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*LabGruppen PLM
Selador Paletto
JBL Eon 500
Audio Technica ATM250DE
RØDE M1*

CUE03 Entertainment
Training Resource

ISSN 1320-5595

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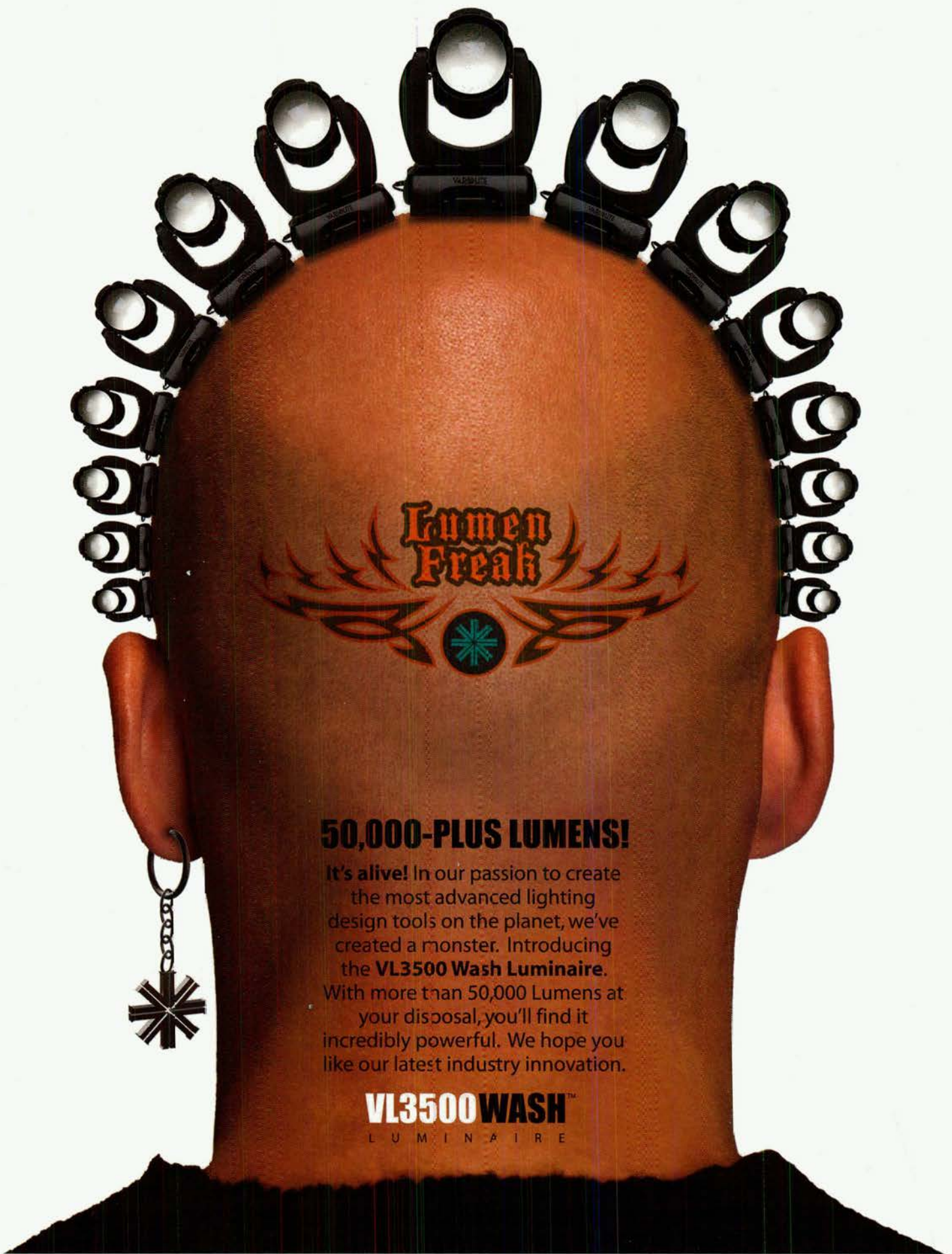
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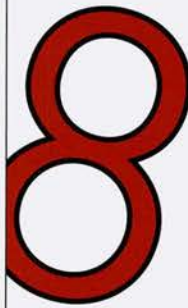
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NEWS



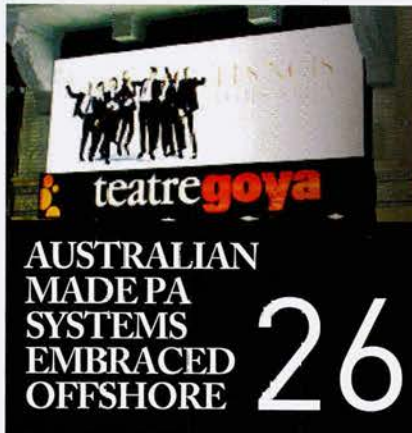
GOOD NEWS ACTUALLY EXISTS!

Media generated gloom misplaced as the financial downturn is not universal

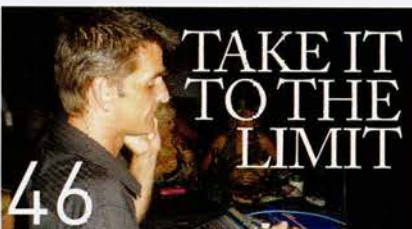
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FEATURES



DON'T DO THIS!



MEGA TEST



REGULARS

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WAY BACK WHEN



thinking sound



"THE TM ARRAY™ TAKES THE LOW-END RIGHT OVER THE TOP"

- BIG MICK HUGHES

FRONT OF HOUSE ENGINEER, METALLICA

Bone-rattling bass for the audience,

Producing the type of low-end that Metallica demands and having to do it in the round, well that presents a challenge: deliver even low-end coverage to the audience, without blowing the band off the stage. Thunder Audio, with the help of Meyer Sound's Thomas Muncor, was able to take this production "over-the-top" with the TM Array™, a revolutionary application of multiple arrays of 700-HP subwoofers flown directly above the band. "After 17 years of doing Metallica in the round, this is the by far the most even low-end coverage we've ever achieved."

- Paul Owen, Monitor Engineer, Metallica and VP & Co-owner, Thunder Audio

Clear comprehension for the band.

CÉLINE DION WORLD TOUR ROTHBURY FESTIVAL METALLICA ROD STEWART AUSTIN CITY LIMITS CELTIC WOMAN
MONTEREY JAZZ FESTIVAL DOLLY PARTON BUCKCHERRY MICHAEL BUBLÉ MONTREUX JAZZ FESTIVAL TASTE OF CHAD
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CUE03

Entertainment Training Resource

This magazine contains much information which is a direct resource for anyone studying from the new Entertainment Training Package, named CUE03. From 2006 we will start to map certain articles direct against the relevant Unit of Competency within the package. This makes CX magazine a very cost effective resource for schools, colleges, and universities. Note that we offer a copyright release where articles in CX Magazine may be photocopied and distributed to students within an accredited course.

EDITORIAL

GOOD NEWS

We didn't venture too far to find good news for this issue – there are good things happening, and the world didn't stop last November. But it was scary. Our business kept coming, so the fear abated. This mag is the same size as last March (which is good news), and our college is full for the first time since it opened five years ago.

BOTTOMING OUT

The pain is felt at Staging Connections where the new management has been very quiet since taking over last spring. The share price is three cents, down from \$1.60 the previous Christmas. CX's enquires to management have been rebuffed with the excuse that they must advise the market of any sensitive matters, but market announcements are scarce.

MORALE MATTERS

Staging's situation arose because they borrowed big to acquire and now carry \$80 million in debt. They didn't treat former staff properly on the way through and now face competition from those people forcing down earnings. They are now filleting staff. When we write about Staging, staff get upset. They should ask management to lead with some positive announcements and vision.

TRUCKLOADS

We support funding for the arts, but you need to ponder the economics of a regional theatre getting a semi load of show for one night with 600 seats – not all sold. The theatre is subsidized by council and the show funded to tour, so our colleagues are all working. But it seems out of step with our times and against the spirit of the great entrepreneurs (Chugg, Dainty, Coppel, McManus et al) who take risks.

WORK TO RULE

We keep hearing about house crew at a major funded centre who won't unload a high stacked load and who clock off mid rehearsal. Whoever leads them isn't embodied with the spirit of theatre. The slick government executive is the antithesis of our industry. We are people who get things done excellently with whatever resources we have at hand instead of asking for more all the time.

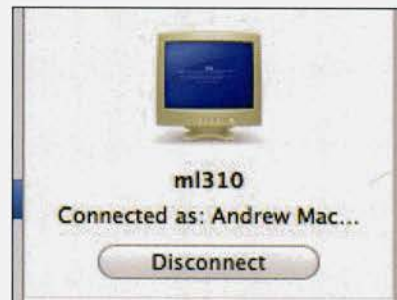
Julius

NOISY BUGGERS

I went to a gig the other night, and once again it was TOO BLOODY LOUD. In the olden days we ran everything flat out all the time because the limitations of technology meant everything was just enough. Now the technology's moved on, and we don't need to run it flat out all the time. Once you get past about 100dB it doesn't sound any louder, it just hurts more.

CHEEKY BUGGERS

After some recent IT excitement at CX, I've found myself in control of a shiny new MacBook. After very little effort it was talking to the Windows server, and we saw that once again the Apple people have missed no opportunity to have a shot at Microsoft.



If you look closely, you can see that the Windows system is represented by a tiny Blue Screen of Death. Nice one. Meanwhile the Outlook system is refusing to forward any of my email to the Mac. The wars of religion continue...

WELCOME SCIENCE BOY



Starting with this issue, Jimmy Den-Ouden joins CX as a permanent fixture. Jimmy's a fan of measurements, graphs and all things empirical and scientific, so there may be a new intellectual rigour creeping into our subjective methods. Or we might convert him. Wait and see.

Andy

Recession Ready Digital Concert Mixing

Packing the same power and performance as the flagship iLive, A&H have bulldozed several pricing conventions to bring genuine high performance digital concert mixing to real world, real people budgets.



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CXNEWS

DEVICES, PEOPLE AND CONCEPTS

GOOD NEWS ACTUALLY EXISTS!

Media generated gloom misplaced as the financial downturn is not universal

The Australian Government has introduced a temporary investment allowance as part of its economic stimulus package – and it makes investment in new equipment for production firms or venues incredibly attractive. A 30% investment allowance is allowed for some purchases until June 30th, making the tax deductibility of equipment purchased for a business 130%.

Spending \$100,000 to get a \$130,000 tax deduction is a good decision. Under some forms of finance such as chattel mortgage, a large deduction could be available in the first year, possibly creating a tax loss which could be carried forward.

“Clients are usually surprised at what we can do”, a leading industry accountant told CX, “with legally structured arrangements that reduce or remove tax liabilities. The Australian tax system is so complex that no one in business can ever be on top of it, that’s my job”.

Equipment vendors report an upsurge in quotes, but at presstime were yet to see orders. One finance brokers said that it is increasingly difficult to source credit but not impossible. “You need a strong performance history, asset backing and cash flow”, a Melbourne broker said, “and strong margins. The problem is the limited second hand value of specialized equipment”. However another broker said he is still getting deals through – it appears to be a case of shop around, and don’t let a negative financier deter you.

Where an equipment distributor backs their own equipment there can be sunshine – several importers have run deals with a guaranteed buy back price which reinforces the second hand value of the equipment, and puts the risk back on their own shoulders. “I’m shy about this one just now”, an audio importer told CX, “but it

AMERICA IS A DIFFERENT STORY

A proposed amendment to the USA Economic Stimulus Package may prohibit any funds in the economic stimulus bill from going to theatres and art centres. As such, it thus would bar many potential projects that would create jobs in entertainment and creative arts. The American production and theatre community are lobbying hard to prevent this.

may happen.” Others are contemplating house finance, where the distributor rents the equipment to the end user with a buyback at the end. When well managed this hasn’t carried much risk for those firms who have done this.

It’s not all doom and gloom. Nexo and Digico importers Group Technologies have hired new people. “You just have to work harder at time like these”, says CEO Mark Ladewig. “There have been Chinese products so cheap flooding the market. It means there’s sometimes no value in the product. Now we can get value back into the market and repairers can start to repair things again”.

Production firms Novatech Productions (Adelaide) and Lots of Watts (Sydney) are buying considerably larger premises, while Jands are acquiring a neighbouring facility in Sydney. Technical Direction Company (TDC) have opened an office in Brisbane.

Business may be flat in some music retail stores, but there are pockets of continued activity if not growth. “Government projects, with councils bringing forward projects are good, as is contracting” says Max Twartz at Technical Audio Group.

Continued page 10 ●●●●●●●▶



SHOCK!

Apple lukewarm with Firewire

Apple set a fast pace by supporting the development of Firewire, and the ultra fast transfer medium is now preferred by video and audio specialists everywhere over slower USB. So more than a few hackles were raised when Apple quietly dropped the Firewire port on entry level laptops.

CX is one user to unpack a new MacBook and search for the Firewire port. Like most pro users we have a variety of outboard drives, video cameras and interface devices that require Firewire, not USB, to connect with our growing fleet of Macs. On the Apple website are hundreds of users complaining at the retrograde step, and an uneasy silence from Apple who may, or may not, support Firewire into the future.




Black MacBook is the just superceded model, alloy unit is the new one and it has NO Firewire port.

Continued page 10 ●●●●●●●▶

NEWS SHORTS



Dave Jacques joins NAS - bringing live sound engineering and production design skills gained over the last 15 years. Previous experience includes owning and operating a production rental company in Melbourne, working in outside broadcast for major Australian TV networks, and System engineering for a leading Audio rental


company in Victoria. Working also as a freelance touring sound engineer within Australia/NZ, Dave moved to Nashville TN, where he has been retained as Production manager / FOH engineer for many Grammy Award winning touring bands for the last 8 years. 



Dave Letson, the former International Sales Manager at Calrec, had joined Riedel's office in Sydney, taking over responsibility for Riedel's sales activities in Australia and New Zealand. "Building on last year's successes like Cutting Edge and Global, I'm looking forward to continue developing Riedel's international business", says Letson. 

NEW ROSCO COLOURS

Rosco introduces DichroFilm, a gel that never burns out! It's the latest achievement in the development of plastic colour filters by Rosco. DichroFilm™ combines the flexibility, lightweight, and safe characteristics of a plastic gel with the longevity and heat resistance of a glass dichroic filter.

Standard Colours are Blue, Red, Green, Cyan, Yellow, Magenta, Orange, Indigo, Violet, Full CTO and Full CTB. 

D&B DEBUT J-INFRA SUBWOOFER



J-INFRA is the cardioid infra subwoofer for the J-Series that can be used to supplement J-Series systems consisting of J8, J12 and J-SUB cabinets in various combinations. It is

tuned to fit perfectly below the J subwoofer in terms of phase, sound and impact and extends the frequency response of a J-Series system down to 27 Hz. Producing the same controlled and punchy performance as the J subwoofer, it definitely lowers the belt when it comes to those very bass sounds.

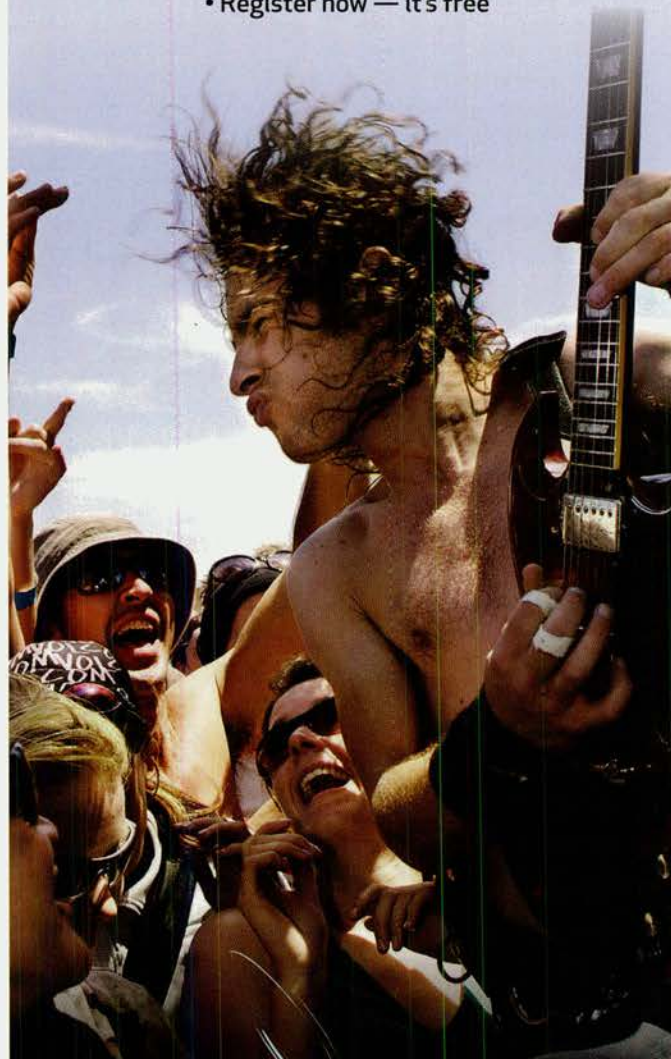
It is an actively driven 2-way bass-reflex design housing three long excursion neodymium 21" drivers of which two face to the front while the other radiates to the rear of the cabinet.

www.dbaudio.com



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sound.light.vision

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www.integrate-expo.com

Continued from page 8...

Schools are investing; they have additional incentives from the Government to spend.

The Australian Music Association reports that the A\$14.7 billion Building Australia package stimulus does include music products for schools under some circumstances with the funds allocated by June 30th. The association had already secured A\$37 million for the Investing in our Schools Fund.

Importer CMI operate in the retail music and professional audio markets. "We had our best retail receipts in December ever", says director Peter Trojkovic.

"This is an opportunity to gain some new products, we expect to add this year. Plus we just equipped a production company in Melbourne, Proline. They spent \$400,000 with us."

Sydney specialist provider SOS Communications have 'stuff all over the place, schools, government, installations, odd things at airports, we keep a wide base', says owner Michael White.

Trade shows are a growth area in the months ahead, with SMPTE and INTEGRATE both set to run in Sydney in July, and the AMAC show on the Gold Coast this spring. ENTECH is scheduled to run February 2010 at Darling Harbour and is now onsale to exhibitors. The Australian Music Association has also announced AMAC will be staged in Melbourne in October next year and rotated between the Gold Coast and Melbourne thereafter.

Concert tours are patchy but still being announced with rumors of AC/DC and U2 for early 2010. Theatre is variable, the very early closure of High School Musical in Sydney spooked many investors.

Finally Audio manufacturer AT Professional have expanded export markets for their Australian made high end line array systems, while developing a specialist market for tailor made solutions in conjunction with audio consultants. See feature on page 26.

Julius Grafton

Continued from page 8...

Upmarket Pro Macbook models still have Firewire, as do desktop models. But if you have a new Macbook, there are limited options if you need Firewire. There is no such thing as a Firewire to USB adaptor nor will there be, since the transfer rates and protocols are totally different. And there's no way to expand a Macbook, since there is no card slot.



Here we go: The Firewire port on the Apogee Mini DAC, just don't try to connect to a standard Macbook, since there is now no port.

WHILE

Apogee discontinues Windows

Audio specialists Apogee Electronics will no longer develop products for the Microsoft Windows platform. Apogee will focus all research, development, and support resources on the Apple platform.

Apogee manufacture premium converters, microphone preamplifiers, clocking solutions, and supporting technologies for Mac-based production environments. Many Apogee devices connect to the Mac via Firewire, the format which Apple appear undecided about. (See story, above)

Windows users can still obtain the Apogee sound by connecting Apogee converters to their Windows-compatible audio interface via AES, optical, or S/PDIF. Apogee technical support will continue to support legacy Windows configurations installed on Windows XP Service Pack 2.

www.apogeedigital.com



Milestones
PADDY BONHAM
BORN 1940

Pat Bonham passed away in December after battling cancer. He became a music and audio equipment importer following a career at Roland and before a knee injury a former champion soccer player who originated in Ireland. He played at international competition level.

Pat's Capricorn Music Concepts (CMC) are importers of Phonic, Ernie Ball, Music Man and other lines – based at premises in Sydney's Northern Beaches. They compete against mostly larger players in a congested market centred on the top 150 of the 500

music retail outlets across Australia.

The thing that made CMC a player which punched above its weight is the passion that Pat, or Paddy as he was born, brought to the equation. He sought the best of what he sold and relentlessly evangelised the benefits. People believed him and he backed up their belief. This is why CMC products can be found in stores that normally only buy from big importers.

Paddy's funeral heard from many who vouched for what everyone knew, and attracted a heavy contingent of music traders and Paddy's competitors. His daughter Sammi asked one thing, that Paddy never be referred to as 'was'.

CX knew of Paddy as a great resource since he had a wide web of friends including some musical greats. His knowledge of the music retail business in Australia was one that we always relied on, and a chat with a cup of tea at CMC was never dull.

He is survived by his wife Nuala, daughters' Sammi and Carole Johnston, and grand children Ashleigh, Lily and Zac. Carol Johnston will continue the business in which she has had a frontline role for many years.

DTS INTRO
FOLLOW SPOTS

PHARUS is the latest evolution of the DTS follow spots range, offering a distinct improvement in projection quality – thanks to a new optical group with a condenser lens.

PHARUS is available in two models; 1500 (fitted with a 1500 W discharge lamp), and 1200 - with a 1200 W discharge lamp. A new customizable



colour changer with automatic switching system between colours and focal zoom from 7° to 16° sets the scene.

www.hillsvl.com.au



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The HHB FlashMic is the world's first professional digital recording microphone. It combines a high-quality, Sennheiser omnidirectional (DRM85) or cardioid (DRM85-C) condenser capsule with an inbuilt, 1GB broadcast-quality Flash recorder to deliver a maximum recording time of over 18 hours.

Just one button press is all it takes to start recording in either linear or MPEG 2 formats. Simple 'drag and drop' file transfer at up to 70x real time to a Mac or PC for editing or onward transmission is enabled by a 'plug and play' USB connection.

Two AA batteries provide more than 8 hours continuous power and the included FlashMic Manager Mac/PC software provides powerful tools for naming and organising recordings, and configuring the FlashMic for various applications.

Audition a FlashMic today;

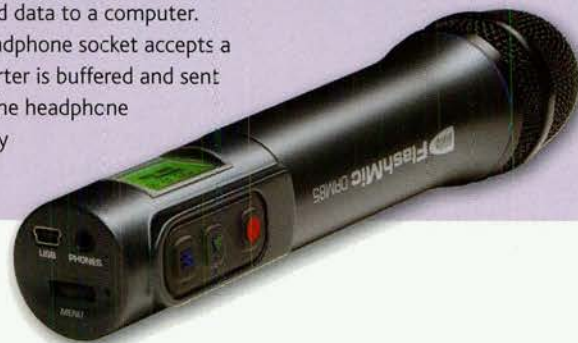
COMPLETE PACKAGE

The FlashMic comes complete with a pouch, stand clamp, USB cable, FlashMic Manager software, 2 x AA batteries and user manual



CONNECTIVITY

FlashMic has a built in USB port for fast transfer of recorded data to a computer. Both USB 1.1 and USB 2.0 protocols are supported. The headphone socket accepts a standard 3.5mm jack. The mono signal from the A/D converter is buffered and sent to both channels of the headphone jack. The output from the headphone socket can also be connected to the analogue line-in on any soundcard, should external recording be required.



For more information contact;

Syntec Australia: Free Call: 1800 648 628
Email: sales@syntec.com.au | Web: www.syntec.com.au

Syntec New Zealand: Free Call: 0800 100 755
Email: sales@syntec.co.nz | Web: www.syntec.co.nz



ALCORN MCBRIDE V16 PRO SHOW CONTROLLER

The V16 Pro is a show controller for both serial and network devices. With 16 serial ports, 16 inputs, 16 outputs, MIDI port and a dual Ethernet interface, the V16 Pro can "talk" to virtually any piece of equipment and can be monitored and programmed from anywhere in the world.

"The V16 Pro was developed to address the needs of customers who wanted Ethernet control but who didn't want

to trust their show to a computer," said Jeremy Scheinberg, Alcorn McBride Chief Operating Officer. "This product eliminates the insecurity that comes with computer control - there's no instability or crashing, no vulnerability to viruses, and no moving parts to wear out. It allows attraction designers and operators to concentrate on the show instead of the hardware."

www.alcorn.com



SHURE PGX BATTERY RECHARGER PROMOTION

In conjunction with Shure, Jands is running a free battery recharger promotion with every PGX wireless system sold before 31st March 2009 - or while stocks last. Subject to ongoing availability, when you buy a PGX System from your local participating Jands Authorised Australian Dealer, you will also receive an Energizer "Easy Charge" battery recharger. Perfect for carrying around in your kit from show to show for those inevitable low battery moments pre-gig. For more information please see your local Shure retailer, or go to www.jands.com.au and head to the Promotions page under the News section.



TECHNOLOGY-DRIVEN COUNCIL UPGRADES AV

Sutherland Shire Council upgraded the AV equipment in their chambers, opting for a Bosch Conference & PA solution, chosen for its capabilities in providing integrated Conference facilities, including Microphone Management, Electronic Voting and Video Display in one package.

The Bosch DCN Next Generation System used features a Chairman Concentus Unit for the Mayor and 21 Delegate Units for Councillors. The DCN is interfaced to a distributed Plena Public Address System for the Public Gallery and other Meeting Rooms. The design of the complete system was based on requirements of Local Councils as prescribed by the Department of Local Government, especially with regards to including capabilities for Electronic Voting and management of voting results.

The automatic queueing of "Request-

to-Speak" Councillors contributes to the effective management of all microphones. The built-in Speech Times with a Count Down Clock Display for each speaker means that it is no longer necessary to use an external timing device. Very clear and intelligible speech from the built-in loudspeakers is maintained for all, including the Public Gallery, without the need for additional loudspeakers within the Chambers.

Digital Recording of all proceedings of a meeting are now achieved with the Bosch CCS800 Ultra Digital Voice Recorder in MP3 format. This forms the basis for the minutes. When required, the MP3 recordings can be played back at any time through the built-in loudspeakers of all the microphone units.

The interfacing to video distribution, including computers, LCD displays and data projectors was designed and implemented by the systems integrator, Ulmano Pty Ltd.

www.boschsecurity.com.au



PIO NAHUM JOINS CLAY PAKY

Clay Paky has announced Pio Nahum has rejoined the team and has been appointed their Commercial and Marketing Director. CX fondly recalls Pio from his time at Clay Paky in the 1990's, a guy who stood out in a marketplace often containing people with little passion.



SHOW SUPPORT ROLL OUT LOWER COST CREW

Local Crew Nationwide www.localcrew.com.au is a new venture from Show Support which has been trading now for four years, servicing many high end clients and providing premium crew for high profile events. Show Support has amassed large crew lists in many areas. Experienced loaders, crew chiefs, EWP, Fork, Heavy Vehicle Operators, Riggers, Audio, Lx and AV Operators are often provided at short notice. Each Show Supporter is equipped with a Show Support waistpack to put their tools in (shifter and a leatherman), which are mandatory on all call outs.

They have also developed a booking software system known as the Personnel Manager, which allows clients to enter their bookings online, 24hrs a day to book crew, nationwide. Crew are booked and the system sends a reminder SMS to crew the day before their shift and another reminder half an hour before their shift, guaranteeing much higher levels of attendance.

While Show Support has always provided premium crew (charged at \$36.50 per hour and upwards) they now provide a more cost effective solution in the form of Local Crew Nationwide. Their intention is still to provide experienced, reliable crew, in all states of Australia, from \$31.50 per hour.

www.localcrew.com.au





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STREAMBOX HD/SD ENCODER

Superbig video over IP

Streambox Inc. has announced the launch of the Streambox SBT3-9200 HD/SD Video Transport Encoder - a solution for HD/SD newsgathering, broadcasting, and video post production.

The SBT3-9200 can be operated in HD or SD mode, enabling the user to capture, transmit, and play out live and file-based video. The Encoder provides 1080i/720p/1080psf HD video at data rates from 256 Kbps to 30 Mbps and SD video from 64 Kbps to 15 Mbps.

The SBT3-9200 Encoder has been developed to meet the performance and quality criteria of customers in a variety of markets. It has particular relevance to the movie and post production sector, where companies use the SBT3-9200 to transmit high quality live HD and SD video over low data rate IP networks as a way to accelerate elements, such as colour correction, of the post process.

Video editors are able to send the edited video file over IP in real-time and gain immediate feedback and approval from clients who may be located in different time zones or even different countries.

Each SBT3-9200 HD system is outfitted with dual Gigabit Ethernet ports, providing multiplex/de-multiplex configurations for video-stream redundancy. The second Ethernet port may be designated as a management port for instant access from anywhere. The SBT3-9200 is capable of outputting both HD and down-converted SD broadcast video simultaneously from a single HD source and it offers support for both digital and analog HD input/output formats.

www.ambertech.com.au



AKG'S C214

AKG's C414 now has a new stable mate, the new C214 offering many of the same attributes at a more affordable cost. All AKG's C214s are individually tested and numbered, and have an RRP of \$1,199 inc.

www.audioproducts.com.au



AVIOM EXPAND PRO 64



The 6416o v.2 Output Module allows 16 channels to break out of the A-Net digital multicore environment. It has 16 outputs with 4 possible output gains from each - via a four-position output level switch with three-segment level metering.

You can choose from +24dBu, +18dBu or +4dBu line-level or mic-level output.

The 6416o v.2 can be used anywhere that analog outputs are required in a system: on stage or at front of house in a digital snake, or even in the most complex audio networks, making it ideal for live sound reinforcement, broadcast, and other audio distribution applications.

www.aviom.com



XLNT DATAMOTION PRODUCTS NOW AVAILABLE IN AUSTRALIA

XLNT Advanced Technologies make a tight range of price competitive lighting data distribution products that are now available through Bytcraft Entertainment. The systems are fully compliant with the latest standards, and are built to survive touring.

The DN2 node is based on road-proven technology and proves that full-featured, highly reliable and versatile solution. With a bright, clearly visible LCD display giving an instant overview of all functions, all parameters and settings are visible and configurable on the display, allowing patch, level and overview without requiring an external computer. Housed in a lightweight, durable enclosure, the unit can also be wall mounted or hung from a lighting bar.

The 12 port Groundswitch is more than just a simple Ethernet switch. Proving 12x

10/100Mb "Power Over Ethernet" (PoE) compliant outlets built into a durable chassis with Ethercon connectors, the base unit is probably the only "built for touring" Ethernet switch currently available. The optional dual 1Gb Fiber Optic ports (NS12PF only) also use the Neutrik quality, dedicated optical connectors. These units are built with low noise fan cooling and speed regulation - essential for any "live" event.

The NS6 is also an Ethernet switch to deliver data to other equipment, but this one is designed to be powered by your PoE Ethernet switch, and hung from a standard hook clamp. In that configuration, the 6+1 port 10/100Mb Ethernet switch will give to 6 reliable Ethernet outputs at your remote location, each physically protected by Neutrik connectors.

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SUMMER CAMP SEASON ROLLS ON

While much of Australia is off at the cricket or on the beach, kids go to camp. CX has a regular camp gig which reacquaints the writer with mouldy sleeping arrangements, midnight water fights and camp food. This year we visited Tops Convention Centre at Stanwell Tops, perched on the hinterland overlooking beautiful Stanwell Park Beach in the Illawarra area of NSW.

It's one of the best camp facilities we've seen, and the auditorium holds 600 people. Production was arranged with Cairellie Showcraft, an expanding Sydney firm whose services we hadn't used previously.

Their crew arrived and within 3 hours we had a PA and a basic lighting rig ready to go. After hanging to make sure I was able to be left alone for three days, they departed. The PA had 2 EV QRx subs a side, each loaded with 2 x 18" drivers, and 2 QRx 112 top boxes. A rack full of QSC amps was plugged into the 3 phase power and gave me way more than I needed.

On stage there were stacks of SX300 boxes with feet that allowed them to sit and act as foldback wedges. I arranged four sends of monitors out of the Yamaha LS9 32 channel desk, using two of the four equalisers in the virtual rack.

Everything was neat and highly



Mark Fanning.

organised in Cairellie land – cables were colour coded on the XLR tightening ring to denote length, multicores were neat and well labelled, and the Shure mic kit was voluminous and newish.

The bunch of Pars and profiles were just fine, combined with the TOPS venue lighting kit and patched back to a little LSC desk I had all that we needed to get on with the business of making music. An eight piece band with six singers finished it all off.

At the end the Cairellie boys arrived early, we packed up in quicktime, and it was all over. Tribute to them, and to Mark Fanning who is the house guy at Tops.

Julius



Michael Beggs and Andrew Champion.



Neat wiring!

PROTRAC THEATRICAL FLYING BATTEN

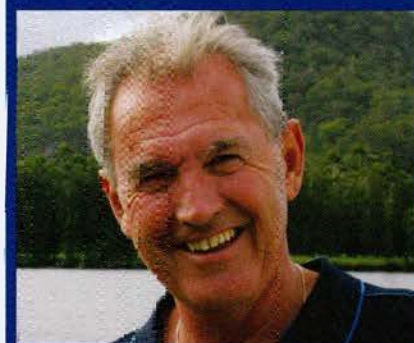
ProTrac is designed as an upgraded fly-bar system for theatre or related fields with several extra options.

New requirements in theatre productions have led to new demands on existing fly-bar systems. A combination of higher loading requirements, due to a growth in the size of productions, and the introduction of automated flying systems have made existing fly-bar systems, in some cases, obsolete.

A common example occurs if the uniformly distributed load needs to be upgraded from 300 to 500 kg and the point load from 40 to 150/200 kg. A normal batten may not have the required strength. Often the single round tube is replaced with a ladder beam usually made from steel.

ProTrac is a combination of an aluminium extruded rectangular profile with a round tube of 60 mm or 48.3 mm attached beneath. Suspension points slide into the square profile and can be locked at any place on the batten allowing it to fit into existing installations.

www.stageengineering.com



Milestones

TERRY TURNER BORN 1960

Terry Turner died young and suddenly of a heart attack in January, leaving his family and new partner reeling in shock. A founder and partner in leading entertainment transport firm ATS, Terry was pivotal in the transport logistics of many major tours and was about to again orchestrate transport for the Big Day Out.

Knowing Terry was one thing, seeing 500 industry heavyweights, truck drivers and friends totally crowd out a western Sydney chapel for his funeral was another. Many had red-eye from gigs the previous night. The eulogy was led by leading

promoter Andrew McManus, and featured a warm message from bitter rival Graeme Fear at Show Freight.

Starting at TNT, Terry soon gravitated to Show Freight where he joined current business partner Phil Duncan working for Graeme Fear and developing a powerhouse transport company.

When Ansett collapsed in 2001 Show Freight was sold so Terry and Phil made the break and set about building their own firm. They prospered and worked very hard in what is one of the toughest markets of all, battling increased regulations and volatile fuel prices. Bad debts were another hurdle and CX last heard from Terry when he was doggedly but decently chasing a serial delinquent through the courts.

The funeral heard much of Terry's great character, large heart and humour, plus his daughter Tanika sung a song she penned for her dad. She recently has enjoyed chart success in the US which gave Terry great joy.

He is survived by his wife Charlene, children Justin, Tanika and Tabatha and new partner Elena. ATS will continue without Terry but will never be the same.





Digital Stage Box With Yamaha Performance.



STAGE BOX **SB168-ES**



Simple.

The SB168-ES is the remote stage box solution you've been waiting for. Using EtherSound, the SB168-ES gives you low latency, high-quality bidirectional audio and control transfer over distances of up to 100m using a single Cat5e cable. Compared with an analogue multicore, the SB168-ES is simpler, cheaper, more reliable and more resistant to noise.

Reliable.

The SB168-ES capitalises on Yamaha's 20-plus years of experience in digital mixer production. Designed from the outset to be used together with Yamaha digital consoles like the LS9 and M7CL, the SB168-ES delivers world-class performance, every event, every venue.

Profitable.

The SB168-ES gives you 16 XLR inputs, each with its own sonically superb, remotely controllable mic preamp, plus 8 XLR outputs. Daisy chain up to four units for simultaneous use. What's more, the SB168-ES is easy to set up, saving you time, money and effort.



LS9 DIGITAL MIXING CONSOLE **M7CL**



CONNECT WITH EXPERIENCE



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Contact us for more information on the Yamaha SB168-ES Stage Box:
www.yamahamusic.com.au/products/comaudio

Yamaha Commercial Audio: (03) 9693 5272 | jason_allen@gmx.yamaha.com | PO Box 268, South Melbourne VIC 3205

SAFETY ADVISORY

THEATRES – FIRE SAFETY – CURTAIN & BACKDROPS

There is a very good reason why there are so few “old” theatres still standing around the world. They are all susceptible to fire. Full of potential fuels and ignition sources in the form of paints, wood, curtains and upholstery, electrical equipment, and so on; throw in candle light and crude pyrotechnics and the odds were just stacked against them surviving.

Modern regulations and fire detection/suppression systems have improved theatre safety, however one area that warrants extra consideration is the flame retardant status of a venue’s stage drapery. Improving safety in a venue means that the person responsible for drapery fabrics needs to be aware of the potential risk of fire – and take steps to reduce that risk to the greatest extent possible.

The vast majority of stage drapes in venues today are manufactured from fabrics which have had a chemical treatment to achieve flame retardancy. This treatment leeches out over time and re-treatment is eventually required.

To determine the flame retardancy status of a venue’s stage drapery, the first step is to locate the manufacturer’s label on each curtain. Labels are normally attached to the bottom offstage edge of drapes, but are sometimes attached to the webbing at the top if the drape is transparent. These labels, if compliant, should provide all of the information you require to evaluate the flame retardant status of your curtains..

The label should include - name of curtain manufacturer, date of manufacture, fabric composition, cleaning instructions, type of flame retardancy treatment and the associated test results. Check the date of manufacture - if over 3 years old, your curtains will likely require re-treatment.

If your curtains have no labels or are missing information, they immediately fail to conform to the required standards (Building Code of Australia). It pays to be dubious over any drape without a label, or not made by a reputable theatrical drape supplier. Labels are also often removed during cleaning of your drapes; Makes it all a little difficult to stand in front of a coronial enquiry and say that you followed the directions on the supplier’s label!

RETREAT OR REPLACE?

It is often more economical to simply replace old stage curtains with a better

quality drape, than to have the old ones cleaned and re-treated. This is especially true if upgrading to the newer range of drape fabrics that can be cleaned without affecting the fire retardancy of the fabric.

When selecting suitable fabric for venues or events it is important to consider flame retardancy. Some traditional theatre fabrics including wool and velvet are now also available as Inherently Flame Retardant (IFR) and not necessarily more expensive. Many venues are now opting for IFR fabrics in preference to materials that require ongoing treatment. This reduces the fire risk and provides even greater long term savings.

An example is Molton, a black cotton material which for many years has been used as a stage masking fabric. Molton is an affordable option; however it is not IFR and requires expensive retreatment at least every three years to maintain its fire retardancy rating. Considering treatment and associated labour costs, in the long term it is an expensive option compared to IFR fabrics which never require treatment.

An experienced theatrical drape manufacturer will have a range of material options – with those fabrics tested and certificated according to Australian Standards 1530 parts 2 & 3. The tests measure the ignitability, flammability, spread of flame, heat evolved and smoke developed. The results of these tests are then referenced against applicable building standards or codes.



MANUFACTURERS FIRE RATINGS

The following list of ratings is generally used as an industry guideline.

- **Inherently Flame Retardant – “IFR”**
Fabrics referred to as “IFR” pass the fire certification testing without any chemical treatment. Usually, this is because they have been woven from fire resistant fibres. Therefore, the flame retardancy of “IFR” fabrics will last for the life of the fabric (assuming the



drapes are maintained dust free) and will not dissipate after cleaning.

- **Durably Flame Retardant – “DFR”**
DFR fabrics are treated with chemicals, usually as the fabric is being finished. Flame retardancy is long lasting, generally up to 5 years or 5 dry cleans.
- **Non Durably Flame Retardant – “NDFR”**
NDFR fabrics are chemically treated using a water soluble solution. These fabrics will usually remain flame retardant for up to 3 years or 3 dry-cleans. Retreatment may be required after wetting, regular handling, or after a period of use in a high humidity environment (say a venue that likes to leave their air conditioning off)
- **Not Flame Retardant – “Not FR”**
Fabrics which are not flame-retardant treated. Most materials can be chemically treated to become flame retarded. However, special care and consideration as to the application and the longevity of the material should form part of the buying decision. **CX**

ABOUT IFR FABRICS...

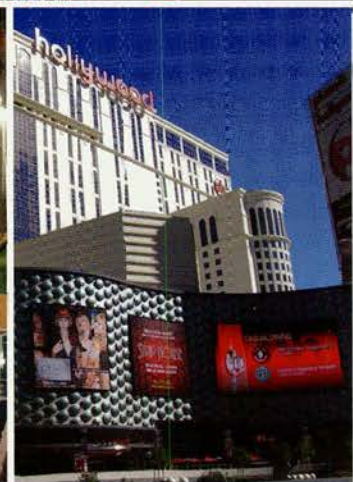
Be careful - just because your drape is “wool” does not mean it is IFR. In fact, many “wool” curtains are manufactured from wool blends, often containing polyester or nylon. These fabrics are a by-product of the clothing industry, not a dedicated theatre product, and they must be chemically treated periodically to maintain flame retardancy.

Bytecraft Entertainment (for example) have a range of IFR Theatre wool and velvets available. The Bytecraft IFR wool was created specifically for theatre use; it has a very tightly woven structure which results in no light leakage and excellent acoustic deadening properties.

Choosing IFR fabrics can provide benefits to the environment, specifically:

- No chemical treatments are required to achieve IFR status.
- No future chemical re-treatments will be required (This is also an economical benefit)
- No leeching of chemicals will occur in the handling of the drapes by theatre staff or performers
- Bytecraft Entertainment offers a free evaluation service with a written report that will at least give you a starting point. Contact the drapes specialist **Rod Paton** on **(03) 8710 2560**.

ONE SIZE DOES NOT FIT ALL



Possible applications for LED Screens

LED VISION

LED VISION panels are ideal for permanent or temporary installation where bright, vivid images are required. Available for indoor and outdoor applications, LED VISION have the perfect solution for concerts, sporting events, television and fashion shows, exhibitions and conventions. Easy to install and operate, the systems can be configured to suit varying size and format requirements.

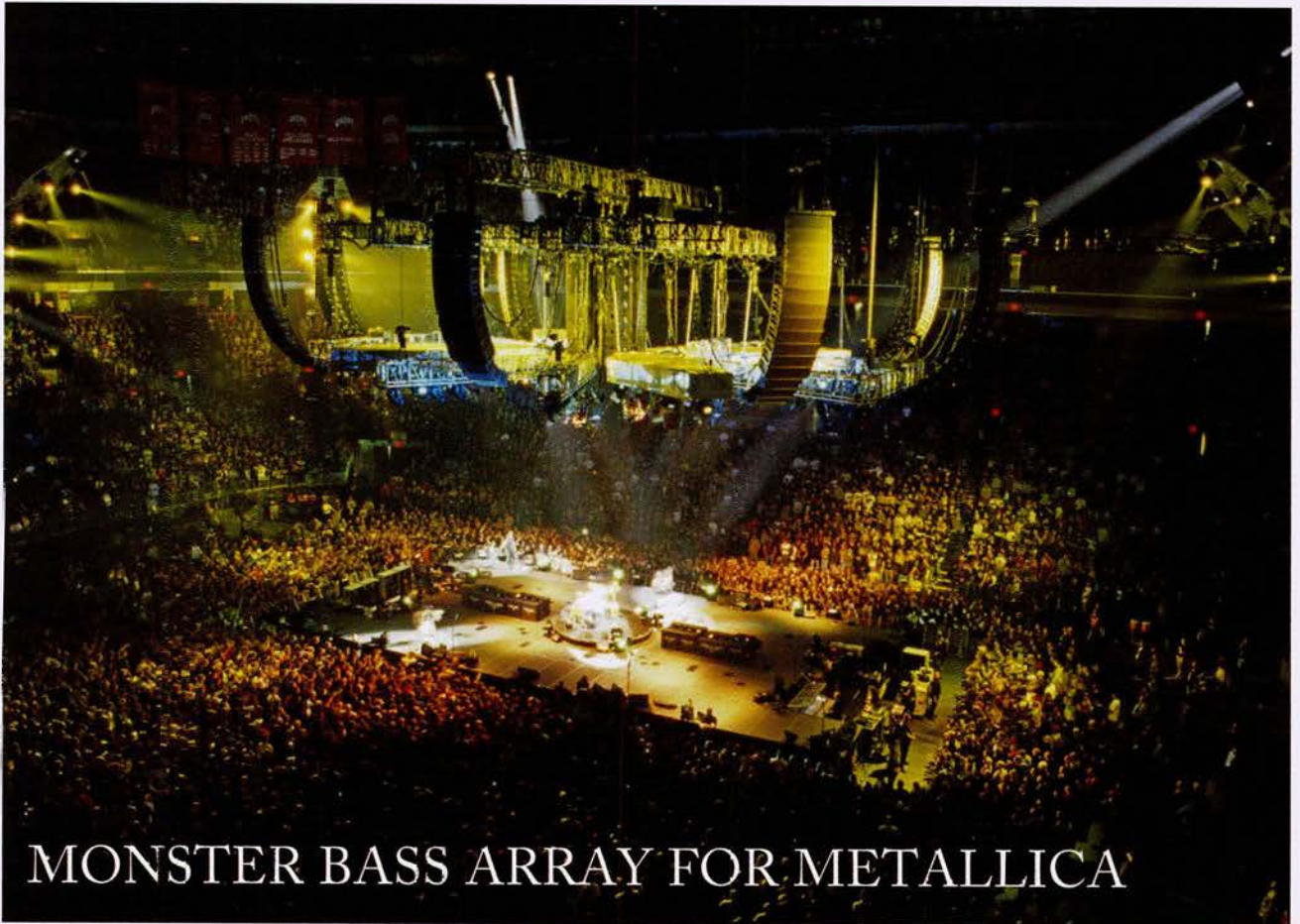


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MONSTER BASS ARRAY FOR METALLICA



Norwest Productions



Norwest have expanded their Lab Gruppen inventory to 196 units with the purchase of 48 FP+ 10000Q amplifiers.

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- EAW SB1000, B760 subs
- Acoustic Technologies Blackbird Line Array
- Adamson Y10 Concert System
- Dolby Lake Processor
- Lake Contour, MESA
- XTA DP428, DP226, DP224
- Optocore Digital Network
- LabGruppen fp6400
- Camco Vortex 6
- Crown Macrotech VZ5002
- Yamaha PM1D, PM5d
- Yamaha M7CL, DM2000
- Yamaha 01V/96 (40 consoles)
- Digico D5 112/EX
- Midas XL4, XL3
- Midas Heritage 3000, 1000
- Midas Verona, Venice

"World Magnetic Tour" is taking Metallica across the US and Europe, playing arenas in the round with the new Meyer TM Array configuration deploying four center overhead arrays of 700-HP subwoofers. A fresh approach to providing even, powerful low-end coverage for in-the-round concerts with fewer subwoofers than traditional configurations, the TM Array delivered such exceptional results at Metallica's London and Berlin record release events that the band specifically requested production to use the system on the arena tour.

Playing in the round presents both opportunities and challenges. With successful implementation, it offers a dynamic and high-energy live experience for the audience with intimacy and immediacy unmatched by other layouts. Such a setup, however, creates myriad problems for production, especially in the low-end dynamics. Metallica, the reigning godfathers of heavy metal, have been experimenting with different configurations for the past 17 years, but with varying success until the adoption of the TM Array.

"It's difficult," says "Big Mick" Hughes, the sound engineer who has been with Metallica since the band's beginnings. "Ask any engineer that's ever mixed in the round, and they will all say the same thing – it's very difficult to get even coverage, particularly in the low frequencies."

Meyer Sound Tech Support first supported Metallica in 2004 when the band played to 18,000 fans using a MILO line array loudspeaker system in Iceland. Meyer Sound continued working closely with Hughes and Thunder Audio Vice President Paul Owen on Metallica's appearances at music festivals, the 2006 "Escape from the Studio" tour, the "Sick of the Studio" tour in 2007, and played an integral role in providing a creative and effective solution for the in-the-round conundrum.

One of the first attempts was a groundstack configuration, and the crew also considered going underneath the stage. Both ideas were rejected—the former because it would blast the first rows with an eardrum-rupturing 145 dB of SPL, and the latter because it would cause earthquake-level tremors on stage. The intricate problem was solved when Thomas Mundorf, Meyer Sound's European Technical Support, used MAPP Online Pro acoustical prediction program to create the radical design of four arrays of ten 700-HP subwoofers above the stage. The configuration effectively achieves the desired coverage while using a smaller number of subwoofers than traditional configurations, a major logistical benefit for the large tour production.

"By creating a line array of 700-HPs," says Mundorf, "and bringing them closer together, you take advantage of the fundamental law of good sound design, the basic line array principle that one sound source is the best possible option. This design uses that and the subwoofers' omnidirectional throw pattern."

www.meyersound.com



Freelance senior AV tech Robbie Park and his lady Cathy were minding their own business in Hue the old Capitol of Vietnam when this guy came along. We like it!

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YAMAHA OFFERS REMOTE STAGE BOX

LS9 and M7CL users rejoice

Yamaha's SB168-ES is a cost-effective and scalable digital stage box solution which provides 16 XLR inputs, each with its own remotely controllable mic preamp, in addition to 8 XLR outputs. The modular nature of the SB168-ES allows multiple units to be daisy chained in sequence for simultaneous use.

With over 21,000 units sold since being launched in 2005 and 2005, respectively, Yamaha's M7CL and LS9 digital consoles have fulfilled a vast range of live sound applications worldwide.

The SB168-ES functions as a

conventional EtherSound device, allowing operators to employ the unit as an analogue input-output box which can be connected to a range of EtherSound-compliant equipment and controlled via AxiTran's AVS-ESMonitor software. EtherSound is the protocol that allows LS9 and M7CL users to combine audio signals with control signals for the SB168-ES head amp remotes and +48V phantom power functions.

In addition to its compatibility with the M7CL and LS9, the SB168-ES can be remotely controlled using Yamaha's PM5D, DM1000, DM200C, 02R96 and 01V96 digital consoles as well as its DME64N and DME24N Digital Mixing Engines.

www.yamahamusic.com.au



HHB DEBUT PRO DVD PLAYER

Everyone in AV knows that shooting a DVD clip onto a screen can be a hassle. HHB's UDP-89 has a new Clean screen feature so the video output remains free of the brand logos that render consumer DVD players unsuitable for professional use. Furthermore, menu commands and transport status appear only in the front panel display, leaving the screen plain grey when no content is being played.

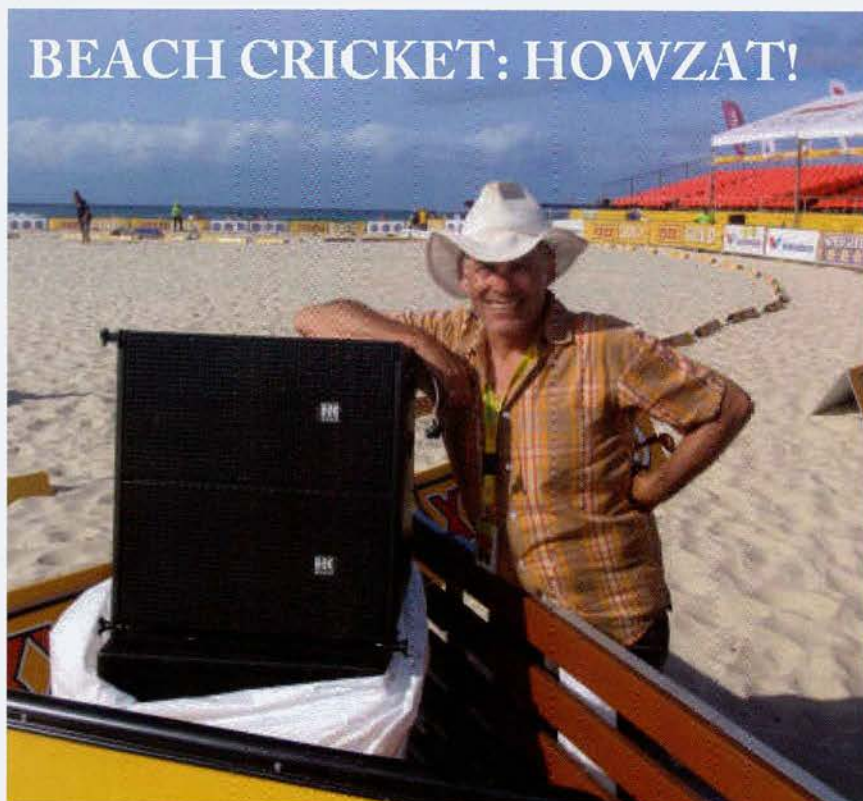
Housed in a compact 1U rack-mounting chassis and engineered for dependable, long-term use, the UDP-89 plays CD, Video-CD, SACD, DVD-Video, and DVD-Audio discs, and features a built-in preamp with volume control for direct connection to active 5.1 speaker systems, Dolby Digital and DTS decoding, MPEG audio decoding, professional cueing, A-B repeat function and RS232 and parallel control interfaces.

www.syntec.com.au



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BEACH CRICKET: HOWZAT!

Once a year Australia plays host to a Tri Nationals series with a twist. Played on Coolangatta beach over the month of January, Australia, New Zealand and South Africa lock horns to see who will win the

XXXX Beach Cricket Trophy.

This year, Gold Coast AV company, Blue Shadow Group won the contract to supply the sound system to be used at the ground. Managing Director Daniel de Vries

opted to use his HK Audio Contour Array system. With a total of four grandstands and the VIP area known as the Retreat, this was a very large area to cover, so ten Contour Array half-stacks were used to give the crowd an even coverage. 'The coverage was fantastic you could hear everything from anywhere around the ground', says Daniel. Also on hand to oversee the audio was one of Australia's busiest production managers Peter Pollard (pictured left) 'It's great to have the dispersion of a Line Array cabinet in this environment', says Peter.

With the Beach Cricket going live to air on Channel 10, there were a few requirements to ensure that the live feed didn't mix with the broadcast and that the crowd could still hear what was going on. 'It is imperative to have good control over every area of the ground as I never know where Channel 10 will be interviewing from', continues Peter. To give Peter the control that was required, every stack was put on a different send which meant that large cable runs were required. Daniel and the guys from Blue Shadow used CMI's new Rapco Horizon Production Cables to do the job. 'I must say it was very handy having the 30 and 45 metre lengths with the color code - it makes life very easy and the quality of these cables is great', Daniel comments.

www.cmi.com.au

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If you've been delaying a move to digital because of interface or operational issues, the wait is over. The Yamaha M7CL Digital Mixing Console offers professional digital console performance and features for live sound in a 32- or 48-channel system that can actually be easier to use than a conventional analogue console. It sounds great, too.



Yamaha Centralogic™

Yamaha's Centralogic interface takes the most direct approach to giving you maximum operational ease and efficiency in a digital console. Rather than trying to simulate the feel and workflow of an analogue mixer, Centralogic goes straight to the heart of the matter, simplifying digital operation to the point where it is actually as intuitive as analogue.



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VISTA GROWS APPLICATIONS WORLDWIDE

A large gamble has paid off for Jands (Australia), when they developed a top end lighting console from the ground up. Users now attest to the diversity of the system, as Jands add new variants to the original Vista design.

For venues with unskilled operators, like a nightclub or bar, the day to day “front end” control should be simple and easy for bar staff and DJ’s to use, while allowing fast and cost effective access for reprogramming and maintenance of the system when required. The Vista M1 does this by providing a simple “5 faders and buttons” interface connected via USB to a computer that’s safely hidden away. When reprogramming and maintenance are required, a technician is able to log into the computer remotely to adjust settings without an onsite visit.

Auckland-based Oceania Lighting, in conjunction with Entertainment Lighting Solutions, installed a system like this in a Taupo, New Zealand nightclub venue that needed a simple, small lighting console that the DJ was able to operate. Now a Vista M1 sits in the DJ booth, with the Vista software running on a hidden computer, which also runs the Jukebox software when there’s no DJ.

Often touring shows will choose to rent the lighting production locally for each show, and only travel with a console to ensure each show remains consistent. In situations like this, the Vista S1 with a laptop is ideal. With 5 playback faders, one Super Playback fader set, 3 encoder wheels and a few extra controls, you have everything you need for show playback and touching up on the road, all within your carry-on baggage allowance. If you cannot rent your favourite moving light for a particular show, Vista’s powerful Generic Fixture Modeller means different fixture types can be swapped into your show with just a few clicks. All parameters are seamlessly translated across to the nearest equivalents, significantly reducing re-programming time needed between stops.

UK-based LD Rob Sinclair recently toured the UK band “Rosin” around the world using a setup very similar to this, sourced from AC Lighting. With him he brought one S1 and two M1’s all connected to his trusty Macbook.

The Vista I3 was designed with



The Vista T2.



The Vista I3.

production and rental companies in mind, being a compact, economical console with a similar form to the Vista S3 USB wing console, but with an integrated computer. With the Vista I3 there’s no need to bring a laptop. Like its bigger brothers, the Vista I3 uses a Linux operating system for reliability, and comes pre-loaded with drivers for popular peripherals such as ELO touchscreens and Wacom pen tablets, so you’re able to customise your system as desired. The I3 provides 20 playbacks plus encoders for programming. If you’re preparing for a larger show, you can augment your I3 with any of the additional wing consoles (M1, S1 or S3) as needed.

Fixed installations in multi-purpose venues generally require fast programming for a variety of shows, and integration with

a variety of building control systems. The Vista T2 and T4 include an integrated LCD tablet screen for programming, which combined with Vista’s intuitive interface, familiar to anyone who uses a modern computer, allows fast programming and reduces the amount of training required for new users, keeping the venue running as smoothly as possible. Built-in serial control options allow Vista to be integrated with any building or AV control system, allowing automation of the venue’s environment, lighting, and AV control systems.

AC Lighting and Finnish professional systems integrator, Electrosonic Lightinen Oy Ab, installed a Jands Vista T4 console and Vista PC with M1 playback hardware to the Levi Summit venue in Lapland. The venue boasts multi-purpose



The Vista M1.

facilities; hi-tech equipment and an auditorium large enough to stage world-class performances and major product launches, making the Levi Summit a first class venue for diverse events. The Vistas can be remotely controlled via the building's AMX system, enabling seamless automation of the auditorium's lighting and AV systems, or programmed and operated by lighting staff for specific shows.

Hotel ballrooms present their own challenges. With lights spread throughout the ballroom and the lighting console often placed somewhere with very little visibility, and divisible walls which create new venue spaces instantaneously, require the lighting system to be split into several smaller systems. Vista provides some unique solutions for these challenges, as demonstrated in The Premier Ballroom



The Vista S1.

at the MGM Grand; part of the Foxwoods Casino Resort in the USA.

With two large ballroom spaces configurable by air walls into 230 possible layout combinations, AC Lighting North America and Boston-based lighting supplier Barbizon used Vista's serial control options to handle the variety of ballroom layouts. Control of each room's lighting is represented graphically on the pen tablet screens. If an air wall is moved, a serial command is sent to Vista, which simply updates the

lighting and the control screens of the newly adjoined rooms, so the operator can always see what they are controlling. Lighting for each of the smaller room zones is controlled by a dedicated Vista PC system, which is operated via VNC on a wireless pen tablet PC from within the rooms. The casino also purchased two full size Vista T4 consoles and four Vista S3 playback control surfaces to operate conference or performance events taking place in the larger room configurations. www.jands.com.au



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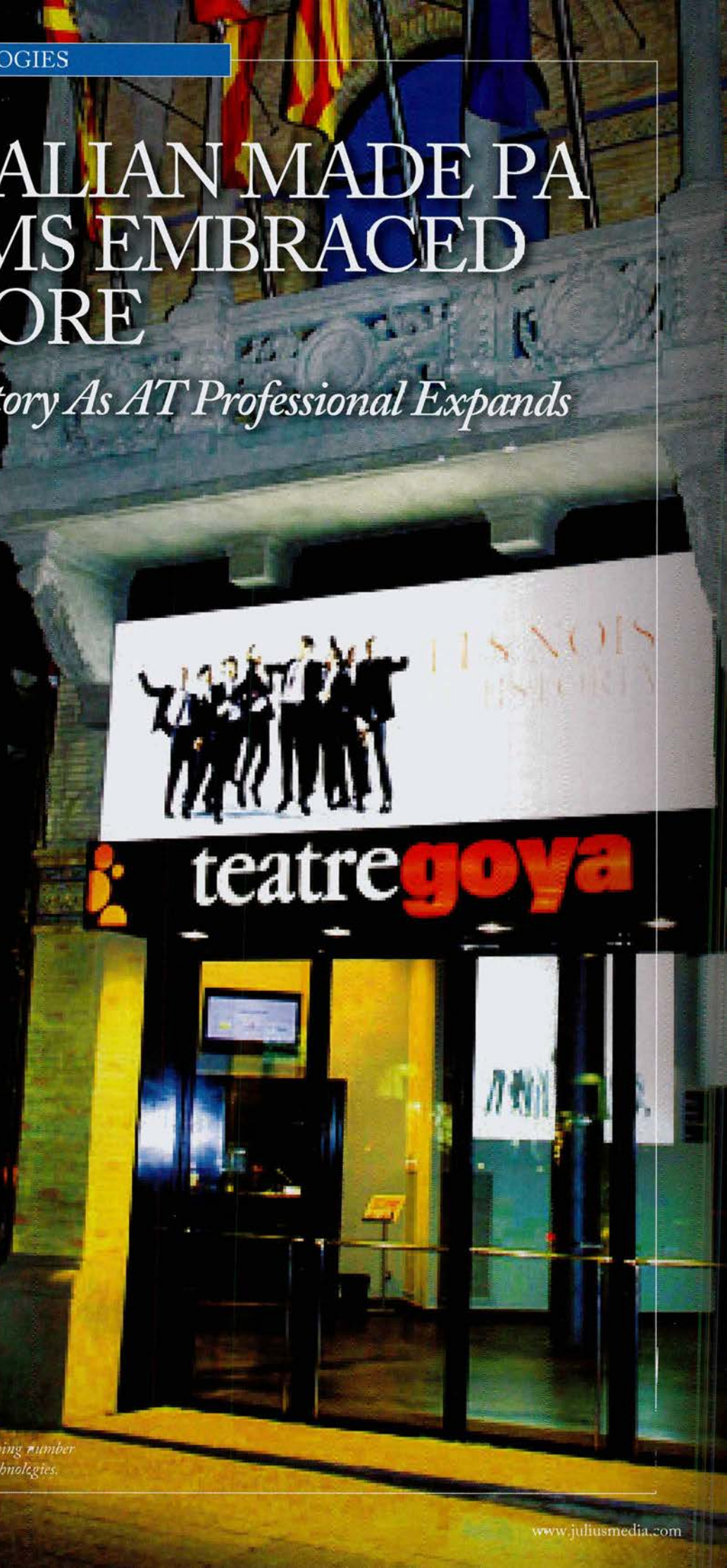
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AUSTRALIAN MADE PA SYSTEMS EMBRACED OFFSHORE

Good News Story As AT Professional Expands

Brisbane is probably the audio system capital of Australia, since it is home to Meyer Sound Australia and Acoustic Technologies Professional Audio Products. Both firms lead their respective fields – as largest importer of audio by dollar value (Meyer) and for AT as the largest manufacturer of audio systems in Australia.



Barcelona's Teatre Goya is one of a growing number of overseas venues adopting Acoustic Technologies.

By JULIUS GRAFTON

The growth of AT can be sheeted home to dogged persistence and passion, since the founder Harry Lloyd Williams hasn't stopped being enthusiastic about live audio. Evidence of this is the revival of the Case guitar amplifier brand, about to be reborn by AT as a premium retro line of heads, boxes and combo amps.

But it's serious pro audio where AT has kicked the hardest goals. Significant developments like beam steering have put AT into the consultant market, where very particular solutions are commissioned for complex and significant jobs. And the success of the Firebird line array system has expanded the firm's reach into production companies as significant as Norwest – Australia's largest audio firm.

Back in the early 1970's there was Harry with a jigsaw – he made speaker boxes under the Matra brand. As a Brisbane audio shop, he built and sold sound systems and backline amps, doing installations and hiring equipment out. Through the gestation period of professional touring audio in the 70's and 80's, Matra was a regional player in a market that was fiercely parochial. Meaning that a Queensland supplier would always get preference in Queensland.

In 1978 Richard Faint joined Harry. Richard is today one of Australia's foremost audio system design engineers, and a director of AT Professional. "Harry and I don't socialize, we have different lifestyles, but we share a commonality of thought", Richard explains.

AT Professional could best be characterized as a lean and adaptable 'just in time' manufacturer who are project driven. Through decades of experience they've learned how to build fast and what works best. Each person has multiple roles, and every process has been tweaked.

Richard Faint tells how they develop a product. "The old way was to use your ear, sink in some time, and wish for luck. Now we use data and tools like LEAP and Linear X. I can open up Enclosure Shop software to get the box right, then Crossover Shop."

"I don't want to know what it is going to cost – I just want to manufacture it right. Most designers are egg heads, or algorithmic's. But at the end of the day, to work in this industry you have to want to do it."

To keep his mind clear, Richard has his design lab separate from the sales and marketing team which is (like most departments at AT) a small group who

do other things. Harry and sales manager Pascal Bonnet usually come up with a customer need, and Richard sets about evaluating how to fulfill it.

REALLY COMPLEX

A recent job really cemented AT in the eyes of consultants. Glenn Leembruggen from Acoustic Directions, a leading consultancy for venue acoustics, had a contract to equip the New Zealand Parliament. He specified a system which is best characterized as beam steered, meaning that the audio output from the speakers could be electronically directed vertically in the parliamentary hall.

With a public gallery on three sides of a large open parliamentary hall, sound reinforcement is notoriously challenging and in this case more so due to the architectural design of the chamber. That's why Glenn Leembruggen ended up on the job – you can't expect a regular solution to work in places as crucial as these.

Glenn says the job required six vertical speakers that were disguised in a shroud to look like long lampshades. Each box, named a HILAS is a 4 way loudspeaker system more characterized as a high fidelity speaker, relatively flat in response from 80Hz to 15kHz. Each is loaded with a lot of small drivers and high frequency devices.

"AT are the only people in Australia and New Zealand geared in a professional way to work on a custom solution", Glenn says. "It was designed by us, a concept they turned into reality with collaboration. They had to liaise with the structural engineers, and the shroud manufacturers. We were the acoustic designers, they did the physical. They suggested transducers; we accepted most of their suggestions."

These days most – but not all – manufacturers of loudspeaker enclosures and systems source the components such as transducers (speakers, high frequency devices) elsewhere – in the same way a car manufacturer might source a gearbox, or a steering rack from an external maker.

"AT are can do people, cooperative and friendly. There's very strong mutual respect between us."

Other jobs where Glenn has designed and AT has fabricated include Sydney's Central Railway Station and St Paul's Cathedral.

"I couldn't do St Paul's for half a million if we didn't have AT. Solutions out of the box from manufacturers would cost a lot more", Glenn concludes.

ROAD SYSTEMS

Out on the road there are a growing number of AT believers. They've grown in



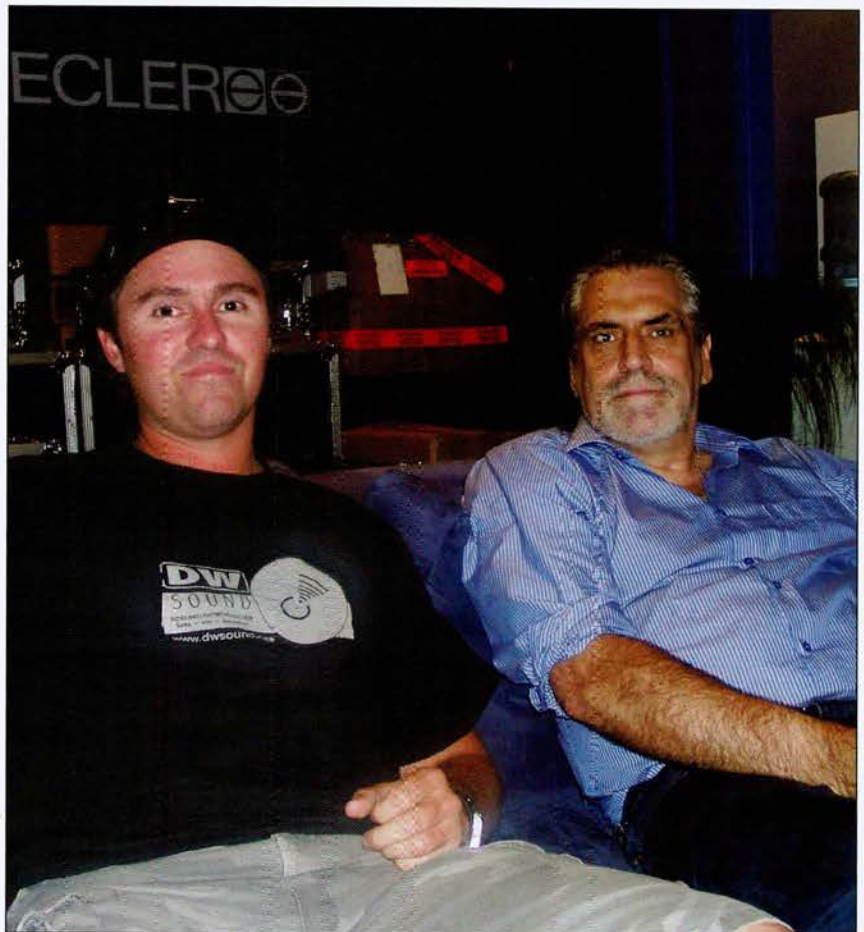
Harry Lloyd Williams with Richard Faint (left), Tina Lim, Southeast Asia Export Manager; Pascal Bonnet, General Manager, Sales (rear); Ron Delbridge, Internal Sales Coordinator (right).

number since the Firebird was released – it is a composite line array, where 2 boxes provide enough sound pressure for the average 1000 seat venue. The bottom box does sub bass, with 2 x 18" drivers. One or two of these sit under the top box, which is loaded with the same drivers as you'd find in four smaller line array cabinets.

Allied with amplifiers and processors supplied as a complete system, it has been a hit. Firebird is based on line array technology from AT's Blackbird range, itself made up of three different sized line array cabinets with two sub bass cabinets.

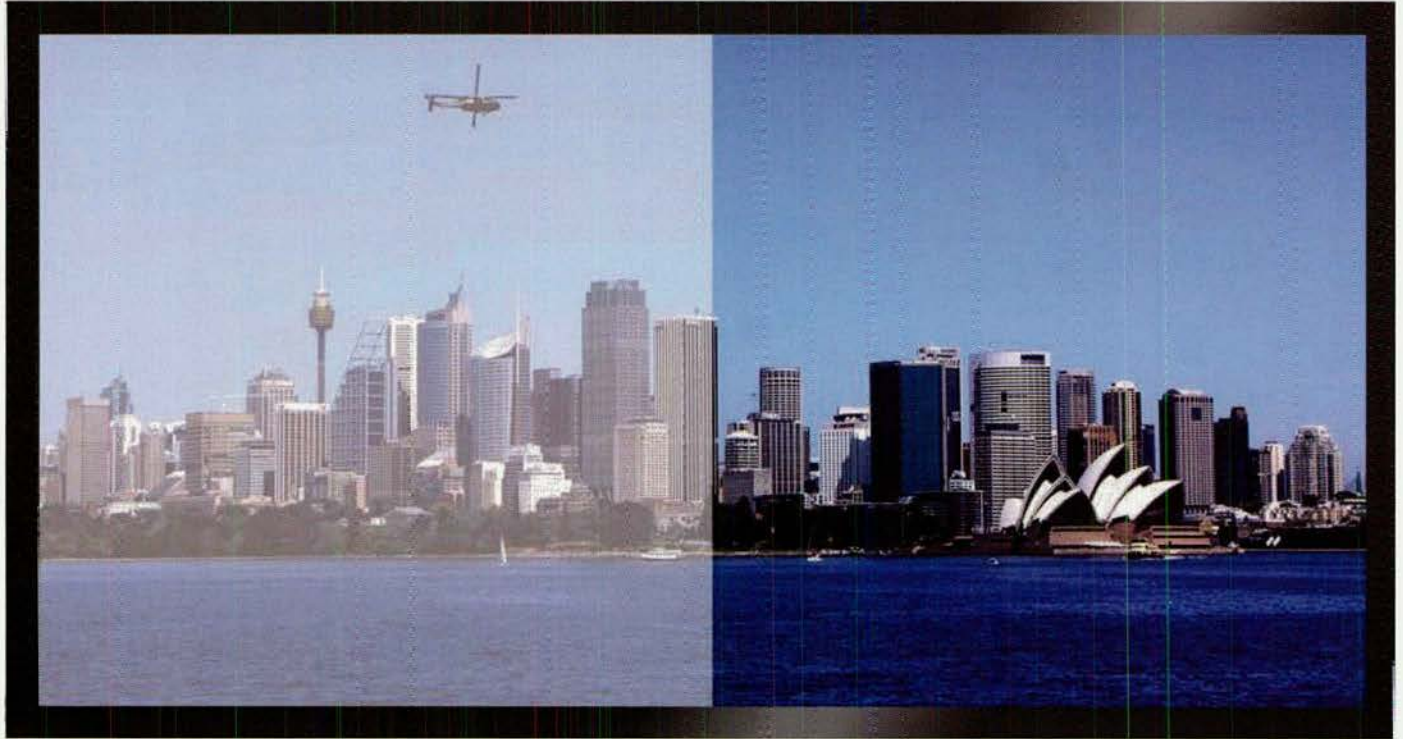
Norwest Productions purchased a Blackbird line-array system in 2004 following the speaker system's successful debut at the East Coast Blues and Roots Festival in Byron Bay. Since then the Blackbird has become the main system in the Queensland office, with hardly a week going by that the Blackbird doesn't get used somewhere.

In the last couple of years the system has been hung at the Brisbane Riverstage (a 10,000 seat venue) for a variety of performances ranging from state-sponsored events such as The Queensland Music Festival, featuring Australian contemporary artists such as Kate Ceberano and Opera performance by Marina Prior, to large-scale commercial concert performances by American singer-songwriter Carole King and performances



Harry and Daniel Webb from DW sound (Sunshine Coast).

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Graeme Whitehouse is the General Manager at Norwest Productions in Queensland. He waxed lyrical about their Blackbird Line Array.

"Being a true line-source array means the directivity of this system is exceptional and can be successfully flown higher than conventional mid-size line-arrays. The lack of sound from the rear of the system fits neatly into the noise-management plan in force at most festivals these days, and we are seeing more line-array systems being specified for this purpose. The factory settings with the system are



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excellent and the only change we ever make to the processor curves are to the high-frequency boost filters, which we increase or decrease depending whether the system is flown or stacked. Obviously we don't physically change the filters, we simply have "flown" and "stacked" settings available in our library. The system is light enough to be ground stacked by two crew and the changeable waveguides provide flexibility in coverage patterns. The build quality of all Acoustic Technologies speakers is second to none in my opinion."

Blackbird has also taken off overseas, with a system installed in the Goya Theatre in Barcelona, and three complete systems shipped to Korea. The opening of export markets for AT allows the firm a natural hedge against the cost of imported components – and comes with the help of an AT staffer – Tina Lim – who is located in Thailand, with extensive connections across the region.

Greater availability of neodymium loudspeaker magnets and better technology has allowed more power to be poured into loudspeakers. "Especially with greater attention to cooling", adds Richard.

THE REST OF AUDIO

Aside from the line arrays, AT have a range of loudspeaker enclosures and stage monitors including an industry standard – the SS24 – 12" with large format high frequency driver. This cabinet sells at under \$3000 in a market segment where an imported cabinet will cost upwards of \$4000. AT explain that they have removed the importer – as they make the box – so there is one less margin in the retail price.

At the boring end of audio, AT produce little cabinets from extruded aluminum that can be finished with any of 74 Dulux powdercoat colours. In between these small workhorses, is a new range of plastic loudspeaker systems, ranging from 8" with horn, through to 15" – powered and passive.

So at a time when there is gloom and doom in the press, there is nothing but optimism, determination and good news pouring out of AT Professional. Last word from Harry and Richard: "Recession? What recession?"

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WIRED IN BIG D

“Coming together is a beginning. Keeping together is progress. Working together is success.”

— HENRY FORD

BY RICHARD CADENA

For about 357 days out of the year, I'd rather be in Austin, Texas, where I live, than in Dallas. Nothing against our neighbor to the north; after all, Dallas is the cradle of the automated lighting industry (Vari-Lite is based there), the birthplace of the DLP chip (Texas Instruments is also based there), and the exporter of both guitar hero Stevie Ray Vaughn and seven-time Tour de France winner Lance Armstrong, both of whom took up residence in Austin. It's not that I don't like Dallas — I do. It's just that I prefer Jerry Jeff Walker (one of the originators of redneck rock) to Jerry Jones (owner of the professional American football team, the Dallas Cowboys), Kinky Friedman (leader of the band The Texas Jewboys, author, and failed Texas gubernatorial candidate) to Ross Perot (failed US presidential candidate), and Willie Nelson (c'mon, he's Willie!) to Vanilla Ice (failed American rapper).

But for at least eight days out of the year, I want to be in Big D. That's because the Entertainment Services & Technology Association (ESTA) holds two of its four annual meetings there, and much of the future of entertainment production is forged by the big hammers of the industry during those eight days.

The meeting in January was no exception. I made the four-hour drive in about two hours and arrived around dinner time. By the time I made my way to the sixth floor of the host hotel, it was late in the evening for the rest of the world, but it was high noon at the RDM Plugfest. The Plugfest is a sort of digital jam session where several manufacturers unpack their RDM gear and play it with other manufacturers RDM gear to see what kind of music emerges. It was a chance to experiment and see what worked and what didn't, to try to break

the software in the lab before it breaks in the field, and to ring it out in a real-ish world setting.

When I walked into the room I found Bob Godcard of Goddard Design, Doug Fleenor and Milton Davis of Doug Fleenor Design, Scott Blair of High End Systems, Peter Willis of Howard Eaton Lighting, and a few other hacker jammers. Gack and geeks were strewn everywhere around the 20' conference table. The bits and bytes were flying.

Goddard had four of his new DMXter4 RDM testers connected together, one acting as a controller sending DMX data and RDM commands, two as intermediate devices intercepting the data, and one acting as a receiver getting the data and commands. Bob was taking RDM timing measurements, going through the RDM discovery process, and doing general RDM housekeeping. He changed the display on the first one from numeric to graphic while it was outputting data and played around with the DMX, adjusting the dimmer levels one slot at a time. With the intermediate units he captured the data as it streamed through the network. On the other end, he grabbed the data and displayed multiple slots at a time. He was dribbling data like Meacowlark Lemon of the Harlem Globetrotters dribbles the basketball.

At the other end of the table, Willis brought some Howard Eaton Lighting RDM Labpacks and he connected them to an Enttec RDM USB Pro interface.

On his laptop he was running Enttec RDM Controller software and it was spitting out DMX and RDM data through the interface.

The RDM Labpacks are ideal for testing RDM data networks because each one has six sets of five LEDs, one each of red, green, blue, white, and amber. The RGBW LEDs represent a single pixel and the amber LED is the RDM status indicator. Peter was able to send DMX data to the device, light up individual LEDs, and when he sent RDM data the amber LED lit up while it was receiving it.

He demonstrated a basic feature of RDM, the discovery process. That's where the RDM controller polls the network by broadcasting to all connected devices a command asking them to respond if they are RDM-enabled. If there are any such devices then they will all respond at once, resulting in data collisions. So the controller then sends an RDM command to mute half of them according to the User ID, which is a sort of electronic serial number, unique in all of time and space that the manufacturer programs into it. Once half of the UIDs are muted, the controller multicasts a message to the unmuted half asking for a response. Again, if there are data collisions then the controller mutes half of the remaining UIDs and tries again. It repeats this algorithm until it isolates a single device, and then it records its UID. It then works its way back up this binary search tree, recording the UID of each device it encounters.



Geeks at work - some of the finest minds in lighting sharing their data.

Once the discovery process is finished the controller will have recorded the UIDs of every RDM device on the network, and it does it quickly with no operator intervention. Since the UID is 48 bits long, there are 281,474,976,710,656 possible UIDs. Thank goodness computers are very fast; otherwise it would take hours for the discovery process to finish. In this case, there were only six "devices" so it only took a matter of a few seconds.

After he discovered the LEDs, Peter set the DMX addresses remotely from the laptop. In order to see which device he was dealing with, the controller would ask a device with a particular UID to flash (or IDENTIFY in RDM speak), enabling him to set the DMX address according to the needs of the operator rather than just doing it randomly. That's just one of the RDM commands in a list of many. Basically, anything that can be accomplished by using the menu on a fixture can now be accomplished remotely by the use of RDM – things like changing the mode, inverting pan and/cr tilt, dimming the display, etc.

In a short while, Peter brought up the Robe Dreambox software on his laptop and connected the interface that comes with it. He demonstrated how it also discovered the RDM Labpacks and allowed the alteration of the DMX addresses that had already been set using the Enttec application.

About that time, Milton nearly jumped through the ceiling. He and Doug had one of their RDM Splitters connected to a power supply that was feeding an LED fixture. They were trying to figure out why the fixture was not behaving correctly. Milton had discovered that the power supply was passing along the RDM data to the fixture instead of filtering it out as it was supposed to. The problem was easily identified and

WHAT IS RDM?

In March, 2006, a new control protocol for the entertainment industry was approved which provides for bi-directional communication between a lighting controller and one or more lighting fixtures or other DMX512-controlled devices. ANSI E1.20-2006, also known as Remote Device Management (RDM), was devised to work with legacy DMX512 gear, allowing it to use the same cables and connectors that have been in use since DMX512 was first implemented in 1986.

RDM makes use of a portion of the DMX512 data packet called a Start Code, which tells the receiver what type of data is to be expected in the forthcoming data packet. The DMX512 Start Code has always been the null set (0) but since the approval of DMX512-A in November 2004, there are a number of Alternate Start Codes, one of which is reserved for RDM. When an operator wants to send an RDM command, she instructs the console to do so and it starts by interrupting the DMX512 data stream and sending a data packet that begins with the RDM Start Code. The receiver then knows not to interpret the data as a dimmer level or channel information but as an RDM command.

There are a number of RDM commands, but there are basically three types; Discovery, Get, and Set. The Discovery process allows the controller to query the network and determine whether or not there are any devices connected to the network that are RDM capable. If so, it registers the Unique ID (UID) of the device so that the operator can communicate with it. The Get command allows the operator to acquire information about the device, such as its DMX512 address, its mode of operation, etc., while the Set command allows the operator to change any settings on the device that are settable. In short, it allows you to make any changes remotely that can be changed on the menu display and possibly more.

RDM has been an approved standard for almost three years now, but only recently have manufacturers begun implementing it in their products. Late last year, several automated lighting manufacturers including High End Systems, Martin Professional, PR Lighting, and Robe introduced products that work with RDM. Soon, climbing a ladder to change a DMX512 address or to change the setting of a fixture will be a thing of the past.

resolved, thanks to their efforts. This is why the digital jam session, better known as the RDM Plugfest exists – to iron out the wrinkles in this emerging technology.

There's a very popular bumper sticker philosophy that you'll find on t-shirts and

on the bumpers of cars all over Austin. It says, "Keep Austin weird." I think Dallas should adopt one of their own: "Keep Dallas wired."

Talk back to the author. His UID is rcadena@austin.rr.com. CX

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FIELD DAY FOR TDC



Very few people, even their biggest fans, would be inclined to say that DJs are exciting to look at. The smart operators know this, and bring in some creative vision.

Every New Year's Day since 2002, a horde of partygoers have come together for Field Day. Since that first year, the event has grown to the point that this year more than twenty thousand dance fans descended on Sydney's domain. With tickets sold out months in advance, expectations were high.

TDC has been involved as vision provider for previous Field Days, so they were the logical choice for this year's event when Josh Chapman, production manager for Fuzzy (the promoters behind

Field Day) decided to step things up a notch with a larger video component than ever before. The main stage became the focal point of an elaborate collection of screens and projections.

The concept immersed the entire stage in video and provided a very powerful enhancement of the events on stage. In years gone by, outdoor vision on this kind of scale was impractical or impossible during daylight but in this case the use of LED products allowed the impressive visual elements to take effect from late morning through full midday sun right

into the night. Projection on the entire roof of the Domain stage created an added dimension and visually stunning effect once darkness fell.

DAYTIME – LED LEADS

For the daylight part of the festival, projection was not a viable option for video so the LED system carried the load. The stage was surrounded on three sides and from above by walls of LED tiles.

MEET THE CREW

It took twelve people three days to install the 5.7 tonnes of LED. More than 500m of cable was required to connect all the different bits, along with more than a dozen processors for signal format conversion, sizing and control to deal with a range of signals including composite video, VGA and DVI all the way up to HD SDI.

On show day three technicians ensured the smooth operation of all display devices, inputs, processors and controllers in the crowded environment that saw 42 degree heat and wind gusts of over 60km/ hour. The challenges of the system, its environment and time constraints proved well worthwhile given the impact that video gave to the festival.



COLIN RENDELL

Formerly of ByteCraft superscreens, Colin has been with TDC for over 2 years and is heavily involved in TDC's LED installations – from a planning stage right through to system delivery and installation. Colin was technically responsible for managing all of the main stage LED and control systems at Field Day.

PAUL CARPPE

Paul is the newest member of the TDC team who has relocated to Australia from New Zealand. Paul was heavily involved in the growth of New Zealand's most prominent video supplier, Mirage. Paul was primarily responsible for the Domain canopy projection at Field Day



TAKAO HASHINO

Takao joined TDC in early 2008 from Japan. As a highly skilled LED technician Takao has had large involvement in large jobs including the 2008 ARIA Awards, Sydney Motor Show and Field Day 2009. Takao assisted Colin with all aspects of the main stage LED installation at Field Day.

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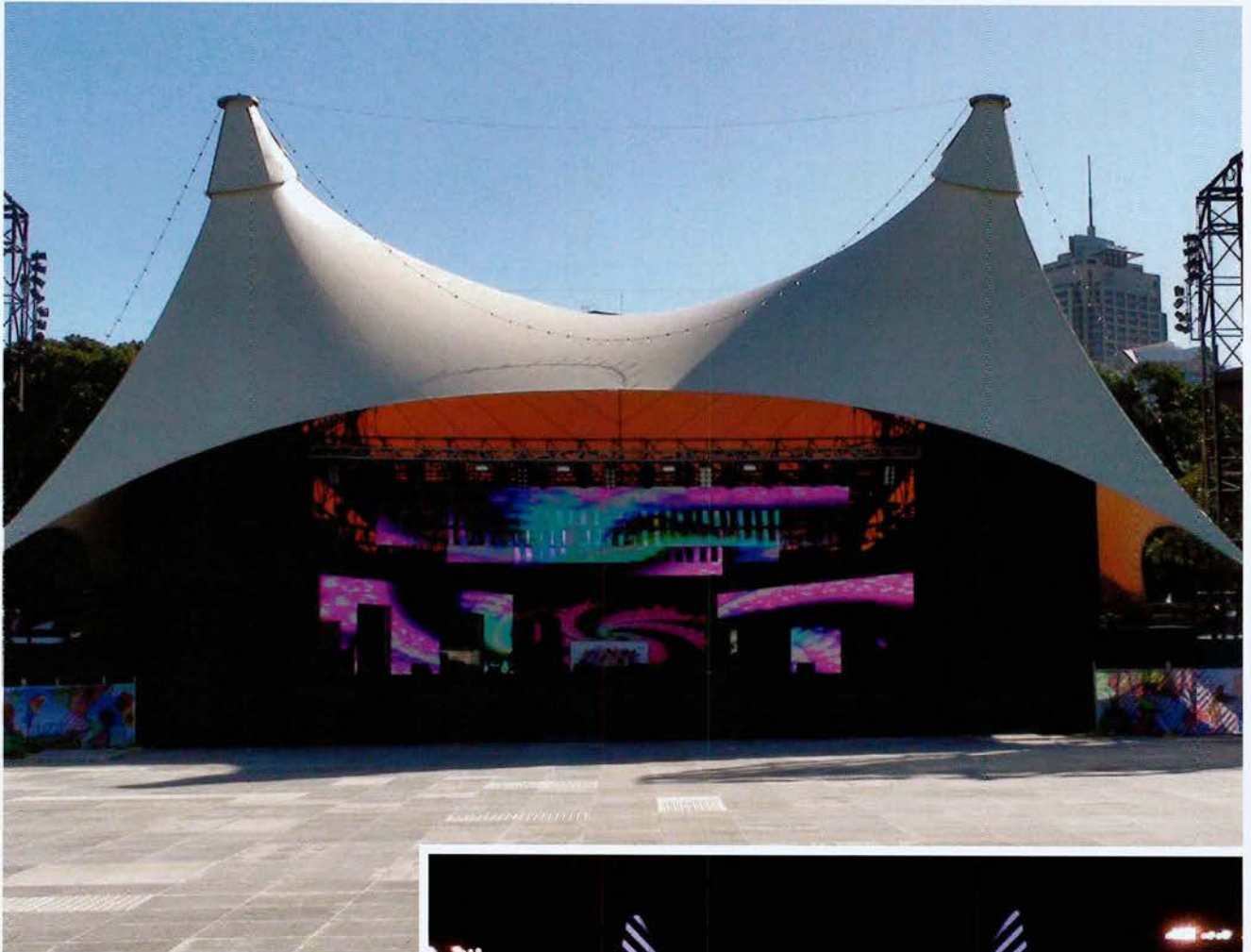
Model No.	HS-1200BT	HS-1200WT	HS-1500BT	HS-1500WT
Rated Power	Continuous pink noise: 100W Continuous program: 300W			
Sensitivity	97dB (1W, 1m)		95dB (1W, 1m)	
Frequency Response	70 -20,000Hz		6C -20,000Hz	
Directivity Angle	Horizontal: 90°, Vertical: 40°		Horizontal: 90°, Vertical: 40°	
Speaker Component	Low frequency: 30cm (12") cone-type,		Low frequency: 38cm (15") cone-type,	



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Running from behind the DJ riser to the front corners of the stage, two walls of Lighthouse R16 tiles defined the edges of the performance space. Each wall was 6m x 3m and they were designed to give the impression of video content radiating out from behind the DJ. To meet the practical requirements of access for artists and backline, each of the walls had two gaps – one artist size door, and a bigger one to accommodate backline on Mega Deck risers.

Directly behind the DJ, closing the gap between the two R16 walls, was a third wall consisting of Barco i10 iLite panels. This provided a perfect backdrop and linked with the R16 screens to allow a seamless video image to run from one side of the stage to the other.

The wraparound video effect was completed by the addition of three more screens, suspended in the rig and angled back at a 10° angle to provide a far more interesting roof to the stage. The tiles used for these screens were Vuepix transparent tiles, selected so that they could be used without compromising the light show.

All this was managed by Encore video processors controlled by Encore SC incorporating a Barco 8x8 DVI



matrix, allowing a sophisticated range of switching options.


CONTENT AND SWITCHING

The Encore control system provided enormous flexibility in the control of the on stage screens, providing the ability to treat all displays as one huge screen or alternatively provide individual sources to each screen. Throughout the day Ken Weston and Rachel Johnson switched the screens, primarily using their Mac Book Pro's as the source. The two Mac Books were controlled with Modul8, a dynamic VJ software package, which allowed flexible triggering of the 500 gigabytes of content via USB MIDI Controllers.

Digitalism, one of the lead acts on

the festival lineup, brought their own entourage including their production manager and LD. During their set, the visiting LD's Mac Book provided content using Arkaos. This was triggered by the GrandMA console running the stage lighting, illustrating once again the convergence between lighting and vision. The effect was impressive, and kept the touring party happy.

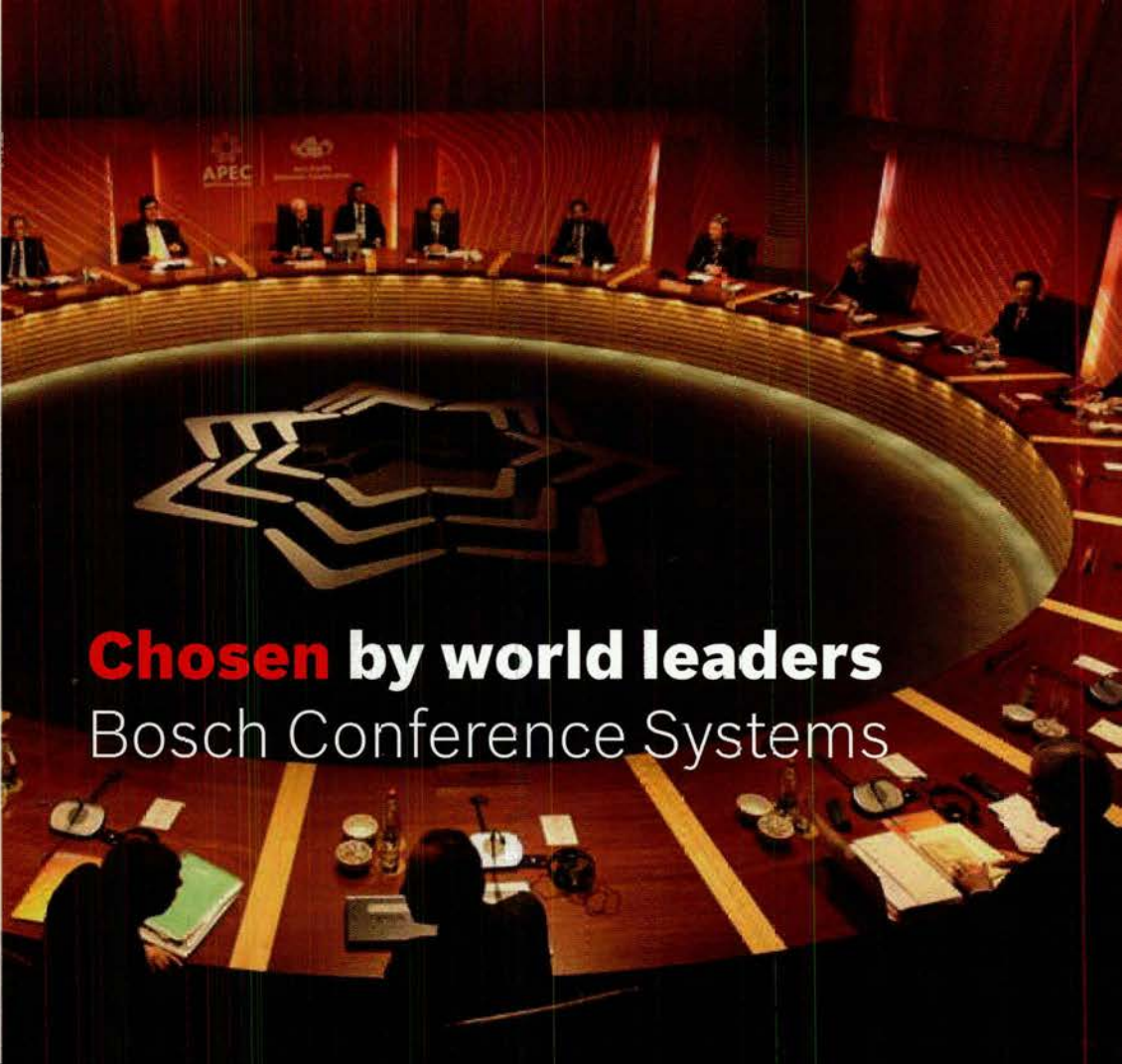
AS NIGHT FALLS

In an innovative move, the promoters decided to make a feature of the massive white canopy that covers the Domain stage. As night fell, Barco FLM 20ks were ignited to throw a Synergix blended image across the entire 65m canopy. The projection of custom video content produced a visually stunning effect. 

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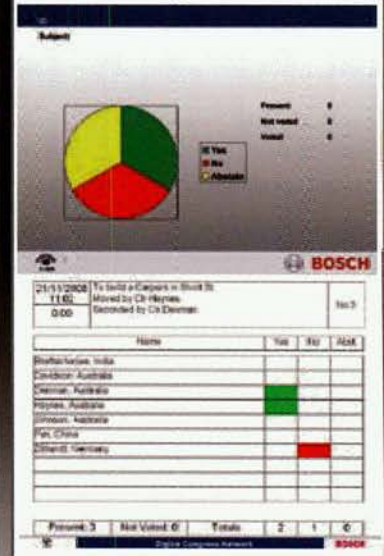
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history

Welcome to the what we were doing section of CX, celebrating our reportage of our industry from these pages ten and fifteen years ago. In our Wiki-fied age of internet archives, we'll all have a better handle on the past in the future. But for now, we need to delve deep into the archives each issue, since although there was a Connections website ten years ago, it was only just a website.

So join us in the time machine as we wind back the clock to a time when life wasn't just simpler, it was also cheaper. Or was it?

15 YEARS AGO: CONNECTIONS MARCH 1994

Nominations were open for the first ENTECH awards, since the first ENTECH was just months away. The awards were a brave move which no one has been game to replicate since. Winners love awards, and losers – well, who wants to think of themselves as a loser?

This issue reported that the phones had started ringing to report a recovery – we visited the NAMM trade show in L.A. and found confidence returning after the US recession of 1993.

Audio School controversy raged, with a nice letter from Glen Ferguson who worked at the Audio Education Centre. He pointed out that we had insinuated we were concerned about the activity of their organization ... whereas in fact we had plainly said that they were dubious. Further, we had criticized Sonics Magazine and writer Gavin Hammond over a four page puff story headed 'Are sound engineering schools sound?' in which he seemingly endorsed some famously failed colleges.

For our trouble we received a smoking legal letter from lawyers working for the soon after defunct Sonics magazine, threatening the usual things. The law



is the only place where you can make threats in writing, knowing full well you'll never carry them out. Our filing cabinet is full of letters like this.

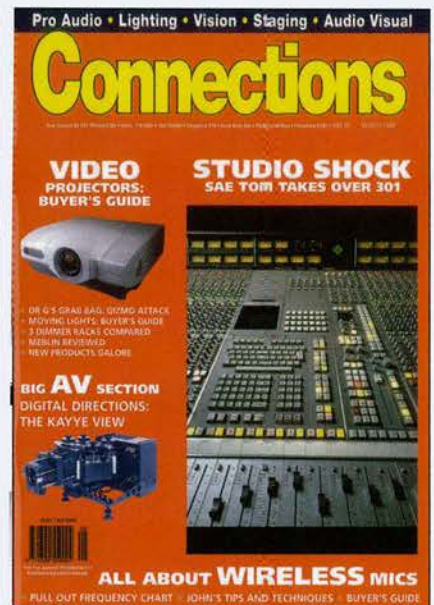
Then as indeed now, we were openly skeptical about audio colleges where impressionable students were led to think they would waltz out of graduation into an immediate job in a recording studio. A laughable concept to those in the industry.

Maybe it was something in the air, but another letter from well known Adelaide industry professional Peter Robbins ripped into us for being intolerant towards religion in some earlier commentary. His letter was correct.

LAVA became Show Technology as Rod Salmon and Emmanuel Ziino joined forces to import Clay Paky and Martin lighting. They enjoyed dramatic growth as waggly mirrors morphed into today's automated lighting.

Jands Production Services purchased a company called Arena Technical Services, thus seeing off a competitor.

Duncan Fry survived the California Earthquake of 1993, with his graphic descriptions gracing our pages. It really was quite a shocker – amazing how fast we forget. And the big one is well overdue, with dire predictions that a slice of California will fall into the Pacific Ocean anytime now.



WHAT WE PAID:

- Mackie MS1202 mixer, \$1049.
- Sheet of Lee colour filter \$12.
- Selecon CYC 500 flood: \$245.
- Tascam DA88 8 track modular digital multitrack: \$13,398.

10 YEARS AGO: CONNECTIONS MARCH 1999

Studio Shock: Tom takes 301. It was a shock indeed for the staff at Studio 301 when Tom Misner of SAE (the audio college) bought their studio and fired some of them. Mind you, they had been vocal in their opposition to SAE so it wasn't exactly unexpected that they would be shown the door. The Tom went on to move the studios out of the old EMI building in Sydney and into his newly rebuilt Mirage facility at Alexandria.

Apogee Sound pledged to lift their presence in the Australian market, and then failed to do so. They are the makers of loudspeaker systems, not the audio processing co founded by Bruce Jackson.

Meanwhile equipment imports rose a significant 11% over the previous year according to the import statistics published by the Australian Music Association.

VHF wireless died as the feds pulled the frequencies for digital TV.




Tom Misner pictured in 1999 at the vault in Mirage (now Studios 301).

Mackie entered the loudspeaker market after buying RCF.

We had a moving lights buyers guide: where are FAL, Coef, Abstract, Mad lighting, TAS and Futurelight today? Ten years ago a Clay Paky Stagecolour 300 wash cost \$7,376, Martin Mac £60 \$9007, and a High End Technobeam waggly mirror \$7059.

WHAT WE PAID:

- Yamaha GA 24 ch mixer \$5295.
- ...and drumroll please, here is the Scry XPLX 200CM projector – with a massive 2,400 lumens at \$46,970 plus lens. True evidence that technology has shifted in our favour, because you can buy a 2,500 lumen projector for less than a grand in 2009! 

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Het Muziektheater, Amsterdam
Total installation:
2640 m. Protrac, 102 fly bars.
2005 Prolyte installed the first batch of Protrac bars

"The choice of Prolyte was a deliberate one, we have to be able to rely on service and technical backup and we felt Prolyte could offer us that."

Huib Huikeshoven
Head of Stage Department

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Esplanade, Singapore
Total installation:
2220 m. Protrac, 106 fly bars.
2007 Prolyte installed Protrac bars

"There is practically no lateral bending and the high loading capacity offers many possibilities. The fact that we could still use our existing installation made it an easy choice."

Peter Bretherton
Esplanade's Technical Manager



Royal Opera House, London
Total installation:
2900 m. Protrac, 121 fly bars.
In 2006 Prolyte installed a special designed type of Protrac in the ROH in London.

Working closely together with technicians of the ROH, a custom made high-grade aluminium Protrac type, based on the standard Protrac system, was developed to suit the special needs of the ROH.

Prolyte: Often copied, never equalled.


PROLYTE PRODUCTS

DON'T DO THIS!

Two outputs into one input means trouble in the audio world. Jeff Mackenzie, of Jands' Technical Resource Group, details a real world example.



Bob (not his real name) is an experienced audio contactor. Bob called us from site one day while commissioning a night club system. He was concerned that the system sounded distorted and suspected the fancy audio magic DSP box with pretty flashing lights may be faulty. After a few rounds of "try this", "try that" we concluded that the fancy audio magic DSP box with pretty flashing lights was working fine and the fault was caused by wiring from the DJ console. Did I say "DJ console" (singular)?

It turns out there were actually TWO DJ console positions, each wired to wall mounted XLR input panels on opposite sides of the room and parallel connected to the SAME inputs on the fancy audio magic DSP box with pretty flashing lights. The concept was to use one OR the other as required by room configuration, never both!

However, as we know, Murphy's Law states that whenever the possibility exists to connect something the wrong way, someone will do it. And this is exactly what happened to Bob. Some very helpful person decided it would be more efficient to test the system if BOTH consoles were connected for testing. This effectively connected both consoles to the DSP via (you guessed it) a Y-Combiner.

One console was running (passing audio), the other was idle (switched on but not passing audio). The majority of current supplied by the active console, was 'absorbed' (sunk) by the low impedance outputs of the inactive console, leaving very little to drive the inputs of the DSP. Someone then drove the active console harder (to drive system to required SPL) pushing the active console beyond its current drive capabilities, resulting in high levels of distortion.

The fix was simple. Unplug the inactive console, which immediately increased system level and reduced distortion.

However, Bob was still not totally convinced that the wiring arrangement was the cause of his problems. He stated that the 'idle' console was not passing any audio and thus (in his opinion) could not

possibly affect the active console. This seems to be a common misconception so I'd like to take a little time to explain what is going on in this scenario.

While it may seem that the inactive console is not passing any signal based on lack of indication on the output meters and/or master faders set to minimum. It actually IS producing an output signal. We call this signal ZERO VOLTS. There is a huge difference between zero volts and "nothing". The output stages



Type A: 1 x FEMALE connector to 2 x MALE connectors. Designed to connect one audio source (output) to two receivers (inputs). A y-splitter may mess your impedances around a bit, but the results aren't likely to be catastrophic.

Type B: 2 x FEMALE connectors to 1 x MALE connector. Designed to connect two audio sources (outputs) to one receiver (input). A y-combiner is often a recipe for disaster.

of audio devices generally employ an error correction technique called negative feedback. The negative feedback circuits attempt to correct any errors on the output by adjusting the output voltage offset to maintain the target value. In the example above, the output stage of the idle device would view signal voltage from the active device as an error voltage and



One i-Pod (or PC) stereo feed into a single DI or channel is: Not How We Do Things! Use two DI's or 2 console channels.

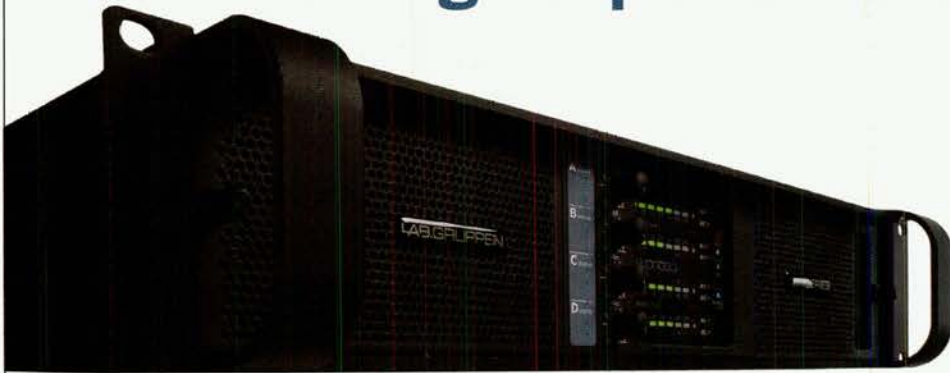
would actively try to adjust this voltage back to zero volts. So we end up with a situation where both devices are fighting each other, the active device attempting to drive the line to a non-zero voltage, and the inactive device attempting to pull this voltage back to zero. Essentially akin to driving a car while simultaneously applying the brake and accelerator. Something we all know we should never do (although I suspect many do, but that is a rant for another day...)

Another common example of inappropriate application of Y-Combiner leads is the 'monoing' of stereo sources such as CD players, iPods etc to a single mono input. The same problems exist as in Bob's night club system. Each channel will load the other producing low level distorted audio. The only time this would not happen is if the signal on the left output was EXACTLY the same as that on the right, but if that was the case then by definition the signal is already mono. So why did we need the monoing combiner? Use a stereo input, that's what they were invented for. If you absolutely must passively mono a stereo source then use a resistive combiner. These use resistors to build out the impedance of each source to minimise loading effects. Construction details of resistive combiners is beyond the scope of this article but details are readily available online. Try googling "passive audio combiner construction".







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35 YEARS IN THE BUSINESS

That would be an impressive claim for a person, but it's even more impressive for a piece of hardware. Jimmy Den-Ouden visits a mobile studio with historic significance.

With the increasing global thirst for content it's no surprise that people are recognising the need to facilitate this. Media as we once knew it has changed significantly in the past 10 years – youtube, 3G phones, moshcam, iTunes store, and DVD extras have brought about a massive re-think of content acquisition and delivery. Peter Pagac of Screensound has recognised this need and is delivering content to the new world of media with old-school class.

Peter (along with some logistical support from Sound on Stage) manages and operates a pair of audio recording trucks. One truck is digital, and designed to cover large scale recordings and broadcast needs. But since everyone seems to know everything about digital already, we're going to take a look at the analogue truck. The truck was acquired in early 2008. The van is 7.7 metres long, 2.4 metres wide and 3.5 metres high. Weight, without extra equipment being carried, is 8.4 tonnes.

"The Neve truck" as it is known started life when it was built in England under a tender issued by the ABC in 1974. The console was completely built by hand, custom designed and built to a very exacting specification by Rupert Neve during the period that most regard as the pinnacle of analog Neve design. The console alone weighs around 850 kg.



Neve truck at Good Vibes 2009.

The technical specification rivals most competitors' equipment manufactured to date. It took approximately 18 months to build the truck and rumour has it that when it was completed the guys forgot to put oil in the motor, and blew it up on the way to the shipyard. That's okay though, there's a brand new truck chassis sitting under it these days.

The truck was formerly known as the ABC Sydney Radio OB Van. It was the

primary audio record and OB truck for the ABC from 1975/6 to ca 2004 when ABC retired it in favour of digital technology. Since being acquired, it's had a loving restoration including a touch up on the body, and a new chassis. Among the many who have recorded with the truck at some point or another are: The Angels, Crowded House, The Eagles, Elton John, Sydney Symphony Orchestra, Australian Opera and countless others.



Neve @ Neve.

SPECIFICATIONS

The truck has, or can be configured with, the following:

- 40 Input (+ 2 F/X Returns) / 16 + Stereoc + Mono Output Custom Rupert Neve Console. An additional outboard 12 channel Neve console with the same input/output modules can be added to increase the number of channels/tracks to 50 or 52
- Input/Mic-pre modules are 3115 plus some 33114 modules (more comprehensive EQ section)
- Output modules: 3721; Switching modules: 3720; Buss modules: 3722
- All input channels have separate isolated outputs (both pre-fade and post-fade)
- 6 F/X sends (one, or two for split mode, are used for the on-board Lexicon 96CL reverb unit)
- 8 patchable Neve compressor/limiters: 3314 (sidechain linking available on 2 busses or individual control) - these

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units have separately controllable and defeatable compressor and limiter sections

- All inputs, outputs and insert patchpoints are transformer isolated
- External distribution of stereo and mono outputs are fed through distribution amps with up to 5 separate and transformer isolated outputs from each source
- All inputs, both mic and line, are externally accessible by multicore cables. There are two extra multicore inputs (40 channels) for auxiliary mixer inputs.
- 2 x microphone-splitting boxes, each containing 20 Jensen dual output microphone-splitting transformers (direct plus 2 splits). These boxes are compatible with the multicores as well as XLR microphone cables.
- Nearfield monitoring speakers are normally dynaudio BM15As
- Recording chain is handled by 4 Digidesign HD192i/o for a total of 64 tracks. Backup is recorded onto a Tascam X-43. Most sessions are tracked at 96 kHz and 24 bit resolution
- Outboard consists of Lexicon 960L, Eventide H3000 SE/B, dbx Quantur, Amek 9098 and dbx compressors, Valley People gates, Echoplex and more available on request.

WHAT MAKES IT SPECIAL?

I asked Peter: "In short, the sound. Elliot Scheiner (four times Grammy Award winning engineer) said it is the best live recording console he has ever used (Melbourne 2004, The Eagles Farewell recording). There is magic that happens when music is mixed on this console, that legendary Neve sound really is at its best. Bass is solid and rich, dynamic yet controlled. The stereo spectrum is clear, precise without the image collapsing at any time. The transients are clean, undistorted, and retain their spatial cues. The top end has air without sibilance and harshness, the equalisation points are musical and oh so sweet. Mid range is clear, not muffled.

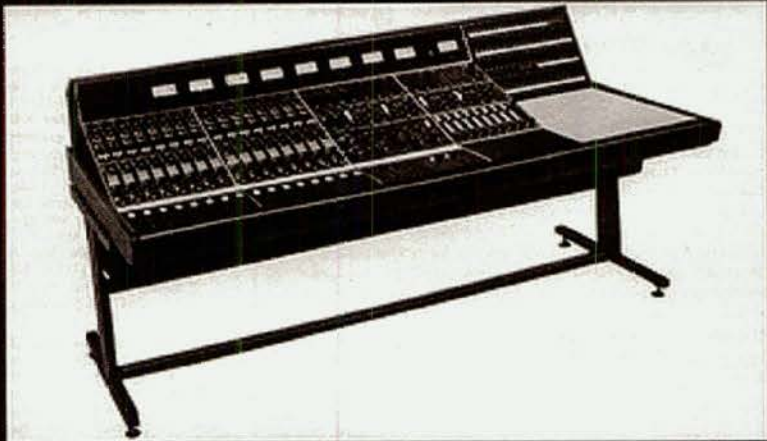
The compressors are once again-so musical, as if they were playing the music alongside the players themselves. No pumping and breathing but rich, rich, rich. The summing buss on this Neve is astounding. It glues the mix together like no console or DAW I have ever used. The depth and the image are quite simply, astounding."

Pete's certainly got the background to make that call. He started in audio firstly programming analog synths, then mixing bands, and doing monitors at the Real Cafe. He then did theatre at the Sydney Opera House, post production mixing for Discovery Channel, composition for Disney Channel and thus ended up with a well rounded understanding of audio in many different applications. He's toured with bands, managed the production requirements at The Basement for 4 years and operated from the Basement Studio mixing the "Live At The Basement series".

AND FINALLY...

I think one of the most impressive things about the truck is the very quick deployment possibilities. I went along to see Peter record Sam Sparro live at the Good Vibrations festival in Sydney, and I reckon in the space of about an hour

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The sound of Neve is worldwide. Our audio control

Original Neve console marketing c.1974.

you could go from parking the truck to "ready to record" state. This process relies on channel splits being in place already, but this is really not hard to organise in advance. Pack down was even quicker, running at about half an hour. On a green note, power consumption on the truck is modest too - it's regulated power system

runs off a 32A Wilco.

At the end of the day it's really not that hard to grab a hard drive recorder, bang on some some mic pre-amps and make a recording. But the recordings this truck turns out are in a very different league. Is it vintage? Only in the places that matter.



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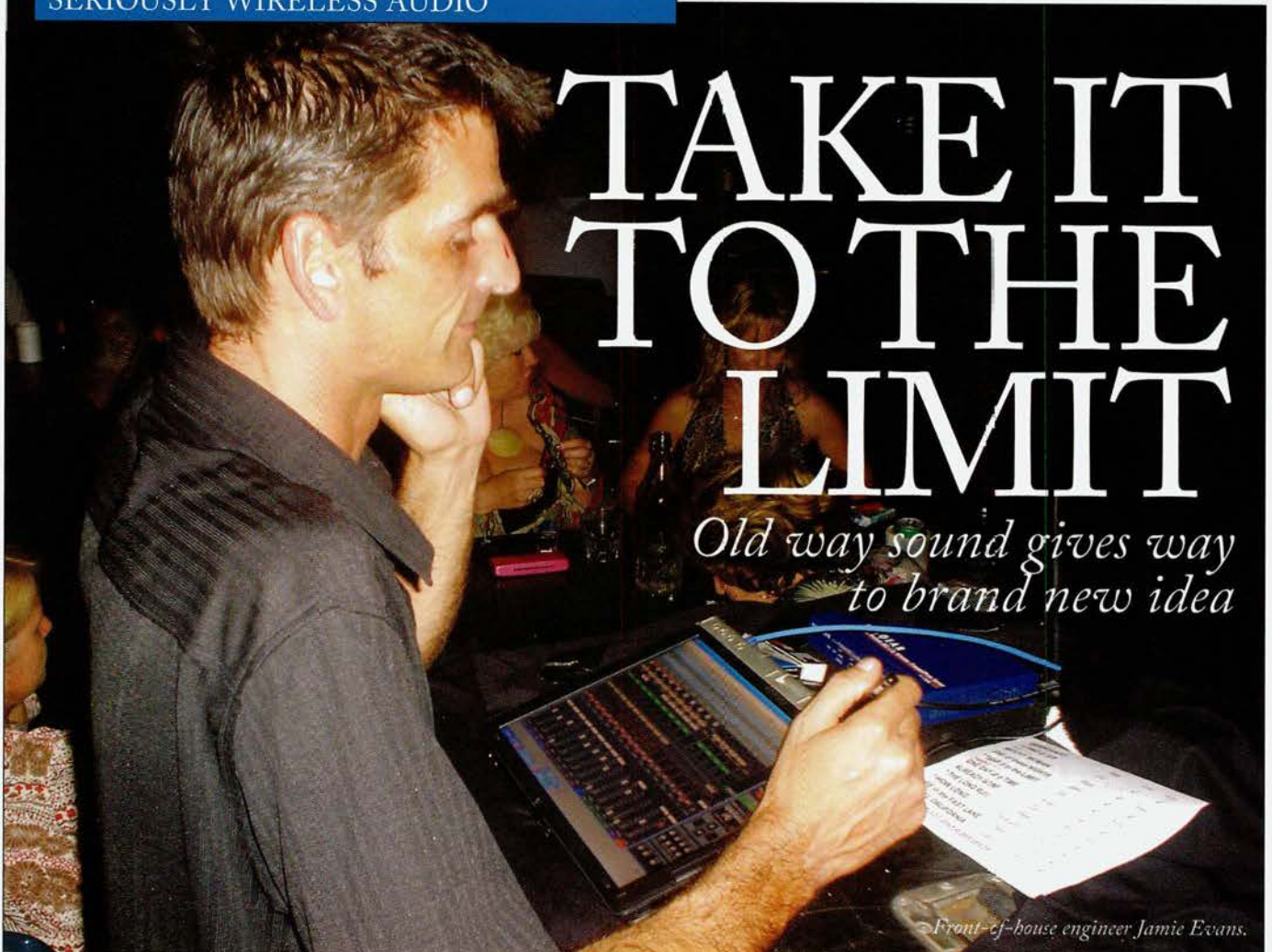
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TAKE IT TO THE LIMIT

Old way sound gives way to brand new idea



Front-of-house engineer Jamie Evans.

BY JULIUS GRAFTON

Melbourne's 'The Eagles Story' concept band use Gallagher Audio and Lighting for production – a firm that has been operating more than a quarter of a century. Owner Jim Gallagher started with a Renkus Heinz Smart System, which he still owns. These days they do shows as diverse as Falls Festival in Lorne, through to dates for the Screaming Jets.

A while back the firm acquired a Yamaha LS9 digital console which was placed in the stage monitor console role. With 32 mic inputs, 16 outputs and a compact footprint, Yamaha's entry level live console range has won a lot of friends.

Out front was the Soundcraft MH2, a 48 channel board mated with 2 x 20 unit effects racks – the standard kind of configuration for a working professional PA system. The FOH desk and rack consumed an area of floorspace measuring 8' x 8' – around 2.5m x 2.5m in the new measurements.

Then the guys had a revelation – the Yamaha LS9 can be two consoles. At the same time. It's a thing I saw done when propped up against a bar at The Venetian in Macau last year. It was 2am, and the



Monitor world!

beer was downloaded so I thought maybe my failing eyesight was tricking me. But the guy next to me at the bar really was mixing the 8 piece band, using a wireless tablet PC.

At Gallagher Audio and Lighting, the concept has been maximised probably as far as it can go, and certainly would make a product designer at Yamaha happy.

FOH guy for Take it to the Limit,

Jamie Evans takes up the story: "The monitor engineer operates the console side stage to drive five sets of stereo in ear monitors using channels 33 to 64, I operate the console for front of house from a wireless 12" tablet PC using channels 1 to 32. I'm not saying that this hasn't been done before, but I think that the live audio world should know how easy this is to do and how cost effective



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Jim Gallagher and Glenda.



and versatile this set up really is”.

As he tells it, you can mirror inputs 1 through 32 with inputs 33 to 64 in the softpatch. This way channel 1 also appears at channel 33, channel 2 and 34, and so on. On the LS9, channels 1 – 32 OR channels 33 to 64 are accessed through selecting which bank you want. So by having the console work surface switched to channels 33 and 64 means the monitor engineer can do discrete and independent things with all 32 inputs – and not affect FOH. The monitor engineer can do EQ, effects, and apply gates and limiters to all 32 inputs, while the FOH person will have all their own settings.

“We don’t use a multicore anymore and I gave up running out a Cat 5 cable as a back up about 15 shows ago. I don’t use any hi-tech wireless gear, just standard components you would buy from your local PC store. The fantastic thing about this set up from a front of house engineer’s point of view is that I can go anywhere in the room during sound check or even during the show and I have my console and FX rack in my hand wirelessly. I’ve even gone to the extent of using a LAN to serial bridge so I can operate the BSS366’s (system processors) than run the Turbosound system that



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NEUTRIK



Monitor desk.

we use wirelessly from the tablet at the same time. So I have complete control of the console and the PA from a PC that you just walk around the room with?

Yamaha offer Studio Manager software on their website, at the moment it is restricted to use on a Windows PC – not Apple Mac.

Jamie is about to take this to the ultimate level, by saving each song on the band's setlist as a scene which is recalled so each song has totally different everything. This is mostly for the benefit of the monitor engineer, since the band require some different settings for different songs. "We also use a few different monitor engineers, so recall will be easier – and I can do it from the tablet".

A final sweet touch is that Jamie has discovered the console will play an MP3 file from the start of a scene – so the band can have a backing track with four clicks to count them in, which fires off the scene cue for the song! "Yamaha say you can even set the play mode so the track fades in, or starts instantly. I'm about to try this!"



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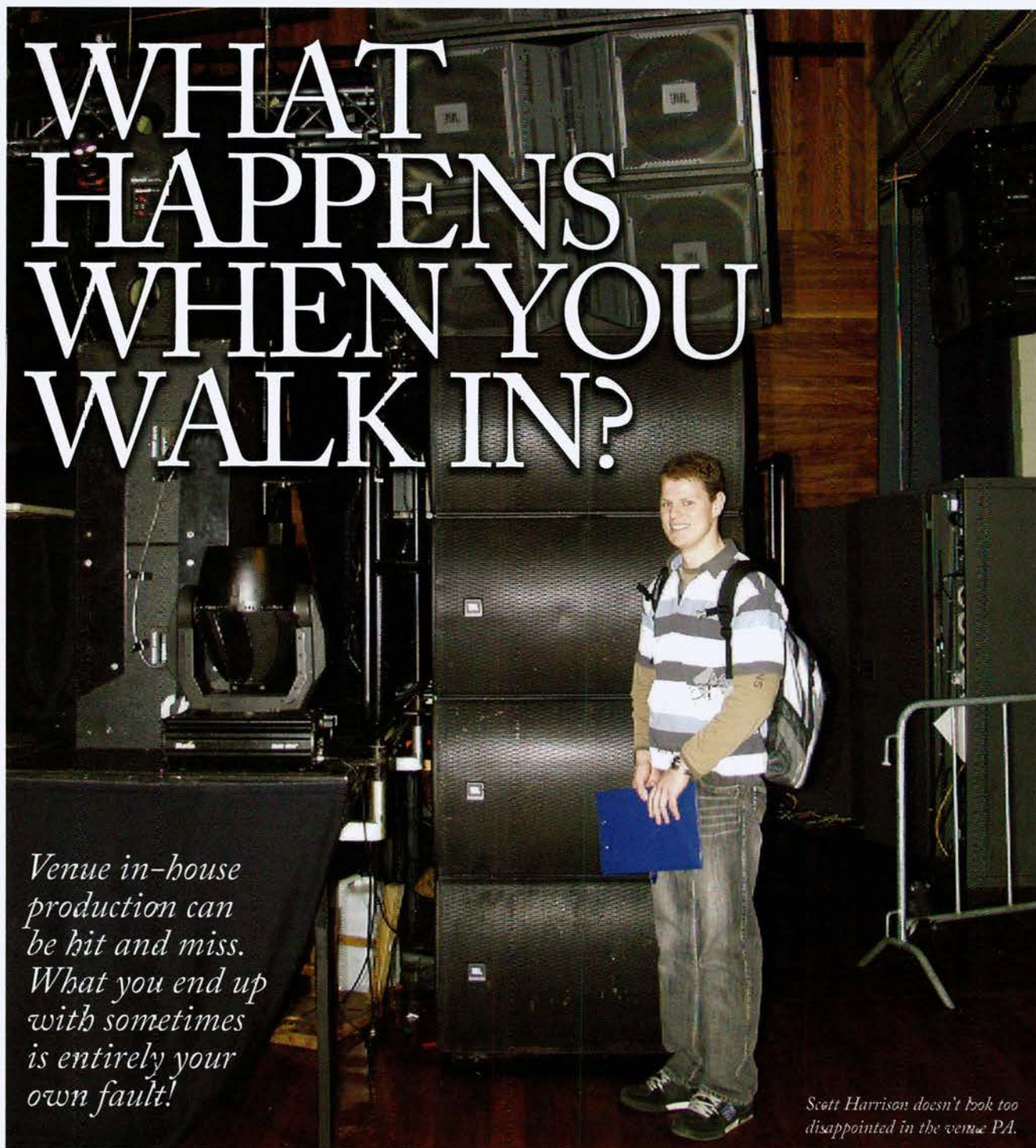
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WHAT HAPPENS WHEN YOU WALK IN?



Venue in-house production can be hit and miss. What you end up with sometimes is entirely your own fault!

Scott Harrison doesn't look too disappointed in the venue PA.

By **JULIUS GRAFTON**

I did a club date recently in a pokey dive on Sydney's Oxford street where the mixing console is located seven feet in the air. It's in an air gap between the top of a cupboard and the ceiling. To mix you stand on top of an upended log of wood, a metre tall. Falling off is a real option. The console was covered in grime, channels didn't work, and the stage box had exposed wires where the multicore had pulled through the entry gland. There were four Par 56's in the roof. 3 of them worked.

I took my own mic's, stands, cables,

worklights and anything else I could think of. It was roulette with the console, an old Yamaha GA 24/12 which was admirably working long after most wouldn't. Sound was made, life went on.

There are some great house systems cut there – the venue I work in a lot has three auditoriums, with Yamaha PM1D (and Grand MA for lights) in one, Yamaha M7CL and Hog 1000 in the next, and Soundcraft MH4 with Maxim for lights in the smaller (600 seat) space. It spoils you.

"The way the PA is installed and the way it works in the room makes The Factory (Sydney) my favourite house

system I've used lately", says CX colleague James Den Ouden. "It works well in the room – clean, accurate and it does exactly what you tell it to, which really puts the onus on you to tell it the right things".

"At Enmore (Theatre) where I work sometimes we had Jason Mraz in last year, and the engineer called E.T. came in and made friends. He said 'Hi, how you doing, I lost my ego 30 years ago and if you hear something not right tell me, because you know your venue better than I do'. He pulled the best mix – and all I could say was 'thanks for getting it so right'".

Go on the road and you need to be

the system is easy to figure out – you just add up the impedances of all the speakers in the series circuit.

In a parallel circuit, as the name implies, there are multiple current paths starting and finishing at the same points – as if there were a number of different roads linking your departure and destination points. Fair enough, there may be variations in how much current flows through each branch of the circuit, but the total current flow is greater than the current flow through any of the branches and if you check back with Mr Ohm, you'll find that this means the total impedance of the circuit is less than the impedance of the lowest impedance branch.

When you're setting out to calculate the total impedance of the parallel speaker system, you can use the formula $Z_T = Z_S/n$ where Z_T is the total impedance, Z_S is the impedance of each individual speaker, and n is the number of speakers connected in parallel. In this situation it is safe to assume that all the speakers connected in parallel are the same – connecting different types of speakers to the same amplifier output opens about six other cans of worms which I'd rather leave shut.

WHAT??

Okay, let's say we're connecting two speakers to an amplifier. If we connect them in series, the whole system has twice the impedance of a single speaker. According to Ohm's law, that means only half the current for the same voltage, which means only half the power output from the amplifier. Since the power is now being shared between the two speakers, this means each speaker is getting only one quarter of the power a single speaker connected to the same amplifier would get. Sure it means less strain on the amplifier, but it seems pretty useless – and it is, unless you have specific reasons for doing it.

Which is why the linking connectors on the back of speaker boxes are wired to connect multiple speakers in parallel. If they're wired in parallel, each speaker is connected directly to the output of the amplifier, and each will draw as much current as a single speaker connected at the same point, which means that each speaker will get the same amount of power as a single one would. Which means we're getting twice as much power out of the amplifier – as long as the amplifier can supply enough current.

If you connect too many speakers in parallel, the impedance goes down and the amplifier is no longer capable of supplying enough current.

If you happen to be using the system to reproduce material which is heavy in the frequency range at which the speaker's actual (rather than nominal) impedance is at its lowest, the likelihood of running out of current is dramatically increased.

SO WHAT HAPPENS THEN?

Depending on the amplifier and the load, a variety of outcomes are possible. In the olden days, when amplifiers used simple circuit design, the outcome was usually that the amplifier either triggered its thermal cutoff, blew the fuses on the DC power supply rails or blew up the output transistors. While each of these possibilities had different implications for making it go again, they all meant the same thing for the show – lead stop. Occasionally a vengeful amplifier would kill a few speakers on its way out.

Most modern amplifiers, at least in the professional world, operate with protection circuits designed to reduce the chances of damage to either the amplifier



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or the speakers. These operate in a variety of different ways and have slightly different effects so it's not uncommon to see several of them in an amplifier. Most modern protection circuits will only reduce the current going to the load so the show doesn't stop, but if you punish your hardware badly enough it can still shut down on you.

I've heard tales of people who feel that this means they don't need to think about loads because the protection circuits will take care of it. Presumably these people also think it's OK to crash your car as long as you're wearing a seatbelt and that a few small fires in the building are no cause for alarm because "the sprinklers will take care of it...". Make something idiot proof, someone will build a better idiot.

As a general rule, when in doubt leave a bit spare. If you're going to be running flat out, think about loading your amps with slightly higher impedances – three 8Ω speakers in parallel produces a load of 2.66Ω which leaves a bit of headroom for an amp designed to drive down to 2Ω. And remember not to make the big mistake of assuming that because lots of speakers are 8Ω yours must be too. There are enough manufacturers out there making 4 and 6Ω units that this kind of thinking is almost certain to land you in a tricky situation.

SO HOW DO I KNOW IF MY AMPLIFIER WILL CUT IT?

I know it seems wrong, and it hurts me to say it, but the best solution is...

(this is tough)...to look at the manual. Somewhere in there will be information about the amplifier's load capacity, but sometimes it will be concealed. The easiest way to tell is this: amplifier manufacturers know people want high power, and they know people want to drive low impedances, so they'll tell you the maximum power it can produce into the minimum impedance it will reliably drive. In other words, if an amplifier spec sheet doesn't quote a power output at 2Ω, it probably won't drive 2Ω.

BUT WAIT – THERE'S MORE!

The impedance of the speaker system is not the only factor to consider here. We also need to think about the impedance of the cable and the output impedance of the amplifier. These both have a far smaller inductive and capacitive component than the speaker load (with the exception of transformer coupled and valve amps – but hey, we're talking about high powered pro audio) which means their impedance is much more consistent across the frequency range. The important thing about these impedances is that they are both in series with the speaker load.

Now, Ohm's law tells us that if we have multiple impedances in series, they'll all carry the same current, and the voltage (and power) will be shared between them in the same proportion as the different impedances. So if you're driving an 8Ω load through a 1/2Ω speaker cable, 1/16 of the power from the amplifier will be dissipated in the cable leaving the rest for the speaker. If you use the same cable

with a 2Ω speaker load, it's dissipating 20% of the amplifier's output power. The same effect applies to the output impedance of the amplifier.

SO WHAT DO I DO ABOUT IT?

There's nothing you can do about the output impedance of the amplifier unless you're an electronics genius and you've designed a super-low impedance output stage. The people that make the amplifiers have pushed the output impedance down as far as they can without compromising the operation of the amp, so you'll just have to live with it. Modern amplifiers tend to be amazingly good in this respect anyway.

But you can do something about speaker cable impedance. The impedance of cables is dependent on several factors

Typical impedances. Note these are 'nominal', but it's a nominal kind of world, isn't it?

Speaker Impedance	Number of speakers	Amplifier impedance
4 ohms	1	4 ohms
4 ohms	2	2 ohms
8 ohms	1	8 ohms
8 ohms	2	4 ohms
8 ohms	3	2.66 ohms
8 ohms	4	2 ohms
16 ohms	1	16 ohms
16 ohms	2	8 ohms
16 ohms	4	4 ohms

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– the length of the cable, the thickness of the cable, and what it's made of. The cable we use now is generally copper, which is about as good as you're going to get, unless you want to upgrade all your speaker cables to silver (pricy, but with the way copper prices are going...) so that leaves length and thickness.

The longer the cable is, the greater its impedance. So you can make a big difference by keeping your amplifiers close to your speakers and your cable runs as short as possible. Thicker cable has lower impedance, so staying away from thin cable will also work to your advantage. The other advantage of thicker cable is that it has greater current capacity, which is never a bad thing – especially when you consider that the current series of 3000W+ super amps would supply a current of about 40A to a 2Ω load if they were driven to their full capacity.

40A rated cable is thick, heavy and expensive, so it's lucky that real world audio only ever gets anywhere close to the rated output of the amplifier for very brief periods – even if your program material only has a dynamic range of 6dB the loud bits will use four times as much power as the quiet bits, and if you're smart you've left the same amount of power spare to allow headroom for transients that come and go too fast to tip the meters. Using thick cable will help with impedance, but don't get too hung up on current capacity.

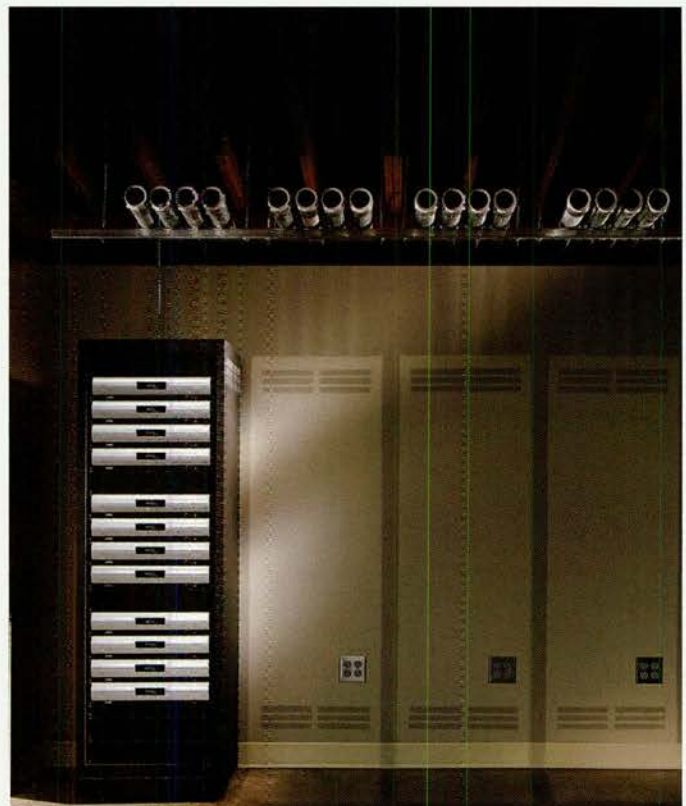
WHAT'S THE POINT OF ALL THIS?

Back in the 'good old days', when equipment was primitive and of dubious reliability and the operating conditions for the gear were much more difficult, we often used to find ourselves limited by the capacity of our amplifiers. It was also not uncommon to need to reconfigure a system to meet different requirements. To cover these needs, every professional soundie knew how to calculate impedances and wire stuff up in series, in parallel, or in a variety of series/parallel arrangements to make it work properly – if necessary you could wire up a series/parallel network of six 8Ω speakers to give a 5Ω load, and lots of compression drivers could be fitted with either 8 or 16Ω diaphragms so you could select the ones that best suited your system configuration.

In our brave modern world, however, speaker and amplifier technology has reached a level at which it becomes impractical to start messing about with clever wiring – most concert PA systems are so complex that if you start getting too clever you'll wreck them anyway. In this environment, impedance calculations are all about planning how many speakers you can drive from an amplifier and still have the amp operate properly.

It's also about knowing why running amplifiers with 8Ω loads is more equipment intensive but sometimes worthwhile if you need big headroom, about knowing why you can only loop so many speakers together off one amplifier, and occasionally knowing how to make up and use some tricky adapter leads to allow you to run stupendous numbers of little boxes off one amplifier when you need a small amount of sound spread over a large area.

So it's up to you oldies out there to teach the young 'uns, and it's up to you young 'uns to demand it. If we let our knowledge disappear, it's only a matter of time before we wind up just patching systems with no deviation from the picture on the box, reduced from cabinetmakers to IKEA assemblers.



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LAB. GRUPPEN PLM SERIES AMPLIFIERS

Dropping a Lab into a Lake is a bad idea. Dropping the Lake into the Lab as it turns out is a good one...

BY JIMMY DEN-OUDEM

PLM is Lab.gruppen's acronym for Powered Loudspeaker Management. The philosophy is to reduce ongoing labour costs associated with touring systems by incorporating signal distribution, speaker processing, and amplification all into one unit. Lab.gruppen has recently acquired the Lake algorithms for signal processing, and these have now found their way into the PLM series of amps.

A TRIP AROUND THE LAKE

Lake processing has been around for some time now, and was included on the Lake Contour and Dolby Lake processors. It has distinguished itself as one of the more widely known and liked way to treat FOH signals before they reach the PA system.

Let's take a look at some of the specifics of Lake processing to gain a better understanding of the PLM series products, starting with Raised Cosine Equalisation. Sounds a bit like a fancy marketing term doesn't it? It's not. It's an ordinary marketing term for a fancy function. The long and short of this feature is that it allows you to make EQ adjustments without adjacent filters interfering with each other. See the "Rated Cosine vs Analog" diagram for



All kinds of inputs, and loopholes for all

what happens with 6db boost across a range of frequencies on an analog EQ (shown in blue), compared with how the Lake treats the signal (shown in red). No interference between adjacent frequencies makes it a super-accurate EQ.

Lake processing offers traditional Bessel, Butterworth, and Linkwitz-Riley crossover modes with crossover slopes of up to 48db per octave. Not much new there, but the Linear phase crossover mode gives you slopes of up to 180db per octave. The benefits of this are most evident when using array type speaker systems, where the advanced filtering capability can improve time coherence and reduce phase interference between different elements of the system. So it makes your PA work better.

LimiterMax is Lake's speaker protection system. It's fully user-customisable, and on the proviso that it's been setup correctly it's basically impossible to clip an amp when using this feature. Whereas many limiting systems rely on guesswork LimiterMax looks at the science behind what's driving the PA system – this is why it's critical to ensure all the right parameters are input to the system.

Iso-Float is Lab.gruppen's term for transformer isolated inputs, and they're not an option on Lake processors.

They're a standard. One of the other cool things about Lake processors in general is that they talk to computers. There's a software package which gives you full control over all processor functions via Ethernet. This means that with a wireless router and a wireless laptop, you can sit wherever you like in your venue and setup your system component levels, EQ, limiting, etc. It all works in real-time, though you can also do crossover designs offline then upload them into the processor later on if you like.

So there's the background on Lake processing. Now you can get it built into your amps, which is well cool. Let's have a talk about the amp side of things.

UNDER THE HOOD

The PLM series is available in two models. The PLM10000Q has four channels, each rated at 2500W RMS into 2 ohms. The PLM14000 is the two channel version, specified to produce 7000W RMS per channel into 2 ohms. Drop 3db on one side, and the other will get up to 7500W RMS. For the uninitiated among us, that's a shitload of power. It's the kind of power that should be a two person lift, yet these amps check in at the feather-weight end of the scale



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The author as a walk in guy, complete with briefcase containing cassette of Supertramp, bucket of Wild Woodbines, condom (small fit) and bottle of Southern Comfort.

adaptable. My colleagues on Crewspace.com agree.

THINGS TO DO

"It's called pre-production", says Howard Smart. "Get your tech spec into the agent or promoters contract. But also be sensible - if you're going from 250 capacity club shows to 2000 seat theatres you can't be specin' the same amount of kit".

"But the thing that still gets me is local specs looking ok - then rolling up and finding lots of the kit not working, I always try and touch base with the local house crew to find out the real story".

Kevin Carey rams home the issue about being prepared. "Advancing the date can let you know what kinda scene to be prepared for. Throwing a fit helps, but only in the planning stage. By the time you get there it is already too late. The bad local gear dilemma is answered by investment in equipment like consoles like the Yamaha LS9 that are easily checked as baggage. Add an ears rig, and at least your mix/FX is uniform and you only have to sort out the local hire PA."

"It's harder on the smaller venues to make enough money to keep the systems running at their best, but at the same time, how many times have you seen a band in the smaller venues, trashing mic stands, mics, cables, wedges. Often things that don't get spotted until after the band has left", says Big Al.

Brad Gostnell says treating the house tech with respect goes a long way.

"If it is advanced honestly and the house person has been truthful, there is nothing else that can be done. When it has and the band engineer still bitches and moans about it none of the staff

wants to work with them anymore. We all got to work together. Might as well get along and not be pissed."

"Work through the gig, treat the house guy or gal like a professional, even if they aren't. Then tell management that it might sound a lot better with XYZ or I would highly recommend these mics or processors or boxes. Management will be much more inclined to hear you out because you have treated them well. I'm sure they already know how much their rig sucks, they get it all the time".

PEOPLE REACT A CERTAIN WAY

Dave Barnett is the house guy who has to apologize for in-house production on a regular basis.

"I'm at least as much aware of our shortcomings as the guest noiseboy du jour. But quite frankly the money for upgrades just isn't there, the income potential for a 500 capacity room won't support it. And yet your agents keep calling us begging, begging for gigs. Every show we do where it just gets by, makes it that much harder to justify the upgrades that I want just as much as you do. My entertainment director will just say "Opeth played on this system, Damageplan played on this system, surely they can get by too."

"I think advancing the gig is a lost art. Hardly anyone bothers to do a tech advance anymore, most of the calls I get are from tour manager's wanting to discuss load in times and hospitality, calls that were meant for the Promoter. And by the time I do get a tech call, all the contracts have already been signed

"I write songs that ask for extreme shifts in dynamic and volume..."



"Everything in between needs to be heard if we're to pull them off in the live realm. EMA in-ear monitors actually do all of the things I've always felt were missing from other units. We hear each other as much as we want or need to without losing that important sense of being attached to our environment. I don't have that awful sense of being trapped in my own skull with no awareness of what it is anyone out in the audience is hearing. Also nobody is fighting for audio real estate up there anymore. Pretty important stuff."

Glenn Richards Augie March



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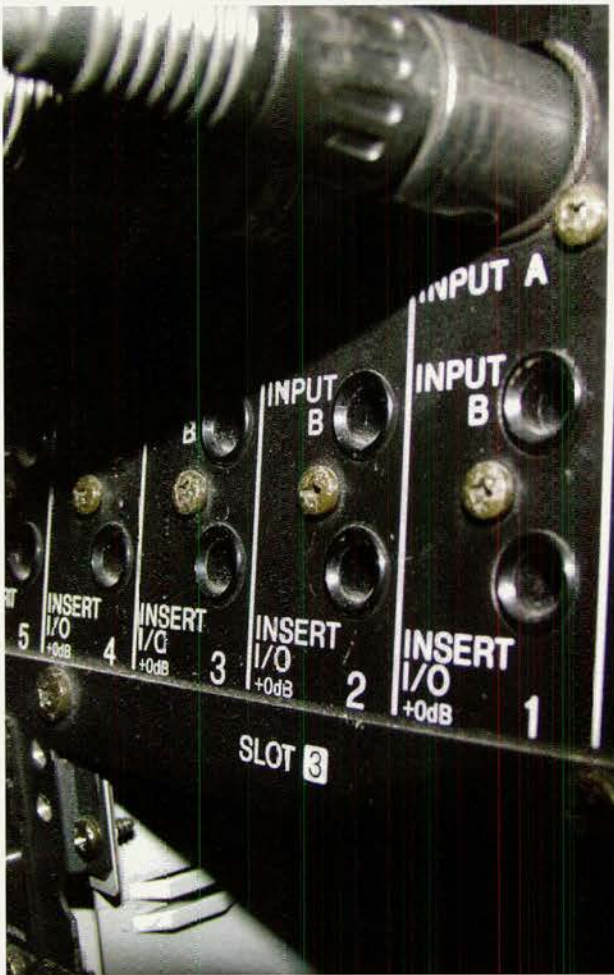


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and the budget is set, so if someone whines that they have to have Yamaha effects instead of our TC and Lexicon, or they can't fit all their input channels on our desk and refuse to share with support, well they suddenly change their tune when someone mentions that any rentals will mean adjustments to the guarantee and break points. The tour manager will override the prima donna band engineer every time. Money talks, ES walks."

This happens. A Sydney based engineer recounted a walk up for a live TV segment last year. "The band engineer is on the phone to the tour manager, yelling about cancelling the gig because he didn't like the system - which is for a TV audience. After a few minutes he goes quiet as the TM explains that he will do the gig and that sound engineers are replaceable. But no apology to us - the show crew."

"The general standard of club gear has got better over the last few years but there still a few golden club rules", according to Mr Hawkins from the UK. "Advance the gig properly and don't be a prima-donna to the house guy. Courtesy opens far more doors. Carry the 'must have' outboard if you really can't manage without it. Carry at least your own vocal mics if possible".

"Far more can be achieved by proper communication in the advance and showing an obvious desire to make the gig happen. I've had house guys offer to bring in their own mics or outboard at no extra cost just because I was reasonable and courteous in the advance. Sure, some of the gear that we run into is not in great condition and certainly perhaps not the latest technology but provided it works you've at least got a starting point. What you make of it then is up to you - don't forget that as long as the PA makes some kind of noise, the tour manager isn't going to cancel the gig." 



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THE VODKA & CORDIAL DIET



BY DUNCAN FRY

Here's a story from those halcyon days, a long, long time ago, when I was a record rep, working for a major multi-national company. I had started off, like all reps, north-west of the city in an area colloquially known as Tombstone Territory, full of nothing but little record shops who would agonise over buying half a dozen 45s, let alone an album. But I survived my tour of duty there and eventually clawed my way up the corporate ladder to the top rung as far as reps were concerned – the city, where I wound up calling on the major record stores every Monday and Thursday.

Back in those days the suburban shopping centres like Chadstone, Southland (insert other appropriate ones for your own city) had yet to reach the massive turnover that they have today, and were small potatoes compared to the huge amount of records and tapes sold in the city.

The job did come with a few perks;

I had a pretty well unlimited expense account for taking the record buyers out to lunch and stuff, and I also got a permanent parking spot in a city parking garage, which came in very handy for the weekends.

Returning to the car park one evening, I could hear lots of engine revving and tyre squealing as I approached. As I entered, I could see a red Lamborghini racing up and down. The girls who parked the cars for you were racing it towards the end wall, jamming it into reverse and squealing the tyres on the way back, then slamming it into first gear and squealing the tyres on the way forwards. Something you could only do in a Lambo as it had synchro on reverse. Glad it wasn't mine! But I digress...

The times that you could call on the shops, to show them new releases and such, were strictly controlled – 9 am till 9.20 at one shop, 9.30 till 9.50 at another, and so on, and nothing at all over lunchtime. Which slotted in nicely with my unlimited expense account!

Pretty soon I got to know all the reps from various companies and would end up following around, say, the rep from EMI, who followed the rep from Festival, and who followed the CBS guy... I'm sure you get the picture.

One of the reps – let's call him Ken from Festering Records – would drone on and on and always take longer than his allotted time, making us all late for our other calls. One day I arrived at the next call bang on time, and he was still there pitching his stuff, while Pete, the rep from EMI stood waiting and fuming.

"Jeez will you have a look at him," said Pete when I arrived, "He's still carrying on like the mummy's boy he is. Is he ever going to stop? I'll fix him up next week – just wait and see!" And he glowered at Ken as he finally wound up and left.

Ken was about 35 to 40, I'm guessing, and indeed still lived with his mum, who dutifully made him his sandwiches for lunch every day, packed into a Tupperware container. Since Ken never drank anything stronger than orange cordial, his mum also

made him some of that as well, in another plastic container.

I had plenty of opportunity to watch him as I waited for him at some shops, and to say he was set in his ways would be the understatement of the year. Every hour, regular as clockwork, he would stop what he was saying, open up his bag and pull out his cordial container, unscrew the cap, screw it back on, put it back in his bag, and then continue pitching his new releases. Talk about a creature of habit!

A week later I was back in the same shop, in the queue behind Pete again, waiting for Ken to finish his interminable presentation, only this time Pete was laughing to himself.

"Watch this," he whispered.

Smoking was still very much encouraged in those far off, less enlightened times. As Ken rambled on, Pete slowly moved up behind him and casually knocked a full ashtray over Ken's bag.

"Shit, sorry Ken," he said, "Crikey what a mess! I'll just go and clean it up for you."

And before Ken could say anything Pete picked up the bag and whisked it away to the bathroom, returning in about a minute or so with the bag all wiped clean and shining.

"Sorry about that mate," he said,

handing it back. "Can't imagine how that happened."

"What have you been up to?" I asked as he came over and stood near me, his back to Ken.

Pete smiled and opened up his jacket, showing me an empty half-bottle of vodka.

"Have a guess where the rest of it is?" he chuckled, and explained that in the bathroom he had whipped out Ken's cordial container, poured half down the sink, refilled it with the vodka, shoved it back in the bag, wiped it clean and brought it back!

We both watched expectantly as Ken stopped talking for a moment, then leaned down and opened up his case, pulled out his cordial, poured a cup, and glugged it down. His eyes bulged and he gasped for air, and then said to no-one in particular "Oooh, I think mum's made the old cordial a bit strong today!"

Pete and I were wetting ourselves as we watched, and both of us rushed through showing our new releases to the record buyer so we could follow Ken to his next call to see what was going to happen!

At the next shop we waited, and sure enough, halfway through Ken poured himself another cordial, and it might have been my imagination, but I was sure his hands started to shake as he lifted the cup

up to his mouth and drained it again.

"Mmm, gosh, yes, that is a bit strong, isn't it," he giggled to himself, as he pulled a bunch of records from his bag. He stumbled against the counter and the records slipped from his hands and rolled around on the floor. He tried to pick them up but overbalanced and fell on the floor laughing.

Embarrassed, he got up, hurriedly packed his bag and rushed off to the next shop. Pete and I had appointments at different shops after that, but we worded up all the other reps to watch out for Ken, and let us know what happened!

It transpired that he had gone from shop to shop getting woozier and woozier, knocking stuff off the counters, letting records go rolling across the shops, even singing. And for someone who wouldn't normally say boo to a goose, he was swearing like a trooper. He ended up eventually falling over at his last call and just sitting in the corner laughing and giggling, then falling asleep. They called a taxi for him to take him home, and I didn't see him again for a whole week. When he returned to work he was a lot quieter, and from that day on, having eventually twigged to what had gone on, always regarded Pete with a great deal of suspicion!

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IMPEDEANCE

WHO NEEDS IT?

With the current proliferation of 'packaged systems', where the processors, amplifiers and speakers are all correctly matched and all you need to do is put them together like the book says, the potential is there to develop a generation of audio systems people who missed out on learning the mysteries of amplifier and speaker impedance. Andy Mackenzie takes a look at speaker impedance and why we should still care.

In order for any of this to make any sense, we need to take a little refresher tour of Ohm's law and what it means. Way back when, Georg Ohm discovered that if you applied a voltage to a conductor (anything an electrical current will flow through – think copper wire), the electric current flow was directly proportional to the voltage – in other words, if you double the voltage the current doubles, if you halve the voltage the current is halved. All very obvious now, but in 1827 it was a significant breakthrough.

Georg went on to discover that all conductors had a certain resistance to current flow and that this resistance determined the proportionality of the relationship between voltage and current. He came up with an equation which, in a slightly simplified form, is now known as 'Ohm's Law'. Ohm's law states that in any circuit or circuit element the applied voltage (V) will equal the product of the current (I) and the resistance (R) – $V=IR$. The value of any one of these quantities can be calculated from the known values of

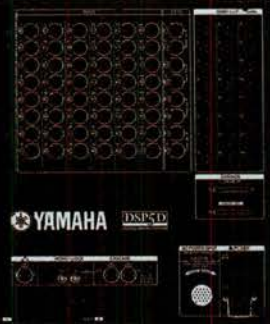


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the other two.

So far, so good. And it gets better – two of the variables included in Ohm's law are the ones that define the amount of power that the circuit is dissipating. Circuits always *dissipate* power, rather than producing it, and the following equation does not give you the information you need to precisely calculate the output power. 'Output power' generally refers to the power dissipated in the desired way – as sound from a speaker, light from a lamp, heat from a radiator – where the dissipated power includes the output power and all the losses in the system (mostly heat, but also mechanical losses and electromagnetic effects).

The total power being dissipated by a circuit or component is the product of the voltage applied to it and the current flowing through it – $P=VI$. Since we already have Ohm's law up our sleeves, we can now calculate any of the four variables: power, resistance, voltage or current from the known values of any two of the others.

For simple resistances, all the standard Ohm's law stuff applies directly to either alternating (AC) or direct (DC) currents. For those unsure about where AC and DC fit into the scheme of things, DC is any current (and thus voltage) that is always in the same polarity while AC changes direction and polarity. In a typical audio amplifier, all the signals are AC, the power supply used to run the amplifier uses three DC 'rails' – one positive, one negative and one zero volt – and the three power supply rails are produced by rectifying the AC supply from the mains.

By now, some of you may be beginning to feel like I've wandered off-track here, but trust me, this all ties together as we go...

SO WHERE HAS IMPEDANCE GOT TO? THIS IS MEANT TO BE A STORY ABOUT IMPEDANCE

OK. Impedance is a bit like AC specific resistance, but it's much more complex than resistance because of a number of different factors. Firstly, there's the issue of capacitive and inductive reactance. These are reasonably complex quantities, so we won't get too far into them – let's just say that pretty much every circuit including a speaker has some degree of resistance, some inductance and some capacitance; that the reactance of capacitors reduces with an increase



Ohmmeter – all well and good for resistance, not so flash on impedance.

in frequency at the same time as the reactance of the inductive elements is increasing; and that even though I've skipped all the stuff about phase shifts and other nasties it's pretty obvious that the combination of resistance, inductance and capacitance is going to lead to some complex frequency related stuff.

Impedance is the combination of resistance, inductance and capacitance along with various other factors like the mechanical and acoustic resistance of speakers and enclosures. The net result is that impedance is a whole lot more complex than resistance and can vary wildly with frequency.

At any specific frequency, the impedance of a circuit can be considered to be fairly constant and treated as the equivalent of resistance for the purposes of calculating voltages and currents and so forth. Audio, however, is not generally fixed at a specific frequency – it's actually a complex signal made up of a whole pile of different frequency tones spread over the 20-20 000Hz range we think of as audio spectrum. So we have a thing called nominal impedance, which basically means a sort of approximate near enough kind of value that's reasonably close over the frequency range.

So when you see a speaker labelled 8Ω, that means 8 ohms nominal impedance. The actual impedance at any specific frequency could be anything between about 5 and 50 ohms. Because the audio signal typically includes a bit of just about every frequency the impedance mostly averages out, but in situations where the speaker is faced with a single frequency

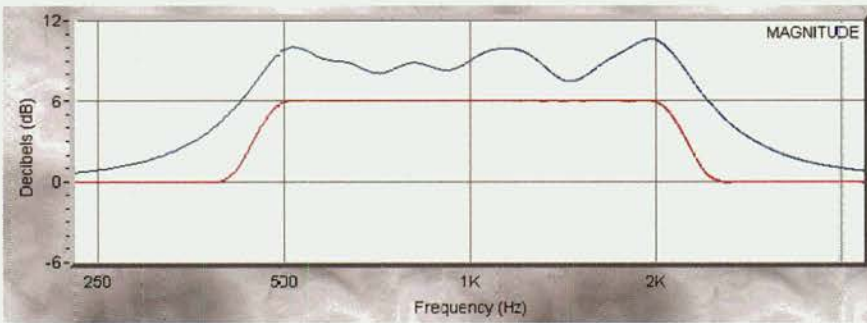
signal or a concentration of signal in a small part of the spectrum it can place plenty of extra strain on the amplifier driving it – more on that later.

For the time being, let's treat impedance as if it were simply AC resistance. This means we can plug it into Ohm's law as a substitute for the resistance variable and Ohm's law now reads $V=IZ$ (Z is the symbol for impedance).

SERIES AND PARALLEL CIRCUITS

In the exciting world of circuit theory, there are a few basic rules. Rule absolutely number one is that you must have a complete circuit for current to flow, and without current flow you got nothin'. That's why speaker leads have two cores – the second one is the current return path. Beyond that, all circuits fall into one of two basic categories – series circuits and parallel circuits.

In a series circuit, there is only one current path, and it goes through every component in the circuit one after another. The obvious conclusion to be drawn from this is that the total impedance of the system is the sum of all the impedances in the system. Think about the experience of driving down a main road – you get stopped by the lights here, then let someone in from a side street, then get caught up in the merge when the lane ends – each thing that slows you down contributes to reducing your average speed. When you connect speakers in series, the total impedance of



Raised Cosine (blue) vs Analog (red) EQ.



Lab Gruppen PLM14000 Front View.

at 13.5kg for the PLM14000 This thanks to the class TD amplification and switchmode power supply. Lots of people are down on switchmode, I used to be one of them. Then I realised that like everything else in this world, you do get what you pay for.

And at an RRP of \$14,886 inc GST

you're certainly paying a bit, but if you think of it at a dollar a watt you're effectively getting a Lake processor for under \$1k. Consider the long term savings, and the pricing takes on an even more reasonable basis; reduced requirements for casing, transport, setup time, signal processing, and even patch

cabling all offset the initial cost of the unit. Then consider that these amps are built to be non system-specific. So they'll work on lots of different speakers – all you need to do is configure them.

We took a look at a PLM10000 face to face to see if it had the goods. Admittedly I've been a bit tied up with microphone science this month to go so far as getting out the oscilloscope, dummy loads and bucket of coolant to see if it delivered everything it's rated to, and our barn test took it nowhere near capacity. I will say as much as I've never yet been disappointed with a Lab.gruppen amp, and I've used plenty. They're monstrously powerful, I've never had one so much as hiccup on me, and nobody's ever tried to sell me a second-hand one they didn't want. The units are shipped by default with a 10A mains plug on the lead, but the 32A PowerCon at the other end is probably being more realistic. The operation manual has a nine section chapter detailing the various protection mechanisms incorporated into the PLM, so of course the usual "try to break it" test failed to yield any smoky burning component flavoured satisfaction. Short an output and it will tell you. Open circuit an output and it will tell you. Be less smart than it is, and it will probably tell you that too.

Just on the note of system protection, Lab.gruppen have devised a load

Microphone cables with colour coded lengths available ex stock.

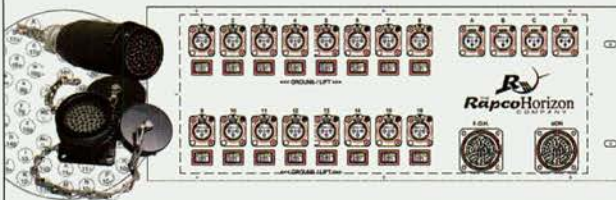


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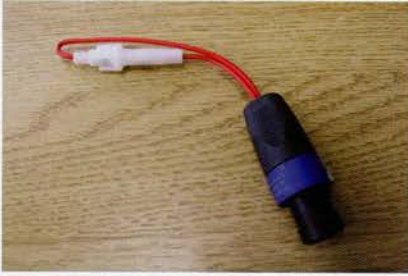
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Science Boy's output protection tester.

"Fingerprint" system, whereby the you tell the amp which brand and type of cabinet you're connecting, and it draws on a library to calculate magnet and voicecoil temperatures. Clever science.

Physically there's not too much to say. It's an amp. It's 2RU high and looks really good. You could quite comfortably rack a few PLM amps into a case and still shift it easily, which is good considering that a couple a side is probably all most people would need. Lab.gruppen suggest leaving a 1RU gap between units – not because they need it to cool or anything, but just to make getting connectors in and out more feasible.

Some of the more noticeable features are the curvy handles for easy rack insertion, the thumb-screw secured air filters, the loop throughs on both analog and AES/EBU inputs, and the dimmable front panel screen with adjacent softkeys.

I like this – it's a faster and more useable option than a touchscreen or a single encoder which "does everything". On the back, the usual array of inputs and outputs is complimented by a pair of Ethernet data ports which handle network and distributed audio. These ports can be used as a primary with data loop-through, or you can run a redundant network on the second port.

AUDIO OR DATA? OR BOTH?

While on the topic of data, the network port on the PLM serves two purposes. One purpose is to enable the amp for Dante distributed network audio, and the other is to facilitate remote control of the amp itself and the Lake processor within. We've already discussed the PC control



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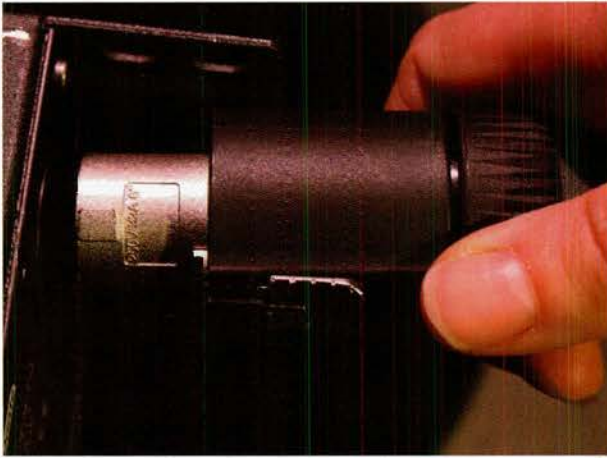
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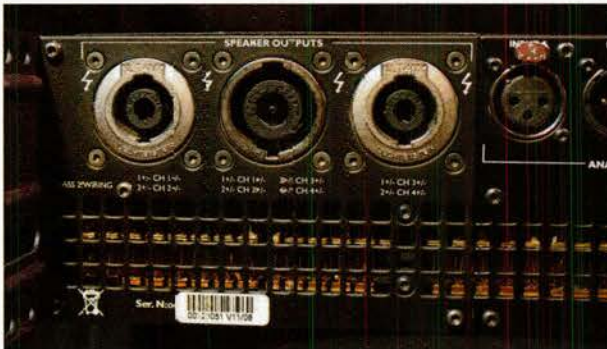


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The 32A PowerCon delivers the buckets of juice the PLM needs.



The PLM10000 gets an NL8 connector with all four channels



The screen and controls are well 'aid out' and easy to use.

of Lake, but you can also remotely control all aspects of the amplifier too. All your signal routing, amplifier controls, and status information is available within the Dolby Lake Software. Apparently they even have a Mac version on the way. With Dante comes "Zen", an automatic network configuration procedure where all the processors find all the other processors and they self-assign IP addresses. All you need to do is set your computer's IP to something in the same subnet as the first amp in the system.

TALKING OF HAVING A BRAIN

We've all met an "engineer" who walks into a venue and smashes the PA (You know, the "I've been doing this for 400 years, piss off!" type). Would you entrust them with a bunch of PLM amps? If I trusted whoever set them up then I would. I'd endorse it. The limiting potential on these units makes them very appealing for situations where you don't know or trust the person at the helm. Chances are if that "engineer" thinks clipping the system is the right way to do their job, they won't be changing your limiting settings.

The bottom line here is that the PLM series represents a whole load of amplifier combined with a whole lot of processor equating into more than the sum of its parts.

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SELADOR PALETTA

The Selador Paletta is among the latest offering in LED fixtures. Based on Luxeon Rebel 2.5W LED emitters it works a bit differently from most LED fixtures. While at first impression it seems something of an unassuming unit, there's actually a bit more to it than you might think.



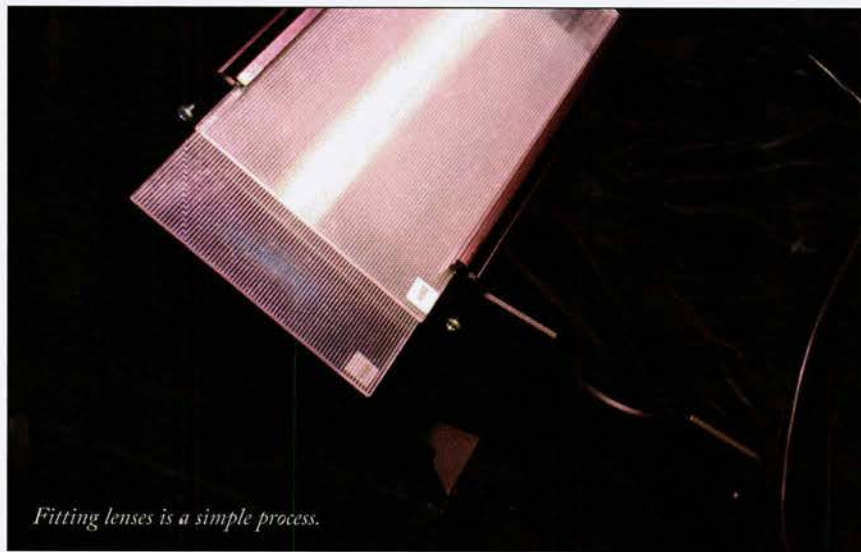
BY JIMMY DEN-OUDEM

Probably the most immediately noticeable thing about the fixture is the build quality – it's nice and solid without being unreasonably heavy. The LED panel itself is recessed quite deeply within the unit, with rails above either side to hold the various secondary lenses at different distances. Looking through the pristine lens above the LED panels I noticed they are connected with ribbon cables on IDC connectors. Theoretically this means that should a panel go faulty, replacing it would be a reasonably quick process. This is a nice feature considering how many so-called "intelligent" lights on the market are virtually unserviceable.

The unit supplied for our test was the 22" model, which is divided into two individual cells, each of these individually addressable and comprising 40 LEDs in seven colours. Single, four, and six cell models are also available. If you want the whole fixture to function as one cell, just set all the addresses the same.

SIMPLE, STRAIGHT-FORWARD SETUP

Connectors on the unit are simple – PowerCon for power input, and 5 pin XLR for DMX input and loop through. With all the discussion relating to DMX



Fitting lenses is a simple process.

standards, and Ethernet and such it's refreshing to find something which is simple, and just does what it's supposed to. DMX settings are found on the back of the unit, and comprise a 3 digit LED display and two recessed buttons. The values are displayed when the unit is first powered up, and automatically switch off a few seconds later so as to be unobtrusive. Push a button and the display will come back to life showing the value increase or decrease. Worth noting is that the value change accelerates the longer you hold the button, so setup is nice and quick. Truly quick in fact, that's

all the configuration Paletta needs.

The only other change you may want to make to the setup of the unit is to install some secondary lenses. This process is facilitated by loosening one screw at the end of the unit and flipping open a cover plate to reveal the lens slots. After this, slide the lenses in and close it up again. The beam characteristics of the unit without additional lenses are very tight. Drop in an 80° horizontal and 80° vertical lens and you've got an instant colour flood.

Power consumption is relatively low – running flat that the 22" model uses 462

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It looks like panels should be easily swapped.



This kind of colour mixing needs more than RGB.



Test unit has two panels, versions with one to six panels are available.

watts, which at 240v is a shade under 2 amps. This might seem like quite a lot for a fixture which is LED based, but considering it's less than a pair of Par56

cans, you get better output on saturated colours than you would from a pair of cans. Luxeon LEDs do generate some heat, and left running at full intensity

the Paletta does get reasonably warm, but not enough that you'd burn yourself from brushing up against it. Heat is dissipated through large heatsinks which run the entire length of the fixture. Using convection rather than fan-forced cooling means the Paletta runs silently.

PUT TO THE TEST

Control of the Paletta requires 8 DMX channels. Red, Red-Orange, Amber, Green, Cyan, Blue, Indigo, and overall intensity. Simple maybe, but it worked first go and that's not something which can be said for every DMX based fixture around. Interestingly enough, the colours which come out of the fixture do actually represent what they're supposed to produce. This is probably the first LED fixture I've seen which can adequately produce indigo from an LED. It responded to changes in intensity as quickly as the lighting console we tested it with could produce them, so if you needed many varying colour strobe effects the Paletta would be a practical choice. In fact it would be a practical choice for any application where you wanted a fixture with good output and simple control. It looks good in a rig, and it does what it's supposed to. Simple thing, done well.

COST AND CONCLUSIONS

With a retail price of \$4995, the 21" Paletta isn't a cheap option, but there's really nothing else around that gives this kind of colour mixing from LEDs. It's also available in larger and smaller sizes – 11", 42" and 63" – with prices varying according to size. The PowerCon cable is included. Lenses come at an additional cost of \$55 per 11" length and are available in 10 degree increments from 20-80 degrees horizontal and vertical. Several grades of diffusion can also be fitted into the lens slots and cost \$75 a length.

The Paletta offers very clear advantages over its LED counterparts in the field of colour mixing and represents the first real possibility we've seen of using LEDs to light performers, rather than just providing colours and effects. For the people just seeking basic RGB colour, and for those who want lots of exciting, flashy onboard strobes and macros this is not the light to buy. On the other hand, if you're looking for an extremely versatile fixture capable of achieving strong saturated colours through a wide range of selectable beam angles, and doing it in absolute silence, Selador's Paletta should be on your 'must see' list.

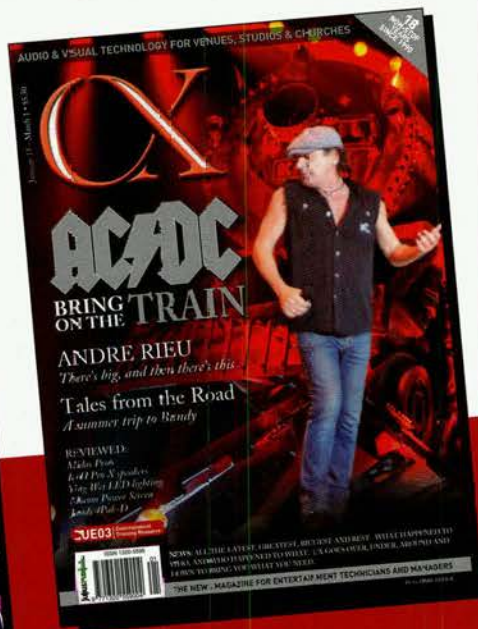
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JBL EON 500

JBL's Eon has gone largely unchanged since its introduction in 1995, but after fourteen years it's time for something different. CX comes face to face with the all new Eon.

By ANDY MACKENZIE

I can't find any definitive figures on this, but I reckon the Eon must be the best-selling powered PA speaker in the history of the universe – if only because it's been around so long. Eons are everywhere. Given the circumstances, I'm not really surprised that JBL left it this long to give the range a complete, ground up overhaul.

And that's exactly what this is. Two things have been retained from the previous Eon – the name and the concept. Everything else is new. The enclosure is completely different in its shape and its look, the amplifiers have been replaced with nice new ones from Crown, and the speakers themselves are all new. There's several products in the range, but we contented ourselves with testing the Eon 515 15" two-way box and the corresponding Eon 518S 18" sub. The 500 series also includes a 10" (Eon 510).

THE ENCLOSURE

Not everyone's going to agree with me here, but I always felt that the original Eon enclosure did it no favours. It was unnecessarily ostentatious from the front, and the 'wedge profile' was cumbersome and ungainly. Both these issues have been resolved with the 500 series. The enclosures are much smoother in their overall shape, being nicely rounded at the top and bottom. They still won't stack real well, but they're not intended to. The grille now covers the entire face of the cabinet, broken only by a couple of reasonably subdued ports, and even the illuminated JBL logo can be switched off for stealth applications.

The new shape also provides a substantially improved wedge profile. Instead of standing upright the box now lies on its side, and little integrated rubber feet stop it from toppling over. The angle is pretty close to 45 degrees



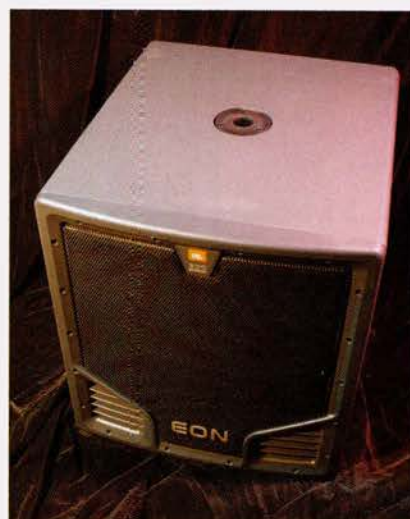
Eon 515.

(couldn't find my protractor) so it sits nicely as a wedge. I'm not sure that the feet keep it stable enough to deal with rock pigs stomping on it, but it's pretty good.

The feet tie in nicely with the handles, which are soft and rubberised so as not to damage your dainty digits, and are also provided in sufficient quantities. The 515 has a handle on each side and another on the top, while the 518S has to make do with one on either side. Nice handles are a good thing to have in something that you carry a lot, and so is light weight. Light weight is a feature of these boxes, with the 515 weighing in under 15 kg and the sub under 30. Nice.

COMPONENTS

A significant contribution to the extraordinarily low weight of the boxes is made by the components within. Neodymium magnets have become increasingly common in recent years because they are able to produce a serious magnetic flux with dramatically less weight and bulk than other materials. All the Eon 500 series use neodymium magnets on all drivers.



Eon 518S sub.

Amplifiers are supplied by Crown, and use class D output stages. Class D amplifiers are extremely efficient, which means they produce much less heat – so the heat sinks can be smaller and the whole assembly lighter. In these energy conscious days it's also nice not to be wasting power on making heat.

INTO THE BUNKER

Having exhausted the possibilities of picking it up and laying it down, we went to the bunker for the audio test. The system stacks up easily enough, with the 36mm pole holes in the sub and the top box keeping things neat. We used an official JBL issue pole, but if you have a different preference I'm sure that's OK.

We tried the 515 on its own first, and were quite impressed. The frequency response is quite smooth and even, with a vocal presence that is clear without being harsh. It doesn't go as loud as some of the big things we've had in here lately, but when it does start to run out of legs the limiters come in fairly unobtrusively. I'm sure that if you ran it right into the red all night it would sound pretty awful, but if you're the kind of person who does

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Even 515S wedge profile.



Even 518S back panel.

that you probably won't notice anyway.

For simple vocal applications, you could get away with the 515 on its own, and it would do pretty decent service as a wedge as well.

If you're going beyond that and want some guts in the bottom end, the 518S sub should sort you out a treat. It doesn't go real low like you'd want from a stadium sub, instead it gives a good solid boost around 45-100Hz which accentuates kick drum particularly. In the applications where I can see this system being used – bands or DJs in smallish venues – this is what people are likely to be looking for.

The 515 has an EQ function on the back panel which allows you to choose a particular contour – 'boost' gives some extra low and high frequency energy like a loudness circuit, 'cut' knocks out some of the sub-vocal frequency energy

and 'flat' does nothing. The difference between the three settings is clearly audible.

MIXING IT

Another rather cute little feature of the 515 is the mixer section on the back. This gives you two line inputs and one switchable mic/line input, each with its own level control. The mic/line input is one of them combo jobbies, so it'll take either a jack or an XLR. The outputs from each of these hook up and travel through the EQ section together before proceeding to the crossover and power amps. There's an output: XLR that can either be a post-mix, post-EQ arrangement or can be switched to simply loop out the mic/line input. Useful versatility in this setup.

The 518S doesn't have a mixer, but it does have two sets of input/output



The mixer section on the 515.



connectors which can be used either as direct loop outs or switched into crossover mode with a 120Hz HPF on the outputs. The two sets of connectors allows you to run a stereo setup with two top boxes and one sub – the inputs are summed for the sub but remain independent to the loop outs. You also get a level control and a phase flip switch – just in case.

HOW MUCH IS IT?

The whole range is actually very reasonably priced. The 518S is the most costly of the family, and it lists at \$2699. The 515 goes for \$2499 and the baby brother, the 510, is only \$1799. Given the performance and feature set that you get, this represents pretty serious bang for your buck. They're lightweight, they look good, they sound right, you get all kinds of natty little features and they don't cost the earth.

I suspect the biggest selling powered plastic might keep selling for a while yet.

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It was a dream that seemed simple in 2001 and became complicated soon after. The dream was to start a technical college that would train sound, lighting, video and management skills for the live production industry.

Getting accredited took two years, then came an offer to buy ENTECH trade show from us - which gave us the money to open our campus in 2004. ENTECH funded us, so thank you for supporting ENTECH when we owned it.

We started our first full time year in 2005 with 13 students. Now we have 50 and the college is full for the first time.

They say all businesses take time to establish, the college was no exception. We've invested around a million dollars to date.

Along the way there is some credit due.

Lots of Watts own our campus building and supply equipment on a weekly basis. Their faith in us has never wavered.

Production firms across Australia have loaned

us modern equipment to train with - no one ever has said no! The list is far too long - we know who you are and so do our students.

Equipment distributors have done the same, plus sent product specialists to talk to our students. Some have donated equipment. All are acknowledged.

Working industry people have given their time to talk to our students, who appreciate every visit.

Tom Misner at SAE abruptly cancelled his advertisements in this magazine when we started - that inspired us because took us seriously. So thank you, Tom!

Industry has consulted with us about needs and about our curriculum. And most important of all, industry has recognised and hired our graduates.

Huge thanks to the team who have done the training and worked behind the scenes.

And finally, massive thanks to you, the readers of CX magazine, who have voted for us by recommending our college to our students.

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RØDE M1

By ANDY MACKENZIE

This turned up at the bunker a little while back, and I was sufficiently intrigued to ring RØDE to find out about the new direction. Craig was quite happy to tell me what they're planning – the intention is to make this the biggest selling vocal mic in the country. Big, big call.

It's certainly in the right market sector. If you want to sell a lot of mics, a cardioid dynamic which is built like a tank is a very good starting point. This ticks all those boxes. The cardioid pattern is tight and well controlled, and the construction is extremely robust. It's well finished, complete with trademark shiny gold circle. OK, it looks boringly like a microphone, but that's what mics look like.

In the hand, it has a comforting weight and it feels nice to hold. Handling noise is minimal and compares well to other mics in the same league.

Sound-wise, it's relatively neutral with a slight, gentle rise into the higher frequencies. There are no sharp humps and dips, and the proximity effect, while

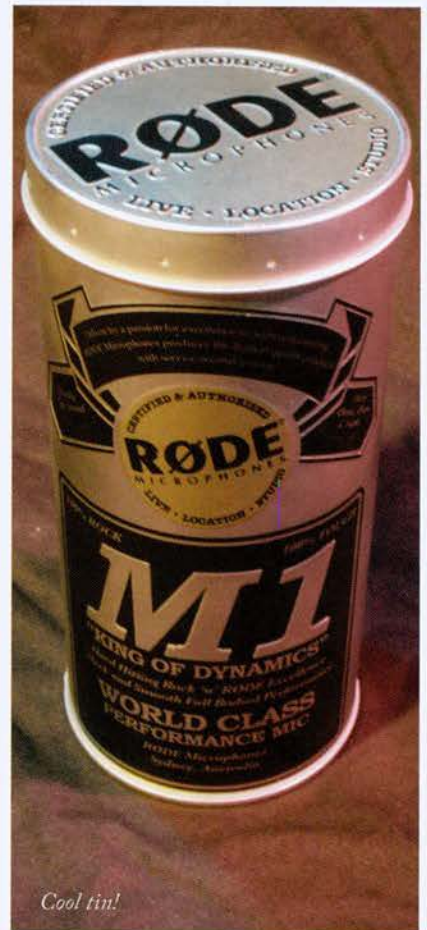


present, is not excessive or unpleasant. Off-axis rejection is good and we had no trouble getting good level from the monitors. Overall, the mic sounds pretty versatile and would probably work for most vocalists.

They've also got the packaging and pricing right. The mic comes packed in a very cool tin (which in turn comes in a cool six pack if you buy six) – not a lot of use, but it gets attention in the shop. And the list price of \$199 with a lifetime warranty will probably help keep people's attention.

Will it be enough to outsell everything else? Time will tell, but I won't risk betting against them.

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AUDIO TECHNICA ATM250DE



There are loads of people using two mics on one sound source, but not many manufacturers putting two mics in one mic.

The ATM250DE is a different approach to instrument mic'ing combining two capsules in one casing. The first is a cardioid condenser element, the other a hypercardioid dynamic. There is no summing done in the microphone housing, so you can choose to use either or both capsules from the console – giving a good versatility in combining the two. The two diaphragms are exactly aligned to avoid any potential phase issues.



The mic, according to Audio Technica's website, is optimised for kick drum use. Their suggestion is that the cardioid condenser element picks up the resonance of the drum shell while the hypercardioid dynamic focuses on the attack of

the beater. In practice we found the response of both capsules to be fairly neutral, suggesting that the mic could also be applicable to other instruments. Many kick drum mics have heavily shaped frequency responses which limit their usefulness for anything else.

The neutrality of the mic response means accurate reproduction, which is great if you're working with a good drum to start with, but it might be a tad unforgiving of a bad one. My only other minor criticism of the mic is the need for a little XLR 5-pin adapter lead to plug it in. This is unavoidable, since you need to get the signal out somehow, but I'd be making a spare pretty quick, because this is the kind of thing that gets lost.

At \$525 the mic's not cheap, but it's not expensive either. The build quality is good, it offers all the features and functionality you'd expect, and has the versatility to do some work away from the drum kit. In the end, microphone choice is always a question of individual taste, but I think the ATM250DE will find its share of devotees.

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MISS WORLD

CX is always up for a slightly different production to review. This one in dangerous and spicy Johannesburg was too good to pass up.

The Miss World event was staged at Sandton Convention Centre in Johannesburg. Like all massive events for live TV it needed 10 technical production disciplines: design, rigging, structures, lighting, audio, video, specialist visuals, set building, power and seating. The event was broadcast live by SABC to 2 billion people on 373 TV stations.

Tim Dunn's lighting design harnessed the energy saving potential of the latest LED and arc source lighting fixtures, Dunn ensured it was also one of the greenest events to date, dramatically reducing the amount of electricity needed to run a world class event. The lighting – which involved 230 intelligent lights plus assorted conventionals – consumed approximately 30% less electricity than the 1995 event in Sun City, also lit by Dunn.

Dunn worked closely with set designer Dewet Meyer on evolving the show's aesthetics – the two have collaborated on many other high profile events including the FIFA Preliminary Draw.

Meyer's massive multi-layered 40 metre diameter spherical set established the architecture of the performance space and completely filled one end of the Pavilion. It was finished in a series of grey tones, allowing Dunn to introduce colour, drama, spectacle and additional texturing



Tim Dunn, Miss World's LD.

with overlaid moving light and video effects.

He was careful to ensure that the contestants and other artists onstage didn't get overwhelmed by the sheer scale of the production. Judicious use of lighting and the creative dynamics and synergies of the stage, set and lighting designs enabled the space to become very intimate one minute and have a massive WOW factor the next – all via appropriate lighting.

Dunn's creative team also included Gearhouse Media's Marcel Wijberger and Chris Grandin who produced 30 video clips that were run through 116 pixel-mapped i-Pix Satellite LED lighting fixtures ensconced in the set and which were also projected onto the stage and lining of the lighting pods via the DigitalSpot moving lights. Meyer



Kseniya Sukhinova, Miss World 2008!

also produced video content that was programmed into a grandMA media server and woven into Dunn's visual mix at this point, triggered from one of the two grandMA full size lighting desks.

Working this way ensured continuity between lighting and the video visual content, and a sense of spontaneity and 'live' evolution with the video texturing effects being produced on site and

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incorporated into the overall show visuals during the intense rehearsal period.

The Gearhouse Media team also produced the opening edit and three custom video sections that were played out during the show's production numbers on a 11 x 4.5 metre Lighthouse high resolution R16 LED screen. This was located upstage centre and supplied by LEDVision.

The playback footage was routed and fitted to screen via a Barco Encore multiscreen controller operated by Wayne Susman from Gearhouse AV, along with a feed from the lighting department's MA digital media server and 3 feeds from SABC's OB truck - one TX from the cameras and 2 from their EVS machine.

Miss World graphics, stings, bumpers, squeezebacks, VT inserts and IMAG footage from 10 SAEC camera sources directed by Ian Hamilton, were also output to the main LED screen from the SABC OB truck. Gearhouse AV additionally supplied 2 side projection screens for IMAG relay to the live audience.

The task of project managing the logistics needed to squeeze 28 trucks worth of equipment into the venue and build the set in just a week fell to Gearhouse's project management team of Jesse Wang, Eyal Yehezky, Michael Lewis and Lee Reynolds. All the kit was moved into the building via two expediently sized service lifts and a 150 tonne crane.

The stage and set build was one of the most overall challenging elements. It engaged the dexterity and lateral thinking abilities of Sets, Drapes and Screens (SDS), In2Structures (steel set substructure) and Gearhouse SA. SDS, Gearhouse's newest company had a site team of 12 carpenters, led by Pieter Joubert and Craig Pretorius, who worked round-the-clock shifts to build the actual set. This once again illustrated how Gearhouse Group companies can combine talents and skill sets for the bigger picture.

Gearhouse Audio's Dave Tudor designed an L-Acoustics sound system which consisted of 9 Kudo boxes per side hung in the traditional line array style. This made full use of the K louver function as the main hangs were very wide apart, so the asymmetrical setting minimised any reflections and ensured even and smooth coverage. The subs were SB118s, and a centre cluster of 6 dV DOSC was flown high up to fill up the gap in the middle.

Stage monitoring was via six 115 HiCs flown up in the truss to ensure the stage was kept clear. This fulfilled the brief from Miss World's own production team co-ordinated by Dave Morgan of being as discreet and unobtrusive as possible. The show's FOH sound and monitors were mixed by Adriaan van der Walt on a Yamaha M7CL and the evening included performances by UK rockers McFly and singer Alesha Dixon.

The show, which saw Miss Russia Kseniya Sukhinova, crowned as Miss World 2008, was a massive success and has already been hailed as one of the best, most visually exciting and seamlessly produced ever. CX

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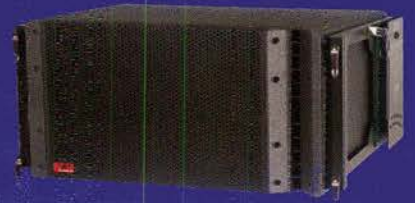
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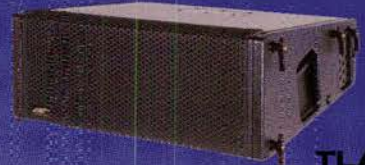
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