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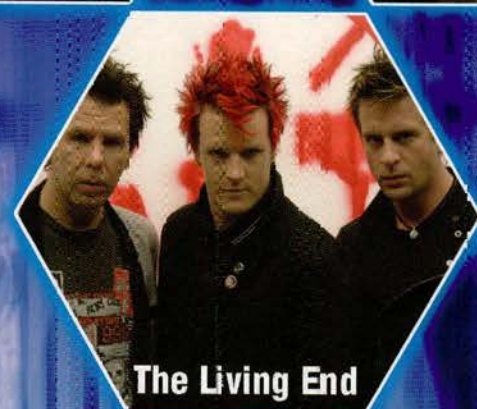
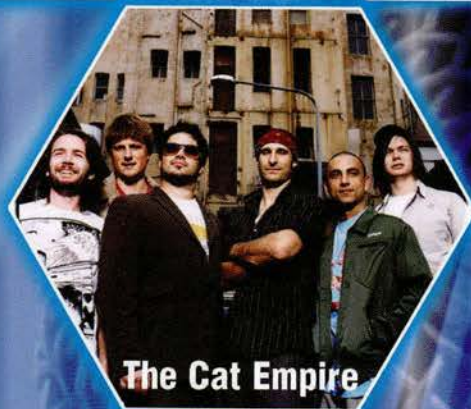
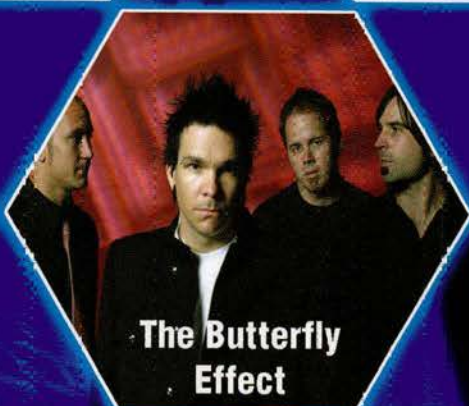
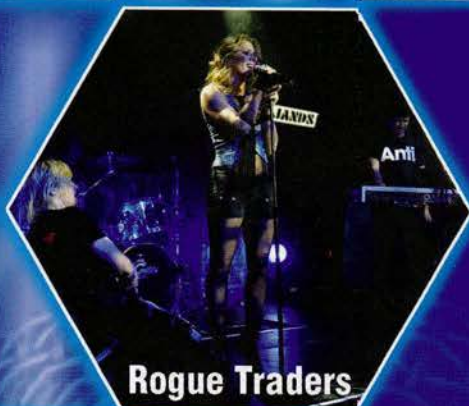
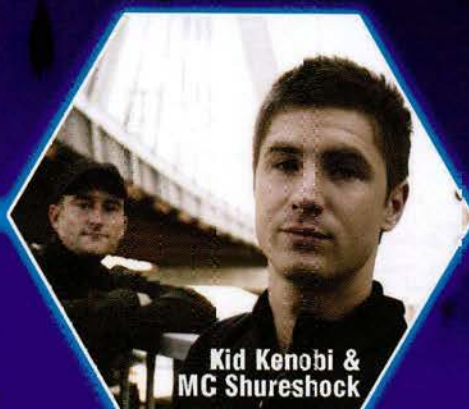
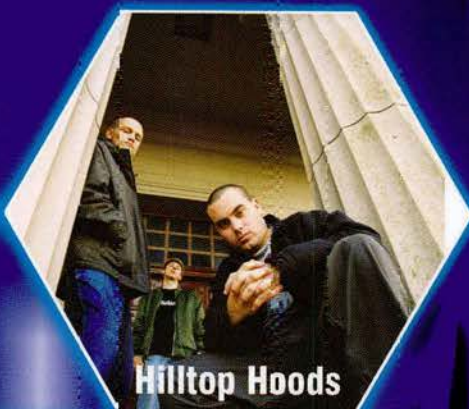
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Worshippers attend religious services because they are enriched by their experience. But for those who cannot understand the service – either because of hearing loss or language barriers – worship services have a hard time meeting their needs. Worship centres are finding that providing assistive listening and language interpretation with Listen products is helping them to not only engage their members, but also retain and reactivate members. Now that's a reason to sing praises!



nationalaudiosystems

For more information on Listen products please contact
National Audio Systems

Ph: 03 9846 3566 | Fax: 03 9846 3544

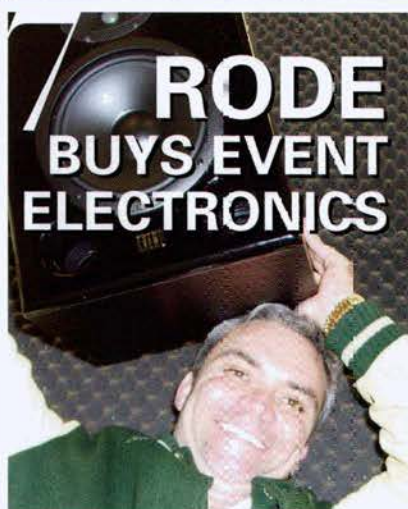
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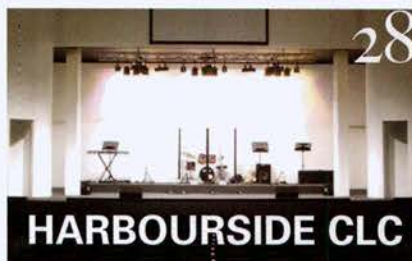
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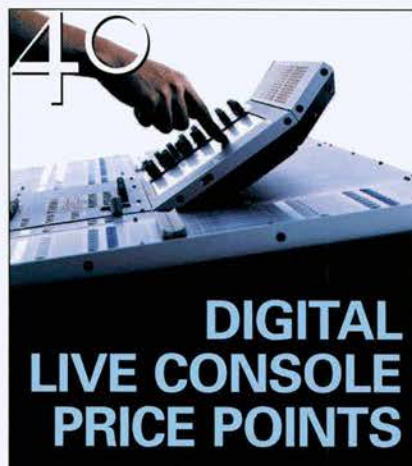
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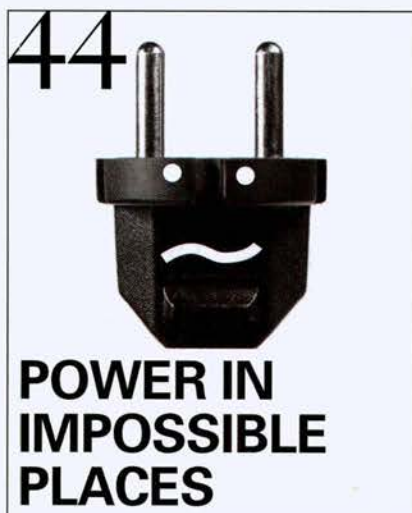
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DIGITAL CONSOLES



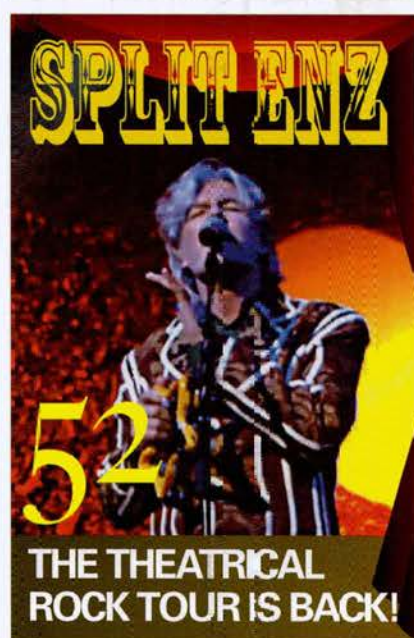
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EDITORIAL

STAGING CONNECTIONS FLEX MUSCLES, BUY ENTECH

At presstime AAV Limited announced they have agreed to buy ETF, the trade show company which runs ENTECH. The effect of this is that Staging Connections, Australia's largest technical production services provider, will run ENTECH. That in itself is of no real consequence, since ETF's management will presumably remain in charge of actual events.

But it begs the question of what Staging Connections will do next, since they are set on growth through acquisition.

The firm recently purchased ETG in China, giving Staging Connections a working business in three very large, strategically important, and growing cities.

Last year AAV did what public companies do best, they purged and retired several significant management including SC founder Gary Hackett. He was no friend of CX, having allegedly banned this publication across his empire – but we still got along, in a mutually cautious way. Hackett is on a no compete deal, and is sticking with it, according to people who have spoken with him.

The problem for Bill Davidson at Staging Connections is that the need for short term investor satisfaction is already corroding his front line troops, who have always been worked very hard when it is busy and then sometimes furloughed using the controversial hour bank system when it is quiet. They complain that they have now

been told not to cross hire equipment or services; and to abolish cross hire discounts. It's a 'sell available merchandise' mantra that MBA clones are taught, but it doesn't work in the world of power by the hour.

Another problem for SC is that event organisers are getting tired of being told they must use in house services supplied by SC within 5 star hotels – which of course the hotel marks up by 25%. Eventies are talking, and telling each other that the hotels will usually back down and allow external providers, if heavied BEFORE the rental agreement is signed. Why would a hotel forego room rental and food and beverage profits over a lousy 25% of the AV budget? It's a growing movement that we support in the interests of a level playing field. Plus the event professionals feel, rightly, that their clients – who pay everyone – are entitled to save the 25% hotel markup!

If Staging plan to grow the business in Australia by acquiring competitors, they will also have an uphill battle with the ACCC due to their market dominance.

It's also a mark of how out of touch management at SC have become that they have just issued a press release boasting that they also are 'Australia's only event based Registered Training Organisation'. JuliusMedia are an event based Registered Training Organisation, and have been for some years now.

Julius

CUE03

**Entertainment
Training
Resource**

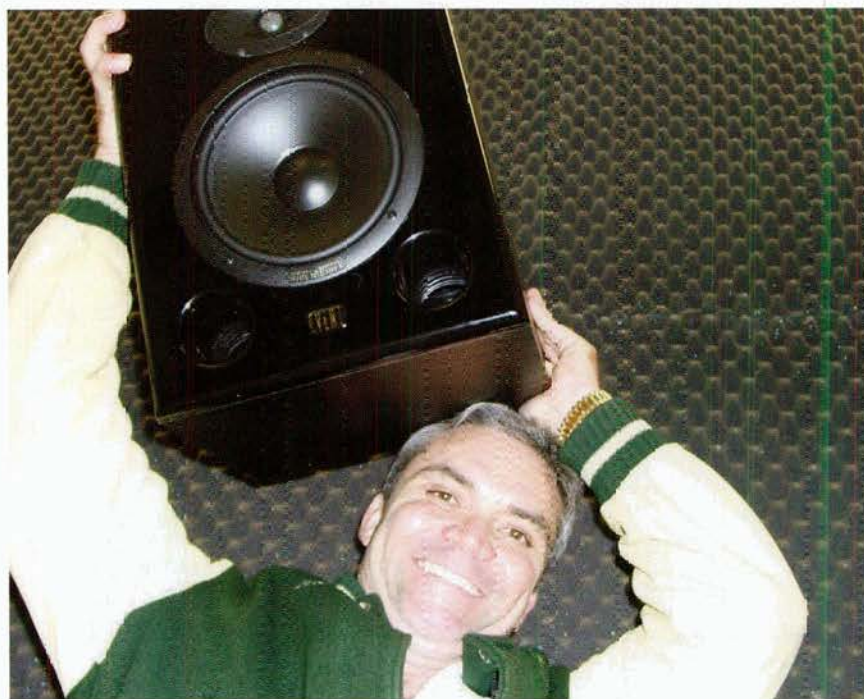
This magazine contains much information which is a direct resource for anyone studying from the new Entertainment Training Package, named CUE03. From 2006 we will start to map certain articles direct against the relevant Unit of Competency within the package. This makes CX magazine a very cost effective 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.

NEWS

PRODUCTS AND GADGETS

RODE BUYS EVENT ELECTRONICS

Sydney firm Rode Microphones has acquired California based Event Electronics, makers of studio monitors and studio electronics. The sale was made for a price that was not disclosed, as both companies are privately held.



The money or the box Mr Freedman - "I'll take the box!".

"Event is large, but not as big as Rode", said Peter Freedman who owns Rode which itself is part of Freedman Electronics - a family firm started by Henry Freedman in 1967. Rode is one of the top 5 microphone manufacturers in the world today, and employ around 70 people at a high tech plant in Sydney's Silverwater.

The sale happened fast. Rode have been friendly with Event for much of the

twenty years since Event was formed from a walkout at Alesis, also California based. Rode and Event share distributors and clients around the world, and have shared trade show exhibits. Event launched Rode in the USA market a decade ago. Rode recently became Event distributors in Australia.

"I love speakers. I'm fascinated and always wanted to get into this (line of business)", Peter Freedman told CX

immediately after the sale was announced. "Now I've got both ends of the transducer spectrum. There's so much that can be done!"

Peter would not be drawn on what reasons lay behind the sale by the founder of Event Electronics, but the deal was done in just five days, potentially a record for a multinational transaction.

Event make powered and passive studio monitors, and sit in the market against KRK and Genelec. Rode have an expanding line of studio and now live microphones, and have won considerable market share world wide.

The Rode factory makes virtually all microphone components in Sydney, and is currently upgrading with robotic technology. It utilizes world best techniques and produces large volume runs of microphones, working around the clock. This has allowed Rode to sell microphones at low prices based on volume, but maintain quality control without needing to monitor outside suppliers.

Whether Event products are manufactured at the Rode factory remains to be seen, but the Sydney facility has a high capacity and space for further expansion. Event have a reasonably large factory at Santa Barbara, which will now be where Rode USA are based. Rode USA manager Mark Ludmer will manage Event Electronics.



MIDAS FIRM UP XL 8 PRICES



The XL 8 Touring system is priced at \$490k including GST.

The Midas XL 8 is the first in a line of digital mixing consoles from the company, who are regarded as making the finest live analogue consoles in the world. XL 8 comes in at the top end of town and is the replacement for the venerable XL 4 as the premium sound mixing console in the Midas range.

An XL 8 is not a mixing console in the traditional sense – it is a system and apart from its control surface it also consists of 22 rack mount devices plus all the cabling to make it work. As a touring product XL 8 is very clearly defined to ensure that all XL 8's around the world are essentially the same. As an installation product it can be extensively customised.

The XL 8 Touring Package is now defined as a Control Surface; supplied

in flightcase with 3 x input bays (8 channels per bay) allowing for 24 channels on the surface at one time, plus an Output bay and a Master bay. Each bay has its own redundant processing on board as well as redundant power supplies.

The Remote Input configuration is loaded with 4 x DL 431 input splitter boxes. Each DL 431 provides 24 XLR inputs that can be split 5 ways in both digital and in analogue. This provides for a total of 96 XLR inputs. For outputs, there are 3 DL 451 O/D output boxes. Each DL 451 provides 16 analogue outputs as well as four AES/EBU inputs and outputs. This supplies a total of 48 XLR outputs.

The system comes with a local (near console) rack, loaded with 2 DL 451 O/I/D input/output boxes, for 8 XLR inputs and 8 XLR outputs as well

as four AES/EBU inputs and outputs. This gives a total of 16 analogue insert/input points at the control surface.

Finally the standard system is loaded with 10 DL 471 signal processor units which contain all the dynamics, equalisation and effects processing etc for the system.

The XL 8 microphone pre-amp will provide the same gain and operational characteristic of an XL 4 pre-amp allowing an engineer to drive an XL 8 in the same manner as he or she is used to driving a Midas analogue console. The system also replicates the Midas equalisation characteristic again providing engineers the same response and feel that they are used to with Midas analogue, coupled with Klark Teknik output equalisation.

The most important aspect of the platform is that the system has no single point of failure. All aspects of the system carry a redundancy path to negate as far as possible total failure of the system. In this respect partial failures can occur without bringing down the whole system.

The XL 8 is aimed at those clients that have traditionally used XL 4's. In this respect already the major productions in the UK have joined together to form the M7 group that have purchased eight platforms to service the UK touring market (see www.m7audio.co.uk for further information).

While the prospect for sales of the XL 8 into production hire is limited it is expected that there is greater scope for the sale of systems into installation.

OX

YAMAHA EXPANDS PC SERIES

Networked amplifiers

Yamaha Commercial Audio announces the PC-1N Series networked power amplifiers. The five new models represent a significant upgrade to the current PC Series offering excellent linear power, low distortion, refined hardware designs, full networking options and superb, uncoloured audio quality. The new entries, PC2001N, PC3301N, PC4801N, PC6501N and PC9501N, are designed to deliver a combination of high-output power and efficient operation for any fixed or mobile sound reinforcement application.

The PC-1N Series can provide a

truly networked system by integrating with the Yamaha NHB32-C Network Hub Bridge, ACU16-C Amplifier Control Unit and Amp Manager software (for Windows).

A single ACU16-C control unit is capable of monitoring a variety of critical functions for up to 32 separate PC-1N Series amplifiers using a PC via RS-232C or USB. The ACU16-C communicates with amplifiers through a CAT-5 cable and uses CobraNet as its input. By adding the NHB32-C Network Hub/Bridge, users can monitor and control the entire system using CobraNet connections and can also use the ACU16-C as a high-quality 24-bit D/A converter.

"The high-powered, lightweight amplifiers in the PC-1N Series will endure a wide variety of demands



and fulfil the need for high sound definition within any application," says Mark Amory, General Manager of Yamaha Commercial Audio. "By connecting the PC-1N Series with Yamaha's networking products or any other networked system, it's possible to set up and control comprehensive amplifier-speaker combinations from a single PC."

www.yamaha.com.au

OX

Audio-Technica 3000A Wireless



There's nothing funny about wireless systems with drop outs, distortion or limited bandwidth. That's seriously 'Not Happy!'

Do yourself a favour and go straight to the 'It's All Good' end of the wireless spectrum with Audio-Technica's new 3000A.

It's choc-a-block full of extremely formidable engineering. Like Automatic Frequency Scanning which searches through up to 200 UHF channels and selects a clear, open one. And when it's latched onto a frequency A-T's true diversity transmission means it's really hard to shake off.

Flexible in the extreme 3000A is available with dynamic or condenser handhelds plus a huge range of A-T lapel mics, headsets (incl. sub-miniature AT892 and fully waterproof AT889), camera mounts, guitar pickups and cables.

From: \$1,195RRP (Dynamic Handheld System).



A-T Wireless: 'It's All Good, Mate'

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See your Audio-Technica dealer or contact TAG for more: info@tag.com.au Ph: (02) 9579 0900





ASHLY AUDIO INTRODUCES SRA-SERIES AND TRA-SERIES AMPLIFIERS

Ashly Audio announces the release of two new series of amplifiers for the commercial and corporate installation markets. The SRA- and TRA-Series of amplifiers incorporate switch-mode-power supplies and Class-D amplifier circuitry. Four models in each series are available in two and four channel configurations with power ratings of 75W and 150W per channel. Features common to

both series include: convection cooling, extremely low noise, an internally switchable 120V/240V power supply, extensive protection circuitry, euroblock inputs and screw terminal outputs.

SRA-Series amplifiers are housed in a compact 1RU chassis weighing only 10 lbs. and are designed to drive four or eight ohm loads. Front panel features include: level attenuators for each channel, signal present and clip alert status LEDs for each channel. Rear panel features include: rear panel switches to select between two choices of input sensitivity, HPF

frequencies and normal or bridged mode, remote power turn-on/off and adjustable turn-on delay up to eight seconds. Two-channel versions have a stereo headphone jack located on the front panel.

TRA-Series amplifiers are housed in a 2RU chassis with the capability to drive four or eight ohm loads and transformer coupled 70V and 100V lines simultaneously. The coupling transformers are internally mounted. Front panel features include: mains power switch and an LED signal level meter indicating -24dB, -18dB, -12dB, -6dB, -3dB and clip alert for each channel. Rear panel features include: level attenuators for each channel, rear panel switches to select between two choices of input sensitivity and HPF frequencies, remote power turn-on/off and adjustable turn-on delay up to eight seconds.

www.syntec.com.au



YAMAHA DME SATELLITE SERIES TAKES PROCESSING POWER EVERYWHERE

Yamaha Commercial Audio has added flexibility to its Digital Mixing Engines with the introduction of the DME Satellite Series.

Engineered for designs requiring a distributed DSP system, the Yamaha DME Satellite Series includes the DME8i-C (8 analogue inputs), DME8o-C (8 analogue outputs) and DME4io-C (4 analogue inputs/4 analogue outputs). All three units include 16 channels of Cobranet input and output for comprehensive digital audio networking.

The release of the DME Satellite Series complements Yamaha's DME64N and DME24N Digital Mixing Engines, which provide engineers and designers with the processing, dynamics, EQ, crossover and networking capabilities to create complex and flexible audio configurations. The DME Satellites can be used to expand the input,

output and processing capacity of the DME64N/DME24N for virtually limitless sound systems, or can be set up on their own.

Like the DME24N and DME64N, the DME Satellites are each equipped with an internal DSP, extending their application beyond conventional Input/Output expansion boxes. Each DSP processor is housed in a compact 1RU unit and boasts 80 percent of the DSP power of the Yamaha DME24N.

DME Designer V2.0, a software upgrade based on the specific needs of contractors, will also be available with the release of the DME Satellite Series. The bundled software allows DME Satellite users to control, monitor and create configurations in exactly the same way as on the DME64N/DME24N. The V2.0 upgrade is compatible with current DME products, DME Satellite and Yamaha SP2060 processors, and will provide enhanced programming and control for all units as well as feedback suppression for the DME24N and DME64N models.

www.yamaha.com.au



PARTY TIME AS WORLD WATCHES CUP

The World Cup took place in twelve different German cities accompanied by a huge program of parties and special events. The most important events taking place outside the stadiums are the official FIFA Fan Fests. Each World Cup town has a large open-air stage with a huge 60-square-metre LED screen showing all the most important matches live. In four of the twelve cities - Munich, Nuremberg, Stuttgart and Kaiserslautern - the FIFA FAN Fest was equipped with an HK AUDIO COHEDRA system.

Munich, Nuremberg and Kaiserslautern each had a COHEDRA 2x12 system, with an additional COHEDRA COMPACT system in Nuremberg for the VIP area. The idyllic Schlossplatz in Stuttgart was covered with a 2x20 COHEDRA system as well as two delay towers made up of HK AUDIO R-Series speakers.



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www.novatechproductions.com.au

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Tasmania - Frontline
www.frontline-tas.com.au



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AAV BUYS ETF



STAGING CONNECTIONS NOW CONTROL ENTECH

AAV Limited has announced that it has entered into a binding Heads of Agreement to acquire Exhibitions and Trade Fairs Pty Limited (ETF), a leading exhibition organiser and manager specialising in trade and consumer exhibitions in Australia. ETF own a variety of trade shows including the ENTECH trade show, which they in turn purchased from JuliusMedia in 2004.

The CEO of AAV Limited Michael Gardner said "I am very pleased to

announce this transaction, which we expect will be the first of a number of acquisitions to expand our Events Division service offerings in Australia and in key global locations. We have today signed a binding Heads of Agreement to acquire ETF for an amount of around \$13 million, subject to completion of due diligence and documentation. We expect the due diligence and documentation process to be completed shortly and to finalise the acquisition by 1 September 2006 with the acquisition being funded from existing internal cash resources."

"In acquiring ETF, we have

identified and secured a strong, profitable business which offers extended and complementary services to our existing Events Division service model and this acquisition is the start of our strategic vertical and horizontal expansion programme for Staging Connections. ETF manages and owns numerous trade shows and consumer exhibitions, and its revenues are derived from annual, biennial and triennial events. The acquisition of ETF will be EPS accretive from day one and will further strengthen our market leading Staging Connections brand in Australia and in the global arena" said Mr Gardner.

ETF will also bring to Staging Connections significant additional expertise in events, trade shows and consumer exhibitions it has developed over its 25 year life span. The benefits flowing from the integration of ETF into Staging Connections and AAV will include greater scale of operations, diversification of its business streams and offerings, and improve AAV's shareholder returns, they say.

Ben Ashton, CEO of ETF said ETF has enjoyed very strong growth and development of the events and exhibitions business over the last four years and we are delighted to be joining the AAV Limited group and combining with Staging Connections, Australia's leading staging and events company, to continue this expansion.

AAV Limited's shares were up 3c to \$1.07 at presstime.

CX

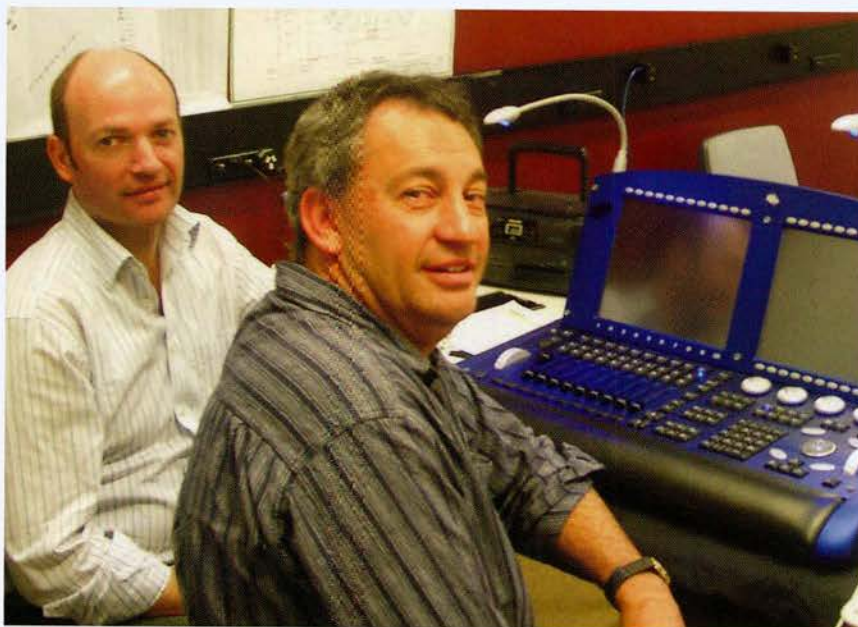


ROLAND INTRO DIGITAL MULTICORE

The new S-4000 Digital Snake from RSS by Roland offers numerous advantages over the traditional analog multi-core, especially that it runs with low cost Cat5e cabling.

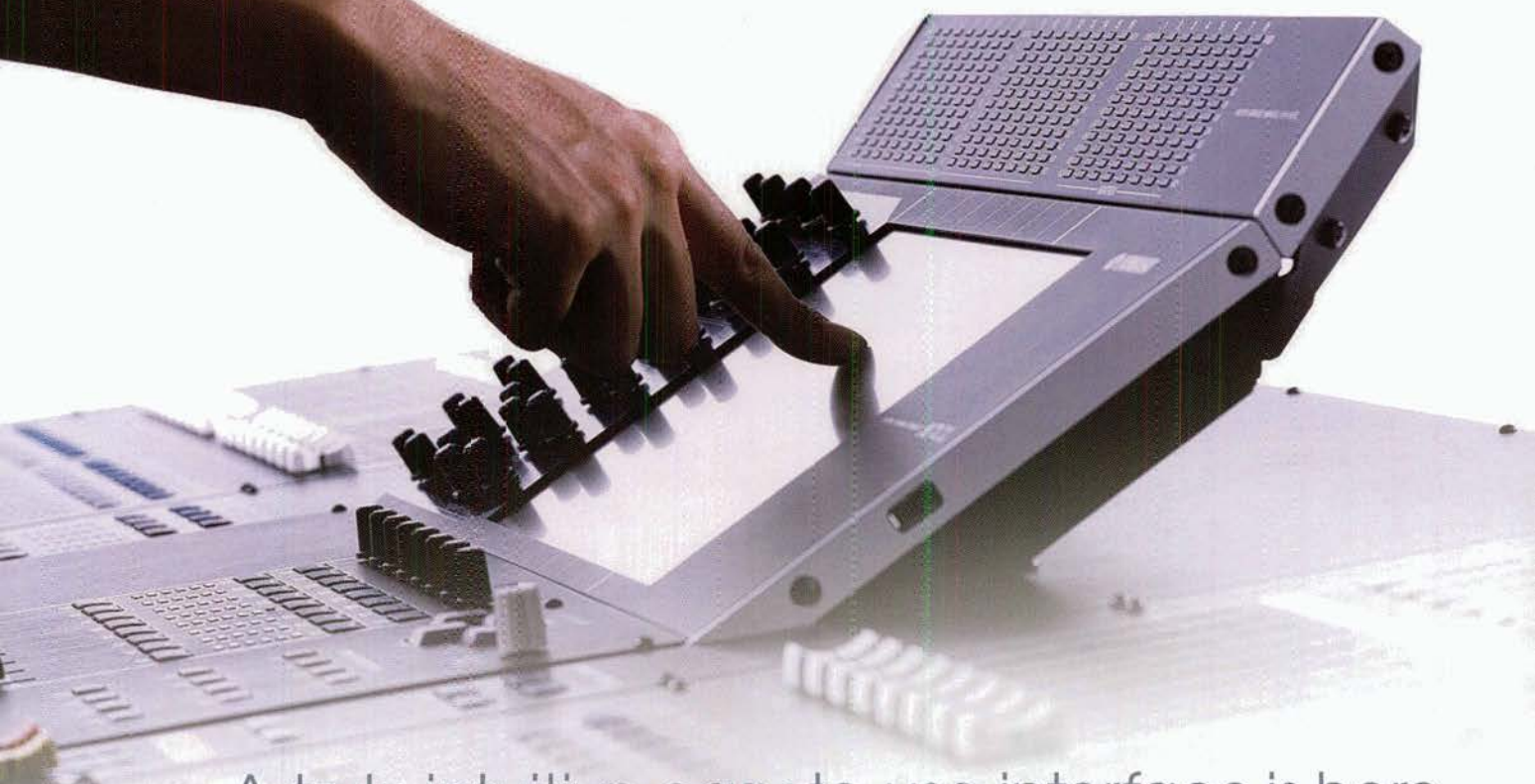
Roland's REAC digital transmission technology allows for a low latency and high quality digital snake, providing low cost, easy installation, and zipperless remote control of all preset settings.

CX



Lighting designers Peter Neufeld and Mark Hammer at Juliusmedia as they prepare to programme the 2006 Potary Convention held in Denmark.

Digital mixing consoles have evolved...



A truly intuitive, easy-to-use interface is here.

If you've been delaying a move to digital because of interface or operational issues, the wait is over.

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32-channel M7CL \$24,000
including meter bridge

48-channel M7CL \$30,000
including meter bridge

DIGITAL MIXING CONSOLE **M7CL**



YAMAHA

CO
commercial audio



HEADPHONES/ EARPHONES FROM A-T

Audio-Technica's mobile earphone range plus additions to the company's pro headphone line-up have been released in Australia. The introduction follows the release of A-T's Pro700 DJ headphones.

A-T's mobile range, specifically designed for iPod/MP3 users, includes a selection of inner-ear, ear-bud and on-ear types united by a singular focus on superior audio. Each model features Neodymium

magnet drivers, rugged construction and a comfortable fit for hours of listening enjoyment.

For broadcast, studio and other critical monitoring applications the Premium Pro range includes a line-up of both open and closed back circumaural models. Featuring 53mm large-diameter drivers, double air damping and A-T's patented self-adjusting wing support (for maximised cranium comfort).

W5000 and W1000 are reference grade headphone monitors finished in an extremely elegant wood housing. Designed to meet the stringent requirements of high end recording studios, as well as the most discerning audiophiles, the closed back W-Series features 53mm drivers, double air damping, magnesium alloy frame, OFC chord and lambskin ear-pads.

www.atg.com.au



2006 MUSICOZ AWARDS OPEN FOR ENTRIES

Australia's biggest Awards for unsigned and independent musicians are now open. There's 18 categories to enter in the Musicoz Awards from rock all the way through to classical and a new category – Channel V Best Video Clip.

Musicoz has built its foundations around developing the grass roots of the music industry by providing opportunities, recognising and rewarding the abundance of talent. More than six years on, Musicoz has given away of a half a million dollars in cash, prizes and industry

opportunities.

"We have ever growing music industry support because we are discovering fresh, new talent across the spectrum, said Pat Maloney, Manager of Musicoz. "The Australian music industry is tough to break into and we offer an alternative that has helped so many careers. All of our winners have experienced increased opportunities that was a direct result of winning a Musicoz Award."

If you've got MP3s of your music, you can enter straight on line; download an entry form; call 1800 002 955 for an entry form or grab one from rehearsal studios in metropolitan areas. Entrants have until July 31st to get their entry in.



Amy Vee performing.



Showquip from New Zealand fabricated and supplied the 21 meter diameter Total Fabrications circular truss used to suspend the lights, the flown tram and performers for the Comm Games Opening Ceremony (above). Nice picture, taken before the Opening, in the very significant rain. www.showquip.com



MONSTER MARQUEE

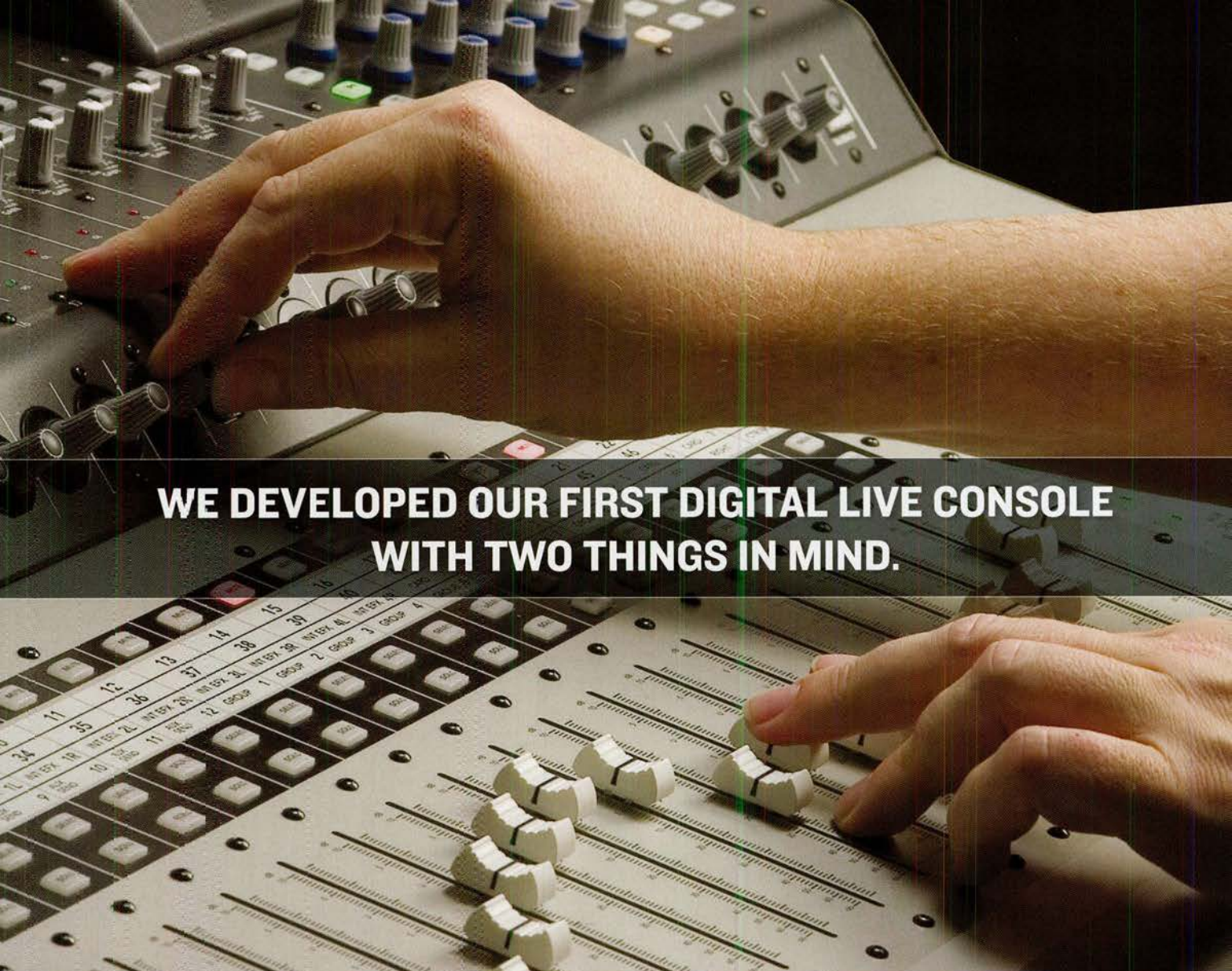
Total Event Services have announced the arrival of the largest known transportable double story structure in the world spanning over 70 metres long, 10 metres wide and a capacity to host 1400 people.

It sent directly from German manufacturer Joe Hocker to Darwin and was used at Hidden Valley for the V8's.

"The time was right to spend over a million dollars" says Colin West from TES. "The N.T.'s strong economy and bright future has given Total Event Services confidence for further investments" he said.

"Northern Territory Major Events, share a vision to provide world class facilities and events in the N.T." Colin said.





WE DEVELOPED OUR FIRST DIGITAL LIVE CONSOLE WITH TWO THINGS IN MIND.

As the world's first affordable digital console designed exclusively for live use, the Mackie TT24 lets you route and control audio in ways which would have been impossible just a few short years ago. We're taking instant recall of levels, EQ, onboard effects, routing, matrix mixes, and virtually everything else—all within reach of two hands and a modest budget.

Unlike other mid-sized digital desks, the TT24 was designed by folks who actually mix live sound. So it has gobs of standard I/O and places every major feature within an intuitive, "two-touch" range. For monitor mixing, the TT24's "Aux Mode" function flips it into an instant monitor console at the touch of a button. Want more control? Just plug the TT24 into your laptop PC, and use the included TT Control software's brilliant graphic interface to make complex mixes a snap.

Finally, digital live mixing is within easy reach of your own two hands... which should be clicking on over to mackie.com/tt24 right about now.



THE POWER OF DIGITAL LIVE MIXING, FINALLY WITHIN REACH. PLUG IN TO LIVE DIGITAL.
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HOME INSTALLS ALLEN & HEATH

Situated on Darling Harbour, Home Sydney is Australia's 'super-club.' It is part of every international DJ's yearly calendar and is as important to dance music as the likes of Ministry Of Sound, Pacha, Zouk and Crobar.

The club is a monster-sized pleasure dome sprawling over three levels with a maximum capacity close to 2,500. There are four distinct function areas, outdoor balconies, numerous bars and a main dance floor which stretches the full height of the club like a giant atrium.

As well as playing host to the world's most respected DJ's, Home is now spreading its influence toward live music. The club is leading a charge into the integration of 'live' with 'club' and combining the two in a way that is meaningful to both.

'I have a passion for both live and club music and I am very excited by the emerging genre that combines elements of both.' Commented Simon Page, owner of Home. 'At Home we want to be true to both live and club music and be a venue that is Home to both. On some nights we want to be true to both separately and on others be true to both together.'



Home owner Simon Page with the FOH console

A key component of this new philosophy was a technical refit which included the installation of an audio system capable of exceeding the expectations of any club or live artist that might walk into the place. True to Home's 'super-club' status a large 16 cabinet JBL Vertec concert line-array system was selected.

The club's choice of mixers followed a similar philosophy with Allen & Heath products being

installed throughout.

'We had very clear demands from both local and international artists to choose Allen & Heath DJ consoles and we took this step in January this year' explained Simon. 'The audio justification for the choice was instantly and dramatically obvious, so it was an easy step for us to go with Allen & Heath for the live side of things as well.'

www.tag.com.au



SENNHEISER 3250 MONITORING SYSTEM

Sennheiser say the new 3250 system is "the most flexible monitoring system the market currently has to offer". With a switching bandwidth of 36 MHz, and frequencies that are tunable in 5 kHz steps, we are providing PA companies, broadcasting networks and stage professionals with the best of the best in the ever-more-crowded RF spectrum," says Sven Boetcher, Sennheiser's product manager for Professional Wireless.

On the transmitter side, the new monitoring system gives the user a choice between the SR 3254 stereo transmitter and the SR 3256 twin stereo transmitter, which both come in a 19"/1U size and are true powerhouses, with an output of up to 100 mW. Unlike the previous models, the transmitters now use the HDX compander system featured in the "evolution wireless" series, achieving noise suppression of up to 90 dB and ensuring a wide dynamic range and crystal-clear monitoring



signals. Both transmitters are easy to operate, can be switched between mono and stereo mode and have a backlit LC display. These newcomers are especially recommended for demanding multi-channel applications and are supplied complete with integrated power supply unit, rack-mount "ears" and either one (SR 3254) or two telescopic antennas (SR 3256).

The system's bodypack receiver, the EK 3253, is 20% smaller than its predecessor but even more robust: both the body and the battery cover are now made of metal. Here, too, a backlit display makes the menu-

controlled operation even more user-friendly. A pilot tone-controlled squelch allows noise-free switching in stereo mode. The receiving frequency is adjustable in 5 kHz increments; the receiver also has a scan function making it easy to search for free transmission channels. The compact, inconspicuous EK 3253 is equipped with a focus function, enabling artists to create their own special mix from their own audio signal and the overall mix. The receiver comes complete with batteries and a pair of IE 4 stereo ear-canal phones.

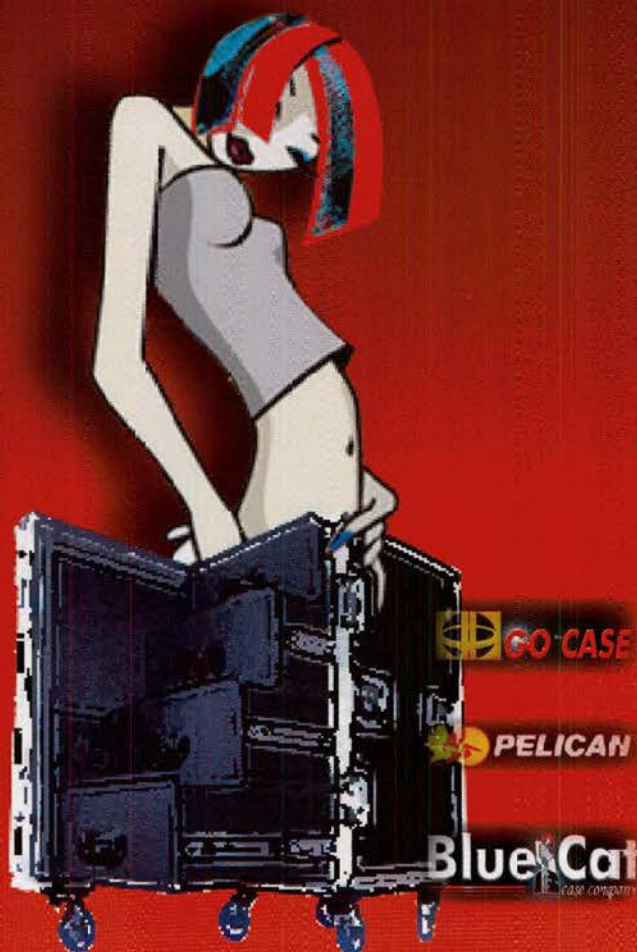
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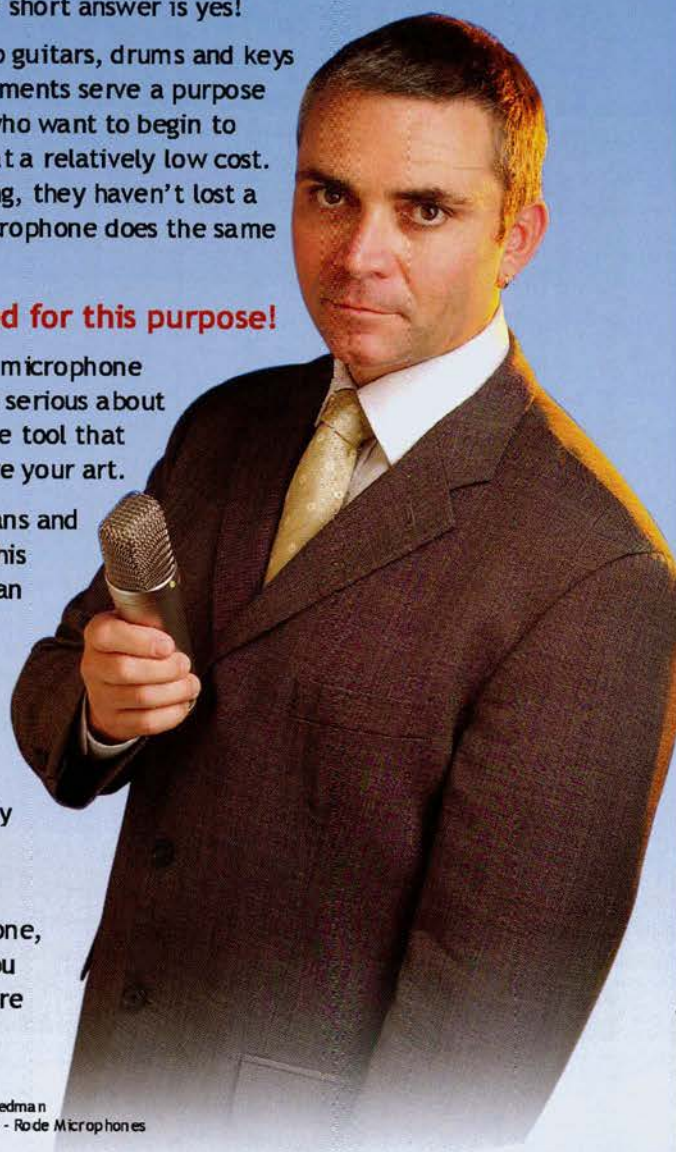
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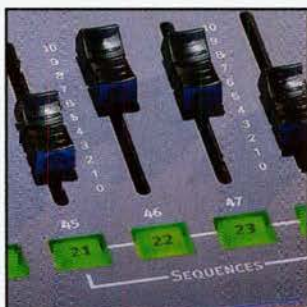
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ASHTON'S PA PACKS

Ashton has released their improved range of PA Packs for 2006. All packs include moulded speakers, a powered mixer, speaker stands, speaker cables and a microphone. There is a choice

of 6 different packs, ranging from something to suit a small conference or meeting up to a venue system.

Examples: the CLUB900 is built around the top of the line PMX1090ST mixer, with 3 x 300W RMS output, twin 7 band equalizers

and 16 digital effects. The CLUB900 retails for \$1995.

The DUC400 has a powered mixer with 2 separate 200W channels. The DUO400 retails for \$1599.

www.ashtonmusic.com



EMX POWERED MIXER CARRIES VITAL NEW FEATURES

Yamaha's new EMX powered mixer has some features we have been waiting to see, and would like to see on more expensive consoles. Like 'one knob compression' on the first six input channels. Major sound of applause from the CX lab. This is a MUST HAVE for anyone trying to ease the natural peaks of human vocals, or trying to get very quiet voices louder, without blasting the audience when those same quiet voices shout or suddenly get louder. Then there is a 'Feedback Finder' light, that'll show you which channel is offending.

The EMX 5014C has 6 mono and 4 stereo main channel inputs, plus dual auxiliary sends and sweep midrange EQ on the mono inputs. It's got an effects unit onboard, and a semi useless 9 band graphic EQ. I wish someone would not use the space and the 9 faders for octave wide EQ and instead devote the same 9 faders to the typical problem frequencies at one third octave centres - 160, 200, 250, 315, 400 and 500Hz; plus 2k, 2.5k and 3k15. How hard would that be? Or even have a SWITCH, so common users can have their useless octave wide, single octave, band EQ and people with some knowledge can operate the thing in serious mode!

Anyway, the other thing about the new EMX 5014C is that the dual channel, 500w amp presents the load to the speakers through Speakon connectors as well as the dreaded toytown 6.5mm jacks. It even has a loudspeaker processor based around Yamaha 'Club' loudspeakers, or you use your own.

The One Knob Compression concept has found its way down market to some of the lower 'brick' styled models too.

www.yamahaproaudio.com



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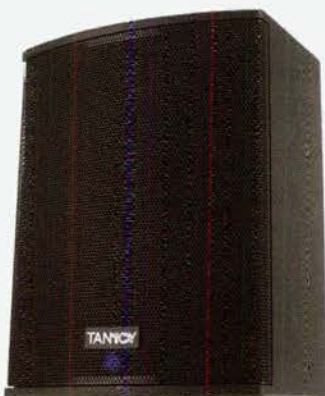
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TANNOY DEBUT VNET - ACTIVE V- SERIES WITH DSP AND NETWORK CONTROL

Tannoy is now offering a fully active version of the V-Series called VNET. By integrating its Dual Concentric point source, constant directivity drive unit with digital signal processing (DSP), network control and class D amplifier technologies into these high definition sound reinforcement (HDSR) loudspeakers, Tannoy is providing a fully monitored amplification system; a turn key solution.

All VNET models are supplied with the active speaker system fully optimised; requiring only room equalisation to finalise the set up. Room EQ is simplified via user accessible signal processing based on the latest third generation SHARC DSP that can be used in place of an upstream speaker management system. Using free network topology, which does not suffer the distance limitations of traditional Ethernet based networks, individual speakers can be linked together with Category 5 cable in a daisy chain, star layout, or a combination of both. Included software facilitates real-time control as well as diagnostics and monitoring of all vital system parameters such as amplifier temperature, driver status and input/output metering.

Tannoy VNET's integrated Class D power amplification with switched mode power supply, is very efficient, flexible and reliable. Delivering 800Watts output per channel, dependant on model, the only surface area needed for cooling is the small control panel on the rear of the cabinet. Even when driven at very high power levels, no fans are required so the system runs quietly and is not prone to internal dust contamination. The auto ranging power supply automatically detects and configures the system to the supplied voltage.

Tannoy's Dual Concentric drive unit places the high frequency drive unit physically inside the low frequency driver, producing a true point source that exhibits constant directivity.

There are four bi-amped full range models and three subwoofers in the VNET range.

Meanwhile, the Tannoy VNET 12 won Systems Contractor News Product Installation Award on June 6 at InfoComm in Orlando. Fighting off competition from other nominated products from Atec Lansing, Meyer Sound and Renkus-Heinz the Tannoy VNET 12HP won the Award for Most Innovative Loudspeaker for Commercial Installation. Nominated products were chosen by a panel of industry experts and, perhaps more importantly, it was the readers of Systems Contractor News who chose the winning Tannoy VNET 12HP.

The SCN Award citation gave an overview of this outstanding new range: "Tannoy integrates leading edge digital signal processing into their high definition sound reinforcement (HDSR) loudspeaker designs. Tannoy are rightly extremely honoured to have been selected top of the class in this highly competitive category. "The award is a testament to the talented Tannoy engineering staff in Scotland, headed by Engineering Director Graham Hendry", they say.

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PRODUCTION NEWS

By **GREENROOM GERTIE**

RESULTS FOR THE 2005-2006 BROADWAY THEATRE SEASON

The League of American Theatres and Producers has released its end of year statistics for the 2005-2006 Broadway season. Thirty-nine plays and musicals opened during the 2005-06 season:

- For this 52-week period, paid attendance to Broadway was 12,003,148 million, up 4.1% from last season (11,527,349). This is the first time that Broadway attendance has crossed the 12 million mark.
- The percentage of seats filled for the season was at an all-time high of 81.6%.
- The number of playing weeks was the third highest on record. The 2005-06 season totaled 1501 playing weeks, up from 1494 in 2004-05.
- Grosses increased 12% from \$768.5 million to \$861.6 million – a new record.

A main contributor to these increases was strong attendance by tourists. Domestic tourists accounted for more than 5 million tickets and international visitors, more than 1.3 million (estimated).

"This season was marked by tremendous new musicals and plays, offering audiences a diversity of shows from which to choose," commented Jed Bernstein, President of The League of American Theatres and Producers, Inc. "Although the strong business results continue to underline Broadway's revenue stakes in New York, increasing cost pressures have resulted in no increase in the number of shows making a profit. Broadway is still a high risk investment."

QUO -V- PURPLE

Following on from Fry's review of Deep Purple and Status Quo (CX 20) Michael and Julius attended said show in Sydney at the Hordern to establish veracity.

Notwithstanding Fry's digital vs. analogue red herring, we discovered that the Status Quo unit does indeed do what it says on the packaging.

Whereas Deep Purple do not; long boring new songs and badly sung old ones. Ian Gillan can't hit the notes and doesn't really try to. Never was this more evident than when Jimmy Barnes joined for a song. Barnsy didn't just hit the notes, he sailed over the top and down the other side in a duet of Black Night. But the audience of ageing panel beaters, butchers and their peroxidized wives bulging out of their jeans cared not.

Hats off to promoter Andrew McMannus for having the gonads to charge \$140+ thus making it all happen. Oh, and the sound and lights were just fine.

TOTO HIGHS

Speaking of hitting the notes, Bobby Kimball from Toto has trouble getting there too, but at least he tries, from what we saw on another research trip to the Metro in Sydney. It was slightly more satisfying last time (in the early 1990's at Selinas) when the moveable lineup included a talented and comely young blonde female who sung Kimball's bits. Umm, did that come out properly? No matter, it is the Steve Lukather show, and 2 hours of one of the world's best guitarists works for us.

But the two show tour must have cost the band a motza, even with a stripped down crew. Tacked on to the end of a probably profitable run of Japan, the freight and air tickets would not have been covered by 1000 punters in Sydney, even at \$80 each and something similar in Melbourne.

TOTO'S METRO LOWS

Sydney's Metro venue was put into administration recently, and press reports indicate some of Toto's fee has not been paid. Toto management in Germany declined to comment.

The Metro has a reported shortfall of \$900k, which has left industry observers dumbfounded, since it has traditionally been successful. At presstime a report in the Sydney Morning Herald claimed the former venue operator had some unfinished business with a certain motorcycle gang who had been starting the locals and asking for him around Sydney's posh Double Bay precinct. The report went on to allege the

operator had reneged on a large debt to a third party and then brazenly told that person to go ahead and to take legal action, as it would 'take years for you to get paid'. He is quoted as saying that the person (to whom he owed money) was silly for not collecting it. Or words to that effect. Other allegations were raised in the article, which suggested that the guy had some form. Discussing the whole matter here skirts the laws of defamation.

Notwithstanding the mysterious disappearance of performance fees owed to various bands and promoters, there's also a certain bad karma about messing up a major venue.

The Metro has now reportedly been placed under the same management as Sydney's successful Enmore Theatre.

PILBROW SLAMS ARCHITECTS

It's about time we had more of this: The Stage (London) reports that theatre consultant Richard Pilbrow has dismissed designs for the £48 million Leicester Performing Arts Centre by a leading architect as "impractical" and "extremely problematic".

What is really different is that two auditoria are situated either side of the stage area - either auditoria will be able to use the stage. That'll make lighting design interesting, won't it?

Pilbrow rightly points out that "the centre's 'inside out' theme, with transparent walls revealing the stage and technical workshops and a giant glass box around the two auditoria, will be intrusive for staff and cause noise and dirt problems."

Pilbrow, who has worked on theatres in more than 80 countries, told The Stage: "Many things appear to have been cut or compromised to pay for the idea of the 'egg in a box'. An actor likes to walk off stage and go into his dressing room - here they have to go across the lobby and downstairs. Scenery has to be carried in across the lobby - do they know how dirty scenery can be? Building scenery backstage is a very dirty

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PRODUCTION NEWS

business, it's an industrial process. When that's opened up to areas where the public expect a comfortable environment, it's problematic. And there are acoustic problems as well."

At least in the UK there are experts of Pilbrow's stature who are less worried about defamation and tort law than they are concerned that the art and craft of theatre is properly protected through decent venue design. Down under, we hear the concerns about new or proposed venues, but can never quote anyone.

RATE OF RETURN

As it is winter in the southworld right now, talk turns to end of financial year issues and the imbalance between those who provide services to tours and festivals (those who face a quiet winter) and the people who work elsewhere without seasonal imbalance. Which leads to the question, Who is Making Money?

A recent international tour had a budget that went like this: Sound \$90k, Video \$120k, Lights \$160k, Trucks \$200k, flights and hotels \$300k.

While the latter big ticket items are affected by oil costs, the lights,

sound and video businesses are not. So who would you like to be?

Sound companies who buy the equipment people want to rent expect 5 to 7 years of usage. Lighting companies are currently running the slide rule over generation and one generation two of moving lights and many are deciding they don't enjoy 5% failure rate, or the extreme cost of replacement parts. Video guys and girls get as little as two years out of a projector, and currently pay far too much for the stuff everyone wants, which are LED panels.

The winner is the smaller company who do sound lights PLUS video all equally well, who don't do large international tours, and who can add value, buy the right equipment, and hang onto it. While maintaining it themselves. Sound hard?

SAFETY RESEARCH

Big Day Out is showing its ongoing commitment to the health and safety of patrons and employees/contractors by sending its Production Director and its Security Director on a fact finding mission to Europe. They attended Rock Werchter in Belgium and then on to Roskilde in Denmark. From there it is over to the UK for a Red Hot Chili Peppers stadium show

followed by T in the Park in Scotland.

"We will be looking at crowd management strategies as well as barrier and staging designs. We believe that it is vital to stay ahead of the game with regard to crowd safety", said Matt Doherty, BDO Production Director.



DEAD GRASS

The Rolling Stones left a legacy for their promoter, in the form of many hundreds of square metres of turf needlessly murdered in Sydney. A system of grass protection can prevent this.

HIT US with the News.....
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INFORMATION (NEWS) WANTED!

The CX Investigations team is currently researching several potential stories. If you have input or information that may assist, please email investigations@juliusmedia.com

ELECTRICAL SAFETY

Have you purchased a product that is hazardous, or potentially hazardous? Did you have a suitable and sufficient response from the point of sale or the distributor or manufacturer? Do you feel that the risk of injury or death presented by this product was understated, misunderstood or not taken seriously by those who profited from its sale to you? If you have input or information that may assist, please email investigations@juliusmedia.com

POOR SERVICE

Did you wait too long, pay too much, or are still waiting for the repair of a relatively new item of equipment? Is the repairer giving you a line of dialogue that appears fanciful? Do you think that there is a systemic problem with this type of equipment? If you have input or information that may assist, please email investigations@juliusmedia.com

RIDICULOUS SPECIFICATIONS

Have you seen a specification that is specious? Can a motor car travel at the speed of sound? Does a plastic speaker box loaded with a 12 and a horn have the ability to deliver 220dB spl and 2,500 watts? If you have input or information that may assist, please email investigations@juliusmedia.com

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CX AND PEOPLE

I must say CX excels in telling the people-stories of our industry rather than just drooling on about endlessly about new product releases, like the other trade rags do. Right on! After all, people buy equipment. Equipment doesn't buy equipment.

- Peter Collis.



BOSE AND BIRDS

I thought you might be interested in seeing what we are pulling out of the decommissioned sub boxes from WIN Stadium's Northern Grandstand. Each box has its own unique ecosystem. Even the inside cabling is a bird delicacy - they seemingly have a preference for RED cable. Dead birds (big ones), dead chicks, Bees with 10 - 15kg of honeycomb, birds nests to name a few, and the speakers are still working. These speakers are only 4 years old. We really do have to hand it to Bose for making the most environmentally friendly speaker I have ever come across.

Thanks Bose.

Sean Keaveny

CX AND AUDIO

I have just finished reading the current CX with stories on MTV Awards and Commonwealth Games and am writing to say thank you for your kind words. It is great to have you personally writing on something like MTV because your many

years of audio background give you a genuine appreciation of what is involved in sub 200 second changeover that most other journalists in this industry don't have.

- Chris Kennedy, Norwest Productions.

CX AND DOGS

Well the worst thing possible has happened. Talk about "the dog ate my homework" scenario... I had just sat myself down on my back verandah, with a lovely cup of tea and a small piece of cake my wife had just made, to while away a few hours perusing my new copy of CX that had just arrived in the mail. It was indeed a glorious morning, the sun was shining and all was right with the world. Well for a few minutes anyway, when disaster struck. The phone had rung and it was for me.

Nothing important just a call but it went for 10 minutes or so. When I returned however, things weren't quite as grand. In fact I could feel both the anger and tears and several mixed emotions pouring out of me all at once. My golden Labrador, Crystal had proceeded to devour 40% of your magazine and leave the remaining 60% scattered the entire expanse of my back yard.

I hadn't even opened to the first page and yet here it was in pieces no larger than a postage stamp in every direction. I just couldn't believe it and she was sitting with the most satisfied grin one could imagine. Funny thing was the cake hadn't been touched, maybe a reflection on my wife's cooking??

- Jeff White

Whitenoise Pro Audio

CX AND PURPLE QUO

Enjoyed the story about the Deep Purple / Status Quo gig (Fry, CX20). I have used both Analogue and Digital desks for some time now and I've got to say I still really enjoy the warmth and sound of a good Analogue desk. Recently I had been in a dilemma about updating to a large format console. The "industry" are all saying "...must be digital, current technology, state of the art."

At the end of the day it came down to economics. To afford a current release Digital console with enough inputs was many times more expensive than the same number of inputs in Analogue. The stark realisation came when I looked at the sort of money I could bring in using a large format console in my area. People in my area of Northern Inland NSW don't have the budgets for high end Digital consoles no matter how you look at it, so Analogue it had to be.

I've purchased two Soundcraft GB8-40 channel dual purpose consoles and I have got to say they really do sound great! The bonus is, everything is there in front of you and I can still afford to feed my family.

- Peter Scott

P C Scott Audio & Lighting Productions
Tamworth NSW

CX AND COMM GAMES

Just wanted to say I enjoyed your article in the Comm Games. I think you reported it very fairly and balanced and represented both companies well which was a nice contrast to what I thought was extremely biased reporting towards Show Technology on the ALIA website.

- Paul Rigby, Bytecraft

CX AND JULIUS

Despite writing the occasional letter grumbling about the early punctuation and spelling issues in Channels and Connections, I didn't realise how much I like Julius Grafton's writing style until I opened the last couple of issues. I still remember vividly his telling of the time after the Princess of Wales died in Paris, how paparazzi were on the nose. His story about the New York AES when he saw Stevie Wonder and dropped his camera trying to snap him while wearing a press pass was so memorable because of his contrition at being rounded on by the crowd, who turned New York hostile. He wrote something like "And how did it come to this?" which was poignant. Clearly your magazine has prospered since what - 1990 - because of the strength of his writing.

- Amanda Hooton, ACT

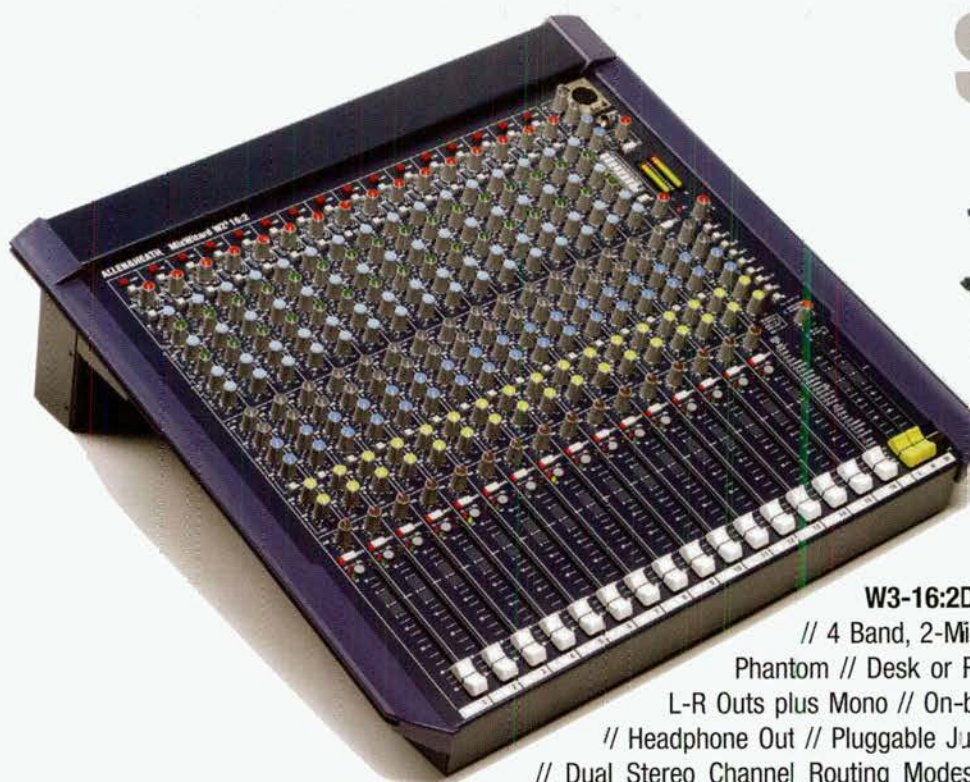
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Allen & Heath's MixWizard 16:2 has been one of the worlds' best-selling compact multi-function consoles since its launch 100 months ago (1997).

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HARBOURSIDE CHRISTIAN LIFE CENTRE

Harbourside is a relatively new CLC following in the footsteps of successful pentecostal churches in Sydney.

By PAUL MATTHEWS

Based in Five Dock in the multiculturally rich inner west and pastored by Gary and Lisa Costello the centre was established in 1996 and until recently operated Sunday services out of Concord Community centre.

Finding "suitable" commercial real estate in the inner western suburbs of Sydney can be difficult at the best of times, however Harbourside have now been successful in negotiating a favourable lease on an old theatre building located on Great North Rd in Five Dock. Far in contrast to the usual "converted factory" approach of most CLC congregational houses this grand old building originally dates back to the '20s and has seen many different lives over the years. Originally built as a large cinema it has in the past been remodelled into a "Vaudeville house" (during the 2nd world war), a dinner dance venue during the '50s and '60s (complete with parquet floor), a major suburban cinema (which operated until 1982) and then survived its last 25 years as "Samian House", a function venue mainly used by the Greek community.

The last 30 years has taken its toll on the building which was in a well and truly "run down" state when Gary and Lissa Costello took control of it in May 2006 with the dream of

opening in the venue in June. On a severely limited budget the team at Harbourside set to work. Interestingly enough large portions of the building (which included virtually all of the mezzanine level upstairs) had simply been "walled off" in 1983 when the cinema closed and as such most of it still stands as a monument to the day the last film rolled – including the original projector booth (with huge open arc projectors dating from 1927 still in place) and original motorised screen mechanicals in the roof long since disused. The lighting and electrical aspects of the task were especially confronting with no less than four layers of wiring in the building (some dating back over 50 years) which had seen a great deal of "unlicensed" electricians work on it during its past "conversions".

PA Matthews Audio won the electrical and lighting contract principally due to our experience as a licensed contractor in "heritage commercial electrics" (read "deathtraps") coupled with experience in budget church installations. One such former being Penrith CLC in the late '90s which underwent a similar transformation (from "barn" to "venue") and in which the lighting rig remains operating today (as testimony) almost unchanged in its design after 8 years.

The brief for Harbourside was for a

fast, low budget "bang for buck" transformation which would utilise and feature as much as possible of the existing ornate plasterwork and fixtures of the original structure that were still in place and yet also provide a flexible, ultra modern bright and exciting atmosphere which is at the heart of many modern day pentecostal worship services. All this coupled with one touch operation, safety and long life low maintenance components... of course.

The condition of the "electrical installation" of the building was our first concern. Normally separate contractors handle "Stage" and "House", but it was clear from the start that for Harbourside this approach simply would not deliver results in time or at anywhere near the proposed budget. A total of three switchboards (one of which had been on fire at least twice) contained over 80 different sub circuits many of which terminated "somewhere". Behind walls, in roofs, or simply poking out of the wall, cut off and still live waiting to bite the next person to come along and brush an aluminium scaffold up against them. A good deal of the "power points" in the venue were running off lighting circuits. The word "Earth" seemed to refer only to the brown stuff on the ground outside and certainly had nothing to do with the electrical installation in this building. RCDs? That's a laugh!

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Open arc projectors dating from 1927 were still in place.

Some of the conditions found were extremely dangerous including one particular fault where an unidentified active from one switchboard was back feeding the load side of breakers on another completely unrelated sub board effectively retaining it "live" even when the local main switch had been turned off. Many days were spent chasing these faults and making the installation "safe" before work could even begin on the task of renovating the theatre. All unidentified circuits were removed from the boards (and that was most of them) or terminated properly, traced physically and labelled. Work was then carried out to provide at least some lights with switches that actually worked and could reasonably be expected to continue doing so without killing people.

But by far the greatest challenge was the budget. With an aim of getting a completely working solution supplied and installed for "around \$10k", there wasn't much room for the normal "scorched earth and start again" policy that many industry professionals prefer to take when confronted with this sort of challenge. New equipment would be limited to Percons, very basic DMX control and a mix of "club style" and common "commercial industrial" technology. And of course there was the deadline.. FOUR WEEKS from quote to completion – and that INCLUDED all that mucking about with the building electrics! To find out

how much it all cost you'll just have to keep reading.

The huge room has one real thing going for it - excellent ceiling access - as many pre 1970 buildings often do. The ornate plaster ceiling was slung just below the roof trusses and allows unprecedented safe access to just about anywhere at ceiling height with no need for scaffolds, and all made the old fashioned way - roof joists and battens. Not a suspension rod in sight, so there's no problem hanging just about anything anywhere subject to weight limits. Even the walls were huge cavities (with ladders behind) which could accommodate humans - if one could just handle the dust of 80 years. What it featured above however it lost below - with only 400mm between the floor joists and the dirt. Rubble was everywhere under there as was an upside down "bed of nails" under the floor ready to tear open anyone who dared try and climb under it to install cables.

Originally built as a theatre the hall is totally black without electric lighting. And the only lights that existed were a series of very ugly fluorescent lights that had been added to the venue walls sometime in the '60s as cleaner's work lights. These were the first to go. The ceiling also contained four 1200mm diameter opaque glass "downlights", above each being a derelict set of 20w fluores and GLS globes (all wired in V R rubber and still all alive!) which

originally served as dimmed houselights in the cinema days. When rebuilt in the '50s the ceiling and walls had also featured a large neon installation (massive for it's time), with blue cold cathode tubes hidden in just about every pelmet and plasterfold. The venue was a wealth of textured surfaces just waiting for paint and light.

To provide main house lighting the original light sources were stripped out of the ceiling and a series of four 400w industrial high bays mounted directly above the glass for general work lighting and for use when the stage lighting system was not required. Added to this are eight standard 500w "Q1" lights (two per bay) which run directly from the stage dimmers giving full control of the venue right from the desk during show times (during which the high bays are simply switched off). Added to this were two simple strings of 30 x 25w festoons placed in pelmets (where neon once was) to uplight two large feature walls to the left and right of the stage. The result is a totally controllable yet soft, warm, inviting (and cheap!) house lighting setup ideally suited to a worship atmosphere. A set of original 75w downlights at the rear of the hall were also rebuilt to complete the picture and provide "safety glow" from the rear.

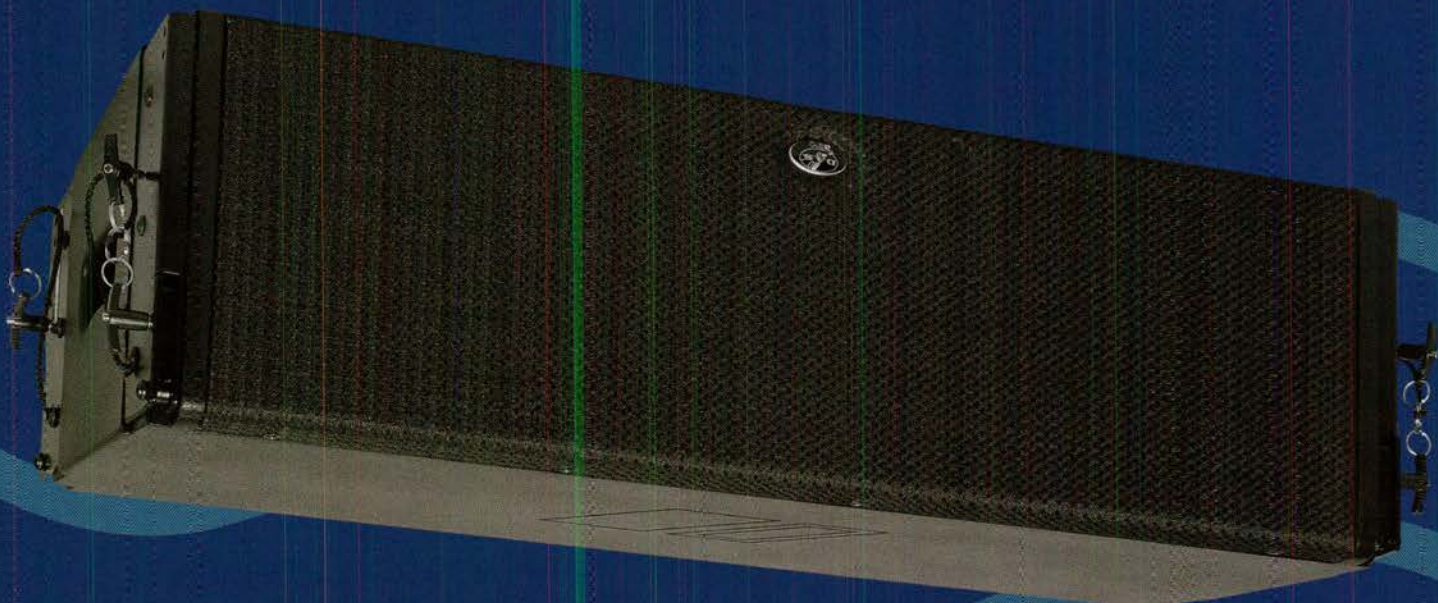
The venue stage is quite small (by CLC standards) with virtually no backstage space. It required extensive rebuilding (including the removal of a large central steel post holding up the ceiling), plus removal of a fence at the front of the stage added in the '60s when the venue was used for dinner dances. With excellent safe personal access to the venue ceiling it was decided to cut a series of holes and mount six Par64's in the roof itself rather than install an FOH truss which would have resulted in the need for a scaffold every time changes were required. This provides more than enough "white light" FOH for worship purposes. With good height and angle to the stage most "performers" don't even notice when they're on - but the audience certainly do! Since these fixtures are expected to "work very hard", 120 volt "Litecraft" Par64's were utilised in pairs due to the 2000 hour lamp life in contrast to the 300 hour life of the 240v equivalents now commonly in use.

From an early stage it had been

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The advertisement features a large, stylized graphic of a speaker driver at the top. Below it, the text "Wharfedale Pro" is written in a blue, cursive font. The main title "EVP-X SERIES" is in large, bold, red letters with a black outline. Below this, the text "QUICKLY BECOMING THE HOTTEST SELLING SPEAKER RANGE IN THE COUNTRY." is written in a smaller, bold, red font. At the bottom, there is a photograph of several black speaker units, including a large floor monitor and several smaller satellite speakers. The background of the advertisement is a mix of grey and white with some red and blue accents.

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decided to feature at least some aluminium trituss in the rig. This has somewhat become a "must include feature" for CLC stages to set them apart from other churches and give the stage that "modern rock" look. Two 3m sections of Soundking Standssystem 50mm tri truss were installed at the immediate front of the stage directly above the performers. Located here also are four standard 500w "QI" flood lights to brighten and wash the stage with white during the message portion of the service. Nine Par56 stubbys are also up there to add colour and liven up the worship portion of the service and provide contrast with the cyc at the back. Finally two club style "aqua" effects lights were added to the truss to play over the feature wall surfaces each to the side of the stage completing the "walls of colour" effect.

The rear of the stage was painted white and three "I Colour 4" integrated DMX colour wash lights installed to provide a simple low cost cyc. These lights (featuring four 500w "J" type QI lamps behind dichroic colour filters each) are a relative newcomer to stage lighting. They have integral dimmers. All they need is about 8 amps of 240v each and a DMX line to complete the picture - working very much like Chinese "fixed moving lights" and having a price point to match. It's all relatively old technology and often leaves us old timers asking "why the hell didn't someone think of building these things 30 years ago?". The accompanying simple ICA32 controller can be set to run a myriad of automatic patches including a very nice slow colour mix fade feature which takes the lights through an almost unlimited range of colour mixes and looks a million bucks behind just about anything no matter what the speed of the music - perfect for a worship service. They're also capable of sound to light patches, chases and manual control. The only downside is the slight noise of the integral fans in the units.. but at the Five Dock venue with it's small and isolated stage and fresh sound absorbent carpet on the floor this has not posed any problems.

Control is via two 6 channel Lite Puter DX610 DMX dimmer packs permanently installed in a rack with their own integral 3 phase

distribution to the side of the stage with all cabling hidden away in the cavity walls. The Chinese made DX610 is designed more as an architectural unit than a stage lighting dimmer however at less than half the price per channel than the cheapest conventional racks available "from the competition". They have an excellent track record for reliability they are perfect for Harbourside - or anywhere a permanent installation on a tight budget is required. This doesn't preclude their use for hire rigs though - and many small PA / Lighting operators are now discovering them (and the attractive price) and finally ditching their 20 year old analog racks. The racks at Harbourside are controlled by a budget concious Behringer LC2412 DMX console- itself another "I can't believe they can do that for the price" offering from Behringer who normally never stray out of the audio world.

Resisting the temptation to go "all in" from the start with a new system, Harbourside have wisely chosen to upgrade and reuse their existing portable PA for the time being whilst setting a budget and evaluating several new solutions and ideas from different suppliers over the coming months. "The PA People" were contracted to install 2 x 16ch Multicores, establish an amp farm and cables for speakers, as well as install a data projector and screen above the stage for songwords use. Despite it's aerial advantages, the venue roof has severe weight restrictions - so line array territory it certainly isn't. However it'll be one to watch in the next year or two.

The complete system had it's inagural opening on Sunday 18th June to a very excited congregation. HCLC also intend to use the venue and installation for live television production, in assistance to several Sunday morning programs they currently produce for newly licensed community broadcaster TVS in Sydney.

And the budget? Well... for all the electrical safety work (phew), room and stage lighting, truss and equipment supply, installation and commissioning? \$10,019. inc GST. And before you ask.. No, there was no volunteer work and Yes the job remained profitable.. but only just.

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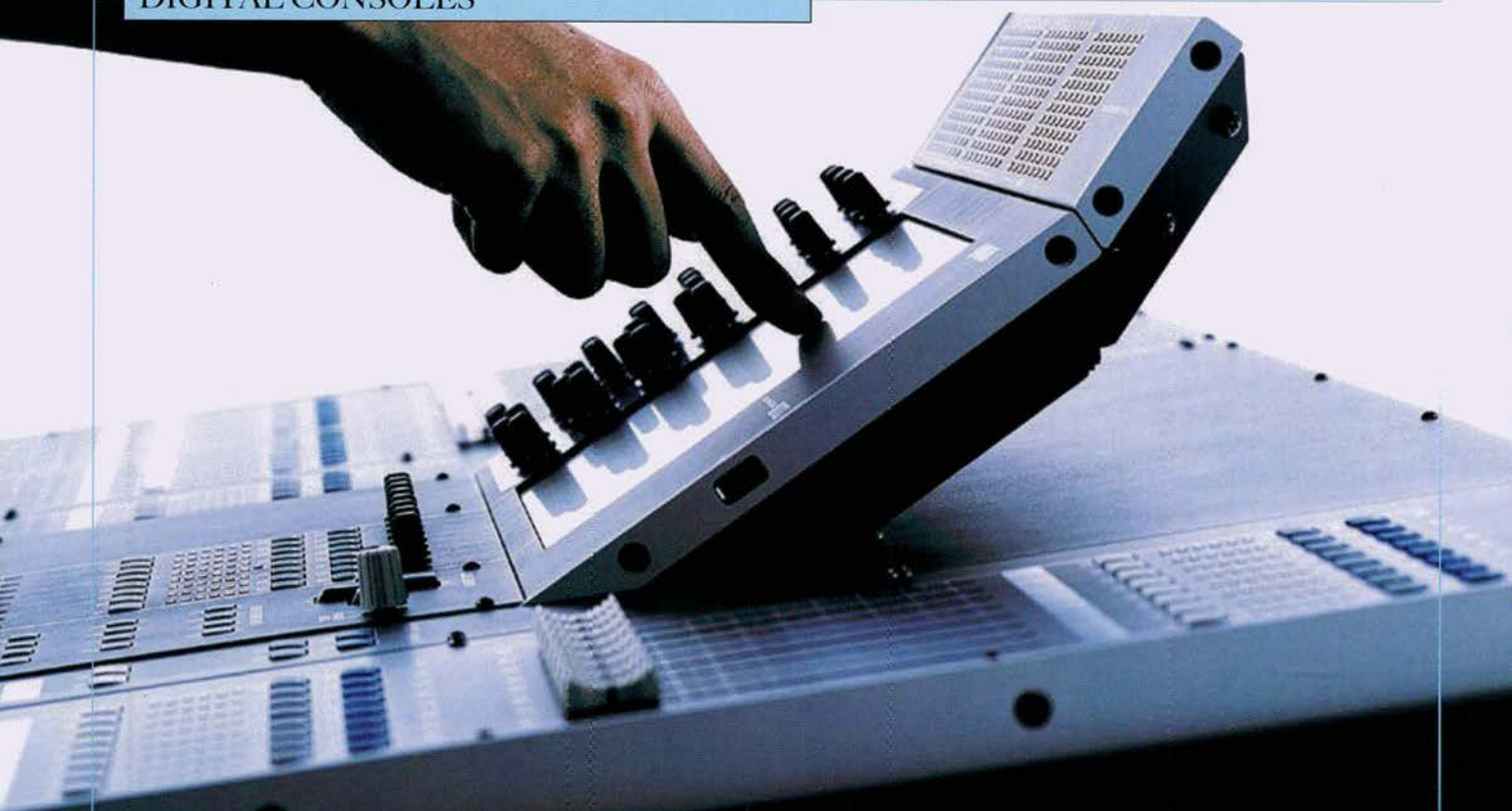
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ISN'T THIS ALL A LITTLE LATE?

Why we had to wait until roughly now to have significant choices and viable price points for digital live sound consoles.

By **JULIUS GRAFTON**

The influx of recallable digital live sound consoles has turned into a fast rising tide, and the era of large format analogue consoles that weigh 300 kilograms or more is over. The technology has been willing, but the uptake has been slow-ish, mainly because live sound engineers are risk adverse.

Studio and broadcast sound engineers progressed to digital a decade or more ago, and have contingency plans should the console crash – as indeed, analogue consoles can do as well. In fact, CX reported recently on a very large damages

claim by Global TV against the importer of a digital audio console which failed within their trucks.

Consoles do fail; but in the live environment it is more glaringly obvious, since the engineer is positioned in the middle of the audience. A stoppage of sound; followed by frantic re-patching and replacement of a console in full view of an idle audience is the nightmare no engineer ever wants.

The other reluctance is that live sound engineers tend to be uneducated in a formal sense, and can be shy about learning what is sometimes a complex new technology. But the proliferation of

digital consoles at festivals and on tours has eventually worn down the ignorance factor, as has the increasing availability of factory training at no cost with proper training techniques.

So the time is now, and the manufacturers are settling into a pecking order and a form of function that mainly features a master channel with much more functionality than that on any analogue console; and usually some third octave or parametric equalization on some outputs.

The sectorisation of consoles now is driven by buss availability, many busses are needed when you do

stage monitors, and the ability of a digital console to work in either stage monitor mode or front of house mode is a boon.

So what are the form factors for digital live sound consoles?

Essentially there are two approaches, one has the control surface remote from the processing and inputs and outputs. The other lumps everything into the one package, closer in approach to the way you would plug all your microphones into a conventional analogue console.

Until Yamaha surprised the trade with PM5D, it was assumed that the more upmarket practice of having remote racks for inputs, outputs and processing was likely to be widespread.

Now there's an upsurge in Cat 5 based multicores, and the remote rack doesn't necessarily need a custom cable or fibre optic multicore any longer. This has revolutionized things, since the multicore is considered a weak link, and the ability to run one active and one redundant (spare) cable connected by RJ45 connectors is sensational. As well as relatively cheap.

There's quality issues, a console that samples at 96kHz is going to be favored over one that works at 48kHz, but really – the extra processing power required to get to 96k makes it a stretch and no one can REALLY hear the difference, can they?

Different converters sound different, in much the same way a Midas analogue preamp is sometimes favored over a Yamaha one. But really – that is very subjective.

Big issues to deal with:

Boot up time. If you need to do a reset, how long will you be without audio? You'll always use a large UPS to ensure the thing stays working when the power hiccups – and now you are used to a computer, you are starting to notice just how OFTEN the mains can stop momentarily while a substation switches or sheds load.

Phantom power. You need to find the phantom switch (which might be buried on screen somewhere) in a hurry.

Channel stacking. It is good to be able to make two adjacent channels, like keyboard left and keyboard right, into one stereo channel and not necessarily suffer all channels sliding down the control surface.

Labels. If you can't read the channel descriptor fast, it'll cause problems at the show. A four letter electronic



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label is a lot less friendly than one that lets you type six or better still, eight letters.

Pages. If the console has 24 faders for 48 channels, you better be able to switch from page one to page two fast; and know you are there.

Assignable faders. I like the Innovason approach where you choose which (if any) are your group or master faders. Being locked into master faders can be restrictive.

User assignable switches and buttons. The big thing for a manufacturer is to get the control surface right, so that future upgrades can happen with software. If they leave off something everyone needs, it's a BIG loss maker.

Footprint. There's no point having a digital console that is almost as large as the analogue console it replaces! Getting 48 or 96 inputs onto a work surface that is 1.2 metres wide is what it is all about.

Weight. Not only is it smaller in footprint, but the overall weight of a 96 input system will be half or even a third that of doing it all analogue. A big deal when air freight costs come into the equation.

Remote setup. Doing the patch and channel setup on your laptop before the show is awesome. Being able to log on and do it remotely like Yamaha let you is amazing. Dave

Watson at Hillsong can walk around with his wireless tablet and tweak the mix on any of the three Yamaha PM1D's that the church has installed.

Recall everything. This is what it is all about, and Digico have made much of the ability to store a show on a USB key or better still, a Digico USB watch! All digital consoles allow recall, and all have snapshot scenes. Not many allow 'dynamic' flying fader recall, but then again, that's your job, right?

External effects: are not required. The big attraction of NOT hauling and patching an effects or even a drive rack is something you don't appreciate until you don't have to do it. Really, the only thing missing is the CD player and how hard would it be to play an audio CD off a CD drive in a desk? No one has fitted this yet.

Finally, what is coming?

Expect much much more, and for much much less money! Midas are just now preparing the XL8 and many more models will appear with less features. XL8 is probably the most sophisticated live sound digital console yet.

There's still a big gap in the market at the low and high mid points, where Mackie's T24 and Yamaha's M7 have just started to impact.

The holy grail must be when someone, maybe Mackie who have

experience with this, puts a hard drive into the system and enables recording and playback (and rudimentary waveform editing) of each input.. It would be insanely easy to do, and wow, what a difference it would make. In fact, if I was designing a work surface (console) now, I'd put machine control styled buttons on it, just in case.

You can already buy devices like the Roland VS-2480DVD, a 24 channel mixer that is primarily a stand alone 'firmware' solution for recording. It's a short step to a live console with onboard record ability.

Most serious sound engineers now carry Pro Tools or a Mackie SDR24 track hard drive recorder with them, to record the soundcheck so it can be remixed later on; and to record the show for the act. Plus many acts now have ProTools running alongside their show, with multitrack feeds running out to the front of house console of synth beds, strings, backup vocals, even – ahem – the whole song, to which the band plays along.... But we didn't say that, did we?

Digico had a Pyramix type external multitrack device on sale a few years back, but as Mackie discovered to their horror with the truly excellent SDR 24, people just won't pay for multitrack hardware anymore. And the truth is, people are not wild about



Midas XL8, now the top specified system on the market.



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paying for ProTools either, because as more than one ProTools user has told us recently, once you start buying cards and devices and plug-ins, the spending just doesn't stop.

It's a world where PC based multitrack software is available free. Put the ability to record into your digital mixer and reap the benefits.

YAMAHA'S SIGNIFICANT DECADE OF DIGITAL

Yamaha's line of digital live sound consoles started with the DMP7 in 1986. It was something of a revolution for keyboard players, who dug the ability to snapshot with flying faders and midi recall the internal effects processors.

Then came the DMP11 in 1988, and the DMR3 in 1990. This wasn't a live console at all, in fact it boasted an 8 track tape based digital recording system and a price tag of around 30 grand.

The year this magazine started as 'Channels', Yamaha birthed the DMC 1000 in 1991 and the DVP9-16 in 1993.

These pale into insignificance against the Pro Mix 01 which I first saw in London in winter 1994, by

which time we were called Connections. The Pro Mix 01 made it to the very first ENTECH that year. That little mixer was a market buster, selling at around 3 grand – the audio community were speculating that Yamaha had priced it at cost or less, to stimulate the move to digital. It was a pivotal moment.

We saw the Pro Mix 01 used in all kinds of places. Our mentor Stan Miller, famous for his quarter century mixing for one Neil A. Diamond, toured Australia in 1996 with ten of them in racks, midi controlled from a 24 channel PM250C. That freaked out a lot of people, as included.

Yamaha made up for tight margins on the Pro Mix 01 with the 02R, released in 1995, and which sold for around 14 grand. Although pitched at post production, many of these ended up in Live Sound, since they have 24 analogue mic preamps as standard. This was a very successful model, and we have one here at Juliusmedia still.

A rash of smaller mixers followed, with an ever confusing array of model numbers. Yamaha want you to make Kando together, according to their latest slogan, and I suspect the Japanese translation of Kando is

something to do with Cipher, which is what you need to unravel to understand the model number logic.

The 03D arrived in 1997, the 01V in 1998, and the watershed product, the device that is now at the pointy end of many top level concerts, the PM1D came in 2001. The PM1D tipped the market, this was, and is still, the first really viable 'top end' digital live sound console, boasting 48 mix busses that can be carved up however you need them.

Year after that Yamaha released the DM2000, which has mainly found favour in broadcast and post, but has been sighted doing live work as diverse as stage monitors for the Farrah Fawcett farewell tour, and in various sound trucks. There is one at that icon venue, The Basement.

2002 was also the year that the 02F was replaced, with the 02R96 – a console that has vague similarities in appearance to the DM2000. The 96 refers to the ability to sample at 96k – z as well as the more standard 48k – z. The DM2000 acquired this ability as well.

In 2003 the 01V was replaced with the 01V96, and the DM2000 came along, plugging a gap in the range.

But it was the release of the PM5D in 2004 that really changed things, this is unashamedly a live console, whereas many of the previous releases (above) are hybrids. PM5D immediately stole sales that may otherwise have gone to large format analogue boards – because it is self contained, the engine and the converters are all internal, so you plug your multicore in the back, just like a normal (analogue) console. People with existing multicores and splitters like this interchangeability, where you can use the same infrastructure for an existing analogue board, or the PM5D.

Finally last year we saw the M7 console arrive, and it is every part as significant as the PM5D, because the M7 gives you a lot of self contained console for the money, albeit with sample rate pegged at 48kHz, to stop the serious broadcast boffins from downsizing from a PM5D or a PM1D.

Following the history above, expect to see something between the PM5D and the PM1D this year,

perhaps. Yamaha have managed to control leaks from their development labs, and we've been fairly poor at predicting what they will do next. And also at knowing what is a Kando.

Prices:

01V 96: **\$5,795**

DM 1000: **\$9,500**

M7: from **\$24,000**

DM 2000: **\$33,000**

PM5D: from **\$72,000**

PM1D: around **\$250k**

MACKIE'S TT24 SITS ALONE

Mackie's TT24 sits at a retail price of under \$14k, well positioned with 24 analogue inputs on either XLR mic level or 6.5mm jack line level plus an insert point on each. All these inputs have in built compressor, a noise gate and a parametric EQ. It also has another 8 aux line inputs via 6.5mm jacks.

It has Left, Right and Centre main outputs plus another 8 matrix or group outputs (XLR) plus 12 aux outputs.

The TT24 has 24 main channel faders plus four subgroup faders



Yamaha PM5D.

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OLD RRP: \$1,450
\$1349

OPERA-SUB15
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FOH – V – MONITORS

It's all about outputs. Front of house mixing consoles usually need left, centre and right main outputs then have auxiliary outputs to feed effects devices and send discrete feeds to places.

Busses in a FOH console usually get chewed up by the need to send signal to sub groups, so that groups of vocal channels, brass, drums, guitars, choirs and things can be 'sub mastered'.

But a stage monitor console doesn't need main stereo or left/centre/right outputs, it needs stacks of discrete outputs, one for each 'send' of monitors and often times, plenty of stereo sends as well, to cater to the now standard in-ear monitor systems that proliferate.

So you can have a 20 or a 28 buss analogue console and it will be compromised in favour of performing either stage monitor duties (where there is no need for sub groups) or FOH (where there are subgroups).

The 'switch it either way' mode that Allen and Heath are most famous for, can be clunky and confusing. Invariably, the best stage monitor console is one that made to do that job, and likewise FOH.

This is where digital rules, because if the work surface is designed with stage monitors and FOH in mind, it'll do both – and most do.

(with two banks giving 8 subgroups). It can be optioned with the UFX11 card which gives full DSP the the 24 optical digital inputs.

In the future the U100 card will give networking capabilities to the TT24 allowing use of digital multicores and linking consoles together.

DIGICO STEER STEADY COURSE

CX had a world scoop when we spotted a strange console on a Rod Stewart tour four years or more ago. Stewart's tour manager and sound buy, Lars Broggard chased us out of the venue, muttering about deleting the photo.

The console was made by Soundtracs, a UK console manufacturer who had always lagged behind Soundcraft and Midas in stature, and who had implemented a disastrous strategy of making cheap analogue consoles with names like Topaz. They gave up trying to make money that way, and focused on a business that some people said would undo them.

Soundtracs make a digital production console, which in 2001 was making inroads in the difficult broadcast market. It was uphill for the firm, trying to sell an expensive high tech platform with the same brand name that they had taken all the way down market. But we were impressed with the technology, and so were the broadcasters we spoke to.

Enter Bob Doyle who was at the time the sales director for Midas, and

who was becoming frustrated with the corporate ownership wrangling that hung over the venerable brand at the time. He had lifted Midas into market leadership with his astute relationship building. Doyle is the kind of guy who remembers your name AND your status, years after you've last seen him. He is also a rare entity, someone who actually will help you when they say they will.

Doyle got together with an investor or two and purchased Soundtracs in 2002, which was ready to market the new digital live sound console we now know as the Digico D5. Re-branded and re-energised, the Digico name quickly shot to the top of the market and the D5 was off and running. He wisely kept the Soundtracs brand alive, and it sells a growing family of broadcast and post digital consoles that have direct DNA with the D5.

Yamaha suddenly had a direct competitor for the PM1D, which is a close equivalent in terms of market sector. You find D5 and PM1D at the most important events and in venues that work to exacting standards.

Then several years ago, Doyle downsized the D5 work surface by dropping 8 fader sets and produced the D1, which has the same engine and remote racks. It enabled him to offer a lower entry price point, and gave him something to sell against the new (at the time) Yamaha PM5D which is considerably lower in spec.

For now, Digico are focused on expanding card options for the D family, they launched a valve mic input card last year, and have cards for Tdif, Adat, Aviom and now Ethersound connectivity. The D family fibre optic multicore system is top class, and the console also has a theatre variant, the D5T that looks almost identical bar two extra snapshot buttons. But the D5T has a staggering 72 mix busses, and a full 32 x 32 matrix output.

Whatever Digico do next, it'll be widely watched.

Prices: D1 from **\$110k**
D5 around **\$250k**

INNOVASON ON THE FRINGE

French company Innovason do what many French companies do; they make an excellent product that is, um, very French. Their audio consoles have found great favour in broadcast and in fact there are more than a dozen examples sold into



Soundcraft Vi6.



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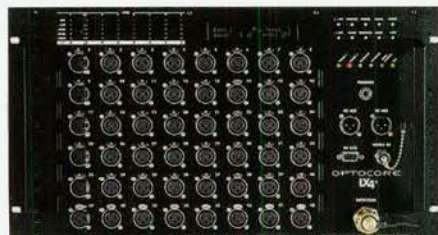
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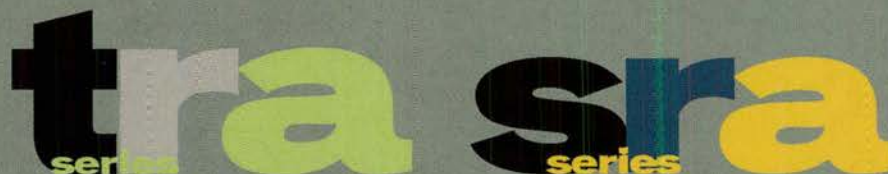
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ASHLY



Far too large. The DigiDesign Live D needs a control surface rethink.

Australia and New Zealand.

But Live engineers have been more reluctant, despite a strong effort by Production Audio Services, the distributor. One Sy 4E console has been sold to a live production company; AALT in Adelaide.

"They maybe went too far and took too much off the control surface", mused Graeme Stevenson from Production Audio Services. "Plus live guys are ferknickity", he added in a possible understatement.

But the Sy48 and the larger Sy80 have found plenty of fans overseas for live work, because of the unique ability for the operator to 'deploy' faders. Imagine channels 1 through 12 are for drums, then you could assign or 'deploy' fader number 13 as a drum master. Similarly, you choose which faders will be master or group faders.

The Sy48 is an update of the original Sy40 which was considered a little light on busses, the 24 busses on the Sy40 were stretched to 40 in the Sy48. The bigger Sy80 also has 40 busses.

In any case, Innovation have survived the first wave and the name is now well regarded for quality and for reliability.

Prices: Sy48 around **\$75k**

Sy80 around **\$150k**

THE REST OF THE MARKET

Roland had a good live console, but it appears to have been sanctioned. They have just release a pretty hot digital multicore system, so watch their space

Ramsa released the DA-7 several years ago, which is kind of a hybrid post production and live console. It hasn't made many inroads in Australia.

Euphonix are king of broadcast with the very sexy System Five, of which the Sydney Opera House own four. They use them live, as do some churches in the USA. System Five is a most unique solution, and one that is probably more suited to a very specific venue installation.

Midas are poised to ship the XL8, which is 'twice an XL4' in features,

they say, and we say it is even more. It appears to be the ducks nuts, and is pitched at a place above anything Yamaha and Digico now offer. We featured a preview in the last issue of CX. Prices not yet set, but expect to pay more than PM1D or D5.

Likewise Soundcraft are poised to show the Vi6, which is based on the Studer Vista console that arrived early last year in Europe. It has a similar heritage to Digico, in the sense that Soundtracs sorted out the operating system that became the D5, just as Studer have delivered for their sister company, Soundcraft. There was a Soundcraft live digital product three or four years ago, but it missed the mark, aimed at the low end of the market, with 24 channels. No word on prices.

Digidesign are one to watch, their Live system is gaining some converts and is now represented in Australia by Madison Technologies, whose Peter Jago knows a thing or two. We reviewed the prototype and while we were impressed at the fast bootup and the ability for the thing to keep going even when we pulled various cables out of it, it had some strangenesses – the one that worried us the most was the enormity of the work surface. And the mushroom knobs that obscured the lightup halo. But – they are serious, and they have some great technology. Digi were talking a surprisingly low pricepoint, but check with Madison.

EAW is a newcomer with the 24 buss UMX-96 console, and this one already has some orders in Australia before it gets here. It is like a PM5D, in that everything is in the one frame – you plug everything into the back. Priced in the 90k area, it will take on the Yamaha directly, and adds on features like the largest touch screen around and onboard Smartt plus a speaker drive processor. This one will sell at about \$95k.

Finally Allen and Heath will ship their 32 buss iLive series later this year, it is a control surface with separate rack and a starting point of \$50k – which is about right for a system like this. They offer three configurations, ranging from 112 to 176 ins or outs. The price target starts at \$50k.

There are some other systems out there, and you can bet you'll see a lot more before the weather gets hot again.

CX

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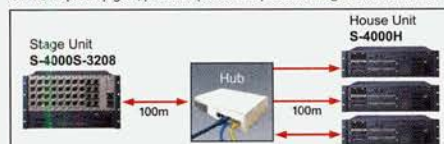
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POWER IN IMPOSSIBLE PLACES



An explanation of KVA, and tips and trips for anyone planning to utilise a generator.

By **JEFF MORGAN**

So you have been signed up for one of those productions, where the Producer thought it sounded like a good idea at the time the one that is out on a football ground, or in a paddock somewhere with the kangaroos and other wild life.

They want PA and lights, the all-

important fancy dinner and enough BLING to wow the client to keep them coming back for more.

The site meeting has been and gone, you find that of course the power situation is bleak to say the least. The power is 300M away and would be lucky to run the pie warmer in the local soccer clubhouse. So this is where a Generator (or Gen Set) comes in.

Where do you start to work out the size you need? And what in the world is a KVA? And no - KVA is not a make of generator, as someone once told me.

People have different methods, but I guess the basic thing to start with is what kind of load and how much of a load you are going to use. If you're a lighting person you add your loads up



Power on the road needs proper planning.

like any other show with your per cans and moving lights, keeping note of things like fluorescent lamps and things with ballasts.

Important also take into account the power that is needed to start everything up.

For the PA do a similar thing, talk to the sound people because idle load and full tilt audio load are different animals, plus be careful with startup, make sure each amplifier is turned on a few seconds apart. Then add it all up again for your catering and leave a bit of bluff space for all those little extras that just seem to make life hard sometimes at special events.

You have come up with a number, for example, 150,000Watts or 150KW. Where the K of course stands for one thousand! This is where we go down the tunnel of Electrical Principles. Cue: theme music to Close Encounters of the Third Kind.

Power is the amount of work done by an electrical current in relation to time. When current flows in a circuit with a resistance it does work, this is measured in Watts. The measurement KVA (1000VA) (three phase = amperes x voltage x 1.732 / 1000) is the actual load that is put on a power system. It takes in account Power Factor that is basically the measure of how good your rig/system uses power.

Power Factor or Pf has stuff called inductance, reactance and capacitance in it, a regular smorgasbord of electrical properties. Inductance and capacitance in a circuit cause the current to lag or lead your voltage in a sinusoidal wave (or

what looks to be a sine wave)...yes we are getting deep now.

Power factor can be any figure from unity (one) to less than unity (down to 0.3 or so leading or lagging). Resistive loads such as electric ovens and filament lamps are non-reactive, so are rated at a power factor of unity or close to unity (if we hit unity it can resonate, which is another problem again).

Inductive loads are reactive, as are capacitive, as Reactance is the by product of Capacitance and Inductance in an AC circuit and reacts a bit like a resistive load by restricting current flow. Inductive loads have low power factors like 0.6 or 0.5 - these can be like fluorescent and HMI lamps with magnetic ballasts.

How does this all help me pick my Gen Set?

Well when you look up your Gen Set web page or catalogue you will see a rating of 150Kva or 20kva etc. A lot of the time, you will also see the current rating next to it, so in a perfect world (Resistive loads) we use the calculation $KW = Kva \times P$ $150Kva \times Pf \text{ of } 1 = 150,000Watts$...bang on the money for our load we have, BUT...

Here is where the Pf and our fluorescent lamps and ballast equipment come into play.

Because we do not know exactly what the type of load we would place on a system, the Pf is often taken as 0.8, so we put this into our calc and we get a 150kva (generator) x 0.8 Pf = 120,000watts (209Amps) which is 30,000 watts less than what we need.

So a Gen Set at - lets say - 195Kva

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Noisy in here, but not outside. Remember to keep the TANKS full!

$\times 0.8\text{Pf} = 156,000\text{watts}$ (271Amps would be the right size. So 0.8 is a good pf to use to size your generator as using lower amounts lets say 0.3 and 0.5 etc take on a whole new ball game and electrical physics. (current waveform distortion harmonics etc etc etc yawn).

(Editor interjects: you have 150,000 watts of stuff, that is 150k, you need a 195Kva genset. If $150\text{K} = 0.8$ of 195 then we're there. Yep, calculator says it roughly is. So fudge factor load $(150\text{K}) + 30\% = 195$ and you are hosed.)

You might hear a term Power Factor Correction (PFC) used in relation to moving lights, lighting equipment and other types of equipment power supplies and the like. These have capacitors placed in them to try and bring the Power Factor back close to 1 thus using less power.

This would work like this: say we have 20 moving lights that have Power Factor correction, they have a 1200w discharge lamp and draw 8.5 amps on the name plate. That's a total of 170amps.

If they were not Pf corrected and because they are an inductive load they would draw almost double the current, anywhere between 320 and 360 amps yet your still only getting the same output out of the lamp, your lamp is not using more power, the system is, thus the need for Power Factor Correction (PFC). This theory works for generators and wired tails into to venue power

Power Factor Correction is a pretty important thing to consider. But just to throw a spanner in the works all this PF stuff is something called Apparent Power (not really real) and the Reactance, Inductive, AC, Capacitance,

Current, resonant, Wave Form Theory could go on forever until the cows come home. And we don't want the cows coming home, as they would be in the middle of your event, kangaroos and all!

THE KICKER.....

Another thing to take into consideration is fuel and how much you will use. An alternator runs most efficient at almost full load, so you may find you use less fuel at almost full load then at half, a bit like when you drive up the freeway and get really good fuel consumption yet you still weigh the same amount when you are doing only 60Kms around town. One of those strange physics things. Most generator companies will be able to tell you how much you will use in reference to percentage load.

I remember being at a large outdoor festival years ago and the 300Kva generator stopped for no apparent reason in the middle of a bands set.

As the word spread to the rest of the festival's production crew that the main venues Gen set had gone down, a crew of twenty or more tech's gathered around the big yellow box to give their two boss on row to get the machine running again. Two of the crew who were diesel mechanics, had all but the generator apart on the dusty ground.

One of the young fellas on the crew asked the question that I think everyone else had not really thought about or were afraid to ask! "Is there fuel in the tank?"

With a few shrugs from other crew members and a death stare from the mechanic, he picked up a stick and

placed it down the filler tube and pulled it out "DRY" ... Yep, after 25 minutes it was worked out by the youngest on the crew - that a Diesel engine needs fuel.

A mad dash was made for the fuel tanker and a few pumps of the primer on the Gen set and amazingly it started. Sometimes we should start at the simple end of the stick (no pun intended).

The Earth Stake, if it has one, use it, unless of course the generator ended up on a very nice new green Rebound Ace tennis court or something of the like. The Earthing system and safety RCD's will work much better and less nuisance tripping if your earth is sound. There is an urban myth if you place two or more RCD's in line, that the one before may become more sensitive and trip before the other. Some generators have RCDs that are able to be trimmed up or down in current. This can cause confusion at times as why the Generator RCD always seems to trip before your Distribution RCDs.

Always work out where you will put your generator. Nice firm ground away from the main function. Although new Gen sets have to meet International standards for noise, the look and smell of a hard working Gen Set is not the best for your guest or Bands set.

Doing an outside show for a Ballet Company some 10 years ago, a 90Kva generator was ordered. Much to our surprise a 490Kva set turned up on a tilt tray, all nine and half tons of it plus 340 litres of fuel. As a result it was placed some 100m away at the back of stage on a council car park, with which it slowly, but surely sank into the tar surface. The 250 metres of mains were pulled out that makes 1.25kms of cable, I guess they figured "big Gen Set needs lots of mains" and we were waiting for the free set of steak knives! All worked well until the wind changed and the big diesel placed what seemed to be a 747's worth of exhaust fumes onto the ballet, thus the Swan Lake looked like it became a battlefield, so placement is always very important.

If in any doubt at all, about anything, always talk to your Generator supplier. They are helpful and have a 24 hour service to most areas. Just make sure you leave enough power for everything else on these type of gigs. You never know when people will turn up with an Urn or hair dryer, or a..... Please can you plug this in for me?"

"You have HOW MANY?"

Jeff Morgan is an electrician and a lighting designer from Sydney.



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HEY, YOU GET OFF OF MY CLOUD

Reality is overrated in design

By **RICHARD CADENA**

If ever you feel like the deposits in your self esteem account are outpacing your withdrawals, you might consider letting your significant other loose with your ego credit card. That should take care of any excess balance you might have.

I only say that because it's true. And I know that because of last Sunday. That was the day of an event in which I was fortunate enough to be involved as a consultant working with several people on the production design. It was a massive event, Resurrection Day at Minute Maid Park in Houston, where 32,000 people came together to celebrate a special day. It was a challenging event in that the stages were to be placed on a baseball field, but it couldn't touch the grass. Nor could any of the crew touch the grass.

It's been a long time since I actually went to a baseball game, but I seem to recall that a large majority of it is actually played on the grass. In fact, I think that very little of the field is not grass. It's that "not grass" part that onto which we had to place a massive stage for 50 pieces of orchestra, several dignitaries, 600 people in blue and white robes (a.k.a. the choir), and a few talented folks like Clay Walker, CeCe Winans, and Wintley Phipps.

From the start we knew that there would be a live audience but we also knew it was going to DVD. Having little experience with set design and broadcast events, I was looking for a big name designer to work with. So I called up lighting designer Chas Herington (www.zenithlighting.com - Dire Straits, Steve Miller, Bob Dylan, Madonna, etc.) and asked if he knew any. Actually, Chas has a lot of experience with video and film and I think he's one of the most talented

designers I know. He and I also brought in Bill Strother (www.williamstrother.com - KISS, etc.), who is a very talented set and lighting designer. Together, we worked with technical director Mark Sepulveda, director Amanda Raska, video director John Pembroke, and lighting director Richard Blankenship, all from Second Baptist Church in Houston, who were hosting the event.

Our biggest concern was to make the video pictures look good, so we were very concerned about the close ups and the wide shots. We were also told that they didn't want a "rock concert" but they wanted a conservative look. They had done last year's event in the Toyota Center, home of the Houston

Rockets professional basketball team, so they had definite ideas about what they wanted. One of them was a good background for the cameras, especially when the pastor was on the pitcher's mound delivering the message. They had their in-house graphics department work up a design for four massive banners, each 10 feet wide and 30 feet tall. They were working on a stained glass image and they planned to place them across the centerfield warning track (which is not grass!) so they would be visible but slightly out of focus.

Another idea that Mark had was to plaster the ceiling of Minute Maid Park with projections of stained glass images. We discussed various ideas including using the biggest video projectors we could find, automated lighting, Pani or Pigi projectors, or a fleet of Robert Juliat followspots with stained glass gobos. But we were working in some very challenging conditions because the roof is somewhat translucent and one side of the stadium has enormous windows. The event was to be from

9:00 a.m. to noon - broad daylight in Houston in the spring, meaning major ambient light. We decided to take a chance and rent 18 Syncrolite SXB 7,000-watt xenon automated lights with scrolling colors and gobos. We crossed our fingers that they would read on the ceiling. If all else fails, we thought, at least they will look good on camera, especially in the wide shots with star filters in the cameras.

From the beginning, Chas immediately started thinking from the perspective of the camera. What would it see during the close ups? What would be in the background for the money shot (pastor on the mound)? We didn't like the answer, which was black skirting on the face of the 4' high stage, the legs of the dignitaries, the skirts of the dignitaries! Yikes! That started us thinking about designing some set pieces for the stage to act as a background for the close ups.

The first pass at a set design was immediately nixed. It was too gothic with too much religious symbolism. They wanted something more abstract. The clock was ticking and the set pieces still had to be built and shipped to the site. We opted to go with the same stained glass design they came up with for the banners. In the end it was a good decision because it circumvented all the approvals and saved precious time. Bill quickly rendered it to scale in Studio Max and I took his design and created a 3D model of the stadium, the stage, the set pieces and the banners in LD Assistant (a lighting design CAD program). We added some 9' columns to give the whole scene perspective and depth, and then we sent it off for approval. When the approvals came back we pulled the trigger, money changed hands and TW Design in Dallas spent the weekend building and painting three tri-panel screens, each nine feet



“No man is happy without a delusion of some kind. Delusions are as necessary to our happiness as realities.”
– Christian Nevell Bovee, author/lawyer

high and nine feet wide.

The lighting vendor, LD Systems, picked up and delivered the Syncrolites, the tri-panels and the columns. When I walked on site Saturday morning, Brent Sanders, the programmer from LD Systems, had all the fixtures up and working, and beaming onto the ceiling of Minute Maid. The problem was, I should have noticed them when I walked in, but the ambient light was just too much, even for 7K lights. When Mark pointed them out to me, my heart sank.

But it didn't take long for me to realize that they added a much needed dimension to the event. When I got a video monitor and switcher at the lighting FOH and I saw the first pictures, I was relieved. It looked great. Brent programmed some very tasteful sweeps and color changes and it justified, at least in my mind, the expense of the fixtures. It wasn't trivial.

The crew was busy making last minute preparations – setting up chairs on the stage, running cables everywhere, tweaking the audio. After sitting with Brent for an hour or so I turned my attention to the set pieces. The prior Wednesday, Mark had called me and said the AutoCAD drawing of the stadium that we had been given didn't match the real thing, and we lost a lot of the precious dirt on the downstage edge. Since that was where we had planned to put the main set piece, our background was in jeopardy. It was decided that we would have to build a bridge across the grass in order to place the set piece in front of the stage. We also had to set it up during a transition in the show and take it back down after the message was delivered. Otherwise it would interfere with the sight lines to the main stage. We had discussed several options to automate it, but we didn't have the time or money to deal with it. So we settled on manpower (or womanpower) to get it in and out of place. But given the very limited space we had for it, it was going to be a challenge.

Just before the first dress rehearsal, we found out that they had to put stairs on the downstage edge to allow the dignitaries to get up and down the stage with their dignity. That meant there was no room for the main set piece and it was struck. Ouch.

In the end, we had a beautiful set with a magnificent stage, majestic-looking columns, nice stained glass windows seemingly floating in mid-air behind the robed songbirds, and some beautiful pictures on video. It wasn't quite what we had in mind when we were drawing it up, but sometimes you have to make due with what you can get away with.

On show day, I sat in the cugout watching the monitor and surveying the live scene. My wife and daughter made the trip to Houston and at one point I made my way up to the arena level where they were sitting. I proudly pointed out the 18 Syncrolites, the six columns and the two set pieces, indicating our involvement.

I believe her exact response was, “It took three of you to come up with six columns and two set pieces? What's that, two columns apiece?”

My wife has a way of keeping my ego in check. It's called reality.

Is this thing on? Send your feedback to the author at rcadena@austin.rr.com.

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RAIDERS OF THE LOST REEL

Dumpster diving in the eternal quest for good sound



By **DUNCAN FRY**

The other day the factory next door to us had a big dumpster hopper out the front, piled high with a load of stuff they were clearing out. Every factory has to do this now and then, otherwise the amount of old bits and pieces that've been saved for a 'just in case we get asked for one in the next 25 years' event.

Unfortunately, I'm just the kind of person who can't walk past one of these things without having a good poke around in there. Don't get me started on Council non-burnable roadside rubbish collections, either. I've lost count of the number of times I've driven the little Suzuki home loaded to the roof and higher with things scavenged from the side of the road, only to put them out on my own nature strip 6 months later.

You know what they say – one man's crap is another man's priceless collectable. And I've got a whole house full of priceless collectibles!

To digress for a moment; I recently had to get my Fender Princeton blackface amp serviced, so I took it to someone (who shall remain nameless) whom I was told specialised in these items. When I got to his house, I could see why – every room, including the hallway, was piled up to the ceiling with old amplifiers of every description, plus Rhodes pianos and old Hammonds in various stages of repair.

"What does your wife think about all this?" I asked

"Oh, she's gone" he replied morosely. "She said that if I came home with one more piece of broken-down shit she was out of here...and as luck would have it, that morning I was offered a B3 in non-working condition for only \$100!" He looked at me with pleading eyes "How could anyone pass up a bargain like that?"

Anyway, while my place isn't quite as bad as that, I love to see what other people are chucking out, so during lunch I wandered next door and had a crawl around in their hopper. Luckily, most of it was rubbish – nothing worthwhile keeping at all, even for a

junk addict like myself with a zero dollar-a-day habit to support!

I crawled down just one more layer, and then 'Eureka' I saw it: a big old 60's era reel-to-reel tape recorder. Like finding a pearl in an oyster, I heaved it out – whoa, 30 kilos at least – clutched it to my heaving breast and staggered back to work with it.

The logo on it said Hitachi, although it looked very similar to any Sony, Akai, Toshiba etc of a similar era, and what's more, it still had a 7 inch tape and pickup reel loaded up ready to go!

It wasn't in what you might call tiptop condition; there was an enormous amount of tape oxide on every moving part, and it looked as though it had played it last tune in the early 70's and been left in the carport ever since. There was also some corrosion on the main drive spindle, but a little bit of TLC and a bottle of metho later, everything looked pretty good.

Tentatively I plugged it into the wall, and pressed the On button.

All the lights came on, the meters bounced, and the motors started grinding away happily. I clicked the Play button, the reels took up the tape slack, and with more rattling than a Holden Gemini diesel, off it went.

I plugged in a pair of headphones, and with a chucka chucka sound the haunting strains of Shaft (can yuh dig it?) filled the cans.

It didn't sound particularly sparkling, but it was loud and big sounding. Huge fat bass, not just the one note doof-doof common today, some mid range and not much high frequency. Just what everyone used to like about reel-to-reel sound, and the opposite, in fact, of a typical mp3 on an iPod.

I've often thought about getting myself an iPod. I bought a 4 Gb Nano as a Christmas present for Fifi Trixiebelles, and she's really happy with it, because even a cynic like me has to admit the iPod is a smart little package. The box, the internal packaging, stickers, and the slick design of the unit itself just screams 'buy me and instantly join the cool people's club.' It's also very carefully priced at just

below its competition, which means that you have to pay more for the lookalike than for the original!

She even likes the TV ads, which I personally can't stand. I wouldn't call myself a violent person, but the sight of those silhouetted wankers prancing around on the screen makes me want to drive an ice pick through their collective foreheads. Either that or change channels, whichever is easier!

The problem I have is that the only music path into an iPod is via the iTunes program, which from her point of view is fine. From my point of view, I don't like the way that iTunes wants to take over all the music on your computer, put it where it wants it, and tell you exactly what you can and can't do with it, all in the name of Digital Rights Management. Well, to paraphrase Herman Goering's comment on culture, "When I hear the words Digital Rights Management I reach for the Delete button!"

I've got lots of music in .wav and .mp3 format on my computer, stuff that I own from live performances, stuff other musicians have given me, works in progress, alternate takes, lots of original stuff that is really none of iTunes business. It's mine, and I'm not really happy with the idea of Apple/iTunes controlling all the music and multimedia that comes in and out of my computer, and how many times I can copy a track or a CD or even a TV show.

So I'm going to get a Creative one instead, one which doesn't mind what you do as long as you buy one, and also has a built-in microphone so I can dictate the Thoughts of Chairman Dunk as I drive to work.

I eventually sneaked the reel-to-reel back into next door's dumpster while nobody was looking. Although it looked OK, the heads and the bearings in the motors were all rooted and fixing it would have cost me much more than it was worth. The really amazing thing, though, was that after all these years it actually worked when you plugged it in, and provided listenable music.

Try getting that from a 38 year old iPod!

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by Roland

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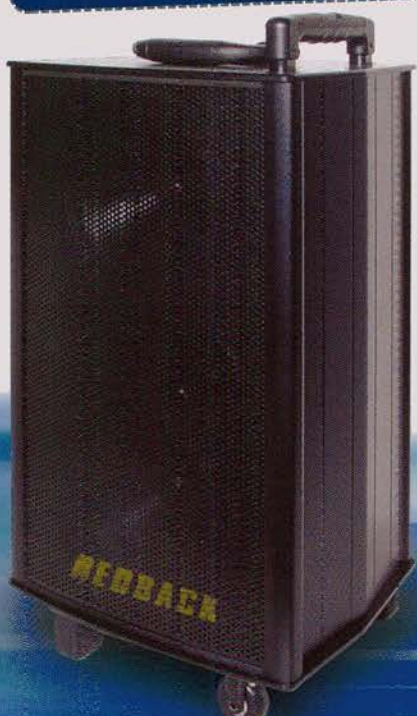
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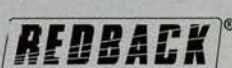




Photo by Bob King

SPLIT ENZ



Split Enz are back together and on tour in Australia after a break of a couple of decades! Trevor Cronin headed down to the second show at Rod Laver arena and got chatty with the front of house operators.



The 'Enz soundchecking at the Rod Laver Arena.

By TREVOR CRONIN

London based Englishman **Giles Woodhead** is front of house sound engineer for the Enz Australian tour. Sound engineering was a teenage hobby, helping out with mates bands, building small mixers.

The local pub was the start of regular paid gigs. 3 nights a week in Birmingham.

A couple of the bands there got a record deal and asked Giles to come on tour.

He has had a long association with the Finn Brothers as sound engineer on past tours locally and around the world. So He was offered the tour as a "known and trusted associate".

The Front of house bunker featured a large Midas XL4 mixing console and was full of tried and trusted analogue equipment and a few digital effects

machines.

Trevor J Cronin - Welcome to Melbourne Giles.

Giles Woodhead - Cheers mate!

T.C.: I see you must be a fan of good old analogue sound gear

G.W.: This type of setup still sounds the best. Digital boards are getting better and there are many reasons to use them these days, they save space (so promoters like them), cheaper to tour (less truck space) and all that. Audio wise The Midas XL4 console is still the benchmark as far as sound quality is concerned.

With a band like Split Enz, we use good quality Microphones to pick up good sounds on stage fed into a good desk and fed in to a good quality PA system. You turn it up and it just sounds good, and that is all there is to it.. With digital consoles, I find they are a bit of a bottle neck to producing all the lovely rich tones.

T.C.: It's great to see you have gone to the extra expense of carting all this gear on tour, for the sake of sound quality!

G.W.: They are an analogue band from analogue times. I wish we were recording the show on analogue tape as well.

T.C.: Take us on a tour of what you are doing with the sound on the show?

G.W.: We have 2 drummers in the Band, Noel and Mal. So we have 2 complete drum setups. A percussion setup, a Bass DI and microphone. Then there's Neil Finn's collection of Guitar inputs- acoustic 6 string, mandolin, Fender deluxe and a Vox AC30 vintage amp. Tim Finn plays acoustic and electric guitars, and an electric Piano plugged into a couple of countryman DI's. Eddie Raynor has a whole bunch of synths which he sub mixes himself on stage and sends me a Left Right mix.

Finally there are 7 vocal channels scattered around the stage.

T.C.: What vocal microphones are you using?

G.W.: The Audex OM 6 and a Shure Beta 58a radio microphone that Tim runs around stage with.

The Audex have proved to be a really intelligible microphone, they have a smoother midrange than the Shure Beta. I think the Audex sound more natural, more transparent.

T.C.: I noticed that you have had a really nice vocal sound during the sound check, what compressors are you using on the vocals?

G.W.: Avalon 737 Valve Mic Pre

Compressor EQ units on Tim and Neil, the various mic's they use on stage positions are bussed through the console to 2 dedicated units, one for Tim and one for Neil.

The show is fairly fluid at times, I'm never exactly certain which mic they will use, anything can happen. It's Rock n Roll; I just watch it and follow the action.

That's another reason not to worry about having to do lot's of programming on a digital console.

T.C.: What other outboard equipment are you using?

G.W.: Drawmer noise gates on the drum kits. DBX 1066 are used as generic compressors on the various instruments. TC Electronic D2 for various delays and the TC 6000 system for all the other effects, reverbs etcetera. It's a 4-engine machine with a touch screen flying fader remote control; it's great as you don't have to move away from the mix position to change things and the LCD screen is easy to see.

T.C.: Did you get much rehearsal time before the tour started?

G.W.: We did 3 days band rehearsal here in Melbourne, then 2 Days with full production at the Brisbane entertainment center before the first show.

T.C.: So how is the show going so far from your point of view?

G.W.: It's excellent, a really good show to mix, lot's of fun. I'm lucky to be here, it's thoroughly enjoyable.

T.C.: Any more touring with the band



Sound engineer Giles Woodhead.



Rocky, the Lighting dude.



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on the horizon after this tour?

G.W.: There are some New Zealand dates planned, to open a new venue in Auckland. The venue isn't quite finished yet, so we are not quite sure when that will be, hopefully before the end of the year.

T.C.: Enter **Pat Richardson**, Jands sound system engineer.

Hi Pat would you like to tell us a bit about the speaker system you have here with Spitz?

P.R.: We are using one of our standard 36 box V'dosc concert systems, it's set up to suit just about all the big arenas. We have refined it over the last 6 years so it works very well, pretty perfect.

I don't think we have ever had a complaint!

T.C.: How long does it take to set up?

P.R.: It's pretty quick, we wandered in at about 8 in the morning with the loaders and at 10:15 we were all patched in and ready to go. For this show we had to run our speaker cables above that 88 foot wide lighting truss for aesthetic reasons. So that's why we started so early before the lights came in. The rig consists of a typical 4 hang system, 6 V'dosc's on the side and 3 DV's. The front hang is 12 and 3 with a front fill of 4 arcs and 24 SB218 Subs.

T.C.: Is it working well here? How was last night's show?

P.R.: Giles is doing a fantastic job, really producing live the original feel of the albums.

The crowd loves it; we have had

great crowd reactions every night. It's a pretty special tour for us.

Parked out the back of the Venue recording the show was Ernie Rose with his Metropolis mobile truck. Recording engineer Brian McMahon ran the Sony 48 track recorder and a Protocols HD rig.

Ernie also did a live 2 track mix to DAT. A Yamaha PM4000 console fed the multi track systems.

An assistant called him about the instrumentation of the upcoming songs, allowing unused channels to be muted via the VCA faders. Recording the show on 3 different mediums allows for a large degree of safety just in case of a system fault. This attention to security has given

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It was never easy for **The Enz** when they lobbied from New Zealand around 1975. The scene here wasn't quite right for a bunch of theatrical looking guys with white makeup. The band bought the old Hush truck, and scratched out the two letter's H. I remember Noel Crombie's girlfriend Rae-wyn Turner would do lights. They got big because they recorded those absolute classic songs, like 'I got You' and 'I hope I never'. They were a band where a show was an event, something unique. That they could sell so many tickets in 2006 and at international 'premium' pricepoints says volumes about what a classic, never to be repeated era they came from.

- JG

the Mobile a great reputation in the live recording world.

The Metropolis mobile is a regular feature back stage at big shows in Melbourne and has produced live recordings and broadcast feeds for most of the big-ticket shows.

LIGHTS

Melbourne based lighting designer "Rocky" was looking after the visuals. The lighting rig came from Bytecraft.

Rocky first met the band many years ago in 1980 as a lighting rigger on a Split Enz tour where he was operating the light show for the support act "The Sports".

So 26 years later "Rocky" is the main man. Let's check out his rig **Rocky**- There has been a heap of work gone into producing what you see here tonight.

The Original idea was to have 3 or 4 Kabuki trusses. Then in meetings with Noel Crombie (drummer and set designer) we decided to go with that idea featuring his hand designed backdrops. Starting with a small stage space and revealing more and more, making the stage bigger and bigger as the show went on. We start with a black Tab track curtain behind the opening act (Evermore), which hides all of our set. As our show starts this opens revealing the first backdrop, 6 songs in this drops revealing Noels next work of art. The next on is on a Tab track and we open that slowly later in the show to reveal the last backdrop.

T.C.: What type of lights are you using?

R.: It's nearly all Martin gear, there's 32 moving profiles and 34 moving washes, all Mac 2000's.

Then there's 7 ETC Source 4 profiles, and 4 Citi colours which are made by studio G, which are architectural lights generally used to light the outside of buildings, we use them at the back to light the very last drape. There are 18 Atomic strobes. We had to use so many lights due to the way the stage works with the 4 layers.

Up in the truss we have a bunch of LED lights, 27 Croma bank panels, this is my first time using them and they work great. I really wanted to get away from using bunch of mole fay blinders.

For "I see red" we have 4 red searchlights that spin around the room and turn the whole place red.

Finally there are 6 follow spots and a bunch of pin spots.

It's all controlled by a couple of Whole hog 2 consoles.

As you can imagine a show like this takes a lot of programming and a lot of focusing, so I started the process by going to a WYIWYG studio. It uses a projector on a wall, kind of virtual reality with a guy named Andy Mutton he runs a company called Lightning Lighting in South Melbourne.

We did 6 days in the studio, a whole day was spent just on the focus. It was a great head start and we were really in great shape when we arrived at the first venue. I'd really recommend checking that system out before you start to set up a big lighting system. We went up to Brisbane and did 2 days rehearsal at the venue, the second day being a full dress rehearsal with a small audience.

This made opening night a lot easier as we had it well and truly dialed in.

The 4 person Bytecraft crew have been great getting it up in just a couple of hours flat.

T.C.: And the result was a fantastic show thoroughly enjoyed by all (apart from one chap I saw the bouncers throw out) The stage looked amazing and Rocky was spot on with his cues and vibe with the light show.

I think it was one of the most connected shows (Music/band/lights) that I have ever seen.

Full house so even the promoter was happy.

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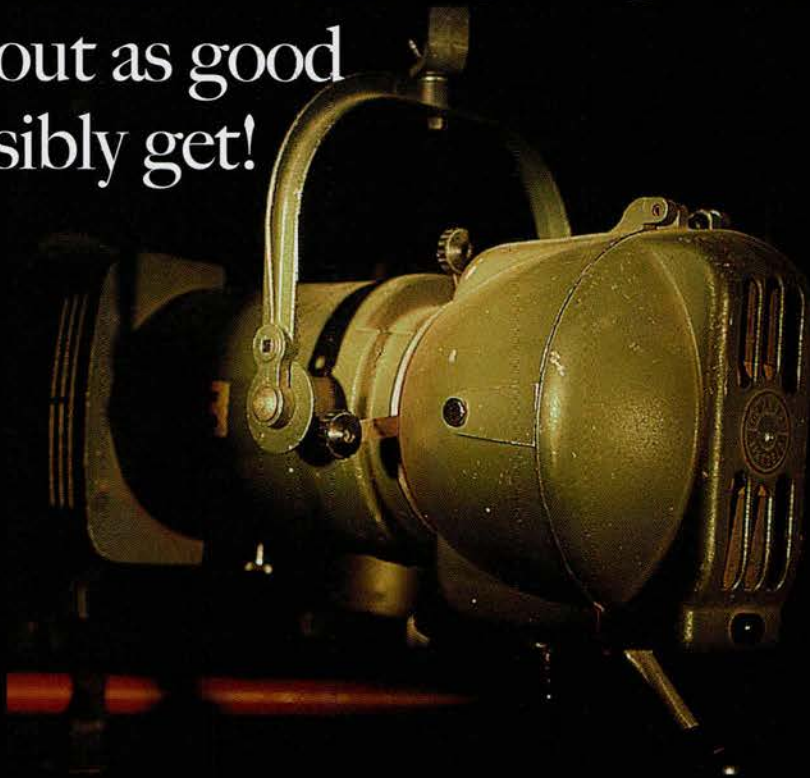
Patt 243: 2000w fresnels kick freckle!



Patt 750: Strand's ill fated answer to the Par 64. Cost far too much.



Pat 774. Greg Yates doesn't like 'em.



By GREG YATES

Old lights.... Old and garbage or possibly the best product ever released? Greg "GY" Yates has a look at some products released over the last 50 odd years and finds out just what is still going and holding up to, or possibly out performing the latest offerings from manufacturers. Apologies in advance to the manufacturers working to make better product and then sell it!

CCT and Hamilton + Baker are two names that bring many varied thoughts to a lighting guy's mind. Names that at times may not be particularly complementary. We all come across lights and lighting equipment that is often older than yourself (including myself and Julius!).

We find this gear in all manner of places and venues ranging from the local community or school hall through to major venues within our cities. Some of it should have definitely been retired long ago, other gear is still performing quite well and serves a useful purpose. Other items are the best for where they are and what they are doing. Some gear

should never have left the manufacturer's factory or even got past the drawing board stage (drawing boards were used before CAD).

So what do we do with this old gear? Do we dismiss it all as old and tired and past its use-by date or do we embrace the fact that many of the lights are still working and in many cases have qualities and characteristics that are equal to or better than those found in some new product on offer today.

Over the years there have been some great failures in the world of lighting fixtures, where you sit back and think - what were they thinking? Strand, being one of the world's great lighting manufacturers, has had some hits and misses over the years. Fortunately the hits have outnumbered the misses.

Possibly the biggest hit for Strand was the Pattern 23 500W baby profile spot, AKA the "Patt 23". The Pattern 23 was the first mass-produced theatre spotlight in the world. They were die-casted by the 5000 for a market in which a gross (144) was thought to be an outsize batch. It was a product line destined to run for thirty years from 1953 to 1983.

Something like 500,000 were eventually made. There were variations on the basic design – the original 23 had no shutters and a plain reflector. The 23 S had shutters, but a square gate, which bothered a lot of people! Then came the Mk2 (Patt 23II) with shutters, a round gate and a faceted reflector.

The Mk2 was a huge improvement over the original. The beam quality was improved and the shutters – wow what a concept! This lantern still wins massively because it's so small. Its output for the size is phenomenal. They are easy to repair and maintain. There are few moving parts or parts that wear out. The saddest part is that the high aluminum content of the lamp house makes these lights perfect for the scrap metal yard. I have heard so many stories of these lamps ending up there. Thankfully there are still hundreds of these fixtures out there performing their task daily. There are even people selling upgrade kits for them to refit them with newer lamp types. Another handy fact is that you can put a 1000W lamp in a 23. Makes a great effect for a few minutes. A very bright special.

Another hit in one aspect was the Patt 264 1000W Profile with the two sets of shutters – one soft and the other hard. This was a great idea and one that would be nice to possibly see again. These lamps did OK in the light output and control department, but their downfall was the fact that the lamp base was at the top of the lamp house and all the heat just went straight up and fried the P28 base. The lamps in these were long and thin too and were chronically fragile.

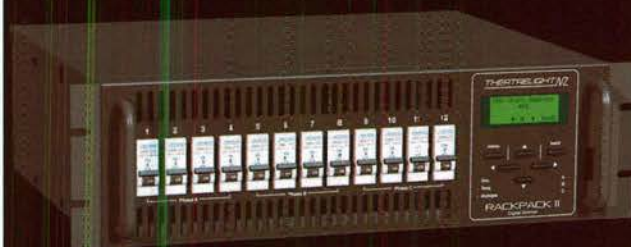
These lights were also a silly shape that did not make them particularly friendly in some locations. There were some Patt 264's hanging on the rear circle ceiling of the Theatre Royal in Hobart until recently after many years of solid service and replaced by Selecon Pacifics. They were doing a great job, probably because they hadn't moved for years! The Patt 264 was superseded by the Patt 764 which used the T19 base down lamp, tungsten halogen as well. Not a bad unit. The issues with frying the lamp base were over. The '7' series were finished in Rank Green, as were later models of the Patt 23 II.

The Patt 774 profile on the other hand was definitely one of Strand's lower moments. This behemoth of a light was big and not very efficient at all. I remember Roger Barrett playing with one of them years ago trying to improve the output and optics, something about the wrong lens installed is all I can remember him mumbling!

While on the topic of big heavy and not that efficient, you can't go past the Harmony range of profiles from Strand. What a pretty sad bunch of amps they were. At least when Strand released the Harmony they also released the Preludes. The Prels at 350 watts were pretty close to the 1k Harmony's output and like half the size. The Preludes are still a good lamp, apart from the jug plug power lead set up which is always breaking. Hardwiring them is the solution. I have not seen any Harmony's in a venue for years. I think they made excellent scrap metal. There was plenty of it.

While still in Strand land there is the Patt 223 (later the Patt 743 with a different newer T Class lamp) 1000 watt Fresnel. The BIG 8" (200mm) lens is a definite winner. This is the same size as a Par 64 lamp and a VL5. You get lots of light out the front from the big lens. It's big and soft. Looks good to the eye and it's also gentle on the gel since there is plenty of area to disperse heat. I don't understand why current manufacturers such as Selecon have gone for 6" or 7" lenses. I prefer the light from a

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Hamilton and Baker vs. Strand Pat 23.

Fatt 223 or 743 any day. Wider and softer. Again there are plenty of these units out there.

The Pat 223's little brother is the Pat 123 500W Fresnel. These are the "egg" shaped lights, or as someone once described them to me, "like Madonna's breasts" (you need to remember her cone-shaped Gaultier bra). Great little units (not really referring to Madonna). Just used some as truss toners in 300mm tri truss. Worked a treat. Old skool lights new skool. They also did very nicely at lighting the stage too.

CCT, another English brand, deserves a mention at this stage. Anybody who has been around a while will remember the Silhouette 30. A workhorse in its day. I can't remember the last time I saw some CCT product out there though. It was generally not that good. Too many issues with the build quality and trying to maintain or get good optical line ups. CCT's range of 650 watt profiles and Fresnels, especially the profiles always had a "toy" quality about them. They resembled the really old toys made of sheet metal. Maybe the CCT stuff was made in the same factory.

Somewhere around the 1950's or 60's a Sydney company by the name of Hamilton and Baker started to manufacture theatre lights. Generally the product was direct competition to the product on offer from Strand at the time. From what I understand this was driven by the pressure from government contracts fitting out school auditoriums. Tariffs and protectionism stuff.

If a supplier could provide an Australian manufactured product that met the specification and the price was right they won the bid. The fact

that the quality of these lights was far inferior to and nearly a direct copy of Strands did not matter; large quantities of these lights were sold. H+B would probably be facing a law suite if they tried that today (doesn't stop the Chinese though).

Thankfully there are very few remaining in service. H+B manufactured a bifocal zoom 500watt spot at one stage – try and get a nice image out of them. Impossible. There is one point where the two lenses work together correctly, otherwise you can get output that that resembles a bob or at the other extreme a very nice projection of the filament. Maybe that's an inbuilt gobo effect...and we thought VariLite were the first to do that sort of thing. The best use I have seen for H+B stuff is to retrofit them with 50W MR16 lamps. Probably the same light output as the original 500W!

Other gear that is still out there doing fine is things like the S63 compartment batten and the Pat 60 500 watt flood. Both these items carry on just fine, maybe not the best or brightest light source, a light source still the same.

Most Fresnels are going fine too. This is probably due to the fact that Augustin Jean Fresnel (1788 – 1827) who invented the Fresnel lens did it a long time ago and manufacturers have had many years to perfect it.

Any product from Ivole Richardson is generally still great and worth keeping. They made great Fresnels and continue to do so primarily for the TV and film markets. Obviously there was a huge lack of knowledge and ability on the part of the profile designers back then, since that is where most older lights suffer. Current manufactures, with obvious special



Pat 23F – yes, they even had a model with a fresnel lens. Go figure...

mention to Selecon for the Pacifics and ETC with their Source Fours, have taken the quality of the optics and heat management to levels that were beyond the dreams and possibilities of manufacturers past.

Australia by the very fact we are British by heritage has always had a huge representation of British lights and lighting methods. Strand had been the largest supplier into the Australian market probably up till the early 80's. At around that time the Americans started to influence our lighting. Take for example the LEKO, created by Charles Levy and Ed Kook.

These guys were working for Century lighting in the US. They must have made an impact since the term LEKO has stuck and is often commonly used to describe any ERS (Ellipsoidal Reflector Spotlight). This light is the forefather of modern lights such as the Source Four profiles. Along the way from the first LEKO to the present we have had all manner of variations on them. Manufacturers such as Colortran and Altman all churned out large quantities of 750 or 1000 watt profiles.

Altman with the 360Q was the mainstay of theatre for a number of years. Unfortunately these lights did not travel all that well in the Australian conditions mainly due to lamp voltage and heat issues. The coiled filament was the downfall. The 240 volt version, FEP, had a relatively short life span and was rather fragile. The other annoying thing about these lights was how the beam angle was described. A 6 x 9 is how many degrees? About 37.

Thankfully manufacturers now just go for the degrees. I would be surprised if there are any installs of 360Q remaining in Australia, and I know they sit on the shelves at the



Patt 23 Mk1. The first.

hire companies these days.

Another legacy of older lights and installs is that often lighting positions in venues were designed to take a particular brand or type of fixture. I am always amused when I see a position that was obviously designed and built around the time of the old Strand Patt 263/4 "banana" light with a lamp base UP setup and there are Pacifics installed there now with their base DOWN. Try changing the lamp easily (I would have installed something with an arc lamp tray such as Source Fours or Snakespeare or SL).

My other favourite is one I saw again recently. In an older club whose Front of House lighting positions that were originally designed for the likes of Patt 23 there were PAR 64 installed. Beam control was non-existent and the amount of light in the room was massive. At least lamp life was good. Oh well what do you do...

So the quest now is to find the oldest lights still out there working and performing. I would be very interested to see and hear about some installations or lights that still exist. I have not even started with dimmers and control. I'm sure there must be some absolutely classic gear buried out there in the boondocks of Australia, or perhaps in our major venues in the capital cities. Hopefully the gear is performing to an acceptable level. Just because it's old doesn't make it obsolete or unacceptable for use. As I have hopefully shown there is a lot of merit to be found in the product of old. At the same time there is a lot of garbage and product that has been retired with good reason.

There is now just one more task that manufacturers need to deal with..... THE LOCK OFF ON THE YOLK. How many times have we had to lift a light higher than needed and then let it drop back to its intended position. Maybe in another 200 odd years manufacturers will have perfected the lock off, just like they have done in the past with Monsieur Fresnel's invention.

Thanks to Chris Rorty and Gillian Hawke at Stage and Studio for the product to photograph. Special thanks to the manufacturers who have designed some classic gear over the years. Special mention must go to Strand for the Patt 45 (a tin box with a globe) how more inspired could one get!. For more information check out

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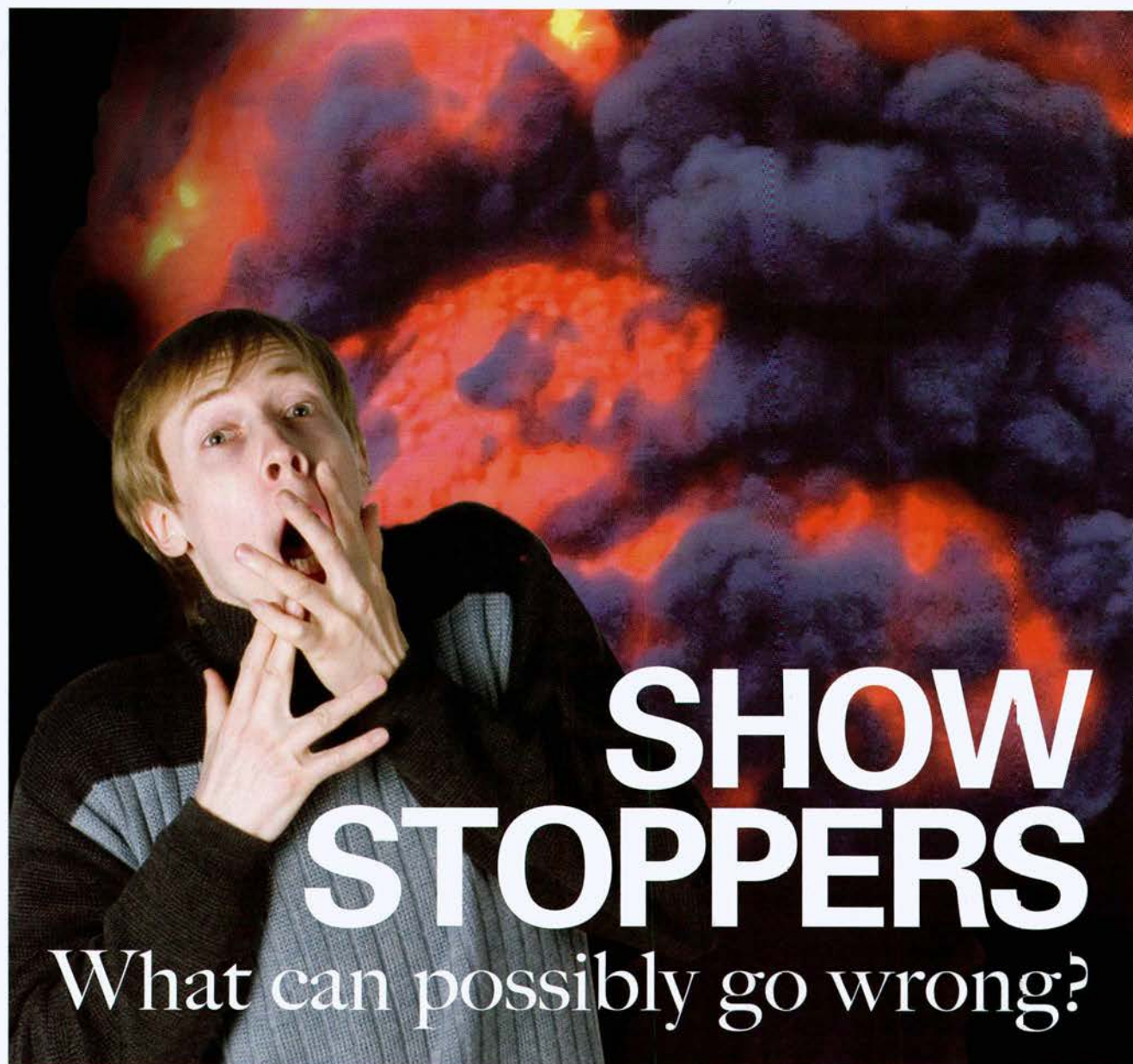
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SHOW STOPPERS

What can possibly go wrong?

By JULIUS GRAFTON

Join us on a terrible trip, where your status as hero audio engineer is suddenly threatened in one career stopping nanosecond. Sure, you've planned for those PREDICTABLE scenarios, like the FOH console power supply going on the fritz. Or the failure of a mic or wireless line. Sure, sure. Or even an amp catching fire. Sure. No, your fearless CX team have been to the dark side, the place where the music stops, and a house full of happy heads turn towards you, no longer happy. Read on as Andy Mackenzie and Julius Grafton 'fess up...

Picture the scene: a room full of jazz buffs enjoying the festival concert – an allstar affair including all the big acts on the festival. The whole thing

has been a great success this year and everyone's happy. Denny (name changed to protect the guilty), the festival's artist liaison guy, is particularly happy as his favourite performer is currently on stage. So excited is Denny, he performs a little dance of joy in the wings, kicking out the mains lead supplying the PA in the process.

Show stops.

Audience, as one, turn to look at audio guy.

Audio guy is gobsmacked. The PA which was working perfectly only seconds before has stopped dead. For no apparent reason.

Audio guy quickly ascertains that he has no power at FOH position, heads off to check the amplifiers. When he arrives beside the stage, everything looks fine – the problem must be at FOH. When he gets back to FOH,

everything there is working again.

It wasn't until some hours later that Denny confessed his sins, and explained that as soon as he realized what he'd done, he put it back the way it was.

- AM

Seven minutes to go, and the foldback desk dies. The op panics, and starts yelling for another power supply. I notice the rack of wireless beside it is also dead, and point out that we have a power problem. We grab out mobile phones, hit the button to turn them into a torch, and assess the circuit breakers.

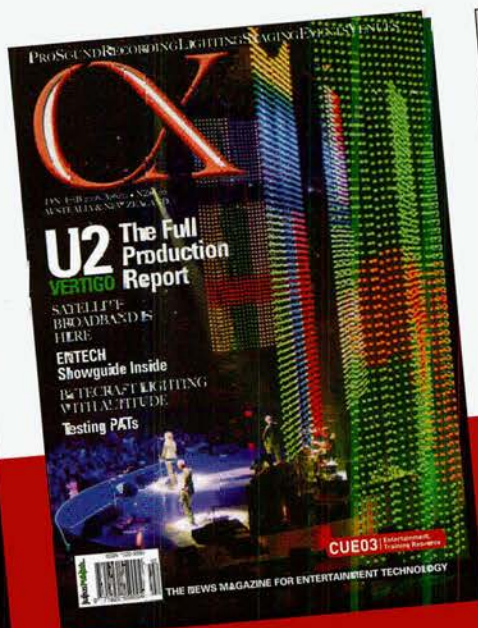
"What does this yellow reset button do? Because the breaker keeps tripping..."

"That's the test button on the RCD", I reply. "What's an RCD" is the comeback, so I explain quickly and add, "What has changed on this

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stage, in the last ten minutes?

Sure enough, a bubble machine has been plugged in by someone, probably a lightie, and it is on the same circuit as the stage monitor system. People often get confused about power circuits – a power point is just one of as many as six others, all on ONE circuit. The bubble machine is ingesting it's own fluid, and there is current on the earth wire, thus the residual current device (RCD) will trip, to protect lives.

And to stop stage monitors. - JG

Also while talking about RCDs, there is the story of a major sporting match a few years ago, where a rock idol, let's call him Willy Idol, does a big entrance on a thing mocked up to look like a hovercraft. He enters the coliseum from the vomitory (OK, enters the stadium from an entry point, but the foregoing sounded better, alright?) and motors towards the stage, right fist clenched up in the 'Let's Rock pose.

Terribly exciting!

Jumping onstage, the drummer goes to count in the song, and the backline all goes dark. An RCD has done its thing, at the worst possible time. The word is that an item of band equipment, imported from the USA, has disgraced itself.

Because it is live TV, the producer counts out the segment, which means

the stage crew have an impossible ten seconds to make it all work. It doesn't, and Billy makes his exit. - JG

Same theme, different problem.

The occasion is the launch of a new sound system, and the audience are the who's who of the audio business. A fickle bunch, and they are wading into the free beer and clustering around the mixing console to needle the team who are about to demo the system.

I can name names, because it was all my idea. The PA was called The Smart System, and the event was in Sydney a long, long time ago. I reasoned that if I put on a band, and it sounded good, people would be impressed. Simple.

Behind the curtain was Stormy Monday who were a very hard working covers band in the mid 1980's. They would open the set with a Huey Lewis number, 'Heart of Rock of Roll (is still beating)' and the rest would be history.

Before the curtain opened there was a certain sequence involving implied and exaggerated claims about the fabulous PA, which was lit up on each side of the stage. Some less cynical soundies were examining the boxes and racks, and generally muttering that it could not possibly be loud enough.

Sure enough, the curtain opens on

cue and the band strike up – followed by a massive series of blats and pops and crashes through the PA, which frankly sound like the system is self destructing, tearing itself apart. The band toil on, trying to keep time against this cacophony of off beats and earth shaking electronic farting.

I'm ashamed to say I took off, running down the fire exit backstage in blind disgrace, down George street, and up the main entrance stairs, running under the bouncers arms and skidding to a halt at the back of the venue, surveying the chaos. Laughing soundies, half doubled over, some with fingers in ears, band playing looking uncomfortable, wife fainted on floor being fanned by worried onlookers.

Hero stage guy unplugs the synthesizer and noise stops, it was the active wire in the piggy back plug arcing. A loose screw. - JG

Speaking of a loose screw, I was doing sound for the now jailed Gary Glitter who had a barn storming career. His glam rock schlock sold well, and each gig was crammed. The show featured The Glitter Band, made up of guys in silver glitter suits and The Star itself in crazy high platform shoes and a genuine chrome cod piece. Amongst other exciting bits.

I'm not sure whether it was the



excitement of the offstage antics or just the power of mixing a full tilt glam rock show, but by mid tour I was more than a little tired. This was a very big gig, and showtime was later than usual since it was a triple header on a Friday night.

When the cue came, the intro tape went on, and it should have been audible after a few seconds, because it was a heart beat that rose in level. But the tape was rolling through the blackout, and nothing was happening other than the channel input VU, which was nicely lit up with each beat.

I decided that with everything lit up in the drive rack, I must have an amp rack power failure, and the stage monitor guy couldn't get into the corner where the racks were, so I somehow got from FOH to the racks, through the crowd, and saw all was lit up and idle.

Surviving the ferret run back through the raining fists and showers of beer knocked from unsuspecting lips, I looked at the console, master faders slammed up to maximum and thought gee, are those master mute buttons on or off?

You've guessed the rest, the PA slammed into overdrive and the band picked up the beat. That desk had no warning lights for the mute buttons. Ever since I have never specc'd a console without them.

But of course it was operator error.

- JG

Shows that stop because the power fails are the most common, but what if you've overloaded a circuit and what if there is an old fashioned fuse in the board instead of a circuit breaker? Lucky this is not common any more, but this is still a lesson for older houses, right?

Pulling the blown fuse is risky with the main switch still on, and shouldn't be attempted.

What is insanely bad is to change the fuse wire, and to re-insert the fuse with the full load still hanging off the stage end, and the main switch on. Well, you needed the rest of the venue to function, didn't you? And if you turn OFF the main switch, the place will be dark and the couple of hundred unhappy people (so the show has stopped, what is the problem with that?) will go feral. Yes?

Anyhow, I remember very, very well the big zaa-a-p-p as the power came out to get my sweaty fingers when the fuse was almost in, and I never did push that big porcelain fuse into its receptacle. I was quivering and convulsing on the floor for a while, synapses fried and smoke curling off my burnt fingers. The fuse lay in broken bits around me.

You could even lay the blame for my current condition on that shocking moment!

- JG

I had a show once that didn't stop, but I had to leave in a very big hurry. It was a 1970's suburban dance in a community hall in a rough suburb. A nasty ugly pimple faced teenager was slapping a girl on the head, and I went straight over and clipped his wingnuts. Nasty little turd.

His gang rounded on me and I was forced to jump out the window behind the lighting desk. The run to the van was complicated by the frantic grapple for the keys in my tight jean pocket. I've never run so fast.

I heard the pounding pursuit of the gang and almost felt them as I threw the key into the lock, twisted counterclockwise, and somehow got inside and locked

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the door as the gronk community threw themselves into the side of the van like demented lemmings.

I drove away in a screeching arc of flung and scattering sharpies, who had managed to do little damage to the van. I sat in a side street and waited until everyone else had left, then scuttled back in and to my amazement saw that all my lighting equipment was exactly as left, and not trashed. - JG

On top of a mountain in the NSW ski fields is a restaurant at the top of a chair lift, a regular venue for gigs at the jazz and blues festivals. Next door to the restaurant is the colossal antenna farm which keeps the resort in contact with the outside world.

The venue is a tiny bit prone to RF interference – sure it's a fairly low powered repeater, but it's right outside the window.

After a few years, and having tried a few solutions, I had the problem nailed as far as interference with the PA goes. The first few gigs of the weekend had gone without a hitch, and I was content...until I went up the hill for a gig with a piano player.

Pianos being heavy, he had wisely decided not to take a real one up on the chairlift. Instead he took a sensibly lightweight electronic version. As soon as we connected this to the PA...

2KY racing radio was not exactly what the assembled hordes were expecting. To me the solution was immediately obvious – one of the unbalanced leads or the DI must be picking up the interference. So we swapped out a couple of leads, tested everything we could find and were still able to enjoy 2KY. While I kept trying to find the problem, the pianist plugged his headphones in to do a bit of practice, and his eyes widened when he realized that he too was able to experience the joys of racing.

Turns out there must be a PCB track or cable loom in that particular keyboard that was just the right length to tune in 2KY. All we had to do was turn the keyboard 90 degrees and the problem all but disappeared. Now tell me again, I've forgotten, why is it that musical instruments and such don't need shielding or balanced lines? - AM

Some years ago I was dealing with a splendid piece of musical theatre (the exact details have been suppressed by my brain's self-defense

mechanisms) and after about a week, I started to notice some strange noises creeping into the system. They were all little intermittent hums and it took some time to identify the source.

All the noise was coming from the radio mic receivers. I tried everything I could think of – different mics, different transmitters, moving the antennae, different frequencies, everything. None of this made the slightest difference. The noise was developing inside some of the receivers.

Undaunted, I put in some new receivers to replace the faulty ones and off we went again.

All was well for a few shows, but then some of the receivers started getting noisy again. Meanwhile, word filtered back to me that the original 'faulty' units were working fine.

The problem stemmed from using a low budget console with a combination of wireless and condenser mics. That's right, folks, all the noise was a result of the radio rigs having 48V fed in to their electronically balanced outputs. Apparently the output ICs don't operate well under these conditions.

So next time someone selling cheap consoles tells you separate phantom switches for each channel are unnecessary... - AM

The moving light programmer

isn't the fastest at his craft, but hey – he got it all done after three solid hours at the gig. The show is programmed but whoa – the desk is now stopped. There is an hour and a half until showtime, and of course the show is corporate.

That means lots of people in suits with big wallets. And presumably big attorneys, waiting for a new brief. Like, "the show didn't happen, sue someone!" Ouch, one nuked lighting console, a whole production of lights, sound, video and extensive staging, drapes, screens and over a hundred expensive hours of labour, transport, gear, gaff... All not paid, with potential damages added on. And legal costs. The horror, the horror...

So naturally some incentivisation beyond simple career enhancement existed. A semi frantic call is made to the hire company. "Send another console" is the short version. Visions of minions flying out into the warehouse, relieved to find a working replacement of exactly the same type sitting quietly on a shelf. Wow!

The company responds in famous

style with the fastest available Hiace fanging down the road, two wheeled cornering, and then the driver progresses at very hasty rate into the venue, lugging entire replacement console including roadcase on broad shoulders. Sighs of relief abound. Joy is restored.

Hiace departs in part hour traffic with the jiggered console sliding around unloved in the back. Lighting genius fires up new board, and decides to load show. Where is the floppy disk?

Fill in the details.

- AM

Not that the world of studios is much different. Rob Zimola reports he had The Call one night from a student who had booked the studio and Knew What to Do. Naturally a call came through, because said student couldn't get the headphone or monitor mix happening. Things were at a stand still.

After much deliberation, Rob got into the car to drive back to the studio – and then had a Big Thought. He rang student and asked the Cigar question... Was the monitor amplifier actually turned ON? Ten seconds of incriminating silence followed. The moral of the story, like so many others in this magazine: check the lights are all ON before ringing and annoying someone!

Then there is that classic problem no one can fix, least of all no one except the system engineer. This one was a long way from home, with a fairly substantial concert sized PA system, that came from a rider I had sent to the company.

The system was nicely packaged and presented, and the stage monitor rig and FOH stacks went up pretty fast. I had a PM 4000 at FOH, all 400+ killer grams of it. Eight of us navigated the monster into position and two of us rolled it up on the roller. Six of us removed the massive lid, large enough to house a family of displaced persons.

Upon powering up the system, there was the mother of all earth hums, made strange as we had all power sourced from one three phase distribution system. Unable to remedy using my limited resources, we called the production co, and the system engineer arrived and shortly discovered that the power cable for FOH that was strapped to the 75 metre multicore was, in fact, minus an earth. It had been tested and tagged the day before... - JG

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MIXING BEFORE DAWN

You Need to be up Early to Work on Sunrise



Evermore, live.

By **JULIUS GRAFTON**

3.15am wakeups need both an alarm clock and a mobile phone alarm and the waking is never easy. Even for the long haul crew on Sunrise, the top rating network 7 TV show that runs 6am through 9am each weekday morning.

If I thought the 4.30am start at the new-ish central Sydney 7 studio was rough, lighting director Paul Lewis put me straight. "I go to bed at 9pm every night, but today I started here at 2am", he said cheerfully as he

reset the studio from last night's news to accommodate the usual Sunrise show plus a live band. The two band mornings mean an earlier start for the lighties, who need to rig extra gear and some decorative trusses. Paul had a delivery from Roger Hind's Theatrix at 2am. "The drop crew thinks it's yesterday, while I think it's the next day. Kind of a weird world," he marveled.

Seven's studio is a masterpiece of high technology working compromise, inserted into an existing building on the corner of Pitt street and Martin

place, the effective middle of the city. It has glass overlooking the streetscape and plaza, with big ticker tape displays catching the eye from blocks away and screaming 'TV station'.

You go in through a regular entrance, get past vigilant security who seem ridiculously alert at an hour when the streets are only occupied by sweepers and drunks, and swipe your way into the studio proper. It is a space that sits in a five story atrium, into which the designers contrived a cunning grid that holds

lights and tracks to move walls around. It's not that large, but the magic of TV makes it look that way.

The broadcast crew arrive, multiply and move around and it all looks very random and casual until they have a desk conference around the Sunrise desk, the large oval shaped structure where the four show presenters sit. Clearly they have planned things the day before, upstairs on the Sunrise floor where a large team 'the family' assemble the show.

iMeantime the band audio guys have started setting up for Evermore, the band of the morning, who are expected sometime around 6.30am. They've sent a stage plan and a monitor system, microphones, and a separate front of house mixing desk need to be installed.

In a studio where space is counted in millimeters, this required some forethought when Sunrise went into band mode. The show expanded its reach by putting more emphasis on entertainment news and segments like the live band one I am seeing set up. The band always play fully live, not miming like the old days.

Sunrise audio director Steve Korres has more than enough on his hands channeling literally hundreds of segments from a lot of sources through the Euphonix System 5 console in a small control room in the heart of the complex. It's essential to have an external live mix, so Randy Fransz comes in on band days with his monitor guy, Ivan Ordenes.

Randy commandeers an audio edit room which has an XLR multicore back to the studio, and places a specially made frame over the top of the post production console installed

in the room. His Yamaha DM 2000 console is then placed on top.

The analogue inputs from the stage area in the studio are connected to the DM 2000's inputs, then run digitally direct out to a Mackie SDR 24 hard disk recorder, which Randy uses to assist with the soundcheck.

The stereo digital outputs from the DM 2000 go into a TC Electronics Finalizer which 'sweetens' and slightly compresses the mix which is fed down to Steve Korres at the Euphonix. He needs to simply fade up the band on cue, and match the gain to his broadcast output which goes live to air across Australia.

It is arguably the most watched live band segment in the land, so bands of every caliber are proffered by their record companies, who make the arrangements. It's then up to their suffering backline crew to be sure to be there with the gear at or before 6.30, and the tour manager to drag the band out of bed and get them in there.



The control room.

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SUNRISE

The show is hosted by David Koch and Melissa Doyle, both on air journalists who fell into the role and who are the front end of a large team. They sit with newsreader Natalie Barr on their left, and sports anchor Mark Beretta on their right.

The presenters file in at 5.50am, get wireless transmitters fitted to the back of their pants, the hair and makeup girls fuss over them, and then the countdown denotes the start of the show.

I'm impressed at the studio acoustic, I can hear them clearly and the space is not reverberating like it could. Meantime the band backline crew arrive though the darkness and rain and start setting up very slowly and very quietly.

There are literally hundreds of segments funneled through the brain of Dave Walters, the line producer. He sits at the back of the control room, with the Director Ken Moore in front of him, all facing a wall of monitors showing potential sources that include the 8 studio cameras and feeds from what looks like everywhere on earth.

There is Jono Coleman standing in London, getting primed, preened and wired for sound. Nelson Aspen is ready in a sun drenched LA, tanned and toothy. He is the entertainment gossip guy. Weather person and fabulous dancer Grant Conyer is somewhere strange in far north Queensland, standing in front of what looks like a fur covered truck on a railway line. He is the current pinup boy for the show, and the crew are in awe of his work ethic. "He travels everywhere, does segments, gets up in the middle of the night, does other shows, and only has Sunday night at home", they enthuse.

News are streaming in from everywhere, graphics are popping up, and what is switched to air is Ken Moore's call, handled by the vision switcher on his right. His assistant on his left seems to spend all morning counting segments in, and must drive home cueing the traffic lights to green. "Lights to green, 10, 9, 8...."

But it's Dave 'Doug' Walters who is the man in the hot chair. He is the most situationally aware specialist I've yet seen, on top of the content of each news story and segment, and talking to the on air presenters about what they are about to present. He is sometimes explaining the background of a story, detailing the context in a



Randy Fransz ready to mix the live band in a room out back.



Steve Korres, audio director.



The hosts desk, view from band stage.

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Hosts and Band.

concise and patient way. Occasionally his assistant takes over, more often than not she is literally running a new script out to the presenter desk and auto cue operator.

Outside the incredible environment

that is the control room is the outer control room, for want of a better term. It's where the technical director, and CCU operator sit, alongside the lighting operator. The TD is the guy whose butt is on the

line when something fails or goes wrong. CCU is the job of making sure each camera is colour matched and level matched, made more interesting as natural daylight filters into the studio through the glass as the dawn breaks.

THE BAND SEGMENT

During a segment break the band can soundcheck, and Randy captures the song on his multitrack so he can hit replay and set the DM 2000 using a second page. It gives him the chance to tweak and equalize and add effects, and to try to get the song sounding as close as possible to the CD that has been provided.

Ivan has sorted out the in-ear monitors and the wedges, and as the band soundcheck he is walking around the stage area listening to what they are hearing. The guitarist has a problem with a lead; it is changed, and then goes bad again. This sets things into slightly tense mode, as time is ticking.

Floor manager Nick Connel is firmly and efficiently coordinating the movements of talent and camera

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Sunrise under way, as band set up behind blue screen.



Band gear arrives, view across to monitor world.

operators. His runner is seemingly everywhere, at one point he is outside the building in the rain searching for promoter Michael Chugg who is incoming to talk about ticket scalpers in respect of Robbie Williams tickets, onsale the day before.

There's a bunch of personal assistants, who are back and forward with food and coffee. The atmosphere appears semi relaxed, and the presenters banter and run out their lines. There is interaction with the crew, who arrange some wacky playouts and sight gags, in collusion with Steve Korres who whips up sound clips from his PC.

The whole thing is overseen by Dave Masala, the Operations Manager.

Finally at 7.50am, the band kick in on cue and play their song.

As they finish, the presenters and crew applaud and the presenters join the band on stage for some dialogue that is pitched in a way that the band are most comfortable with. They say their farewells and cut to an ad break.

The band pack up quietly and depart, leaving Ivan and Rancy to strip the audio, and the lighting assistant to pack up the rented extras. The audio guys hit the road by 9.30, while the regular Sunrise crew go upstairs to debrief and plan the next days show.

It's a content hungry beast, and clearly well researched and resourced. CX

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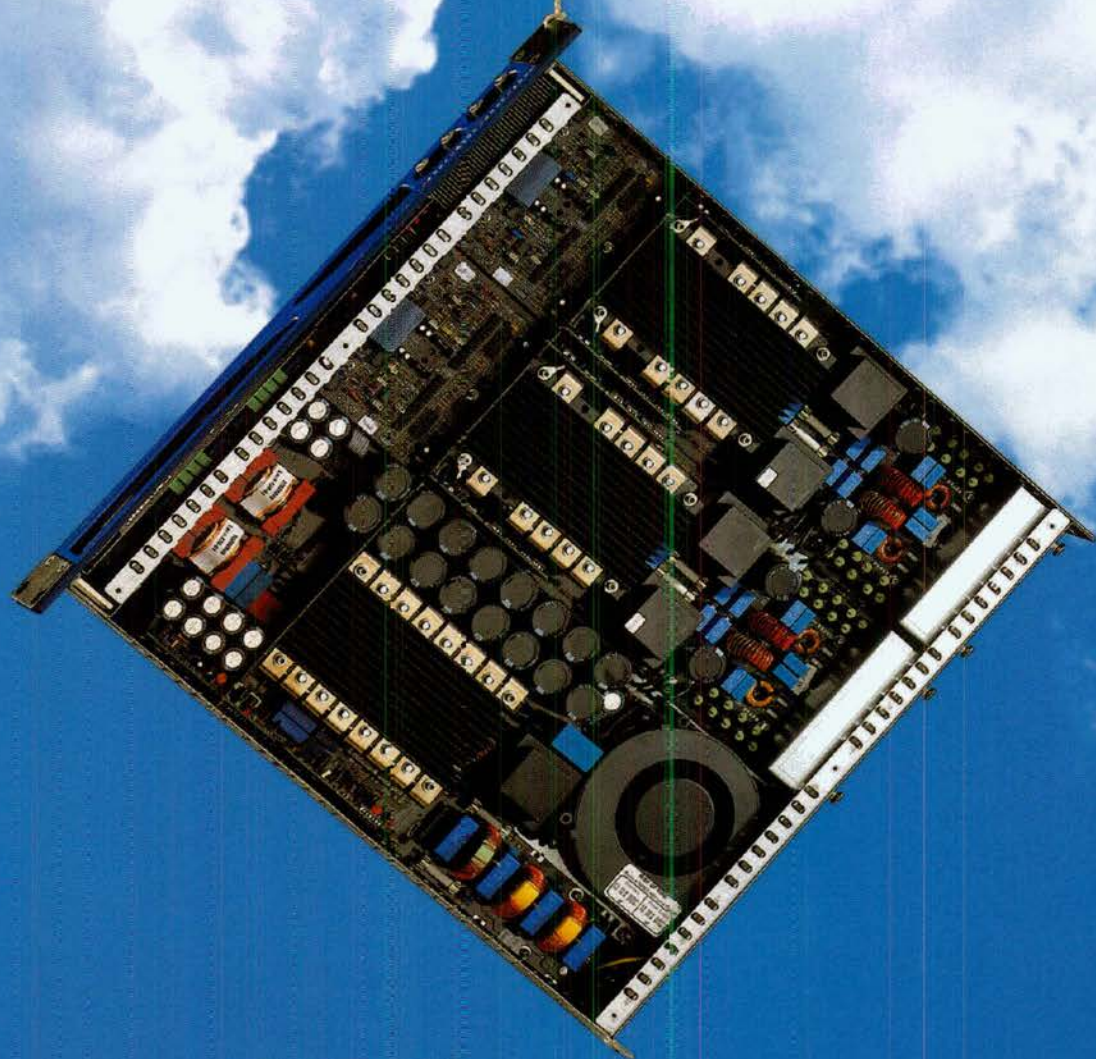
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