wheatstone E² (E SQUARE) gives you the convenience of Ethernet audio without all the IP hassle. It just *knows*. The built-in Setup Wizard lets you configure an entire system with just your browser and a laptop. Unplug it when you're done and there's no PC between you and system reliability.

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

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



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



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



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



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



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

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

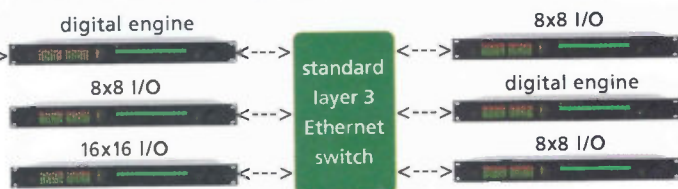
E-SQUARE is Ethernet audio done RIGHT!

Studio 1

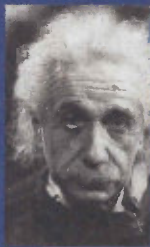


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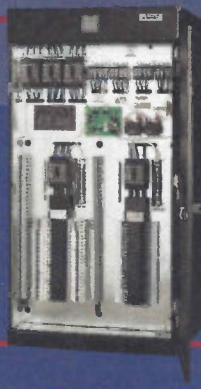
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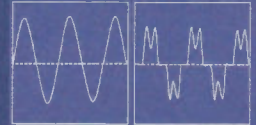
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Waveform before correction

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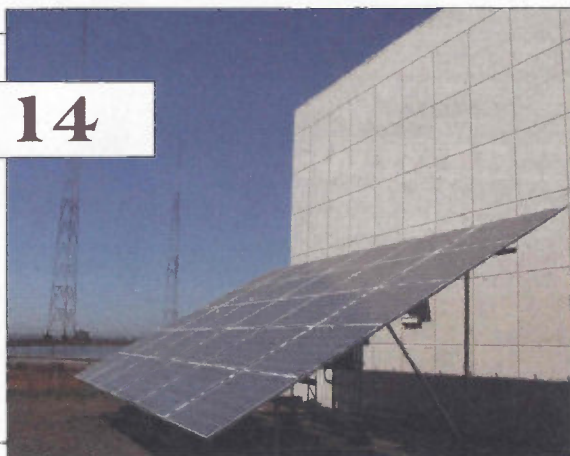


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The youth and radio

ON THE COVER

WNYZ in Brooklyn goes from a traditional Russian-language station to a new beat. Read the full story beginning on page 24.

Cover design by Michael J. Knust.



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Currents Online

Selected headlines from the past month.

Prendergast Named Director of Engineering at Entercom Buffalo

Bill Prendergast takes over for the seven-station cluster. He previously worked as a contract engineer in Alaska.

Arbitron Restarts PPM Commercialization

The company says it has addressed the concerns expressed with the system's performance and is working with the Media Rating Council to achieve MRC accreditation.

Newberry Elected NAB Radio Board President

Steve Newberry, president and CEO of Commonwealth Broadcasting, was elected chairman of the NAB Radio Board.

First Mexican HD Radio Border Stations On Air

XEEZ is using a Broadcast Electronics system in Caborca, Sonora, and XHTY has installed a Nautel system in Tijuana.



Triton Radio Networks Acquires Jones Media Group

Jones Media America will combine with Dial Global under the leadership of David Landau and Ken Williams, the co-presidents/CEOs of Dial Global.

Westwood One Finalizes \$100 Million Investment

Gores Radio Holdings made the investment through a stock purchase.

Father of FM and TV Stereo, Eilers Dies at 83

In his 50-year career at Zenith Electronics, Carl G. Eilers also worked on pay TV and HDTV development.

Cumulus, Hubbard and Cobalt Join Broadcaster Traffic Consortium

The BTC was formed to use HD Radio to broadcast real-time traffic and other location-based information to portable navigation devices and automobile in-dash systems.

Find the mic and win!

Tell us where you think the mic icon is placed on this issue's cover and you could win a Heil mic courtesy of Heil Sound.

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Site Features

The Engineer's Notebook

Do you have a notebook, a shoebox or wall full of Post-its with notes and ideas? So do we, but it's online and easy to use and reference.

Digital Radio Update E-newsletter

Stay up-to-date twice a month with the source of digital audio broadcasting news and information. The coverage extends to DRM, satellite radio and more. Subscribe today.

New Products, too

We also give you the latest information on new products in the New Products Extra! e-newsletter. Subscribe today and stay on top of the newest technology.

Advertiser Links

Web links to the advertisers in the July issue.

Industry Events

The *Radio* magazine Industry Events section lists upcoming conventions and conferences.

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The business of engineering

Why have you chosen a technical career in radio? I think most of us in radio had our start with a different focus than we have today. At some point, being on-air was probably the big draw. It was for me. My original plan was to work in production and on-air, and then I realized that I knew how to maintain and install the equipment I was using. This was a skill no one else had. I was still able to feed my creative on-air and production interests, but I found my real interest in the technical side.

As an engineer, you likely have a passion for solving problems. You see a challenge, identify possible solutions, formulate a strategy and get the job done. But while most engineers have excellent troubleshooting skills, many do not have the best business skills. I was fortunate to work with several engineers and managers who taught me to understand the value of my skills.

I recently observed an engineer completely devalue his skills by volunteering to develop a communications system for a commercial entity. The company has its own IT department, and it was creating a new system to serve its needs. For the company, this was a new endeavor. For the engineer, this was a task he had completed many times before. The engineer saw a problem and wanted to provide a solution. That's being proactive. Unfortunately, the engineer stopped short. He evaluated the problem and formulated a solution, but he did not consider his own value in the solution. His knowledge and skill have value. He was able to provide a service to a commercial entity. Instead of submitting a business proposal, he volunteered to fix the problem.

His business proposal may have been rejected, but that's a choice the business operator can make. It's frustrating for most engineers to watch a problem go unfixed, especially when we know we can correct it, but it's smart business to understand your own value.

Anything free has no value in the end. It's been my experience that services performed for a fair price have a greater value in the end. Being fairly

compensated also avoids the repeated asking of favors to get the job done. To borrow the phrase from a phone book company, it's nothing personal, it's just business.

I often hear engineers and technicians lament that they are underpaid. Using the scenario above, it's not surprising. Good engineers are not always good businessmen. However, new skills can be acquired and honed.

Be somebody

In addition to my career work, I work in several volunteer positions. In both cases, there's a phrase I often hear that can often lead to automatic failure. During a discussion of a problem or goal, I'll hear someone say, "You know, somebody should ..."

This is usually followed by a general agreement with the idea. Yes, somebody should do that. This is a tipping point for success or failure.

At that point, if no one takes the responsibility, the idea languishes on the table and often dies. An effective leader can eliminate this by assigning the task to someone, but this doesn't always happen. It may not be the fault of the leader. It's easy to assume that the person suggesting the plan is the one who will execute it.

But why leave that to random chance? The next time you hear someone suggest "somebody should," step up and be somebody. Don't leave it at somebody should. Make it happen that somebody will.

Chris Scherer



Impossible Remote? Nah...You've Got ACCESS!

Cape Town's Heart 104.9FM's hot new ACCESS opens new horizons!



Above: Heart 104.9FM DJ *Koketso Sachane* doing his show from the streets of Cape Town.

Top: *Saskia Falken*, Heart 104.9FM Mid Morning Mix host broadcasting from Table Mountain.

With ACCESS, Heart 104.9FM left its competition literally standing still by offering innovative, superb sounding remote broadcasts that kept listeners (and advertisers) coming back for more. Whether it was from a sailing yacht, from the top of majestic Table Mountain or from the vibrant streets of downtown Cape Town, ACCESS always delivered with its winning combination of pristine audio and ease of use.

ACCESS delivers mono or stereo over DSL, Cable, Wi-Fi, 3G cellular, satellite, POTS (yep, ACCESS is a full featured POTS codec and works seamlessly with

Matrix, Vector and Bluebox)—plus some services you may not have even heard of. Given the challenges of the public Internet, it's no small boast to say that ACCESS will perform in real time over most available IP connections.

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Tweaking the antenna system

By John Battison, P.E., technical editor, RF

The last link in the broadcast chain under the broadcast engineer's control is the transmitter and antenna system. From then on quality of reception is left in the hands of the listeners. Best quality includes not only audio, but also signal strength to overcome noise and interference. It's not very satisfactory to transmit the highest quality audio if the signal is weak and below the required field strength level.

Engineers in non-directional, one-transmitter stations should not have great difficulty ensuring the signal is up to par. In connection with audio modulation it is advisable to use a 'scope on the transmitter output to judge modulating conditions visually. Flat topping on peaks will show clearly, as will excessive negative modulation. Sometimes unanticipated modulation artifacts are brought to light on a 'scope.

It's always a good idea to remeasure the base operating impedance of the single vertical antenna when checking overall station performance. Although the original license may have shown a base operating resistance of 55 ohms,

it may no longer be correct today. Sometimes guy insulators develop cracks, or may even break sufficiently to add a few feet to the antenna's electrical length. Base insulators have also been known to crack and affect antenna impedance.

Sometimes a cracked insulator, or in a worst-case condition, a length of guy wire from a broken insu-

The ATU should be examined carefully looking for overheated inductors, which can usually be spotted by their discoloration. Capacitors should be felt for over heating (be sure power is off first) and suspicious components should be replaced. Sometimes shorted turns in a matching network may get hot and waste power. In networks calling for negative reactance it is better to use a single capacitor of the desired value, if possible. The usual practice of using extra negative X and obtaining the desired value by inserting inductive X (i.e. an adjustable coil) to cancel the unwanted negative X can sometimes be less satisfactory. Unfortunately variable gas or vacuum capacitors are expensive.

Many engineers run quick mental checks by multiplying final plate voltage by plate current to find dc plate power. Then they check this against the antenna RF power using $I^2_{ant} \times R_{ant}$ to determine final stage efficiency. If this is in agreement with previous figures and/or the manufacturer's, and the other checks are satisfactory, one can be reasonably sure the system is performing properly. It is important, when performing this check on a directional station, to be sure to use the correct FCC power percentage allowance for the transmitter power involved.

Directional antenna systems

Generally, fine tuning a directional system involves much the same work as in a non-directional except that there is more of it. Some of the critical measurement values involved are common point impedance and current. Their significance is similar

to antenna-based operating impedance and current for a non-directional system. In each case the combination of current and impedance determines the RF operating output power. In the case of the non-DA system, adjustment of the ATU affects only the antenna match. However, in the case of a directional antenna, adjustment of a single ATU can impact the whole system, and affect the common point characteristics. It is very important to remember that almost any change in an ATU or the phasor settings will probably change the common point current and or impedance. It's also important to apply the correct FCC allowed operating power tolerance when you try to calculate RF power in a directional antenna system.

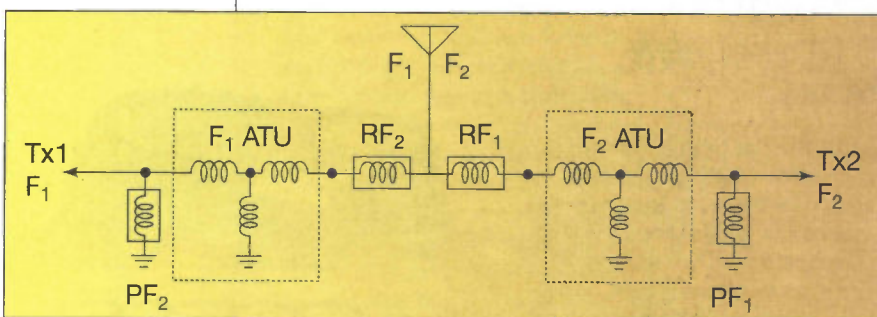


Figure 1. A typical duplex installation. The F₁ and F₂ filters set for pass (P) or reject (R).

lator added to the antenna, will cause intermittent noise in the signal and generally change the base operating impedance match. Such an occurrence can change the operating condition of the final stage and may affect the RF output.

When satisfied with the operating conditions of the antenna system, it is time to check the efficiency of the transmitting system. I like to feel transmission lines for hotspots, which are good indicators of impedance mismatches in the RF system. Their significance varies with the power of the system. This is a situation where an inline operating bridge is an essential piece of equipment, as well as close visual inspection. Depending on what is discovered, it may be necessary to readjust the ATU.

Non-directional multiple transmitter installations require adjustment of considerably more equipment. In addition to the basic transmission line system there will be an ATU for each frequency, together with additional pass and reject filters to be checked and retuned as necessary. This is an area where impedance mismatches can be catastrophic.

Additional filtering in the form of pass and reject filters will also be required. Figure 1 shows a typical diplex installation. Each ATU should have a separate equipment cabinet to prevent against stray RF pickup. A separate antenna lead will go to the output of each ATU.

At the input side of the ATU for transmitter 1 (F_1) a pass filter tuned to transmitter 2 (F_2) shunts any undesired F_2 signal to ground. Between the ATU output and the antenna is a reject network tuned to F_2 . This prevents F_2 signals from entering the F_1 ATU. If the pass and reject filters are not precisely tuned to the required frequency, internal cross modulation will occur in the final stage of the transmitter.


The operation of the ATU and the filtering system for transmitter F_2 is similar with the exception that the reject filter between the ATU output and the antenna and the pass filter at the ATU input are both tuned to F_1 to prevent any F_1 transmitter signals

entering F_2 transmitter. Occasionally additional pass or reject filtering is required depending on transmitter frequency difference and power.

Because two or more different frequencies are feeding the same antenna, it is particularly important to ensure there are no corroded antenna connections, or tower joints, that can operate as rectifiers and generate interference to both stations and others. It is very important to check for spurious signals and cross modulation products in the desired signals.

Multiplexed directional

Fine tuning multiplexed directional antenna systems requires the same degree of attention to filter network adjustment as for non-directional installations, but there is a lot more work. Each individual antenna will have its own ATU to be adjusted to meet the DA specifications plus pass and reject networks and its own phasor. When there are so many networks involved tuning interaction sometimes occurs and adds to the time and work involved.

It goes without saying that ATUs should be separated in view of the many possible undesired sum and difference signals that can be unintentionally generated. 

E-mail Battison at batcom@ohio.net.



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The Public and Broadcasting updated

By Harry Martin

The FCC has released a new edition of *The Public and Broadcasting*, which all full-service broadcasters are required to have in their local public inspection files.


The new edition was released in connection with the FCC's ongoing localism proceeding and is intended to serve as a preliminary instruction manual for members of the public who want to raise issues with the FCC about station performance. *The Public and Broadcasting* is supposed to tell citizens what they need to know about the broadcasters who use their airwaves, the Commission rules under which broadcasters operate, and the procedures that can be used to file complaints or comments with the FCC.

The 2008 edition updates outdated terms and deletes discussions of rules and policies that no longer exist (i.e. the personal attack rule). The new version also includes new discrete

Effective immediately, broadcasters must make sure their public files contain a copy of that new edition of the manual. And since the FCC also requires broadcasters to make copies available to people who walk in, stations may want to make multiple copies in the event the one in the public file disappears. The 2008 edition of *The Public and Broadcasting* is available for download at www.fcc.gov/mb/audio/decdoc/public_and_broadcasting.html.

FCC sets 2008 regulatory fees

The FCC has announced its proposed regulatory fees for 2008. Fees for 60 of the 61 categories of broadcast authorizations went up, some more than others. For radio stations, Class C AM licensees in markets with populations of 25,000 or under and Class C AM construction permit holders suffer the most proportionately, with 12.5 percent increases. Most other annual regulatory fees will increase by 5 percent to 10.8 percent depending on the class of station and the market size. Only Class A AMs, and Class A, B1 and C3 FMs in small markets, and FM CPs will have increases of less than 5 percent.

Since the proceeding is still open, no date for the submission of fees has been set. Usually, regulatory fees are due in August or September. The deadline will be announced this summer, after comments have been submitted. As in the past, the FCC will impose a 25 percent penalty on late payments. Timely and full payment of annual regulatory fees is particularly important in light of the FCC's red light system. Under that system a licensee who fails to pay FCC fees is not eligible for any FCC authorization until all fees and penalties are paid. 

Dateline

August 1 is the deadline for submission of biennial ownership reports by radio stations in Illinois and Wisconsin.

On August 1, radio stations with more than 10 full-time employees located in Illinois and Wisconsin must electronically file their Broadcast EEO Mid-Term Reports (Form 397) with the FCC.

Also on or before August 1, radio stations licensed in the following states must place their annual EEO Reports in their public files: California, Illinois, North Carolina, South Carolina and Wisconsin.

sections on digital broadcasting, V-chips and local marketing agreements. It also gives more detailed information on how to file a complaint – especially a complaint about allegedly indecent programming. The new manual explains how the Commission has streamlined the indecency complaint process by providing an online fill-in-the-blank template that can be submitted to the Commission electronically.

Martin is a past president of the Federal Communications Bar Association and a member of Fletcher, Heald & Hildreth, Arlington, VA. E-mail martin@fhhlaw.com.

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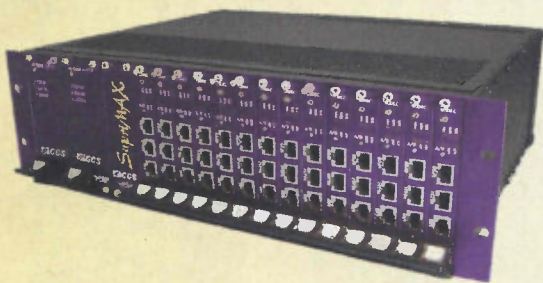
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Feel the

By Doug Irwin, CPBE AMD

POWER

From generator and UPS back-up to alternative sources, facility power is often-overlooked but mission-critical.

There are so many items in a radio or TV facility that we classify as mission-critical; but what can possibly be more mission-critical than the station's power source? Living in a large metropolitan area – such as I do – one of the worrisome aspects of summertime is the possibility of rolling power blackouts. And that's just one reason for the power to go off.



ON THE AIR

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SOME WORDS SHOULD BE OBSCENE AND NOT HEARD



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Our new HD compatible BD600, 24-bit delay, comes standard with AES/EBU, and provides up to 80 seconds of memory — twice as much as other delays. There are fully adjustable Delay and Dump functions, and a Sneeze function which “edits” audio entering the delay, allowing the host to sneeze, cough, or make a short comment without being heard on air.

The BD600 offers two different methods of delay buildup and

reduction: Eventide’s catch-up and catch-down system, and an exclusive fast-entry-and-exit feature which allows starting a broadcast with the delay already built up to a safe amount and ending it with a rapid reduction of delay.

For HD, the BD600 offers MicroPrecision Delay™ mode which allows up to 10 seconds of delay to be adjusted in real time in 100 nanosecond increments. This is useful for synchronizing analog and digital signals while on-air, without audible artifacts, to maintain a seamless user experience.

Whatever your size, whatever your format, you can’t expect to protect the integrity of your air and the foundation of your business without an Eventide Broadcast Delay in your rack.

Eventide®

HD COMPATIBLE

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Feel the POWER

Precipitated by the Clean Air Act, in 1979 the EPA advanced new source performance standards from stationary sources, which includes ac power generation equipment. New standards were developed (known as Tiers 1, 2, 3 and 4) but it wasn't until 2006 that the final regulations were set in stone. In the interim period, different states developed different standards. Today the EPA requirements in Tiers 1 through 4 are the minimums that any particular state must meet (see CFR 40 part 60). Tier 1 regulations were phased in from 1996 to 2000; Tier 2, from 2001 to 2006; Tier 3, from 2006 'til 2008; and finally Tier 4 from 2008 through 2015. The purpose of the tiers is to diminish over time the release of particulate matter (PM) and NOx (nitrogen oxides) into the atmosphere. In 1998 the EPA estimated that by 2010 NOx emissions would be reduced by about a million tons per year – the equivalent of taking 35 million passenger cars off of the road.

A new model for power

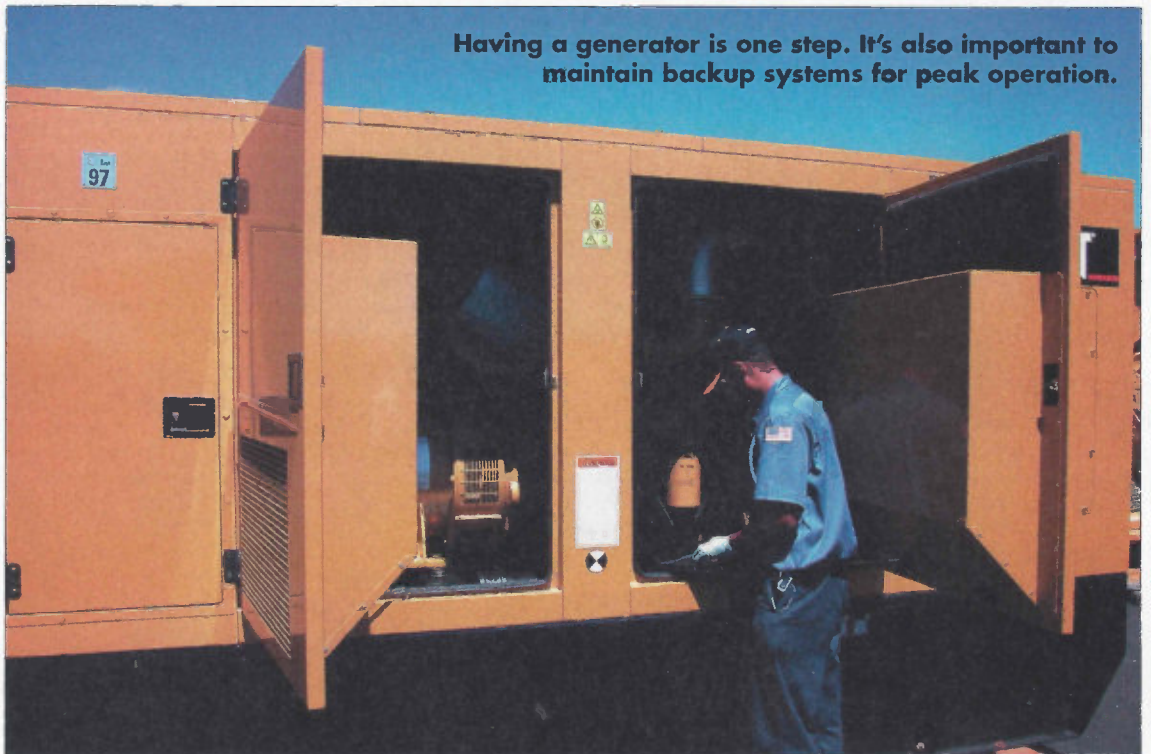
Buying a new generator today means that you'll be getting more than just an old, smelly beast that sits out behind the transmitter building, practically out of site and all too often out of mind. Aside from running cleaner, many come with modern communications facilities that can make our lives as radio engineers a little easier. For instance, Kohler makes an extensive line of generator sets, over a very wide range of power and different fuel systems, such as diesel and LPG/natural gas. A recent addition is the Powerscan Monitor System, a monitoring and alarm system that communicates outbound via the GSM cellular system. User-defined alarm conditions and telemetry are



Temporary power systems are ideal in a crisis, but permanent systems are a better solution.

forwarded to a control center via the wireless connection, and thereafter forwarded for action to whomever is designated by the generator owner. Messages can be sent by e-mail, telephone, fax or to a pager. A website is maintained at the control center as well, allowing the end-user to remotely monitor the generator.

Not to be outdone, Cummins/Onan offers a wide range of power levels as well, with the typical fuels: diesel, LPG/natural gas and gasoline. Its monitoring and communications system is known as Power Command Iwatch and is a browser-based system that allows the generator set to be operated and monitored via LAN/WAN or the Internet (or even a good old-fashioned telephone line modem). Start/stop capability in addition to telemetry is available via what Cummins calls an easy-to-grasp



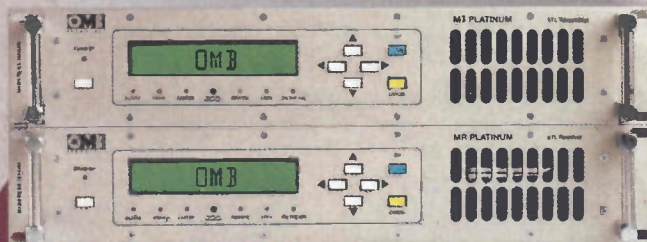
Having a generator is one step. It's also important to maintain backup systems for peak operation.



B R O A D C A S T

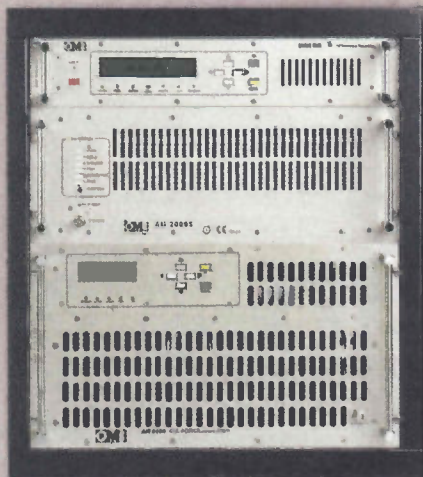
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EM 2000

is a 2000W FM transmitter made up of the EM 25 DIG exciter (or EM 20/30 exciter) and the AM 2000 FM amplifier. AM 2000 includes eight 300W high-efficiency MOSFET technology amplifying modules, fed by 2 independent switching power supplies, which are made to withstand the working conditions. The amplifying modules work independently thanks to a power combining structure that provides high isolation between them.

EM 10000

is a 10000W FM transmitter made up of the EM 250 COMPACT DIG exciter and three control units which combine the power of six AM 2000 FM amplifiers. AM 2000 includes eight 300W high-efficiency MOSFET technology amplifying modules, fed by 2 independent switching power supplies, which are made to withstand the working conditions. The amplifying modules work independently thanks to a power combining structure that provides high isolation between them.

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GUI. Alarm conditions are reported to the end-users of the genset by way of e-mails.

Cummins is also working on a commercially-viable SOFC (solid oxide fuel cell) in conjunction with the Department of Energy. The power level is 10kW, and its introduction to the market is expected no later than 2011. Natural gas is the fuel source for the SOFC, by the way. The goal for the cost of the system is \$400/kW.

Caterpillar is a familiar large manufacturer of generator sets powered by diesel or natural gas. Probably the most interesting aspect of Caterpillar is the maximum sizes that it builds – over 10MW for diesel and about 5MW for natural gas.

Generac is yet another familiar generator manufacturer. In addition to its line of compression-type engines (i.e., those running on diesel fuel) and spark-ignition types (gas) it also offers a Bi-Fuel system, which is actually



Generators are available in sizes ranging beyond 10MW.

a redundant fuel system. When the generator starts, it runs on diesel; but as the load is applied, natural gas is substituted. Just enough diesel is left in the mix so that the compression inside the cylinders will continue to ignite the fuel mix. The primary advantage asserted by Generac to a system such as this is the greatly extended run time due to a reduced draw on the diesel fuel itself. Should the source of natural gas be missing for some reason, the generator will run 100 percent on diesel.

If you can't be satisfied with just a single generator for standby power at your facility, you may want to consider multiple units, with their outputs combined via large switching panels and synchronization of the output waveforms. All the manufacturers I've mentioned – Cat, Generac, Cummins and Kohler makes systems to accomplish that.

Power interrupted

It's obvious in this day and age – with a radio or TV facility almost completely reliant upon computers for the generation of program material – that keeping the power available during the time it takes to switch over to the standby power source after a power failure is an absolute necessity. That's where the UPS comes into the picture. For our purposes there are basically two types of UPSs: off-line and online (commonly known as double-conversion).

If you are planning on backing up ac power that feeds computers, avoid the off-line UPS types. The problem with that type is that it needs time to not only detect a loss of ac, but to switch over to its internal backup source. This series of events is going to take around 20 milliseconds; during that time the power supplies that feed the computers, routers and all other equipment are going to have to use their internally stored energy (in those big power supply capacitors) to make up the

difference, and when that happens all kinds of havoc can occur.

So, assuming you are settling on the online type, you then must decide to what level you want your system backed up. Will you protect individual racks that hold important servers, for example? Or will you provide a backup for your entire technical core? There are many factors to be considered in that decision, but I do want to bring to your attention some manufacturers and what they offer.

APC offers an extensive line of UPS units including the Smart-UPS RT. This series of on-line UPSs comes in power levels from 1 to 10kVA. The 10kVA unit uses 10RU of rack space, weighs 440 lbs, and has a half-load run time of 13 minutes. Serial and Ethernet communications are standard. (Just think about all the e-mails you're going to get when the power goes out!)

One manufacturer you may not have heard of is Falcon Electric. I'd like to point out its SG series of online UPS units, in the power range of 800VA to 6kVA. Falcon also points to another advantage of online UPS technology – the elimination of UPS problems associated with drifting frequencies, as well as voltage, in the output of a generator.

In the design of a new facility, if you decide to provide UPS backup for the entire technical core (or maybe even more) you could easily go with a large UPS that makes use of batteries for energy storage, such as the Tripp Lite Smart Online SU80K modular UPS system that provides 120/208Vac three-phase outputs. It's an online system with all the advantages I've previously described – but it's made up of four separate 20kVA UPSs, which according to Tripp Lite gives the end-user the capability of working on the system even while the load is energized. I should

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Feel the
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also mention it includes a manual bypass breaker and an automatic bypass function.

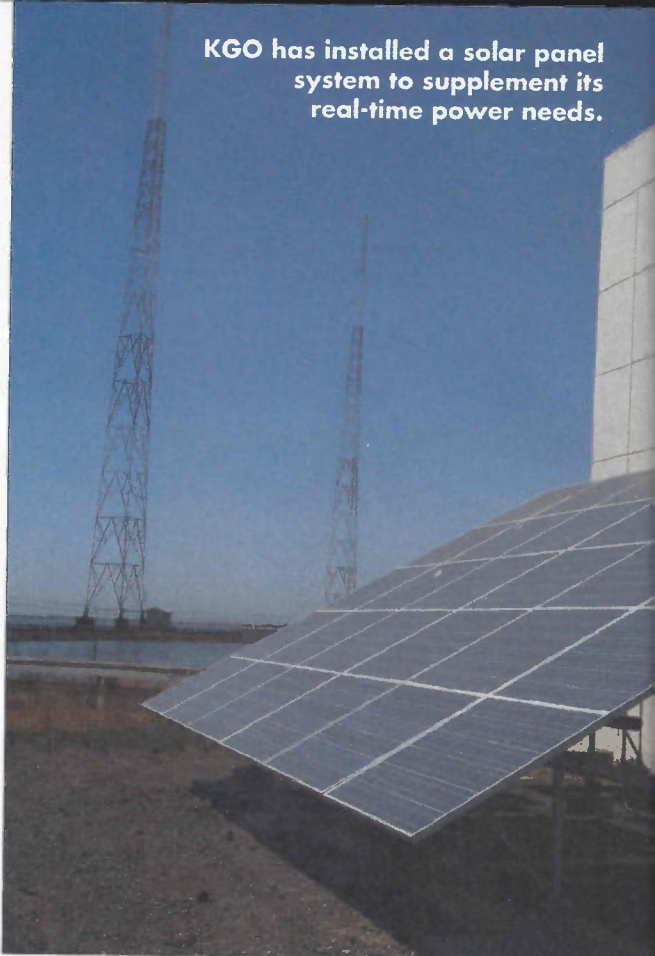
There is yet another option for the on-line UPS backup for the technical core – one that uses energy stored in a rotating flywheel as opposed to backup batteries. Active Power offers Clean Source in a wide power range, from 130kVA up to 3600kVA. It's highly efficient – up to 98 percent in fact – and though you won't have to maintain or dispose of large batteries you will need to change bearings for the flywheel upon occasion. I must also mention the application (aside from full-time line power conditioning) is to bridge the gap between the time the utility power goes down and your generator starts. This type of UPS isn't meant to supply an entire facility for a substantial amount of time.

Power alternatives

Perhaps you are not in the market for a new generator or UPS, but instead are interested in alternative power sources for your station's studio or transmitter facilities. There are at least two different technologies readily available and warrant your consideration.

It's interesting to note that most energy sources on the earth are in reality derived directly from

KGO has installed a solar panel system to supplement its real-time power needs.

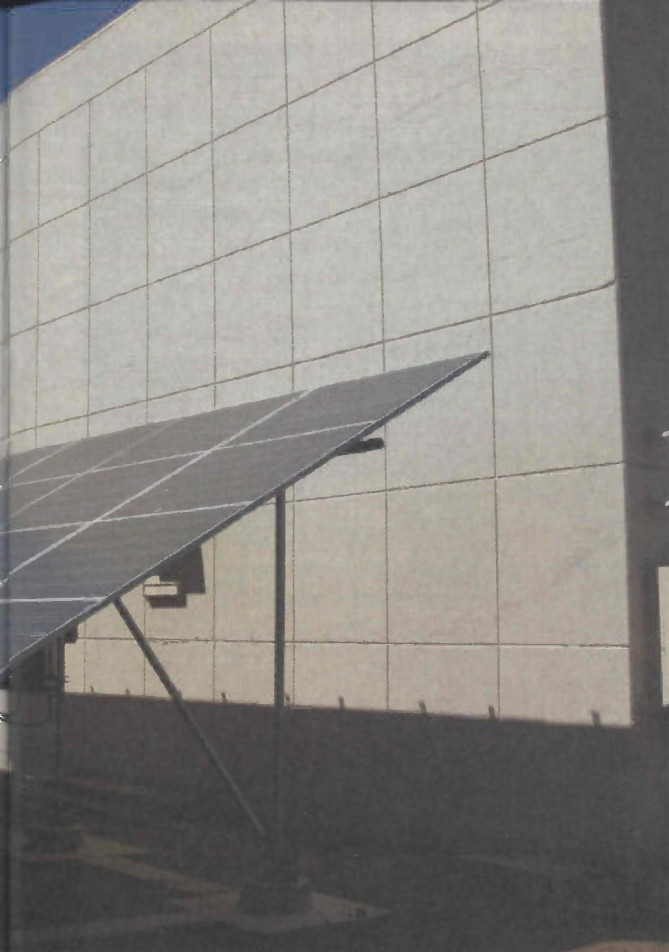


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the sun – whether it is electricity from photovoltaic cells, wind, fossil-fuel or even hydropower. The ideas aren't new but in many cases the specific technology is. When you stand in the sunlight on a hot summer day, it's a little hard to believe that a burning ball of gas 93,000,000 miles away still feels that hot! Indeed, the amount of energy from the sun intercepted by just the Earth's surface is about 7,000 times more than the total global energy consumption (for 2005 anyway).

Going green is, at the very least, a good marketing avenue for radio. Using alternative energy sources, for even a part of a station's energy needs, is relatively easy to do. Let's take a look at a prime example: KGO radio in San Francisco.

The solar power project for KGO is being conducted at the KGO transmitter site near the Dumbarton Bridge in Newark, CA. A major highway is immediately adjacent to the site (in fact the KGO transmitter is commonly known as "the Towers" in traffic reports) and so it provides a lot of exposure to thousands of commuter eyes every weekday. Its first solar power system is made up of photovoltaic cells (PV) manufactured by General Electric and mounted in flat arrays on the roof of the transmitter building and near it on the ground. Its second solar power system is based on the use of concentrator photovoltaics (CPV) and is provided by Solfocus of Mountain View, CA. The

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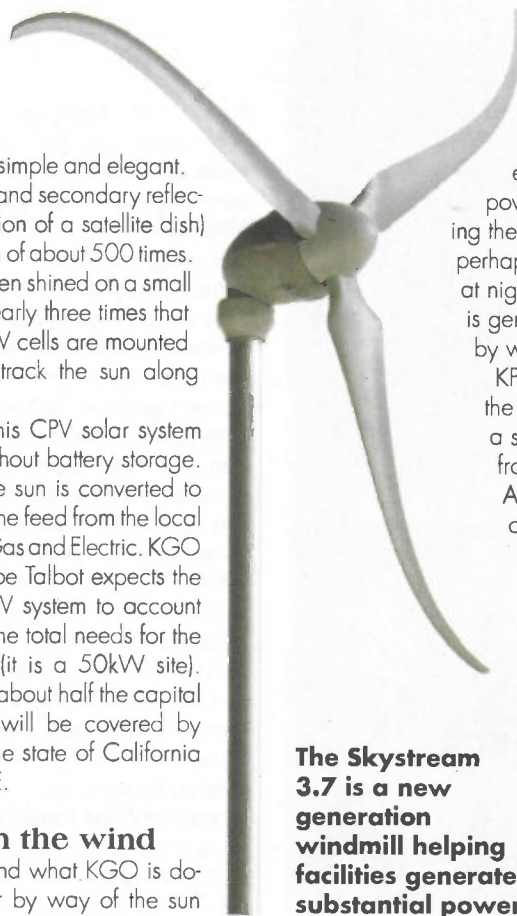
Feel the POWER

CPV system is really quite simple and elegant. Small mirror arrays (main and secondary reflectors – simply a small version of a satellite dish) collect sunlight with a gain of about 500 times. The collected sunlight is then shined on a small PV cell, with efficiency nearly three times that of a standard PV. The CPV cells are mounted in flat-panel arrays that track the sun along azimuth and elevation.

In the case of KGO, this CPV solar system operates in real time, without battery storage. Energy collected from the sun is converted to 60Hz ac, and added to the feed from the local power company, Pacific Gas and Electric. KGO Director of Engineering Joe Talbot expects the peak output from the CPV system to account for about 10 percent of the total needs for the KGO transmitter facility (it is a 50kW site). Talbot also indicates that about half the capital expense of \$200,000 will be covered by incentives provided by the state of California in conjunction with PG&E.

The answer is in the wind

If you want to go beyond what KGO is doing and generate power by way of the sun



The Skystream 3.7 is a new generation windmill helping facilities generate substantial power.

and wind, you can meet (at least part of) your site's needs through the entire day. In theory you could generate power from both the sun and the wind during the day, store some of it in batteries, and perhaps rely upon the wind generator by itself at night. Let's take a look at one station that is generating a substantial part of its needs by way of the wind.

KPAN radio, located in Hereford, TX (in the heart of the Texas panhandle), uses a small wind turbine (the Skystream 3.7) from Southwest Wind Power of Flagstaff, AZ. This unit is rated at 2kW of constant output, with a peak capability of 3.4kW. Like the KGO system, the output of the Skystream 3.7 is in the form of ac power that interconnects with the user's utility feed (if it turns out that the Skystream generates more power than is being used, the utility meter goes backward). Chip Formby of KPAN tells me the entire kit costs about \$5,600 – and can even be sourced by mail order. (Installation in the case of KPAN was around \$10,000.) Sounds easy enough – but you will need about a half

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acre of land, a 45' pole, and an average wind speed of at least 10mph. Although the system is brand new (about two weeks old as this is composed) Chip expects the system to provide about 25 percent of the energy needs of the studio facility during the windiest months. He also tells me that the Skystream will power the studio facility completely while the studio is unattended.

As an alternative consideration, you may also want to look at Endurance Wind Power. Its small wind turbines make use of an induction motor, with an output that is 60Hz, and connects directly to the power grid without making use of an intermediate dc to ac inverter.

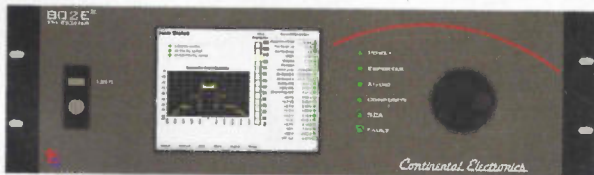
Finally I'll mention the fact that there are ways (at least in some states) to make use of wind power right away *without* building it for yourself. Rocky Mountain Power, which provides power to customers in Utah, Wyoming and Idaho, has a program known as Blue Sky, which allows its customers to purchase power sourced completely from wind energy.

Developing new, standby or alternative power sources for your station gives you an opportunity to exercise your environmental convictions – but it goes farther than that now. Energy prices are increasing – without looking back – and considering ways to break our dependence on the traditional sources of energy makes financial sense even now and probably more so into the future. 

Irwin is chief engineer of WKTU, New York



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By Ken Tankel,
CSRE CSTE

WNYZ, Brooklyn, NY, was a Russian-language station that operated very much in the old tradition of radio. There was a control room with a board operator/producer, and the show hosts and newscasters sat in front of their microphones in a separate studio space. The equipment was quite up-to-date, including a Comrex Stac phone system and a stand-alone Mediatouch workstation. Production was done in a room designed for producing music beds and beats. The studio had two DAWs, some great synths, but no console. This room supported a full-fledged recording studio where commercials and original music were produced, and finished production was transferred, via LAN, to shared storage. From the shared drive, files could be moved to the stand-alone Mediatouch system. There were no audio or control lines between any of the rooms. But that was yesterday.

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Upbeat

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Today, WNYZ, which covers Manhattan, Brooklyn, Staten Island, Northern New Jersey, and Southern Connecticut is bringing a new beat to the tri-state area.

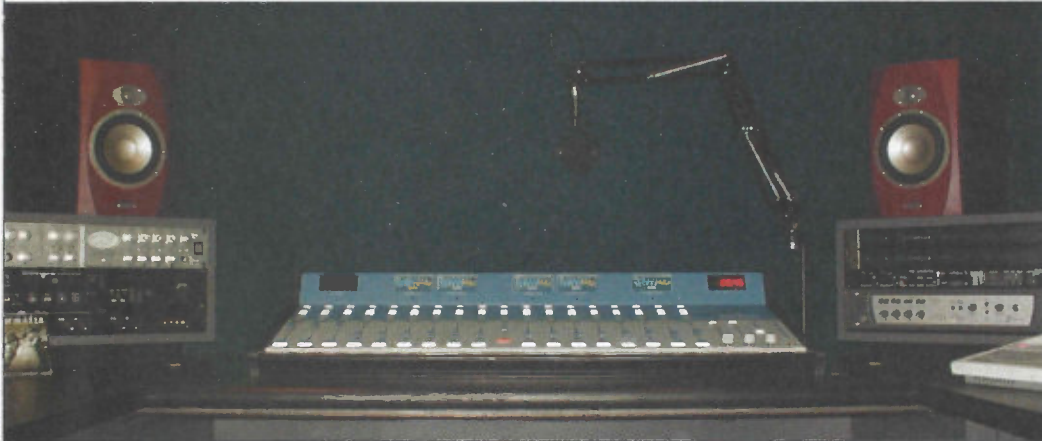
Veteran radio programmer, Joel Salkowitz, was hired as the PD and operations manager to program a new dance format and to develop the facility for his new staff. Budget, time frame and functionality were all critical factors in getting the station on the air with the new format. The air staff would be drawn from the established New York radio scene where the talent had the experience and the

expectation of good broadcast tools. Informed equipment decisions would allow staff to hit the ground running and also provide flexibility to respond to the station's growing needs and take advantage of new opportunities.

A place to begin

To accommodate the new format, the facility would get new air and production studios. The existing studio/control room would be used for the morning show. There was no space for a dedicated rack room so it was important for all the centrally located equipment to fit in a single rack. The rack would be located in a small area outside the morning show and air studios. To build the facility as quickly as possible, the new studios would be assembled, wired and tested off site. Space renovations and cable installation could proceed at the same time the studios were being wired. As soon as the new rooms were available, furniture and equipment could be delivered and a working studio system could be quickly completed.

WNYZ chose Radio Systems Millenium Digital consoles for the studios. To further reduce



WNYZ Production combines a broadcast console with two DAWs. To the left are several synths and a window into a small vocal booth.

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installation time and labor expense, the Studiohub+ wiring was used for the studios and the central rack. The Millennium consoles were supplied Studiohub-ready, with all audio connections available on RJ-45 connectors. Studiohub Mini Tie hubs were used as tie-points between the studios and the central rack. Each hub has two RJ-21 connectors distributed to 24 RJ-45 connections. These are used for 12 analog stereo pairs and 12 AES3 digital audio connections between each studio and the central rack. To eliminate any possibility of crosstalk between AES digital circuits and analog audio circuits, one multi-pair cable carries only analog signals and the second cable carries only digital audio circuits.

Studio Technology furniture, all the new audio equipment and studio accessories were delivered to the integrators' shop at Future Media Designs. The cables for audio and device control were put in place in the studio furniture prior to delivery to the studios. The consoles, mic booms, microphone controls, headphone amps and cross-connects to the

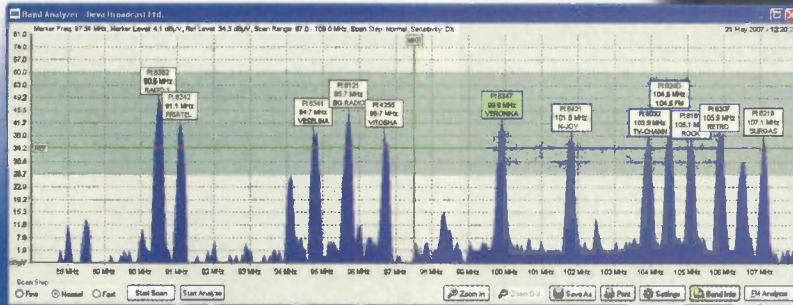


The talk studio provides plenty of control for the host including all mic on/off/cough, phone speaker and monitor levels, phone system, and a view of the Media Touch screen.

Mini Ties were all installed and tested. In the central rack, cross-connects between the studio tielines and the rack equipment were installed. Wiring for equipment that would be reused from the existing studios was also

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Upbeat DIGS

put in place during the pre-build. Studiohub adapters for audio connections as well as remote control were used throughout, and prefab, shielded CAT-5 cables were used. Studiohub has comprehensive ground/shield management allowing control over the ground system. After each studio and the central rack were wired, the cables were bundled into harnesses and pulled back to the Mini Tie terminations. The equipment was pulled out of the racks with the exception of the Mini Ties and patchfields, which were transported in place in the furniture.

Meanwhile, six lengths of shielded, 25-pair, CAT-5 cable with RJ-21 connectors preinstalled were delivered to WNYZ. Two 25-pair cables were run from each studio to the central rack location. Six individual



The morning show control room has a profanity delay, behind the Short Cut, with a red dump button visible on the console surface.

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CAT-6 cables were also run from each studio to the central rack. The individual cables would be used for KVM extender, console remote starts for automation, an ISDN line, a LAN for Internet access and for future use.

Something existing, something new

The design called for the studios to share the existing Comrex Stac phone system, so the Stac was moved to the central rack. The two caller outputs run to a DBX 166 compressor/limiter and then to a stereo distribution amp. The DA outputs run, via the tielines, to each of the three studios. The caller mix-minus and program-on-hold outputs from each studio return to a stereo, three-input-by-one-output switch. Any studio can use the phone system by selecting the appropriate mix-minus source to feed the Comrex.

The standalone Mediatouch system was expanded to serve all of the studios. The new system provides payout in the morning show studio; the new air studio, recording in the production room; and scheduling and audition of content in the PD's office and traffic. The Mediatouch server and studio workstations for the new studios are located in the central rack with KVM extenders into the air and production studios. AES3 digital audio connections are provided via the tielines.

The furniture and equipment arrived on site on a Monday at 7 a.m. The furniture and central rack were in place and ready for equipment in a matter of hours. The production studio was



The furniture and equipment arrived on site on a Monday at 7 a.m. The furniture and central rack were in place and ready for equipment in a matter of hours. The production studio was up and running by the end of the day Tuesday. The air studio was complete at end of business on Thursday. Simply plugging in the two multipair cables in a studio and in the rack instantly provided all the audio interconnect to the central rack and between the studios. Each studio uses approximately 50 percent of the audio capacity in the multipairs. The central rack was complete, and the entire studio system tested by Friday evening. Saturday was spent in the talk studio and control room reprogramming the existing

Equipment list

Air and production studios

360 Systems Shortcut
 Avalon VT 737
 Comrex Stac
 Crown D-75
 Denon DN-C635
 Digidesign Pro Tools
 Focusrite Voicemaster Pro
 Motu 828mkII
 Radio Systems Millenium Digital
 Shure SM7
 Steinberg Midex 8
 Studio Technology furniture
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Morning show studio

Air Tools 6100
 Audioarts D16
 E-V RE-20 microphones
 Radio Systems custom switching

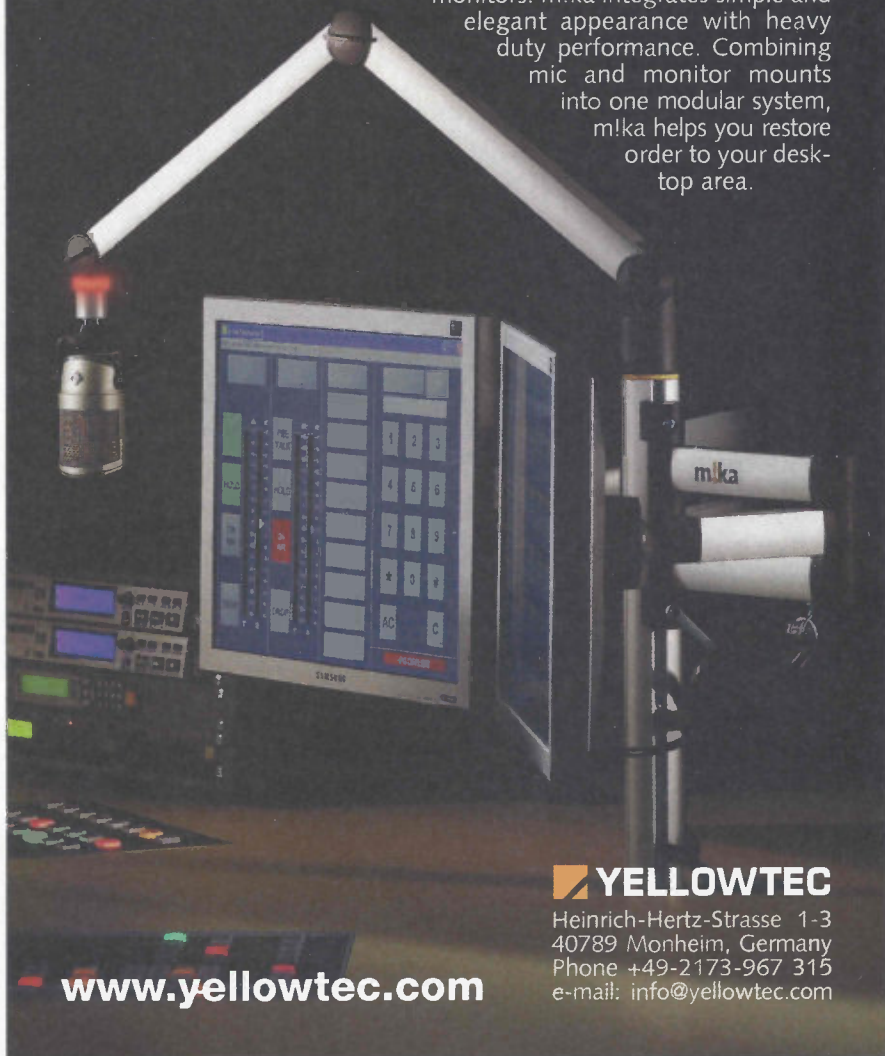
Central/shared equipment

Translantech Sound Arianne
 Arbitron PPM
 Comrex Stac
 DBX166
 Broadcast Tools 2.6 DA, SS4.1III
 Radio Systems RAD-DA6DC
 Imediatouch
 Middle Atlantic WRK rack
 Tripplite 2400
 Studiohub+

Some equipment was pre-existing and reused for the new installation

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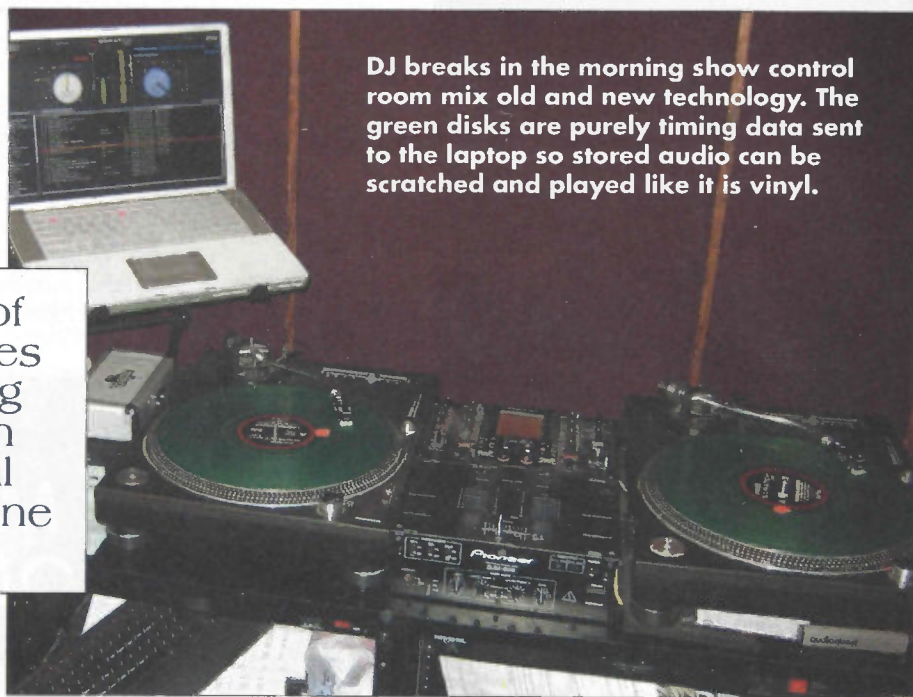
Upbeat DIGS

Audioarts D16 console to try and anticipate the needs of the *Star And Buc Wild* show, returning to New York radio on WNYZ.

The flexibility of the Millenium was put to

The combination of stand-alone consoles and modular wiring provided a system that met functional requirements, timeline and budget.

the test when the air staff requested changes to record phone calls off-line. Their request was to be able to record phone calls when the callers were not on air, take calls totally hands free, record calls without



DJ breaks in the morning show control room mix old and new technology. The green disks are purely timing data sent to the laptop so stored audio can be scratched and played like it is vinyl.



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turning on any console channels, and recording calls without changing program/audition bus assignments. All of this is to avoid any on-air mistakes. The recording was to be split with the studio mics on one channel and the callers on the other, to provide maximum flexibility in editing the calls. The console was quickly programmed to send a pre-fader sum of the studio mics to the 360 Systems Shortcut left channel input, and pre-fader phone callers to the right channel input, whenever the caller one channel is in cue. When the channel is turned on, the left channel feed switches to the phones mix-minus program bus and the right channel switches to the post-fader caller output. Turning a caller channel on turns cue off. By contrast, two external, eight-channel stereo mixers are required to accomplish the same task in the morning show studio.

For WNYZ the combination of stand-alone consoles and modular wiring provided a system that met functional requirements, timeline and budget. The system has the additional benefits of being easy to maintain and is adaptable to future needs.

Where did a radio license with coverage of New York City come from in 2008? Pulse 87 is actually the audio carrier for a low-power TV license on channel 6 and is licensed in Brooklyn. The FM, stereo audio for channel 6 TV is receivable on about 85-90 percent of standard FM receivers.

FCC rules allow low-power TV stations to broadcast separate programs on the aural and visual carriers. Because there appears to be no FCC rulemaking contemplated to require low-power TV to move to digital broadcasting, New York will be able to dance to the new beat of WNYZ for some time to come.

Tankel is the principal of Future Media Design, futuremediadesign.com.

WHEN EVERY SECOND COUNTS



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Tips, tricks, hints and more

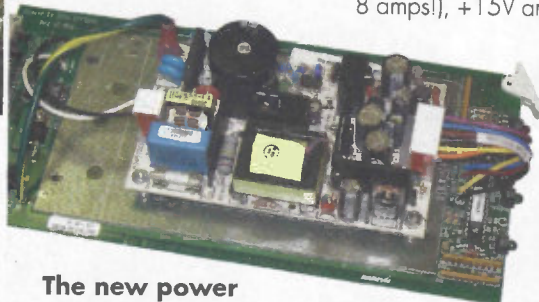
By John Landry, CSRE

Alternative power supply

The 24/7 nature of broadcasting is hard on equipment – particularly power supplies. It used to be most broadcast equipment had a built-in, linear-type power supply, designed by the equipment manufacturer. Modern trends have led to smaller, switching-type supply modules that are off-the-shelf items. Several pieces of equipment approaching 5-plus years of continuous use in our facility are experiencing power module failures. And finding replacements quickly is often expensive. (One well-known T1 multiplexer manufacturer quoted \$700 and a lead time of four weeks.)

Out of necessity I stumbled on an affordable, immediate alternative:

The International Power Sources model UPO653S-03. This supply provides 5 (at 8 amps!), +1.5V and -1.5V, and will fit in



The new power supply module on the T1 shelf card.



Resource

XP-Foresite

1-800-278-6650

A bad power supply module – note the bulging capacitors and heat marks.

Wiring a road rack

It seems that wiring a large rack in a rack room is always easier than wiring small racks for remotes. The number of wires needed is less, and usually the hardware to make the wiring neat takes up too much room. A simple solution is shown at right. Take a scrap of stiff cable (such as RG-6 or plenum CAT-5) and use it as a lacing bar. It will

hold the smaller wires together in a bundle, making a nice neat wiring job for the road rack that looks just as good as those in the big racks.

Rack wiring with a piece of RG-6 used as a skeleton



Belts are a cinch

Recently a client asked me to repair a cassette deck. It turns out all it needed was rubber belts. No sooner than I had it working, an IT person asked me for help with a DVD drive that wasn't working (and he needed to fix it yesterday and

there was no time to run to Comp USA). Quick inspection revealed that it too needed a rubber belt. Since I have a stash of small belts, soon the DVDs were rolling again. Luckily the PRB line of belts is still available, and thanks to the Internet I found a good place to get belts, tires and rollers. Ken's Electronics has a large stock of new belts and a great index online, complete with instructions for measuring or guesstimating the size of a belt. Ken's also has a large inventory of electronics parts and info on his website.

Resource

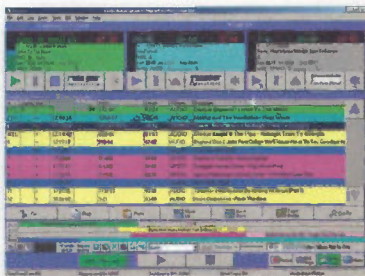
Ken's Electronics

www.kenselectronics.com/lists/belts.htm

Landry is an audio maintenance engineer at CBS Radio/Westwood One, New York.

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Radio Automation



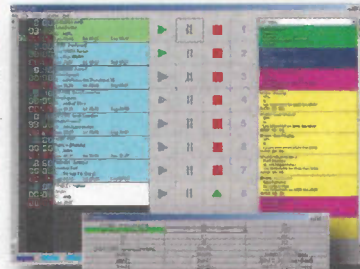
Simian - radio automation and digital play out system

Instant Audio



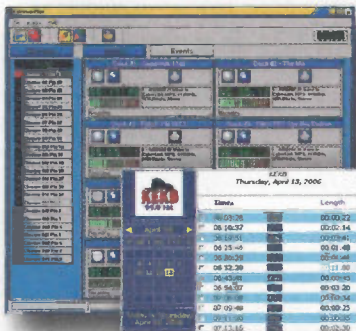
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Audio Logging



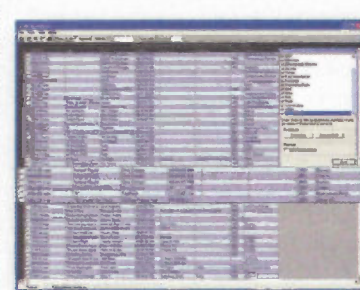
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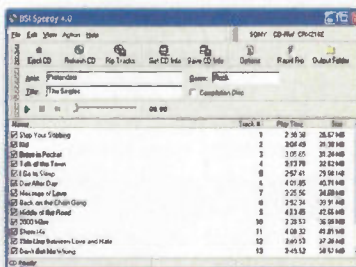
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Centrance Micport Pro

By Chris Wygal

In the 1980s, Madonna indicated she was a material girl living in a material world. However, more than 20 years have gone by, and we find ourselves living in a USB world. Serial connectors are becoming more and more scarce, and USB is a faster, easier computing interface. The speed offered by USB connectivity has opened the door to handy developments in the recording and radio industries. When Madonna recorded *Material Girl*, microphones, preamps and mixing consoles were a must. But today, microphones can simply connect directly to a computer via USB with the help of the Centrance Micport Pro preamp.

Outside, inside

The Micport Pro is a Class A microphone preamp constructed from black anodized aluminum. It is 4" long, 1" around, weighs 2.2 ounces and comes equipped with a USB port (cable included), headphone output, 48V phantom power on/off button, mic level adjustment, and headphone level adjustment. A female XLR jack allows for easy connection of a standard dynamic or condenser microphone. No batteries are required; power comes from a computer USB port, and it drives the phantom power circuitry and headphone jack. The mic gain adjustment allows for 36dB of gain adjustment, accommodating most dynamic or condenser microphones.

sound from the computer can be routed back through the Micport Pro for multitrack monitoring, or for use when no speakers are available. Zero latency is a plus with this device. No noticeable delay is detected when using the device as an output monitoring device. The phantom power is activated using a small button near the headphone and USB jacks. Micport Pro offers 20Hz to 20kHz frequency response, complementing the performance of virtually any microphone.

Having experimented with a Shure SM7, Sennheiser E835, Audio-Technica 815-b, and Rode NT1, I found the tool accurately sampled the expected character of each microphone.

The quality Class-A preamp matched the performance of typical high-end microphone preamps by providing quiet, pristine power and affording true life-like frequency response.

The Micport Pro will operate using Windows Vista, XP and Mac OSX 10.5. It is compatible with USB 1.1 and 2.0. Multiple preamps can be used for stereo or multitrack recording in conjunction with the Centrance Universal Driver, which is downloadable from the Centrance website.

Capturing audio material is sometimes best done using a laptop or desktop computer, and sound gear is sometimes hard to lug around or unavailable. The Micport Pro tags along easily in a computer carrying case. Just snap on your favorite microphone and hit record.

Centrance

P 847-581-0500

W www.centrance.com

E info@centrance.com

Performance at a glance

24-bit/96kHz performance

48V phantom power

USB-powered

No drivers necessary

Stereo headphone output

Windows XP, Vista, and MAC OS X and 10.5 compatible

Compact, rugged construction

There are no drivers or software to install: When the unit is connected to a USB port, the computer recognizes it as an audio in/out interface within seconds. A bright white indicator ring lights up when a computer has recognized it. Depending on individual computer audio interface and recording software properties, designating the Micport Pro as the working device for recording will take some brief experimenting. It will be automatically included as a possible audio device on a PC or Mac, so setting up is a snap.

The Micport Pro provides a 96kHz sampling rate and 24-bit resolution. When used with headphones,

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Deva Broadcast Band Scanner Pro

By Barry Thomas, CPBE CBNT

You are likely familiar with the incredible FM signal analysis tools now available. One limitation of many of the most powerful tools is simply size. Being responsible for multiple markets, I find it difficult to justify big hardware just for spot checks. Fortunately we have some fixed tools available, but sometimes quick, portable measurements are needed.

The Deva Broadcast Band Scanner Pro is a USB-powered FM scanning receiver, modulation and RDS analyzer that literally fits in a shirt pocket. It is only slightly thicker than my 250GB USB backup hard drive. The unit has a few connections: USB (data and power), an F connector for a supplied telescoping or external antenna, a BNC for FM baseband measurements, and a 1/8" stereo headphone jack for listening or connection to a PC.

How it works

The device uses PC software to control and operate the system. The tuning controls operate like a consumer radio, with programmable presets for up to five stations, an input selector for the baseband input and Windows buttons for the analyzer functions. The tuner station search settings can be adjusted between four RF levels, the step can be

proximates an LED display that illuminates when the Band Scanner Pro detects one of the RDS groups. This is a useful thumbnail to see that certain RDS data is being transmitted with appropriate frequency. The Windows button Group Analyzer takes the next step showing measured percentages and group data flow for more in-depth analysis. There are tabs at the top of the display for each

Performance at a glance

- USB-powered
- 75Ω F connector antenna input
- 87-108MHz in 100kHz or 200kHz steps
- Decodes RDS and RBDS standards
- 3.5mm headphone jack
- Composite MPX/RDS BNC input

switched between 100 and 200kHz. There is an on-board 6dB attenuator and the demodulator has selectable de-emphasis (50µs/75µs).

It's apparent this device is targeted at RDS data analysis. The initial screen devotes a great deal to RDS (Figure 1). There is also a selector for the data mode: RDS or U.S.-Style RBDS. The display shows the RDS PS, PTY, call letters, radio text A and B, as well as the date/time. The RDS raw data is displayed as well. Very few U.S. radio stations use the AF list (alternative frequencies), but the initial display shows the presence of the list and its contents.

A particularly valuable data tool on the first screen is the Group Detector. This part of the display ap-

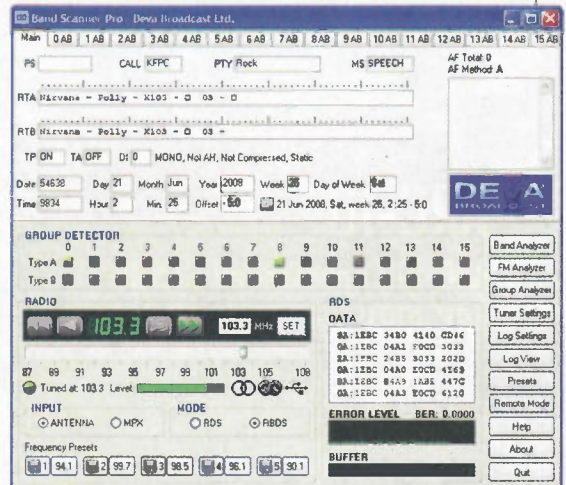


Figure 1. The initial screen displays a great deal of RDS information.

of the RDS Groups. Using those tabs, individual RDS groups can be observed. For setup, the RDS error level and BER display can be very helpful to find the best measurement location and are a good indicators of signal quality as well as for data measurement.

Recognizable tools

The Band Scanner Pro has a number of very familiar analysis tools. The Band Analyzer (Figure 2) is a scan of the FM band. There are two ways

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to do this: Scan, which shows relative signal strengths and Analyze, which augments the relative level display with frequency and the RDS PI code. After a band analysis is done, double-clicking on one of the station information boxes will tune the Band Scanner Pro to that channel. The reference level and marker can be moved

also be printed. It would have been helpful to be able to directly save this data as an Excel or CSV file but this can be easily rectified by making sure the Windows computer has a text-version print-to-file printer setup.

The main and Band Analyzer screens have a Windows button for the FM Analyzer. This is a set of FM Modulation analyzer tools. The analyzer consists of a number of tabbed screens each with the familiar tuner display at the bottom. The main Modulation analyzer screen includes bar graph meters for total mod (MPX), RDS, Pilot, left/right audio and RF level. Each bar graph shows numeric values for the instant, minimum and maximum levels measured. More specific modulation analysis information is available using the display tabs:

- FM Graph is a real-time graphical display of modulation parameters. The displayed time span can be varied between 1 minute and 10 minutes. Although it's possible to print, this is another place where a direct-export of a graphic file would be handy although print screen will suffice.

- MPX Deviation, Pilot Level and RDS Level are similar graphical displays of the parameters over time. The display takes a little getting used to but it's a bold way of displaying the measurements in

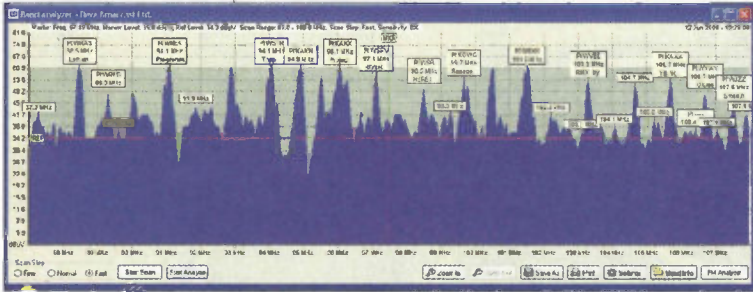
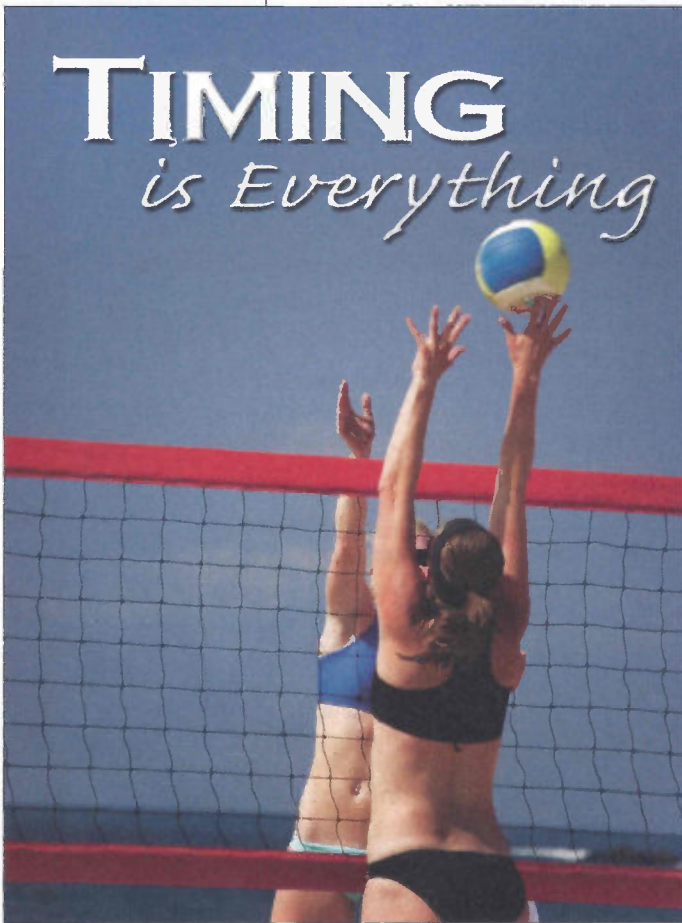


Figure 2. The Band Analyzer scans the FM band and shows a spectrum display.

with the mouse to help isolate parts of the band for investigation. The display can be zoomed, printed and saved, as a JPG, WMF, EMF or BMP. Clicking on Band Info will present the band analysis in table form including additional information for each station. This information can



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such a way to quickly see that the measurement is either within or out of tolerance.

- The Left Right graph is a more conventional display of level over time.

Logging

The Band Scanner Pro has logging capability although its primary capability is to log RDS/RBDS data and not modulation parameters. This is an unfortunate oversight, particularly considering its remote capabilities.

For me, the attraction of this device was that it was a quick FM measurement tool I could fit in my laptop bag. It was something I could use to make a cursory measurement before I committed the serious hardware to the job. It will fit that bill very well but I found a nice little feature: Remote Mode. This mode turns a computer into a monitoring device over IP. By running this function and connecting the headphone jack to the computer audio input, a quick remote measuring device complete with a streaming server is created. The Band Scanner Pro software will stream encoded audio ADPCM, MPEG Layer 3, CCIT, Windows Media, GSM, and PCM at a variety of modes and bit rates. Remote Mode has its own Web interface that closely approximates the local Band

Scanner Pro interface. This could be useful for quick remote listening applications that do not require the complexity or features of larger devices.

The help file was useful but I didn't find I needed to use it often. I initially had a minor problem with the display because I was using an odd resolution setting for my dual-monitor computer. The software needs 96dpi settings. Not a big deal. I'm not sure why I set it at 120dpi anyway.

Deva is currently testing a Band Scanner Pro with an on-board 12-channel GPS receiver. The new version will monitor up to 50 radio stations and plot the results on Google Earth. I look forward to an HD Radio version as well someday.

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Online Extra

For more screen views of the Band Scanner Pro, visit www.RadioMagOnline.com



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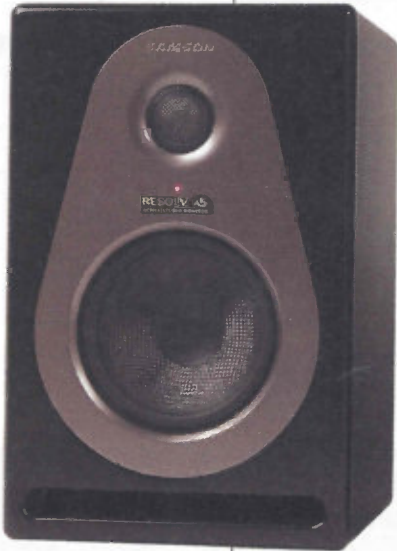


www.audioscience.com



by Erin Shippo, associate editor

Studio monitors Samson Technologies



Resolv: In addition to woven carbon fiber woofers that provide tight and controlled low frequency response and a low diffraction wave-guide for precise imaging, Resolv monitors feature a 1-inch silk dome tweeter, offering a smooth, sweet high frequency response. For cooler operation and low thermal compression, each Resolv model has an external heat-sink, ferro-fluid cooling and a ventilated ceramic motor structure. Constructed with medium density fiberboard for maximum SPL, the monitors are also AV shielded, for operation near computer monitors. The new Resolv series is offered with three different woofer and

amplifier configurations. The A5 has a 5-inch woofer and offers 50W on the low frequency driver and 25W on the high frequency driver. The A6 with its 6.5-inch woofer offers 75W on the low frequency driver and 25W on the high frequency driver. Finally, the A8 boasts an 8-inch woofer with 75W for the low frequency driver and a high frequency driver with 25W.

**631-784-2200; www.samsontech.com
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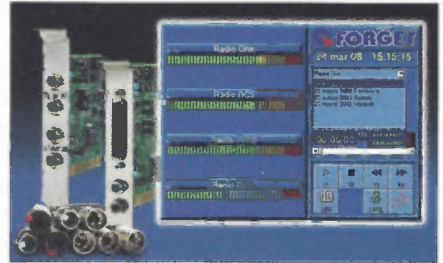
Six-channel headphone amp Presonus Audio Electronics



HP60: This headphone mixing system has six independent headphone amplifiers. The HP60 features dual stereo inputs as well as external input, for each channel allowing mixing between three stereo audio streams. Stereo output is also available on each channel to send line level headphone channel mixes to additional headphone amplifiers or monitor systems. Each channel features headphone level, mix control between A and B inputs, external input volume, mute and mono. The HP60 also features talkback via external XLR microphone input.

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Web, voice remote control system Broadcast Tools



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The mic icon was hiding as a flower petal on the lower right.



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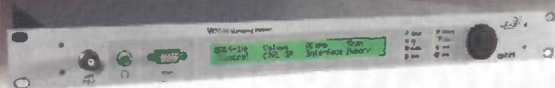


UPGRADES and UPDATES

Omnia Audio has released the Omnia One AM for AM stations. It features a wideband AGC/leveler, four bands of AGC and a separate four-band limiter. (www.omniaaudio.com)...**Tascam's** DR-1 portable recorder has been updated to version 1.10. The update adds recording and monitoring features. (www.tascam.com)...An oft-used page on the **V-Soft** website is the free Zip-Signal utility, which uses a database updated on June 1, 2008. (www.v-soft.com)...**Airshift** has updated its website, and with the update has posted evaluation versions of Airshift Studio 2.1 and Airtime 2.0 software for Windows, Mac and Linux. (www.airshift.tv)...To counter counterfeiting, **Neutrik** is identifying its products with a hologram of the Neutrik name and logo. Neutrik will also include an authenticity seal on its packaging. (www.neutrik.com)

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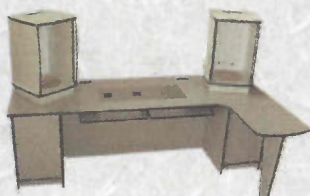
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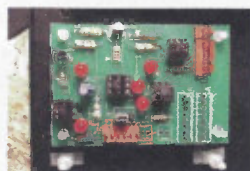
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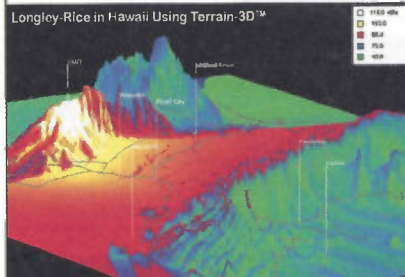
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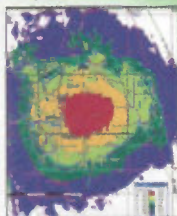
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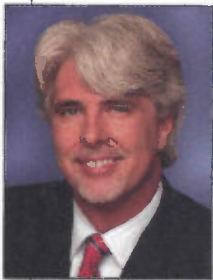
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This month:
Field Report, page 36



Barry Thomas
Vice President
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Thomas has been in the industry for 29 years as a chief or director of engineering. He joined Lincoln Financial Media in

2006 after serving as VP/engineering for Westwood One in New York. He is the current president of the Society of Broadcast Engineers, holds certification as a Certified Professional Broadcast Engineer and a Certified Broadcast Networking Technologist. He resides in Atlanta.

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Via Radio	44	321-242-0001	www.viaradio.com
V-Soft Communications	47	800-743-3684	www.v-soft.com
Wheatstone	2, 51, 52	252-638-7000	www.wheatstone.com
Yellowtec	29	+49-2173-967-315	www.yellowtec.com

This index is a service to readers. Every effort is made to ensure accuracy, but Radio magazine cannot assume responsibility for errors or omissions.

SIGN OFF

by Erin Shipps, associate editor

www.RadioMagOnline.com

Do you remember?

McCurdy Radio Industries began selling radio equipment in 1948. When this ad from *Broadcast Engineering's* August 1974 issue came out, the company had already been doing business for 26 years! Its "package system allows the user to easily locate his new equipment without the added burden of wiring to auxiliary equipment." This setup covered everything from news booths to music production and could be assembled in unique packages. McCurdy Radio is still in business today in Canada. Visit the company's website at www.mcradio.com.



THE ULTIMATE IN TURNKEY CONSTRUCTION

The new McCurdy approach to the engineering and construction of a packaged system allows the user to easily locate his new equipment without the added burden of wiring to auxiliary equipment. All aspects of the broadcast function, from news booth to music production center, can be assembled into a unique and functional package. Each system is fully presented as a total functional unit and will meet or exceed all broadcast specifications.

FEATURES OF THE SYSTEM SHOWN ABOVE

- All inputs and outputs to the system are monitored through jacks and wired to dual ribbon connectors. (for convenience of service and transportation)
- Audio and EBC interface to an automation system.
- Remote control of reel, turntable and cartridge machines.
- Program routing selector to downmix audio from two production centers and automation reads to news lines.
- Switchable A/B/C control on all microphone filters.
- Equalization can be controlled by any mixer or program channel.
- Included in the package are tone and digital interference generators which are used in the production of tape and cartridges for playback in automation systems.

McCURDY RADIO INDUSTRIES INCORPORATED
1051 CLINTON STREET, BUFFALO, N.Y. 14208 (716) 854-8700



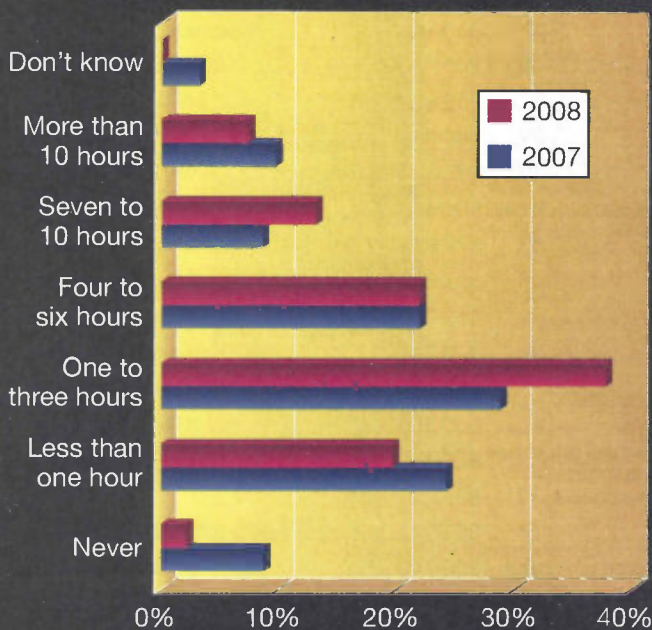
108 CARDPORTH ROAD, TORONTO, ONT. M6A 2L4 (416) 751-8202

Sample and Hold

Youth and Radio

According to a study by Paragon Media Strategies, radio must be doing something right, as youth listening is generally up from last year. Even if only a slight increase is evident, 14- to 24-year-olds are tuning in more than last year.

Time Spent Listening to Radio During a Typical Week



Source: Paragon Media Strategies

That was then



Marvin Collins, retired chief engineer of KFI/KOST Los Angeles, sent us this photo after seeing J.R. Reid seated at the WUSJ General Electric console in the May 2008 issue. Here, Collins is seated at a similar GE console at KCBH FM 98.7, Beverly Hills, CA. It was taken in 1956, during his first job in radio. This job involved driving to Crawford's of Beverly Hills and picking up a stack of LPs and voice track tapes. After that he would drive to the KCBH transmitter, which he turned on at 3 p.m., and play the proper voice tracks and LP albums for the day's programming. At 11 p.m., the voice track tape would sign the station off and after turning off the transmitter, he would drive home. After 54 years, Collins says he still has fond memories of his first job in radio.

Interestingly, Collins notes that when he started at KCBH in 1954 and would tell people where he worked, they had no idea what FM radio was. Today, the former KCBH is KYSR-FM.



Ethernet Audio Done Right



MEET THE SQUARE

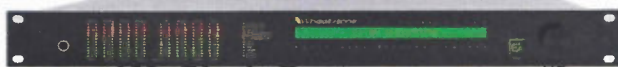
The Wheatstone E² (E SQUARE) gives you the convenience of Ethernet audio without all the IP hassle. It just *knows*. The built-in Setup Wizard lets you configure an entire system with just your browser and a laptop. Unplug it when you're done and there's no PC between you and system reliability.

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

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



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



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



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



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



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

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

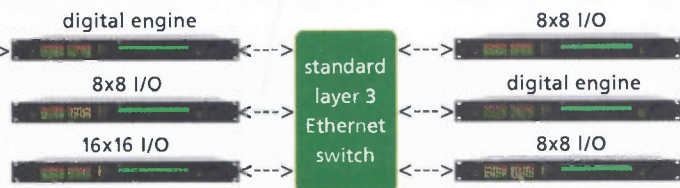
E-SQUARE is Ethernet audio done RIGHT!

Studio 1



E-SERIES control surface

STUDIOS DONE EASY!



AIR WARRIOR



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