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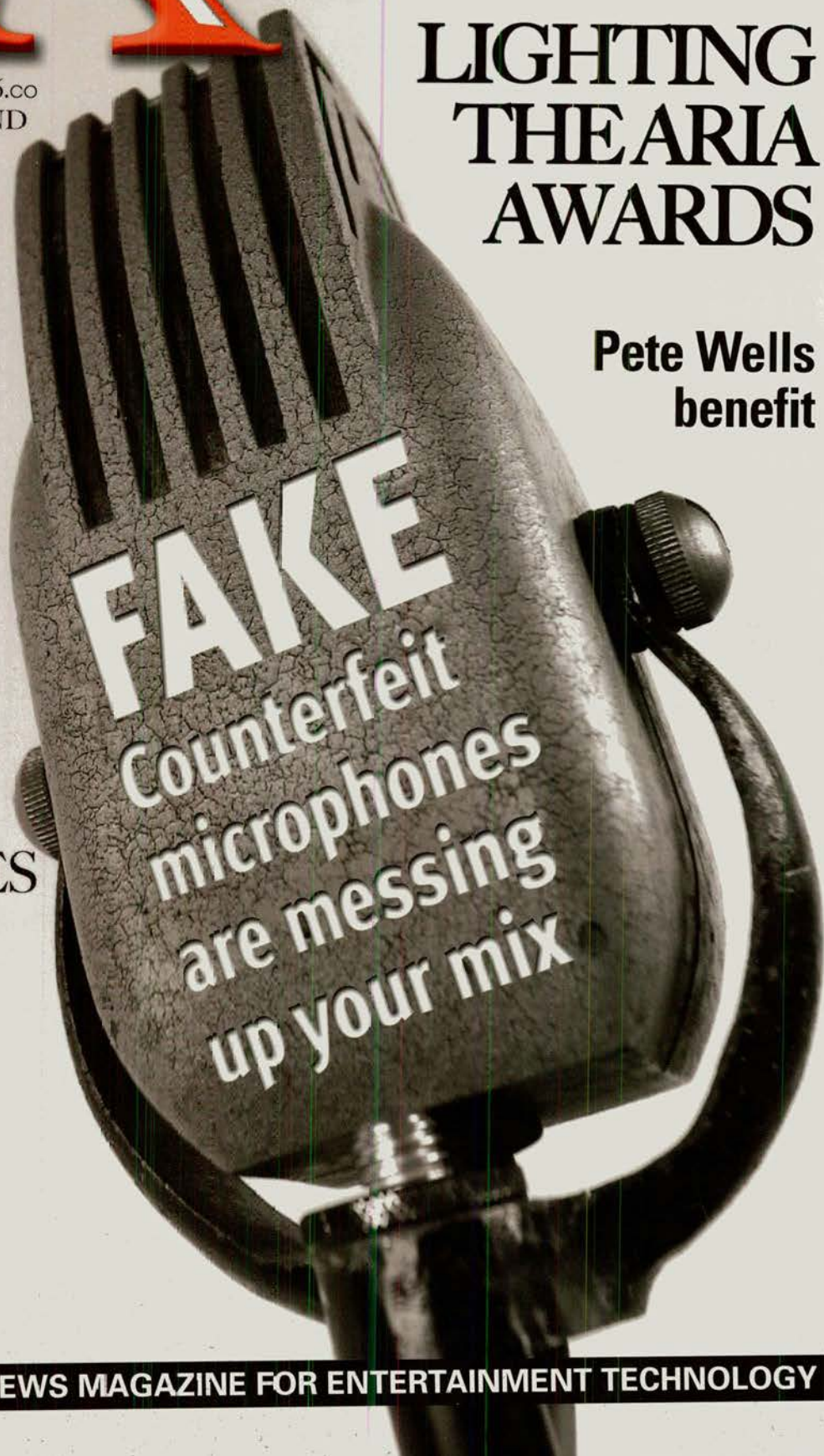
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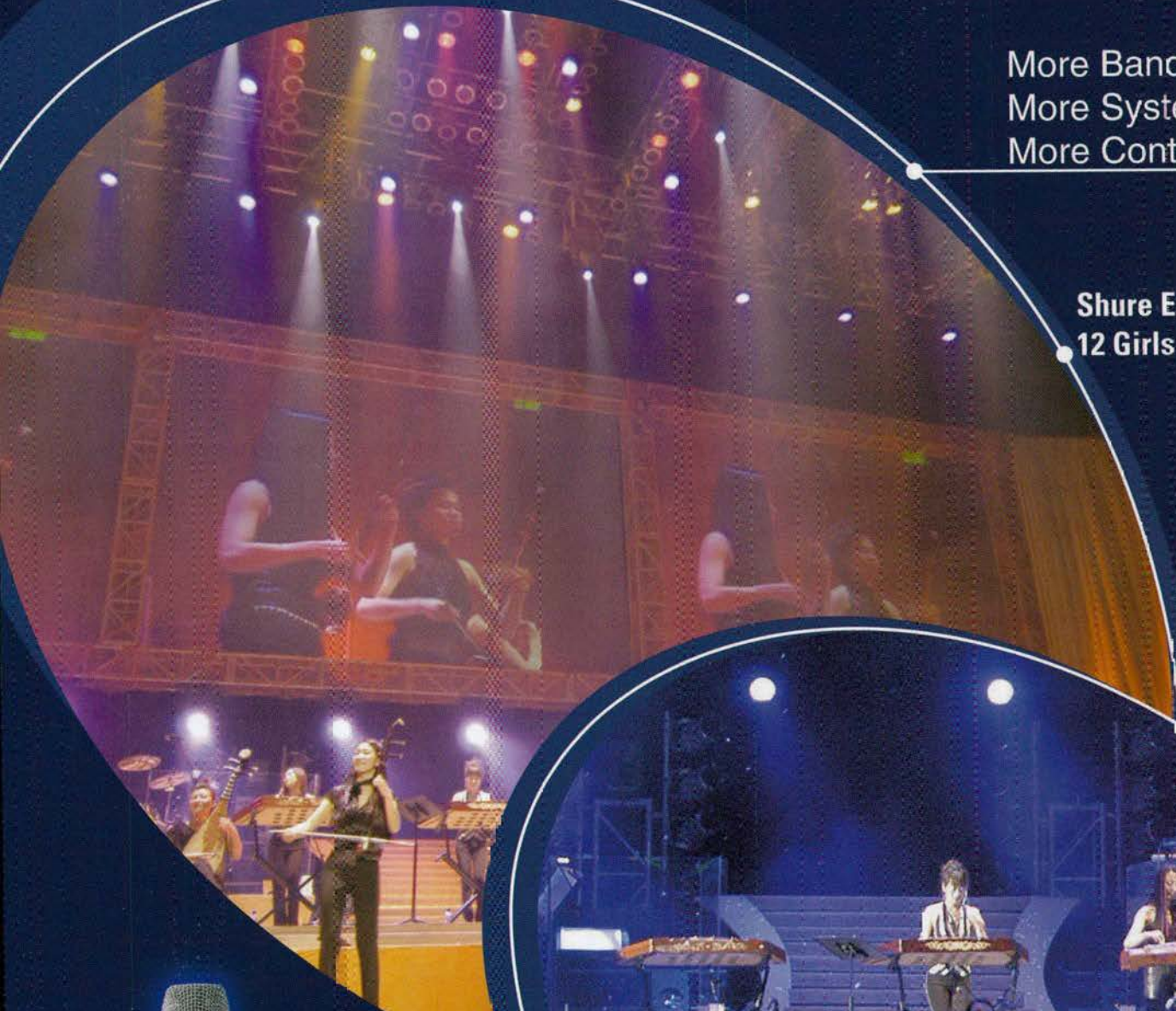


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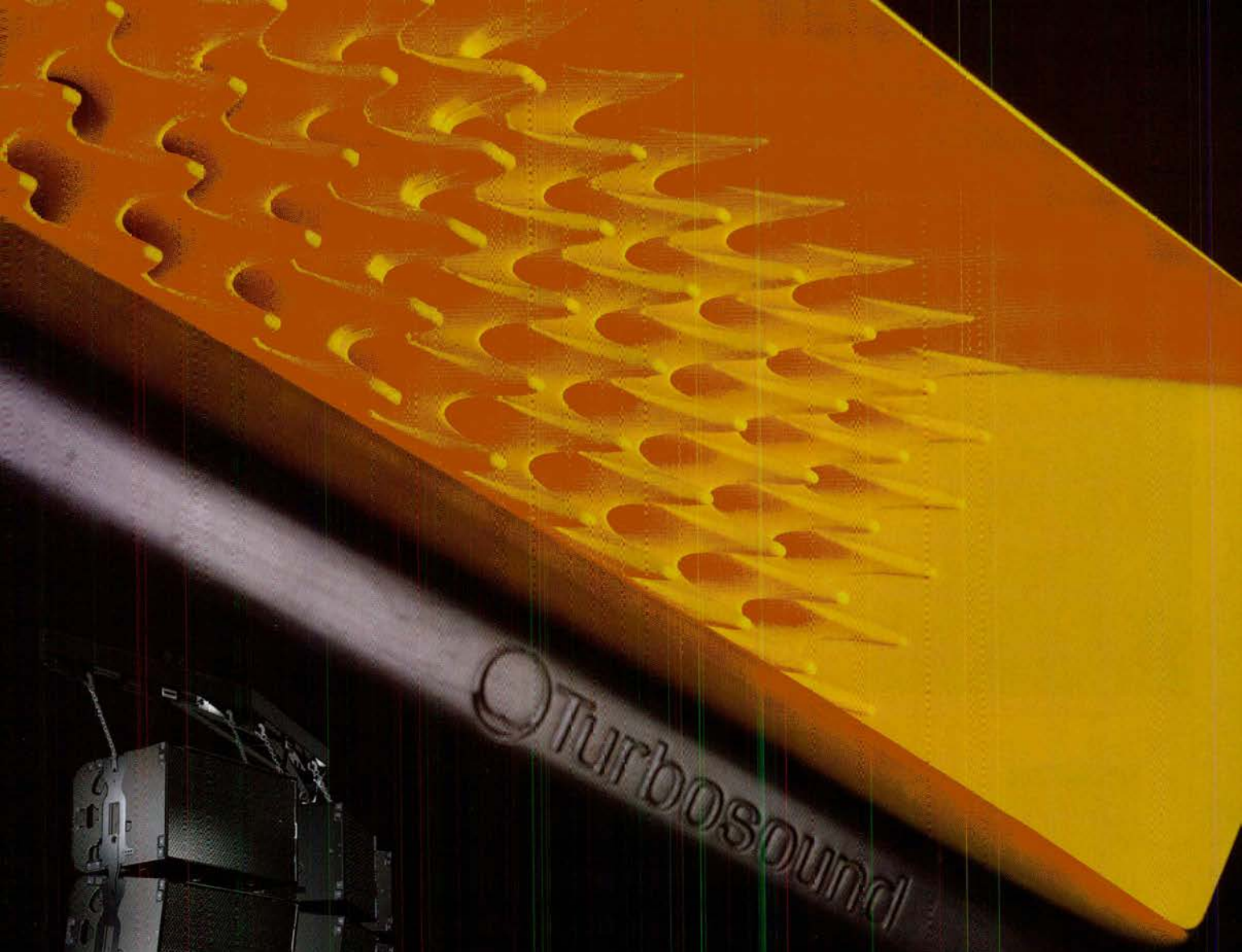
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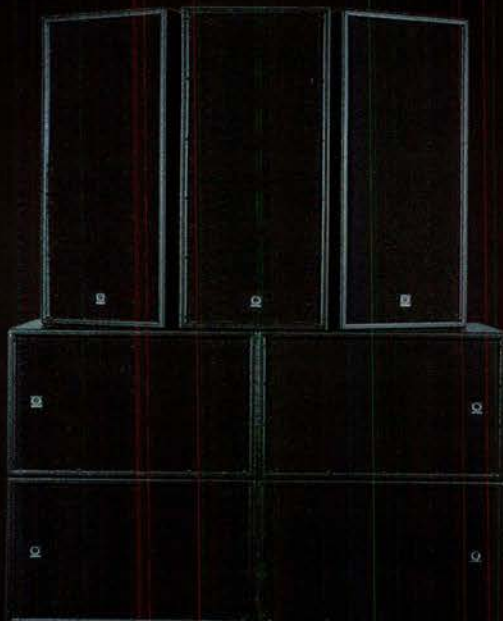
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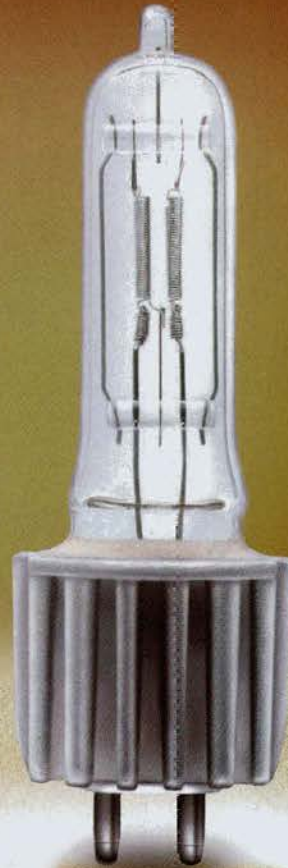
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EDITORIAL

Last issue in this place I paid out on anyone within earshot, and got well deserved flack in return. Writing an editorial alone, late at night, should never be attempted without a re-read the next day...

By **JULIUS GRAFTON**

LONG DAYS

The amount of work that goes into a corporate event is staggering. I've been out on some Go Crew assignments lately. Go Crew is a new labour hire company we run. I learned to think in touring production and theatre season terms. So when someone ordered 8 crew to unload 2 vans, I scoffed, 'so many crew'. Wrong. It wasn't the unloading, it was the fiddly setup that chewed up the hours.

We did a show at Randwick for Foxtell's 10th birthday. Every production company in town was there – along with all the labour hire companies. There were events scattered all over.

Reading the story (inside) about Australian firm Inspiring Events working a massive corporate gig in Chicago brings it all home. The pictures tell the story; empty concrete cavern that becomes a breathing environment for one night, then back to empty. All in a week.

My Go Crew took almost 3 hours to load out, because of the 'one of', fiddle factor' of working with a pile of equipment that is tailored to the event.

In touring, we make locks, we plan where each thing goes, we practice every show to tighten the log sticks.

At events, we need to spend days preparing all the parts, putting cables one by one into cases, doing the same job we do to prepare an entire tour. Instead of one self contained stage measuring 40 x 20, we then go and put things everywhere inside and outside the venue. The loading dock and the stage are industrial strength, designed for hard knocks.

At the corporate gig we have theming and banqueting staff trying to set tables, and we sweat and maneuver 61" Plasma screens on truss stands, trying really hard not to scratch the floor or hit the walls or damage the lift. Then the client does a walk through, all clipboard and pants suit and breezily changes where everything must go, before decamping to do morning tea.

Every corporate gig I've been to so far has featured a shuttle of vans bringing bits and extras, and a conga line of harried technical crew dressed in corporate colours and going slowly nuts listening to the party radio channel.

My touring and theatre days tempered my planning brain, and now I've got a lot more respect for the army of guys and girls out there every day doing those one-off lucrative corporate shows.

THE STUDIO

Just like a well planned corporate event, it takes an experienced planner to build a recording studio. We have just done this – and it took a lot longer than we thought it would.

At the start, we did a timeline and added some. As we went, human and practical aspects kept slowing the job. Some of the delays were to make improvements, and it's possible that since we had no burning deadline, it took as long as it could take to get done.

Overall the job ran for about five months, and I'd suggest anyone trying this should allow that much time. The de-bugging and technical fiddling took a lot of time, even simple stuff like getting the DM 2000 configured was time consuming. Not to mention the Mac G5 and Pro Tools. Now THAT'S another story!

By the way, the Mac is back. I just purchased another one, this time for my home office. So I was wrong, incorrect, misguided and just plain reckless when I predicted The End of Apple last year. And the year before, and the year before that.

Do you forgive me?

RANT RESULTS IN PURGE

Last issue in this place I paid out on anyone within earshot, and got well deserved flack in return. Typical was call from a lady in Brisbane who had the guts to tell me straight that it was all too depressing. Thank you to all letter and email writers. I have since removed those items from that orifice as it was hard to sit.

It's fair to say where there is smoke there is fire, my second marriage was breaking up at the time which put me in a difficult place. Writing an editorial alone, late at night, should never be attempted without a re-read the next day.

Once the enormity of my gaff became apparent, the brains trust here at Juliusmedia took me aside and suggested that we need some major changes with this beloved magazine. I capitulated, and now we have the new look CX, ready and primed for the next 15 years.

Meet Andrew McKinnon from Bite Communications, who has stepped in and taken full control of layout, context, style and continuity. He also has eyes that can stop crazy rants, but of course the full responsibility still sits with me.

Julius

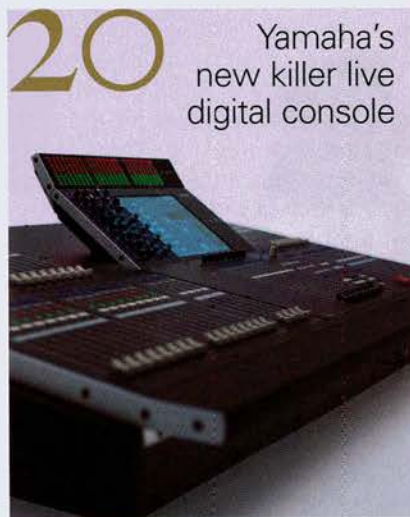
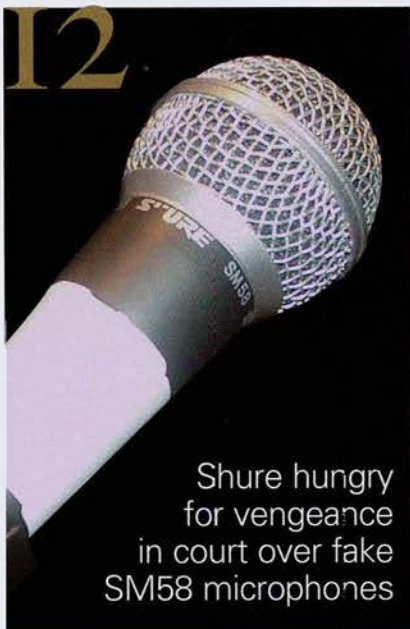
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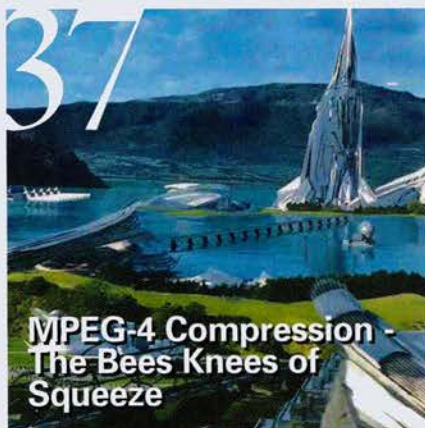
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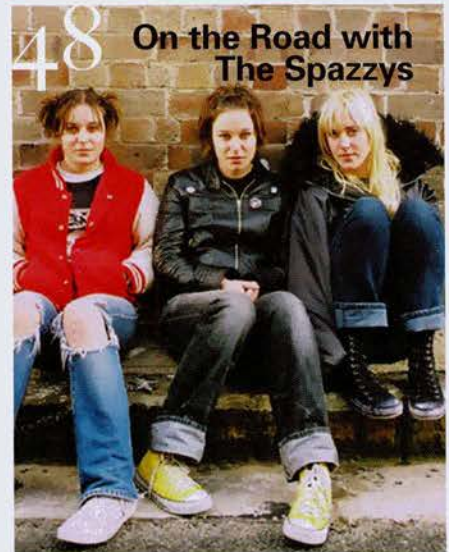


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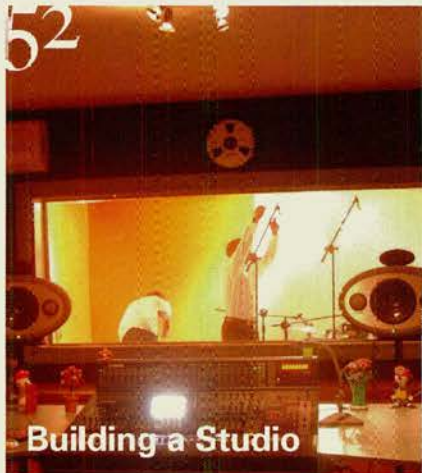


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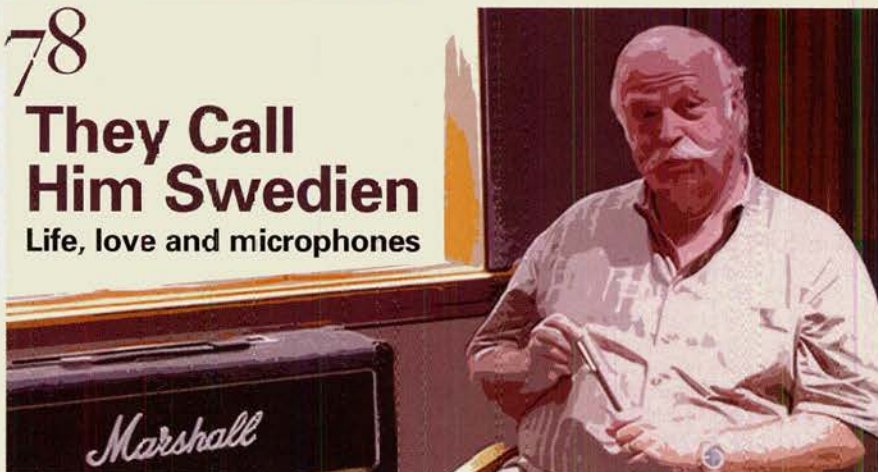


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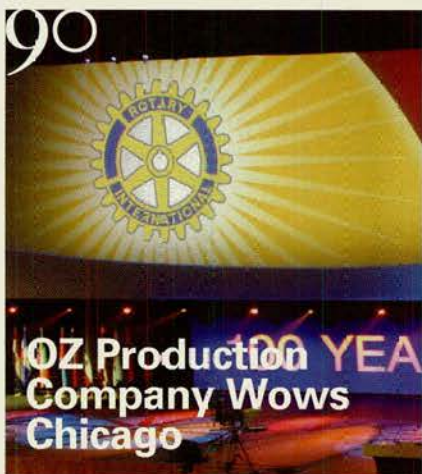
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Life, love and microphones

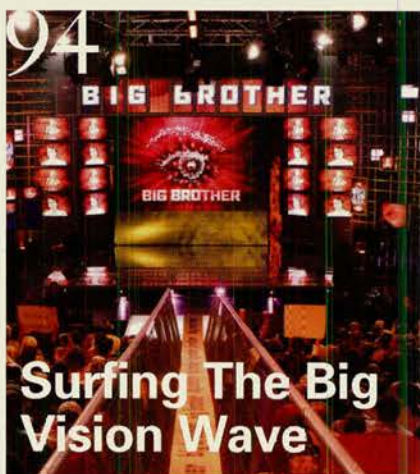


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Juliusmedia



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LETTERS

EMAIL & FLAMES FROM OUR READERS

HONESTY

I've had a subscription longer than I can remember and won't be cancelling anytime soon. Appreciate your honesty and the way you've dealt with issues. I wish more companies would advertise – unlike woman's magazines I'm actually interested in the ads and spend as much time on them as I do the articles!

Andrew Gissing

TOWNSVILLE COLLAPSE

I write to you without objection to the printed story on the VP60 collapse as this picture speaks for itself. Bottom line there is no excuse EVER for such an incident under the control of qualified and experienced show riggers.

Instead I take you to task on the criticism of the so-named "competitor" in your editorial. Without the prompt action of this competitor I imagine this incident was ready to be swiftly swept under the carpets of VP60 bureaucracy and tucked away from public scrutiny.

Political point scoring and competitive rivalry aside, our entire industry has a duty of care to its clients and the patrons who attend the events we produce. To trivialize events such as this or to aid in excusing the actions of these operators undermines the integrity of the truly accountable professionals in this field.

Corby Green, Audio Visual Services
Manager, Townsville Entertainment and
Convention Centre.

LIVE 8 LX MATH

I have a question about the lighting used for Live 8. Was there really 295 mega Watts of lights? Because that's almost impossible I would've thought.

Roughly add:

150 movers at say, 2kW = 300kW
120 conventionals at say, 1kW = 120kW
6 follow spots at say, 10kW = 60kW

That comes to about 500kW, which isn't even close to the 295,000kW stated in the Sept/Oct CX magazine.

David Bunn

David is correct, and we were wrong. - Ed

FAIRLIGHT QUESTION

Does anyone know anything about the Fusion console? Any manuals available? I have a unit but no idea how to get it to run. It's got a 4-

pin XLR with can+, can-, gnd, 24V+. The gnd and 24V is easy enough; any idea on the can+ can-?

Greg Filewood

[grf@physics.unimelb.edu.au]

FAKE SHURES

I thought I might bring it to your attention, recently while 'ebaying' I stumbled across this fantastically priced Shure Microphone, direct form surprise, surprise Hong Kong!

It came complete with an on/off switch...

Unless things have dramatically changed, and I have been hiding in the dark SM58 mic's don't actually have on/off switches and never have. I looked this up on the Shure website which sure enough, alleviated my concern that this was in-fact a fake item... very well done though!

It may be worth again warning people that these fake items are out there and to be wary of them when using services such as ebay. Do you know if these fake mic's perform anything like the real deal?

Jeremy West, Visions West Productions.

* Your letter sparked our article (inside). The fakes are rubbish. - Ed

WHICH HAZER?

Any recommendations about which hazer/fogger to buy? I am overwhelmed with the range and "must have features" - after you scratch the surface of imports by the many reputable companies. Some manufacturers even have registered names for "particle density" and "proprietary thermal cut out circuitry".

Any chance you might feature a shoot out of the \$750 - \$1650 range, with DMX on board and units that use the least damaging fluid, in an upcoming edition of CX?

Jonathan Pav, Equipment Technician,
Melbourne

Good idea, will do soon. -Ed

KILLER KUPO CANS

Regarding your story in the latest issue on the wiring in PAR cans, I to have come to grief with the same problem.

I have entered into the lighting side of production with the purchase of 12 cans and a lighting controller. I bought all new cans. Not being a lighting guru at all I thought the best thing to do would be to set them up one by one and test them.

Much to my dismay 7 out of the 12 would

not work. I thought at first that the globes must have been faulty. My wife kept complaining that the lights in the house would dim and all the power was tripping out while testing.

I opened each of the cans up to see if had done something wrong only to see that the wiring looked a little suspect. I noticed red going in and brown coming out of the joiners. Needless to say that if my house had not recently had the wiring re-done and RCDs fitted, I would probably no longer be in the industry at all!

Kim McCutcheon, KimboSound

MAD AS HELL (TOO)

Julius, after reading your "Mad as Hell" article (Sept/Oct), here is a saying that my Dad told me not too long ago, "Take my advice and please yourself."

Scott Matthews, Adelaide.

OLYMPIC MIC'S

As an avid reader of CX since the first issue 15 years ago, I wish to point out a discrepancy in your latest edition.

The announcement of TAG's appointment as the Audio Technica distributor was, not unsurprisingly, directly lifted off the TAG press release announcing same. That particular press release contained an inaccurate statement, saying that Audio Technica was used exclusively for the Sydney Olympics. Later that week, my colleagues and I were attending a function and I pointed out to Max Twartz, Marketing Director at TAG that this statement was incorrect. True to character, Max stated that you can't believe everything you read on the internet.

However, this has been perpetuated in your own reputable publication. In the Opening Ceremony of the Sydney Olympics edition, there is a photo of Peter Twartz in front a large rack of Shure wireless mic receivers and Shure PSM In Ear Monitor Transmitters accompanied by editorial comment observing that all the performance mics seen and heard on television were in fact Shure "U" series.

It is true, Audio Technica were the official microphone sponsors of the Sydney Olympics, but at the time their product did not meet the requirements of the ceremonies production team and Shure wireless mics were used instead.

Susan Twartz

We stand corrected. - Ed

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BAD SOUND EQUALS TROUBLE FOR SHURE FAKER SYNDICATE

The copy microphone case evidence is stacking up, and Shure are hungry for vengeance in court. Julius Grafton visits the front line....



Jands director Robert Young looking suitably impressed by the fake mics.

Australia has become the new front line in the war on counterfeit Shure microphones, after a rash of poor copies were submitted for warranty service at the Shure agent in Sydney. The copies are so poor that innocent purchasers have shipped them back for replacement – and then realized that they have been robbed.

Initially the staff at Jands were not alarmed, as there have been isolated cases of directly copied microphones in recent years. But then the calls escalated, the microphones turned up in larger numbers, often daily, and it became clear that there was an organized syndicate at work. Shure

Incorporated of Illinois has launched a global investigation.

Copying a branded product is illegal everywhere, even in China where much of this practice originates. The problem in Australia is that very inferior microphones are finding their way onto stages, often alongside legitimate examples. And the fakes can be excruciatingly deficient.

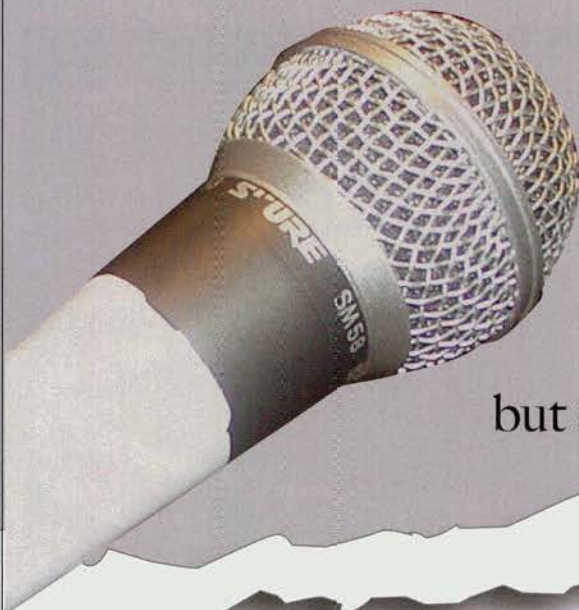
Jands showed CX a line of fake and genuine microphones. In every case the fake could be rapidly detected due to excessive handling noise. Some were so bad that any movement on a stage would be transmitted up the microphone stand and appear as feedback.

One had a pseudo omni-directional pickup pattern instead of the tight cardioid design of the original, which made it far more susceptible to feedback at much lower levels than the real example. Worst of all, one example was not balanced, with Pin 2 wired to the case. Switching phantom power to the microphone produced horrendously broken sound as the phantom rail short circuited.

Some fakes are poor copies, but some look very close to the original. There appear to be several sources making these products, unless the examples were from an early and a later batch from the same plant.

A new and worsening problem is typified by the fake U Series Wireless microphone system that Jands received for service recently. Despite appearing externally identical to the real thing, the system was actually not a UHF wireless system at all. Removing the cover immediately revealed a small VHF transmitter, with

“The penalty possibilities are huge, but so are the legal costs for Shure.”



“Some fakes are poor copies, but some look very close to the original.”

one of the two 'Diversity' antenna's not connected to anything. Use of VHF frequencies for wireless microphones is being phased out, and is no longer permitted in Australia.

Inside the wireless handheld microphone, the differences continued. The genuine Shure example has a neat surface mount circuit board, whereas the fake appears to have been hand soldered and assembled.

Jands director Robert Young has been chasing the importers and believes he is close to identifying not only some of the resellers but also the syndicate members. He initially went to eBay and obtained a power of attorney from Shure, authorizing Jands to act on behalf of Shure. eBay have cooperated, and Jands have appointed a firm of investigators who are tracking the transactions. The transactions have run for some time, leaving a longer trail of evidence.

"It's going to be a problem for the people behind this", says Young, "because first of all, they are breaching section 52 of the Trade Practices Act by passing fraudulent products and misleading and deceptive conduct. That's the criminal side of this. Then there is the matter of damages, losses and costs for Jands, and for Shure. I'd hate to be up against Shure Incorporated in a legal action".

The hunt is also underway overseas, where mainstream brands have convinced local authorities to raid factories and seize customer records. In the same way people are now being prosecuted for downloading a few illegal songs on the net, using source records from download software vendors, the sales web that stretches out from a factory can be tracked all the way to a Fedex or UPS account and

ultimately produce the documentary evidence that Shure need to run a case.

In Australia, Jands have issued signed posters to authorized outlets, and advise customers not to purchase without checking that outlet is, indeed, legitimate. There are rumors some fake product is being sold through some music stores that are unauthorized outlets, which opens the outlet up to the possibility of future legal action.

On the front line at a live performance, CX has detected at least one imposter Shure microphone in a kit of genuine articles at a recent show.

The example had plainly different characteristics, and could not be relied upon. A less alert sound engineer could have used it, and had significant problems with gain before feedback and audio quality.

Before use, engineers should reference all microphones against a known genuine article (or against the best performer in a kit) and discard any that are appreciably different. Pay particular attention to handling noise. Professional microphones like those that Shure make, are usually consistent with only tiny batch variations.

CX



Fake U Series Wireless microphone systems.



Warning poster for authorised outlets.



Fake circuits appear hand soldered.

PRO REP AUSTRALIA

Pro Rep Australia specializes in professional sales representation for the Australian Musical Products Industry. The company was 'founded' by in September 2004 (by the pool at the Beach Hotel at Byron Bay actually) by Managing Director, Dave Dwyer – along with Rebecca Dwyer, who assists in the day to day running of the business.

Pro Rep Australia represents Cole Clark Guitars, Major Music Wholesale, Zoso Music Australia (dist. Crafter Guitars) and JRG Imports, which is the wholesale division of Jackson's Rare Guitars (distributors of HIWATT amps, Collings, Heritage and National Resophonic Guitars).

Pro Rep currently covers the eastern seaboard and is now proud to announce the appointment of Craig Stanley as their QLD and Northern NSW Sales Manager.



TURBOSOUND DELIVERS THE LOW-DOWN WITH THE TSW-218

Providing dynamic and accurate low-frequency performance at very high levels, the Turbosound TSW-218 sub-bass system is a double 18" modular coupling-horn enclosure, benefiting from a dramatic sensitivity increase when multiple units are coupled. Incorporating TurboBass high-velocity partial horn-loading principles, the TSW-218 outputs 104dB sensitivity from a single unit, with eight cabinets coupled delivering up to 110dB. Designed for high power applications in the sub-100Hz region, the new enclosure is particularly suited to concert touring and festival environments. Performance characteristics have been specifically developed to complement Turbosound's Aspect series enclosures, particularly when additional sub-bass energy is required for large-scale arenas, stadia and nightclubs, with the TSW-218 also complementing the larger QLighT loudspeakers, such as the TQ-445 or TQ-315.

The 18" transducers incorporate a 5" diameter voice coil - among the largest in the industry - and high temperature, neodymium magnet structures.

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STAGING RENTALS SPOTLIGHTS CONSTRUCTION SERVICES

More and more people in the events industry are finding out that Staging Rentals produces custom build work, as well as providing rental staging products. The company now trades as Staging Rentals & Construction Services, to better represent its professional skills in event and exhibition construction.

CEO of Staging Rentals, Mr Meri Took said that the new name more accurately reflects the company's service offering and place in the industry.

"We lead the market in providing great rental products for staging. Now we want the industry to know that we also have the specialist skills and equipment

to create state-of-the-art custom stages, sets and exhibition stands".

Staging Rentals & Construction Services has fifteen years of experience in helping clients stand out in the crowd. Their investment in computer aided manufacturing equipment and product research means they can provide cutting edge ideas and outstanding custom builds.

"Our aim is to achieve a consistent, reliable and hassle-free experience for every client, from first briefing to bump out", Meri stated.

Meri said that Staging Rentals & Construction Services provides convenience and confidence — factors which are of utmost importance to their clients. Warehouse branches that recently opened in Melbourne and Brisbane will provide a local point of contact for Victorian and Queensland businesses.

www.stagingrentals.com.au



INTERGALACTIC LIGHTSHOW FOR OMAN

World renowned German-based Light Architect Gert Hof is collaborating with large format projection specialist Ross Ashton from the UK on a truly international work of light art in Muscat, Oman.

The show will deliver lighting technology as never seen before in the Arab world, in a mind blowing performance staged in the Indian Ocean, set against a stunning natural backdrop in front of the Sultan's Palace in Muscat.

Hof has been specially commissioned to compose and creatively direct the 3 act "Light For The Arab World" show to celebrate the 35th anniversary of Sultan Qubccs bin Said's accession to the

throne. The event takes place on his actual Birthday, November 22nd 2005.

The performance will feature a multimedia visual collage and 2000 live musicians, telling the story of the rich 5000 year history – both ancient and contemporary - and culture of Oman.

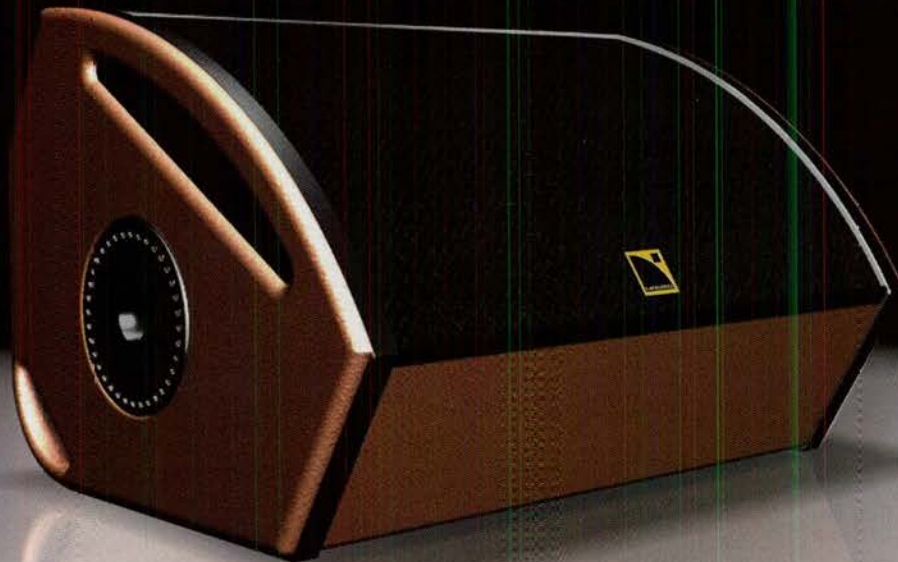
Massive 200 x 100 metre projected images will be created by 16 PIGI large format machines from ETC UK, firing onto a mountain arising from the ocean.

Other lighting technology utilised will include 80 Ireos Pro II searchlights and over 8,000 conventional lighting fixtures.

23 tonnes of fireworks will be integrated into the show, plus a total of forty 40 and 50 Watt YAG lasers and a 50 Watt white light laser from Jenoptik as well as a total of 60,000 red, green and yellow star light burners.



POWER OF SEDUCTION OR SEDUCTION OF POWER ?



YOU DECIDE..... THE 115XT HIQ OFFERS YOU BOTH. SUPERIOR POWER HANDLING, EXCEPTIONAL RESPONSE STABILITY, GREATER GAIN BEFORE FEEDBACK, LOW PROFILE, AND UNLIMITED VERSATILITY.

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IMAGINE... YOU HAVE A VISION, WE HAVE THE TOOLS

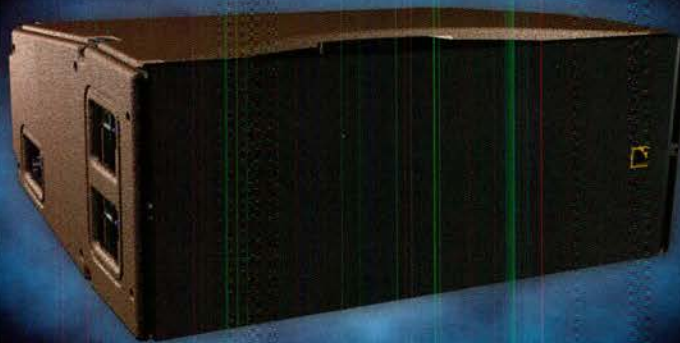


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A D A P T I V E D I R E C T I V I T Y

K U D D O



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SKY THE LIMIT FOR BYTECRAFT AS STATE CRASHES

Within a matter of days the shutters went up at State Automation, formerly Bytecraft Automation, and Bytecraft itself was fully sold to Tattersalls. State was put into administration, marking a very difficult time for the company, which started life as Bytecraft Automation before being split out of Bytecraft some years ago.

At the extreme opposite end of the road to fortune, Bytecraft co-founder Stephen Found is a wealthy man after selling 100% of his shares to Tattersalls, the Victorian based gaming company. He sold all his shareholding in Bytecraft Systems, and in Bytecraft Entertainment.


Tattersalls announced that Stephen Found has entered into a five year employment contract.

The contrast is very real – State Automation struggled to fulfill large contracts to install automated flying systems into theatres across Asia, and in Europe. They had a high level of market acceptance, but ran into difficulties with the long time frames associated with major building contracts.

State was formed when former Bytecraft founder Ted Fregon split with Stephen Found, the latter retaining the Systems and Entertainment businesses,

which both boasted strong cashflows.

Ted Fregon exited State Automation more than a year ago, and is rumoured to have 'done OK' from the exit. The subsequent shareholders have not done well.

But Stephen Found is for now the most successful man in the small and incestuous Australian production lighting industry, with Tattersalls rumoured to have invested around \$40 million. Most of this is associated with the Systems business, where Bytecraft provide service contracts for gaming equipment operated by Tattersalls. 

ASHTON DEBUT CLASSIC 100

Ashton's Classic 100 is the pinnacle of Ashton's microphone range. This large diaphragm valve microphone has an amazing dynamic range and a warm, rich tone that will lift any vocal track to new levels. It comes complete with a switchable polar pattern, external low frequency roll off switch and a shock mount for great isolation, along with the protection of a heavy duty aluminium carry case. Ashton's Classic 100 is the ultimate recording mic and priced at only \$895.

For more information on the Classic 100 and Ashton's wide range of musical instruments and sound equipment visit

www.ashtonmusic.com.au



LOW COST AUSSIE MONITOR

Australian Monitor's AMC line of amplifiers offer a low cost amplifier format for applications where reliability is everything, but the more elaborate features of the AMIS series are not required.

Available in 30, 60 & 120 watt versions the AMC series are a 2 RU mixer amplifier featuring 100 volt line & 4 ohm outputs, & 3 universal

mic/line inputs. Master volume & overall treble & bass controls are provided, along with Vox triggered muting (defeatable) giving channel 1 priority over inputs 2 & 3.

There is also facility to internally add & a tone generator card. The Australian Monitor AMC series give the contractor a low cost alternative in applications that are cost sensitive, but still require a high quality of sound reproduction & reliability.

www.audiotelex.com.au



DYNACORD'S NEW COMPACT SATELLITE SYSTEM

D-LITE 2000 is a lightweight system for entertainers, mobile DJs and live bands — or fixed installation in schools and pubs, or multimedia presentations.

The heart of the system is the PowerSub 315, which boasts an Electro-Voice DVX3150 15" LF driver and switchable crossover frequencies. There is an integrated 2000W of system power -1000W from the subwoofer and 2 x 500W from the satellites.

The complete system (1 x PowerSub 315, 2 x D12 and speaker leads) weighs less than 75 kg and fits easily into any car boot.

From www.apacaudio.com.au



GL SERIES

Meet the next generation...

We're proud to present the new GL Series – 4 dual-function live-sound mixers boasting all the features and quality you'd expect from a company with a 35-year professional audio pedigree.

Built for modern engineering techniques, every detail in these uniquely capable consoles has been carefully designed to provide the very best mixing experience possible:

- superior dual functionality
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- new ultra-quiet mix amp for extended dynamic range.

...Innovation comes of age

To learn more about the superb new GL Series, visit www.glservices.com today.



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XA-2 PA IS PLUG AND PLAY

Dynacord's Xa-2 system consists of two FX12 tops, four FX20 sub-woofers and two Xa4000 system power amps. The fully horn-loaded system delivers the maximum possible on-axis sound pressure and is ideal for a whole range of applications, notably bands, open air concerts and mobile DJ events.


The audio performance is the product of a number of special features, including neodymium drivers, constant Q horns and patented planar waveguides on the bass horns. The system is driven by Xa 4000 class H, active 2-way power amplifiers with switching power supplies, audio processors and Voice-Coil-Tracking-Protection safety circuits that act as the personal bodyguards of the drivers to ensure that the dynamic range is not achieved at the expense of reliability and system security.

Two top boxes are provided, the FX12 is a fully horn-loaded, coaxial 2-way high-power top that covers the frequency range from 100Hz to 19kHz with a maximum sound pressure level of 134 dB/1m

Then four subs do the rest, the FX20 is a planar waveguide bass horn housing an EVX 180 B 18" woofer. The frequency ranges from 30Hz - 150Hz with a maximum sound pressure level of 132dB/1m

Two Xa4000 amplifiers do the drive, these are rated at 1100W in the SUB channel and 900W in the TOP, include all processing, and weigh only 8.25 kg

The packaged system consists of 2 x FX12 tops, 4 x FX20 sub woofers, 2 x Xa4000 power amps and speaker leads, and sells for RRP: \$32,499 inc gst.

From www.apac-audio.com.au 

TURBOSOUND OUTSTANDING ACHIEVEMENT AWARD FOR AUDIO TELEX

Audio Telex was recently presented with an "Outstanding Achievement for 2005" award from Turbosound. The award recognises substantial growth in sales of core Turbosound products including the TXD Series, TCS Series and QLight Series.

Turbosound Brand Manager for Audio Telex, Don McConnell, commented: "It has been a great year for Turbosound in both Australia and NZ with the bar, club and live markets particularly strong. With the Aspect system now shipping and a number of exciting new products previewed at PLASA, we're looking forward to a strong finish to the year and a great 2006. We thank the ever-growing list of Turbosound users for their support."



Picture is Tim McCall from Turbosound with Chris Smith from Audio Telex, who accepted the award while at the PLASA show in London.

AUDIO TELEX
COMMUNICATIONS PTY LTD



INEXPENSIVE CROSSOVER

Redback's A 5350 is an active crossover which can be configured in either stereo 2-way or mono 3-way mode. Designed to be used in a multi-amplifier, multi-speaker PA or front of house system, it accepts a balanced line input via XLR connectors on the rear panel. Output connectors are all balanced XLRs.

The crossover frequencies can be adjusted from 45 to 960Hz, with a

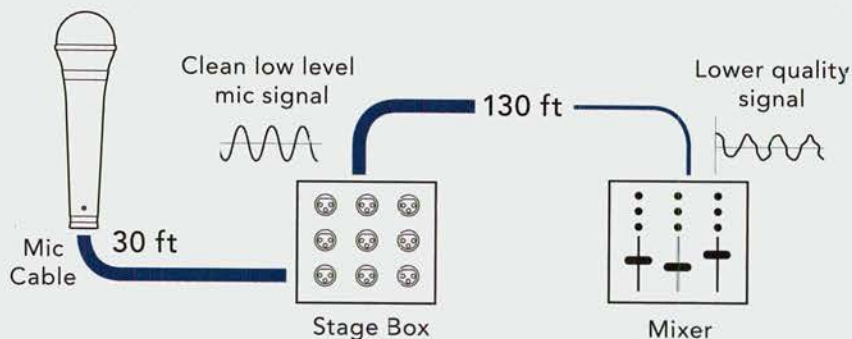
x10 scale selector allowing adjustment from 450Hz to 9.6kHz. Gain controls are provided for inputs and for the separate low, mid and high bands. A separate subwoofer output socket and gain control is provided, with the subwoofer low-pass point adjustable from 20Hz to 200Hz. To provide further signal adjustment, phase invert switches may be used to reverse the polarity of the low, mid or high output signals. Redback, from

www.eltronics.com.au 



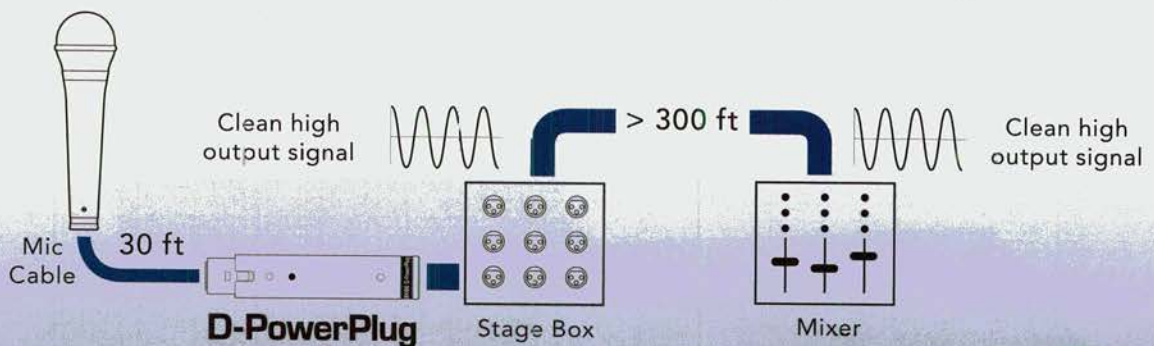
The Xa-2 system comes with 2 x Xa4000 power amps rated at 1100W.

Turbocharge your mic!



Long cable runs can dramatically affect the purity of your sound. Multicores of 130 ft. or longer are not uncommon in touring systems.

Every inch of cable adds resistance and capacitance resulting in reduced signal quality at the mixer. You are then faced with having to amplify that low quality signal, introducing unwanted noise.



The **D-PowerPlug** incorporates technology used in expensive active distribution systems. Featuring a precision instrumentation grade pre-amplifier, the **D-PowerPlug** will convert any dynamic microphone to a high level low-loss output.

This high level is capable of driving in excess of **300 ft.** of cable, providing improved signal quality and the added benefit of lower noise from your mixer!



D-PowerPlug

Turbocharge your microphone

www.rodemic.com

RØDE
MICROPHONES

NEWS

PRODUCTS AND GADGETS

YAMAHA INTRO CATEGORY KILLER LIVE DIGITAL CONSOLE



M7CL SETTO DOMINATE MIDDLE MARKET FOR NEW PA CONSOLES

Yamaha have launched a category killer digital live sound console which is already backordered well beyond production limits. It is a 'son of' PM5D, with origins in the successful DM 2000 Production console. But it is no derivative, it is new from the ground up.

Confusingly named the M7CL, the console comes in two frame sizes and is ready to plug and play, with all processing internal, same idea as the PM5D. The kicker is the price – the 32 channel version ships at \$24k, the 48 channel at \$30k – and that is with the

metrebridge.

What is making this puppy a winner is that there are no layers. Live sound people don't like layers. We need to be able to go hands on, and M7GL has a fader for every channel.

When Yamaha say 32 they mean 32 mono inputs, there are an extra 4 stereo inputs, so the 32 model has 40 holes on the back. Likewise the 48 also has 4 extra stereo faders, so it boasts 56 holes for things inbound. Best of all, the bigger console is just 1.2 metres wide and only 50kg in weight. The front to back stretch is around 700mm.

A defining feature is that there are 16 omni outputs, which may limit you, but

help is on the way in the form of expansion cards. Once we get a console in here at Juliusmedia we will report fully on all this.

In the metal, there is a raised area with touch screen and master channel controls that has a metrebridge grafted on top. It looks like it folds down for transport and it should – but doesn't.

There are big improvements in user friendliness starting with the Centralogic concept. This is the name Yamaha have applied to 8 faders at the master section of the console, under the touch screen. Each fader is

Yamaha haven't skimped on connectivity either, the back panel looks pretty much like you'd expect on a mid range Yamaha professional analogue console.



grouped with [CN], [CUE], and [SEL] keys and level meters. You can bring any channel down on to one of these faders, so you can put your eight most important channels in front of you.

You can get into channel settings on the touch screen, or on the master channel at the left. Having two ways to do things is a bonus.

Another new and exciting thing is the effects stack, where you can whiz up eight effects units in a stack on the screen – EQs and / or effects units. It appears that in front of house mode, or normal concert mix mode, you would probably have enough effects and graphic EQ processing to avoid an external effects rack. It's a shame there is no CD drive, but then again, many soundies carry an iPod or suchlike these days. So, it is almost hasta-la-vista cutboard! Plus you can insert setup data via a USB key.

Naturally there are two dynamics processors on each channel, so you can gate and limit anything.

Unlike the PMED where they make you option up, the M7C has recallable head amp settings, meaning the input gain can be set and stored electronically, instead of via a knob – like on the standard PM5D.

Yamaha haven't skimped on connectivity either, the back panel looks pretty much like you'd expect on a mid range Yamaha professional analogue console.

The key points: you save tons of space, less weight, in-cabinet outboard and of course digital recall.

Yamaha have promised a console as soon as they lend so we can do a full review.

Meantime, this is a very exciting product which in 2005 dollars costs the same as a Soundcraft 200B in 1985. The 200B came with 24 channels, fixed 4 band EQ, and 4 auxiliary sends



The 'son of' PMED with origins in the successful DM 2000 Production console.



Overview display.



Selected channel view.



Easy to use interface.



Virtual Effect and GEQ Rack.

PRO CO STAGE SOUND WIN OVER WHYALLA'S MIDDLEBACK THEATRE

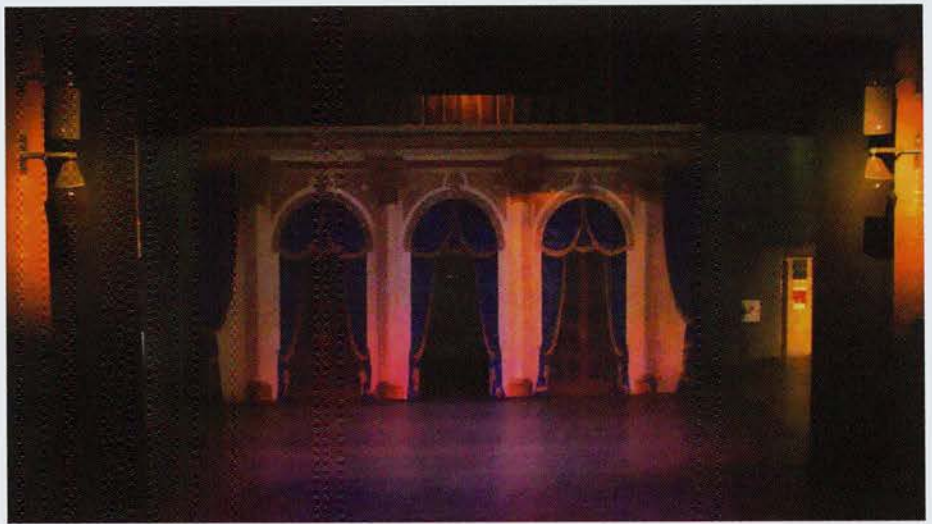
Nestled between the ocean and the Middleback Ranges, and only a short drive from the Flinders Ranges, Whyalla, 'where the outback meets the sea', sits on the north-western coast of the Spencer Gulf. The Middleback Theatre is located within the city and services approximately 38,000 residents of both the town and surrounding countryside.

Having originally opened in 1985, the theatre operators, Country Arts SA, decided that it was time to upgrade the audio equipment in this 500-seat theatre. The venue is part of a number of regional theatres operated by Country Arts SA and caters for a variety of performances including drama, ballet, conferences, choirs and musicals.

Ron Hay and his company Pro Co Stage Sound Whyalla won the contract. The new system consists of a pair of JBL AE AC2215 cabinets per side, in short throw and long throw configuration, a dbx DriveRack PA, Crown XLS602A, Soundcraft GB4 24 channel console and a dbx 1231 eq for monitors.



Ron had installed JBL AE speaker systems into other theatres with great success and so he didn't hesitate to recommend them for the Middleback Theatre. Ron sent through details of the venue, proposed system layout



including potential speaker positions to David Curt Smith at Jands who ran it through the EASE computer modeling system. The generated information confirmed the speaker positioning, angles at which the boxes should be flown and dispersion patterns.

Ron said, "Our task was then to facilitate the installation of the new system, within a short time frame due to theatre activities. We were fortunate to be able to use existing speaker cable runs from the original system, but a fair amount of work took place in the control room, on cable management and patch bays, to go from the

previous 16 channel set up to the new 24, along with additional console outputs eg. groups/matrix/mono".

"Since the FA has been in operation, I've heard nothing but favourable comments from both local and touring companies," said Ron. "We commissioned it with a touring show running several omni-directional lavalier microphones, with some of the artists moving out into the auditorium and directly in-line with the speakers. This wasn't a problem as the system runs so flat there was no potential for feedback from the microphones nor did I have to alter any of the levels or EQ on the console."

Two other major productions in The Dancers Company (ballet) and Australian Dance Theatre (ADT) have used the system recently with positive comments. Ron said "for the ballet, I actually sat in the back row of the auditorium and the orchestral

tracks just sounded very open, clear and as if there were on stage".

During the quotation time, the Soundcraft GB4 mixing console was introduced to the market, an event that Ron describes as very fortunate. "The console is very responsive, smooth in its operation and along with the input/output configurations, channels levels, 8 aux sends, mute functions/groups and matrix outputs it has provided the venue with a very flexible console."

"With the dbx DriveRack PA managing the audio and having that in total control, the system has been set for a number of configurations and 'locked away'. Having this type of system management means that you get consistency and people don't have the ability to play with it, a big consideration when you have a venue with multi-operators."

In addition Ron said, "the JBL AE cabinets work very well in performance spaces such as these, providing good levels of audio, with good dispersion."

Technical Manager, Graham Johnston commented "there is now evenly dispersed sound at a good level in all seats - it is the first time I have ever heard that!"

Jands is Australia's leading distributor of professional lighting, sound and staging equipment. As well as distributing the leading professional brand names throughout Australia the company manufactures lighting control equipment that is used and distributed throughout the world. Our theatre projects division provides products and installation services throughout the country and our extensive manufacturing and sheet metal facilities can meet the needs of the broadest range of technical requirements for the entertainment and audiovisual industries. The philosophy is simple Best Products, Best Solutions, JANDS.



NEW YAMAHA POWERED MIXERS

EMX212S
\$599rrp

The lowest-powered model in the series offers 200-watts per channel, that should be more than sufficient for small-to-medium size venues.



EMX312SC
\$899rrp

If you need a little more power - 300 watts + 300 watts - and the added advantage of one-knob compression on mono channels, the EMX312SC is the model you need.



EMX512SC
\$1,099rrp

For larger venues and audiences, or if you plan to use it for outdoor sound, the EMX512SC with a pair of whopping 500 watt amplifiers to ensure that your music or message comes across with full impact.



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DIGITAL MULTI
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The EMX212S, EMX312SC and EMX512SC all feature a selection of 16 top-quality Yamaha SPX effects - including reverb, echo, chorus, flanger, phaser, and even distortion.



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For further enquiries email pa_support@gmx.yamaha.com or call 1800 331 130.





COLD AND SMART LED'S FOR SHOWCASES

Ardiso is a new Australian specialist designer and manufacturer of leading edge Digital Led Light Sources and Control Interfaces. Ardiso is short for Artificial Digital Solutions. They specialise in the lighting of rare artifacts for Museums along with Architectural and Entertainment effects lighting.

Museum fit outs are their fastest tracking product range. Ardiso have under development new technologies that will enable Museum exhibitors to completely rethink how they have controlled display cabinets in the past.

Complete Spatial control will soon intelligently monitor the complete cabinet and control everything from temperature, light levels, viewing presence, feedback and shutdown, all from a central logic device mounted below the display cabinet.

With the pre-release of the Avalon series of led bars over 250 units were sold to equip three leading Museums in the first six months of prototyping this year.

Contact www.ardiso.com



AUDIO-TECHNICA INFILTRATE DJ HEADPHONE MARKET

Audio-Technica have now launched a full frontal assault on the DJ market. The first in the A-T DJ 'phone series, the premium, 'top-of-the-line,' ATH-PRO700, draws on both A-T's huge headphone R&D and street level research on the demands of leading DJ's. Available in black or, the uniform



of the street, camouflage, ATH-PRO700 makes an immediate impact both visually and well as acoustically. 53mm neodymium magnetic drivers deliver rich and accurate bass, a 5-33,000Hz frequency range and a huge 3,500mW maximum power handling, while the ultra stylish design combines with total comfort around the ears to provide the ideal 'phone for the professional DJ.

Retail price of ATH-PRO700 (Black) is \$345 and ATH-PRO700-MS (Camouflage) \$395.

From www.tag.com.au



MANNING ENTERTAINMENT CENTRE FLYTOWER CONCERNS

Recently Juliusmedia College conducted competency training at the Manning Entertainment Centre, where a new counterweight flying system has been installed by a company with origins in West Australia.

In the interests of safety, we have decided to publish some concerns we have with the nature of that system, since without debate it is possible that nothing may be done about the issues we found. A theatre counterweight system is potentially a very dangerous environment unless it is tightly managed.

The following words are extracted from John Grimshaw's report after he conducted the training for various Manning Centre staff and casuals. We need to stress that we have not researched whether there have been any breaches of any standards. It is quite possible that this counterweight system was installed in complete accordance with all applicable regulations or laws. This debate is simply intended to show how a system like this could be safer, by design, or by better implementation.

Firstly, there are no weight locks supplied with this system. Since a death in Sydney and the subsequent coronial inquiry, it has been standard practice for all counter-weight flying

systems to have some method of locking the weight into each cradle. This locking process is a formal part of our training, and while it was discussed at the venue, I was not able to physically show how to use a locking system.

Another problem is the swaging of steel cables for some of the fly lines. In at least one case, the swage that holds up the bar has not been correctly done. On fly line 2, the ends wires are not exposed through the swage. Thus there is no way to inspect this line and be satisfied that the swage isn't slipping. On many of the other lines, the amount of exposed wire is barely enough to make this inspection.

There are some other issues and information that was not supplied by the installer which I have corrected:


- Training that installed rope brakes can only hold a load of no more than 40kg out of balance, and methods of holding greater loads out of balance.
- Training that rope brakes should always be applied.

There are some issues that I could not correct, and I have recommended to the venue that these should be corrected:

- Inadequate operational light to run the flys during a show

- Removal of clumsy line tensioning system at the bar, and replace with rated chain and shackle arrangement (this would also allow the swinging of bars as required, a simple tool-free process for maintaining straight bars, and adjusting for poorly distributed loads)
- "Mousing" of remaining D shackles to ensure these do not come apart
- Retensioning of rope locks to hold 40kg out of balance
- Identify from the supplier the maximum distributed load for the bars.

There are other fundamental flaws in the system which may have arisen through a lack of communication between the architect, engineer, builders, and installation company. Both operation galleries could have been better placed – the top gallery is unusable as a Loading Gallery, and if the operation gallery was 50cm lower, then they would have been able to achieve the full travel of the bar from the grid to the floor.

Ideally, a new loading gallery should be suspended one floor below the current one. Then weights could be safely loaded into the lower half of the cradle from this level, and the upper half of the cradle from the top gallery. 

ASHTON'S NEW MINI PA

This is a hot new sector, the PA that packs up. Ashton's answer is the Traveller 150, an all-in-one PA combo with 150W of power, and a 4 channel mixer with a master 5 band EQ. It comes with a range of built-in digital effects.

There are 4 x XLR microphone jacks, a stereo input and an auxiliary line in, even a dynamic microphone and cabling to get you started. The twin stand mounted 10" speakers with piezo horns clip back inside their protective moulded case when the show's over.

The Traveller 150 is available now from Ashton dealers Australia wide, priced at \$995.

www.ashtonmusic.com.au



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Clearer, more natural sound with acoustic echo cancellation



Introducing Biamp's innovative AEC2w input card. Offering the highest level of wideband performance available on the market today, the new AEC2w is also a true 20 kHz wideband acoustic echo cancelling system, a first in the industry.

Using a proprietary algorithm, the AEC2w delivers true 20 kHz bandwidth with the AEC and non-linear processing activated. The AEC2w still offers two channels of selectable acoustic echo canceling per card, but the wideband capability also accommodates broadband systems and those employing new technologies for teleconferencing.

One of the first customers to test the new AEC2w cards, Sharon Harned of United Technologies, commented:

"Using Biamp's new echo and noise cancellation technology, we experienced a dramatic improvement in sound quality. As a result of its performance, we anticipate deploying more of these systems throughout UTC."

To see how Biamp's AEC2w can dramatically improve the sound quality of your corporate boardroom, conference centre or public venue, call 02 9578 0172 for more information.

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www.audioproducts.com.au

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www.audioproducts.co.nz



DIMMER CAUSES BUZZ

After a number of years in the market place, LSC decided it was time to update the maXim and extend its features. At PLASA in London they recently showed the new look maXim and previewed Version 2 of the software. The new code supports

double the number of moving lights and other additions.

The new e24v2, a natural evolution of the popular LSC e24 compact touring dimmer system that includes a touch sensitive LCD control panel and networking, caused quite a buzz amongst the throngs of visitors to the stand at PLASA.



The new DNAnet/R rack mount DMX/ArtNet converter which can convert two DMX512 Universes to Ethernet, or vice versa, was well received as was the new ePLATE series of architectural controllers specifically designed to be used with the EKO range of dimming systems but can also be used with the new e24.

And last but not least the XTC, one of the most innovative lighting consoles on the market, was nominated for a PLASA Innovation Award.

www.lscighting.com.au



SYDNEY OPERA HOUSE DEBUT VL1000 FIXTURES

Sydney Opera House recently purchased twelve Vari-lite VL1000 incandescent fixtures.

"We chose the VL1000 because of their acceptance with theatrical designers," stated Phil Dunasky, Technical Operations Manager at the Opera House. "There were several features that we favoured including the incandescent lamp, the onboard dimmer that dims the same as our conventional fixtures, the framing struts, the Vari-lite colour mixing and their silent operation. Of course, we also like their price!"

Phil commented that the plan is to use the VL1000 fixtures extensively in The Studio venue.

"The Studio is perfect for the VL1000 as it is a short-throw venue," he explained. "We'll be using them for the jazz sessions that are coming up soon."

Despite being purchased for the Opera House's smaller venues, the first performance by the VL1000's was in the Concert Hall where David Ferguson used them for a Taiwanese corporate show.

"I had the twelve VL1000's in a row with half of them utilising the four-blade strut system and the other half the irises" explained David. "The gobos were very nice and I found they were easy to hook up and patch into the console."



Sydney Opera House plan to use the VL1000 fixtures extensively in The Studio venue.

New!

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MACKIE
ONYX 4880
New Premium 48-Channel/8-Bus Live Sound Console
Online \$9,996



ELECTRICAL DANGER ALERT

BAN THE CAN

Last time we called for the Par 64 can to be banned, we were half joking. And thanks to the lightie who tried to stuff one over the top of the publisher's head when he ventured too close to a large rig a week later.



Recently tested, but the insulation is pulled clear from the ceramic. Waiting to fry you, and – tested, and tagged as OK.

But now the industry really does need to stamp out the use of the 110/120 volt Par 64 and series splitter. And preferably, stamp out the use of any cheap Par 64 can that does not come with an ironclad assurance from a reputable local importer that the thing is safe and well made.

There are high currents existing within a 110/120v 1,000 watt can. Because it is run in series with a second can, the total current drawn is 2,000 wats, at around 8.2 amps when the mains is supplying 240 volts. Anything that draws a high current needs to be treated with respect.

Whether or not the series splitter is 'legal' rests on whether or not someone gets hurt. Because the 'can' is used everywhere, there is an increasing chance someone will get

killed. Especially when negligence comes into play.

Last issue we exposed a lethal manufacturing mistake in a Kupo Par 64 can, and judging by reaction (see 'Letters') the example we found is not the only one. The silence from the importer is deafening.

There is an argument of potential criminal negligence in selling a product that is wired active to earth; and then



A 120 volt to 240 volt series splitter. The round earth pin can be removed (by an idiot). The industry adopted round live pins in the late 1970's. Who decided to change to a round earth pin?

not recalling the product or issuing an industry wide alert.

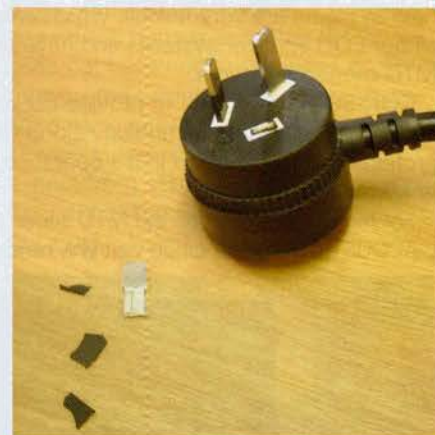
So although there are big profits to be made selling more Par cans, we submit that the thing should be outlawed.

NEW PLUGS MORE DANGEROUS

In an effort to make electrical plugs safer, the regulator has made them more dangerous. We have noticed a



rash of broken prongs of late, logical when you consider that in order for the prong (isn't that a great word!) to fit existing sockets, the metal has been made thinner to accommodate the insulation.



The problem is, a broken prong can stick inside the female plug, like in our photo, and bring an energized connection to you or your worker. So we need to be extra careful when handling energized cables now, and look at the socket before we go anywhere near it.

SLS LINE ARRAY TESTED

Our picture shows Scott Willsallen testing a new SLS LS6500 line array at Lots of Watts recently.

The LS6500 is a lightweight, compact line array module featuring a 100 watt RMS, 6.5" woofer and a SLS PRD500 5" Planar Ribbon Driver in a compact bass reflex trapezoid enclosure. With a frequency response of 80-20kHz and Horizontal coverage of 110 degrees, multiple LS6500 modules form the newest addition to the SLS Line Array Series, the RLA/3.

www.slsloudspeakers.com

Scott Willsallen testing a new SLS LS6500 line array



Even the police have a road crew! Spotted outside our media conglomerate is the NSW Police Band crew collecting some audio from dB Sounc, just across the road.

EV's first time ever pre Christmas special

WHERE TO
PICK UP

YOUR

ZX4 TODAY?

- 15" two-way, 800W(program) • 45° and 55° monitor angles
- 44.5lbs/20.2kg • Legendary EV horn design for clarity and pattern control

Top End Sounds, **Darwin NT** (08) 8981 7744

Kennedy Amp Hire Service, **Mackay QLD** (07) 4952 2799

Brisbane Sound Group, **Bowen Hills QLD** (07) 3257 1040

Music Park, **Victoria Park WA** (08) 9470 1020

A1 Audio & Lighting, **Adamstown NSW** (02) 4957 8288

Turrumurra Music, **Turrumurra NSW** (02) 9449 8487

Bavas Music City, **Liverpool NSW** (02) 9824 2211

John Reynolds Music Centre, **Adelaide SA** (08) 8212 4827

Better Music, **Phillip ACT** (02) 6282 3199

Pro Audio Supplies, **Fyshwick ACT** (02) 6249 7766

Hitek Audio Video, **Northcote VIC** (03) 9482 1744

Production Works, **Hobart TAS** (03) 6231 1505

APAC AUDIO VIDEO (08) 9470 1020 (T. 612 9685 4752) (F. 612 9690 5928) (E. info@ev.com.au)

STAFF MOVES AT COEMAR DE SISTI AUSTRALIA



Adam Whitfield, who has been with CDA for over 2 years now, has recently completed the Juliusmedia C3 Live Production, Theatre and Events course and has been promoted to Product Support.



Greg Robins joins the team in supporting logistics operations.

With a background in musical production and a real passion for lighting, David Puopolo joins CDA in the role of National Sales Executive focusing on supporting trade clientele.



Norbert Neugenbauer, with a wealth of experience in the area of Architectural Lighting, joins CDA to further develop our presence in this important sector of the industry. Norbert has had significant experience in the design and implementation of custom solutions for a diverse range of venues.

Simon Pricor, well known after a long period in our industry with CDA, has been promoted to National Sales Projects and will now concentrate on expanding the Special Projects division.

Stacey Baxter, previously Internal Sales Support Officer, has been promoted to become National Sales Administrator taking full responsibility for Internal Sales and National Marketing & Advertising divisions.

LIGHTFACTORY STARTER KIT GOES PROFESSIONAL

Following the introduction of Enttec's LightFactory Starter Kit, the pack that turns a PC into a 36-channel Lighting Control System, comes the LightFactory Starter Kit Pro Edition.

The new Pro Edition contains the same basic elements as the original Starter Kit – a 36 DMX channel license of LightFactory, a DMX-USB interface, USB A-B cable, 5-pin to 3-pin XLR adaptor, Installation CD & Quick Start Manual – but this edition contains the DMX USB Pro, Enttec's new professional-standard DMX interface.

The Starter Kit Pro Edition includes a 36 DMX-channel license of Light-



Factory, you can purchase upgrades to expand your control system to a full 512ch DMX universe, or beyond to a current limit of 10,000 DMX channels. www.balancedtech.com.au

BUZZ AUDIO UNVEILS NEW PRODUCTS

New Zealand based pro-audio manufacturer Buzz Audio is pleased to announce the unveiling of two new items.

The Resonance Equaliser Model REQ-2.2 is a high end stereo equaliser intended for tracking, mixing and mastering applications. It gets its name from the use of real switched inductors and capacitors as the reactive elements in the EQ stages - no electronic simulation - which results in natural resonance and what is claimed to be a simply delectable sound. The REQ-2.2 boasts four bands of parametric EQ with the high and low bands switchable bell/shelf and each band can be switched in/out of circuit. The REQ also debuts a unique variable transformer saturation circuit which introduces varying amounts of low frequency colour in the form of harmonic distortion creating subtle but effective lifting of low frequencies. A passive choke based high pass filter completes the picture.

The second new product is the Dual

Compressor System Model DCS-2.2, a high end audio compressor which features 2 different compressor types in the one unit with features not found on any other compressor today. The DCS-2.2 includes one channel of hard knee FET based compression and one channel of softer OPTO compression. Routing switches allow the user to use the two compressors types individually, in series or in parallel modes. A blend control allows the user to mix between uncompressed and compressed signal, or blend between the two compressor types in parallel mode. Other features include a front panel switchable insert point, transformer saturation, LED metering and a side-chain frequency response tilt control. Intelligent linking to a second DCS allows for stereo operation.

The overall design of both new products is a "no holds barred" approach with True Class A discrete transistor amplifiers throughout and individual discrete power supply regulators for each stage. The REQ-2.2 and DCS-2.2 will both be available with detented (Mastering) and non-detented controls. www.buzzaudio.com



Above: The Resonance Equaliser Model REQ-2.2

Left: The Dual Compressor System Model DCS-2.2



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SEE PAGE 76 FOR DETAILS

BRAND DETECTIVE

REPORTS ON REDUCING THE COST OF MAKING MUSIC

HK
AUDIO

dB TECHNOLOGIES

Wharfedale
Pro

Superlux

PEAK
HIGH PERFORMANCE SYSTEMS

SYSTEM-WD400 PA PACKAGE



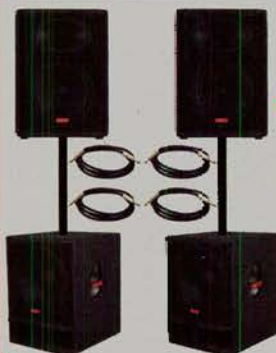
Wharfedale
Pro

400W COMPLETE STEREO PA PACKAGE EXPANDABLE TO 800W/RMS. PERFECT FOR VENUE OR REHEARSAL APPLICATIONS!

- 2 x EVP-X12 enclosures
- 1 x BX-1780SD mixer
- 3 pack DM-253 mics
- 2 x speaker stands
- 2 x speaker cables

\$1599.00

SYSTEM WD-1600 SPEAKER PACK



Wharfedale
Pro

SELF POWERED SPEAKER PACKAGE WITH AN AWESOME 1600 WATTS RMS! HEAR THE DIFFERENCE.

- 2 x EVP-X15P Self Powered
- 2 x EVP-X15PB Self Powered
- 4 x Signal Cables
- 2 x KP-202 poles

\$2999.00

IEM-1100 UHF IN-EAR MONITOR

PRICE BREAKTHROUGH WITH HIGHEST QUALITY IN-EAR MONITORING AT AN AFFORDABLE PRICE.

- 9.5" transmitter in a metal housing with removable antenna
- 2 control inputs with LED level indicator
- 2 x balanced inputs and parallel outputs
- Beltpack receiver with limiter & volume control
- Pair of high power Sony earphones, plus silicone ear pieces



\$799.00

SYSTEM-DB600 PA PACKAGE



dB TECHNOLOGIES

COMPLETE 600W/RMS PA PACKAGE. THE UNBEATABLE OPERA SERIES AT AN UNBEATABLE PRICE!

- 2 x Opera Live 405 Active Speakers
- 1 x Comp-214D Compact 14" Mixer with FX
- 2 x Signal Cables
- 2 x Speaker Stands

\$3199.00

R-200 COMPACT MIXER

Wharfedale
Pro

PERFECT FOR HOME STUDIO AND LIVE APPLICATIONS

- 4 balanced/unbalanced mono line inputs, 4 low noise
- High headroom XLR mic inputs
- 2 pairs of balanced/unbalanced mono line input
- 48V phantom power
- 3 band EQ in each input channel
- 75Hz, 18dB/ octave low cut filter on channels
- Peak LED's on mono channel

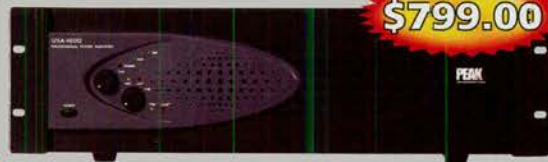


\$169.00

USA-1600 POWER AMPLIFIER

PEAK *Audio* **TOUGH, RELIABLE AND INCREDIBLE VALUE FOR MONEY.**

- High Powered Stereo Amp
- 800 watts per ch @ 4ohms
- Fan Cooled
- Switchable Compression
- Relay Speaker Outputs
- Extensive Protection Circuitry including DC, Thermal, Slow Start



\$799.00

PRA-SERIES DRUMKIT MIC SET



Superlux

Set of 6 PRA Series mics for miking instruments & drums, incl 1 x PRA-218B, 3 x PRA-228A, 2 x PRA-268AH + A4 Case. Includes all mic clip adaptors.

\$399.00

DM-253 MICROPHONE PACK



Wharfedale
Pro

3 x DM-2.05 (with ON/OFF switch) microphones with stand adapter packed in an ABS carry case, Unidirectional dynamic microphone, zinc alloy body, gold-plated XLF connector, pop filter, Dent-resistant spring-steel grille. Neodymium magnet for high output and low distortion.

\$119.00

Brand Detective brings to your attention quality products available from some of the world's leading professional audio manufacturers at prices now more affordable than ever.

There is a mass of equipment in the Audio market today and quite often it can be difficult to discern between quality and what is just cheap. The Brand Detective only presents the best value for money Audio products that meet highest quality standards.

Products presented in this catalogue are available at all good Audio outlets and Music stores. For a preferred dealer listing, please go to www.cmi.com.au/valueformoneyaudio

All prices other than "Special Offers" on the front page are recommended retail prices. All prices were correct at the time of printing, and are subject to change without notice.

PRA-SERIES VOCAL & INST. MICS



PRA-C1: \$89.00

Supercardioid Dynamic Mic with on/ off switch + clip + A1 case, 50 Hz - 16 KHz, low imp.



PRA-C3: \$169.00

3 x Supercardioid Dynamic PRA-C Mics + clips in sturdy ABS case.



PRA-C5: \$249.00

5 x Supercardioid Dynamic PRA-C Mics + clips in sturdy ABS case.

PRO-SERIES MICROPHONES



TOP-248: \$149.00

Dynamic vocal Mic + clip + A2 case, 50 Hz - 16 KHz, low imp, high sensitivity, wide extended frequency response.



TOP-258: \$149.00

Dynamic vocal + instr. mic + clip + A2 case, 50 Hz - 16 KHz, low imp, high sensitivity, wide extended frequency response.

SONATA SERIES MICROPHONES



FH-12S: \$99.00

Dynamic Super Cardioid Mic with switch, A2 case + clip, freq response: 50 Hz - 16 KHz, imp 250 ohm, powerful neodymium magnet, high sensitivity, extremely low handling noise.



FI-10: \$99.00

Dynamic Super Cardioid Vocals & Instrument Mic with A2 case + clip, flat extended frequency response suitable for miking of various instruments, 50 Hz - 18 KHz, 250 ohm imp, neodymium magnet.

PRA-SERIES DRUMKIT MIC SET



PRA-218B \$149.00

PRA-228A \$79.00

PRA-268A \$99.00

DRK-E4C2: \$499.00

Set of 6 PRA Series mics for miking instruments & drums, incl 1 x PRA-218B, 3 x PRA-228A, 2 x PRA-268AH + A4 Case. Includes all mic clip adaptors.

PRO-SERIES DRUMKIT MIC SET



PRO-268A \$149.00

PRO-218A \$269.00

PRO-228 \$149.00

PRO-288A \$89.00

DRK-B5C2: \$799.00

Set of 7 PRO Series mics for miking instruments & drums + A4 Case. The kit includes 1 x PRO-218A for low freq, 3 x PRO-228A for mid freq, 2 x PRO-268A Condenser for the mid-high freq and 1 x PRA-288A for miking the snare drum.

SONATA SERIES DRUMKIT MIC SET



2 x HO-8 \$129.00 ea

FS-6 \$79.00

3 x FT-4 \$79.00 ea

FK-2 \$129.00

HI-10 \$119.00

DRK-F5H3: \$699.00

Set of 8 Instrument Mics also for use with d-ums. Set includes 1 x FK-2, 3 x FT-4, 2 x HO-8, 1 x FS-6, 1 x HI-10.

LARGE DIAPHRAGM CONDENSOR MICS FOR RECORDING

CM-H8A: \$269.00

Large 1" Diaphragm Condenser cardioid Mic with low noise transformer circuitry, swivel adaptor mount, 30 Hz - 20 KHz, low imp. Internal bass roll-off switch makes this mic ideal for studio recording, broadcast and live sound applications. Packaged in a sturdy plastic case.



CM-H8C: \$549.00

Large 1" Diaphragm true condenser card/ omni/ fig8 Mic, 20 Hz - 20 KHz, low imp. Designed for broadcast, studio & live sound applications with 3 polar patterns, low freq roll off and 10dB attenuator switch. Ideal for extremely high sound pressure level sound reproduction. Includes deluxe carry case, shock mount harness, 48V power supply & foam windsheild.



CM-H8E: \$549.00

Large 1" Diaphragm Condenser cardioid Mic with external 2 steps low freq roll-off switchable, 30 Hz - 20 KHz, low imp. This microphone can be used in high humidity and dusty environments, and performs equally well for live vocals, instruments, and as a boundary microphone at stage floor level.



CM-H8G: \$1199.00

Tube 1" Diaphragm Condenser Mic Package offering 9 different polar patterns, from omni through cardioid to fig. 8, all selectable by the user giving it unparalleled versatility in broadcast, studio and live sound applications. 30 Hz - 20 KHz, low imp. Packaged in a durable aluminium case.



GOOSENECK & MICROFLEX SERIES

SHOTGUN & BROADCASTING MICS



PRA-518AS: \$75.00

Superior, low noise Gooseneck 1ft Electret Condenser Mic, 50 Hz - 16 KHz, low imp.



PRA-518AM: \$79.00

Superior, low noise Gooseneck 1.5ft Electret Condenser Mic, 50 Hz - 16 KHz, low imp.



PRA-618M: \$79.00

Gooseneck 1.5ft Dynamic Mic with tailored vocal frequency response. 100 Hz - 15 KHz, low imp. Ideal for conferences, lectures & interviews.



PRA-116B (370mm): \$279.00

PRA-116B is a gun condenser microphone with a strong directivity and a length of 370mm. The tailored frequency response makes it an ideal candidate for the miking in TV programming, movie production, theater reinforcement, press interview and outdoor picking-up. It is directly powered by 6V of batteries, which makes the external power supply unnecessary.



PRA-118L (450mm): \$679.00

Super Directivity Condenser Shotgun mics. Features excellent control on off-axis sound, natural and crisp reinforcement, 30 Hz - 16 KHz, low imp. Ideal for miking in movie & TV programming, and speech reinforcement in theatres and press interviews. Also available: PRA-118 short (240mm) - \$599.00



PRA-318S: \$179.00

Omni-dir Dynamic Broadcasting mic designed to be mounted on a video camera, or hand held in recording and broadcasting. Solid, but slim light zinc alloy die casting body featuring 50 Hz - 15 KHz freq response, low imp. Comes with case & windshield.

SPECIALTY APPLICATION MICS

BOUNDARY MICROPHONES



PRA-383: \$169.00

Mic for miking brass & wind + A1 case, 1.5 m cable, power supply, 20 Hz - 20 KHz, low imp.



WU-518B: \$69.00

Uni-dir condenser Lapel Mic + 3.5mm Jack. Features high sonic durability, wide dynamic range, low distortion. 60 Hz - 15 KHz, low imp. Best choice for theatres and live broadcasting.

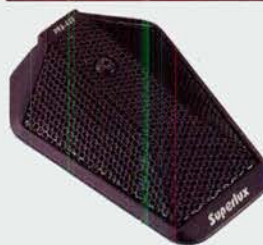
PRA-52B: \$109.00

Ceiling Condenser Mic w/10m cable. Features high sensitivity, wide frequency response, phantom power, 40 Hz - 18 KHz, low imp. Ideal for choir, drama and orchestral performances.



PRA-418: \$219.00

Omni-directional condenser boundary Microphone + case with power module, 30 Hz - 20 KHz, low imp.



PRA-428: \$229.00

Uni-directional condenser boundary Microphone + case with power module, 30 Hz - 20 KHz, low imp.

Wharfedale Pro MP SERIES 2 CHANNEL POWER AMPLIFIERS

EXTENDABLE
3 YEAR
WARRANTY

MP-1200 POWER AMPLIFIER

- Stereo mode output: 8ohm: 260W
- 4ohm: 400W
- 2ohm: 640W
- Bridged Mono mode output: 8ohm: 800W
- 4ohm: 1280W



- Sophisticated protection circuitry
- All steel construction

\$799.00

MP-1800 POWER AMPLIFIER

- Stereo mode output: 8ohm: 330W
- 4ohm: 600W
- 2ohm: 900W
- Bridged Mono mode output: 8ohm: 1200W
- 4ohm: 1800W



- Sophisticated protection circuitry
- All steel construction

\$949.00

MP-2800 POWER AMPLIFIER

- Stereo mode output: 8ohm: 800W
- 4ohm: 1400W
- Bridged Mono mode output: 8ohm: 2800W



- Sophisticated protection circuitry
- All steel construction

\$1199.00

Wharfedale Pro WPG SERIES GRAPHIC EQUALIZERS & CROSSOVERS

EXTENDABLE
3 YEAR
WARRANTY

WPG-315/WPG-331/WPG-335

- WPG-315: \$249.00**
Two ch 15 band Constant Q graphic equalizer
- WPG-331: \$249.00**
Single ch 31 band Constant Q graphic equalizer
- WPG-335: \$399.00**
Two ch 31 band Constant Q graphic equalizer.



EQ-215/EQ-31 EQUALIZERS

- EQ-215: Stereo 2/3 octave graphic equalizer
- EQ-31: 1/3 Octave graphic equalizer



\$369.00

WPG-202 CROSSOVER

- Stereo 2 way, Mono three way electronic crossover, 1 RU, 2.7kgs N.W



\$249.00

Wharfedale Pro PRO SERIES DIGITAL EFFECT SIGNAL PROCESSOR

EXTENDABLE
3 YEAR
WARRANTY

EZVERB EFFECTS PROCESSOR

Stereo / Dual Mono Programmable Effects Processor:

- 255 studio effect presets
- Two separate processors (dual processing)
- up to four studio effects combinations per preset
- Stereo inputs and outputs
- One touch control - no programming necessary
- Effects include plate, room, chamber and hall reverb; forward and reverse gated reverb; stereo chorus and flanging
- Stereo delays and panning
- All steel enclosure



\$269.00

PROVERB EFFECTS PROCESSOR

Stereo / Dual Mono Programmable Effects Processor:

- 255 studio effect presets, Two separate processors (dual processing)
- Up to four studio effects combinations per preset
- Stereo inputs and outputs, Easy editing - no programming necessary
- Plate, room, chamber and hall reverb; forward and reverse gated reverb; stereo chorus and flanging; stereo delays and panning; slapback and tapped delays; stereo echoes
- MIDI control
- All steel case.



\$449.00

PROCOM COMPRESSOR

Stereo / Dual Mono Compressor / Limiter:

- 2 independent compressor/limiter gates
- Stereo-linked or dual-mono operation
- Detector loop on each ch.
- Balanced/unbalanced operation for both inputs/ outputs
- Input and output level LED
- Soft and hard knee compression for greatest flexibility
- Limiter/compressor selector on each ch.
- Gate has threshold and release controls
- All steel enclosure.



\$319.00

Wharfedale Pro R SERIES COMPACT AUDIO MIXERS

EXTENDABLE
3 YEAR
WARRANTY

Compact Mixers perfect for a variety of applications including home studio and live performance.

R-200 COMPACT MIXER

- 4 balanced/unbalanced mono line inputs, 4 low noise
- High headroom XLR mic inputs
- 2 pairs of balanced/unbalanced mono line input
- 48V phantom power
- 3 band EQ in each input channel
- 75Hz, 18dB/octave low cut filter on channels
- Peak LED's on mono channel



\$199.00

R-1604 COMPACT MIXER

- 4 balanced/unbalanced mono line input, 4 low noise
- High headroom XLR mic inputs
- 4 pairs of balanced/unbalanced mono line inputs
- 48V global phantom power
- 3 band EQ in each input channel, 75Hz, 18dB/octave low cut filter on channels
- 1-4PFL/SOLO and Mute



\$349.00

R-2004 COMPACT MIXER

- 8 balanced/unbalanced mono line input, 4 low noise
- High headroom XLR mic inputs
- 4 pairs of balanced/unbalanced mono line inputs
- 48V global phantom power
- 3 band EQ in each input ch
- 75Hz, 18dB/octave low cut filter on channels
- 1-4PFL/SOLO and Mute



\$449.00

TOPAZ TS SERIES COMPACT AUDIO MIXERS

TS-164 COMPACT MIXER

- 4 mono input channels, 4 stereo input channel and 2 stereo effects returns
- Dimensions: 80 H x 370 W x 400 D



\$419.00

TS-184 COMPACT MIXER

- 10 mono input channels, 2 stereo input channels and 2 stereo effects returns
- Dimensions: 80 H x 400 W x 476 D



\$629.00

TS-284 MIXER

- 20 mono input channels, 2 stereo input channel and 2 stereo effects returns
- Dimensions: 80 H x 400 W x 770 D



\$1049.00

EXTENDABLE 3 YEAR WARRANTY

Peak USA models are powerful, heavy duty, reliable and a successful, stable diet of the Australian installation market in a compact 2 RU package. ST Amplifiers excel in power & crystal clear reproduction of sound perfect for small installations.

USA-600 POWER AMPLIFIER

Stereo Power Amplifier 300w RMS per channel @ 4 ohms.
Fan Cooling, Soft Start, Low Noise, 2 RU.



\$569.00

USA-900 POWER AMPLIFIER

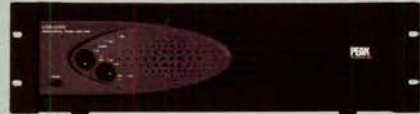
- Stereo Power Amplifier
- 450 watts per channel @ 4ohms
- Fan Cooled
- Switchable Compression
- Extensive Protection Circuitry including DC, Thermal, Slow Start
- Relay Speaker Outputs
- 3 RU



\$679.00

USA-1200 POWER AMPLIFIER

- Stereo Power Amplifier
- 600 watts per channel @ 4ohms
- Fan Cooled
- Switchable Compression
- Extensive Protection Circuitry including DC, Thermal, Slow Start
- Relay Speaker Outputs
- 3 RU



\$799.00

USA-1600 POWER AMPLIFIER

- High Powered Stereo Amplifier
- 800 watts per ch @ 4ohms
- Fan Cooled
- Extensive Protection
- Circuitry including DC, Thermal, Slow Start
- Switchable Compression
- Relay Speaker Outputs
- 3 RU



\$950.00

ST-3 POWER AMPLIFIER

Studio Series Power amp Stereo Amplifier 125 watts RMS per Channel @ 4ohms. 1 RU.
Convection cooled ultra quiet performance.



\$325.00

ST-5 POWER AMPLIFIER

Studio Series Power amp Stereo Amplifier 250 watts RMS per Channel @ 4ohms. 2 RU.
Convection cooled ultra quiet performance.



\$425.00

PEAK MIXING CONSOLES & STUDIO MONITOR

EXTENDABLE 3 YEAR WARRANTY

PM-184 / PMA-184 CONSOLE

PM-184: 14 channel compact stereo mic/line mixer with 32 preset 24 bit digital multi effects. Features 6 XLR mic inputs plus 4 stereo jack inputs, 4 band EQ on stereo, 3 band EQ with sweepable mid band on mic channels, switchable 7 band graphic EQ on master, 2 Aux sends per channel.



\$699.00

PMA-184: 14 channel mic/line 300 watt RMS stereo mixer (400W + 400W @ 4 ohm). All other console features are same as model PM-184- \$995.00.

PMT-244 MIXING CONSOLE

4 Bus 16 channel stereo mic/line mixer with 12 XLR mic inputs plus 2 stereo jack inputs, 3 auxiliary mix sends, 4 switchable stereo aux returns with routing switches, 4 true groups with pan control, 100mm faders, mono 3-band + stereo 3-band EQ, phantom power on each ch., ultra thin profile construction, extremely low noise operation, PFL/ solo on each input, AFL on each output, on buttons for each input channel, record in/out.



\$999.00

PSM-250A STUDIO MONITOR



- Active 100W/RMS 2-way nearfield monitor
- 1" Ferro fluid cooled soft dome tweeter
- 6.5" Woofer
- Bi-amped internal power (50W/LF + 50W/HF) clear
- Transparent sound with full linear frequency response.
- Shielded for operation near video monitors.
- Freq: 35Hz-20KHz
- Imp 8 ohm

\$249.00

PEAK MIXING CONSOLES

PM-8D MIXER WITH FX

8 channel stereo mic/line mixer with effects, 4 XLR + 2 stereo mic/line inputs, 16 segment digital multi effects, +48V phantom power, 3 band EQ on all channels, AUX send on each channel for external effects and monitoring, separate master mix control for room and headphone outputs, 2 assignable track inputs, 10 segment master bargraph meters.



\$249.00

PMB-16D MIXER WITH FX

16 channel stereo mic/line mixer with effects, 12 XLR + 2 stereo mic/line inputs, 10 pre-set digital multi effects, +48V phantom power, 3 band EQ on all channels. 2 main master controls and 1 stereo sub group faders, dix faders on all channels. Weight 9.5 kgs, size in mm 670 x 390 x 95.



\$549.00

PMQ-16D MIXER WITH FX

16 channel stereo mic/line mixer with DSP effects, 12 XLR + 2 stereo mic/line inputs, 32-bit digital multi effects, +48V phantom power, 4 band channel EQ, 2 group buses + 2 main master faders, 2 x 7 band master EQ's, dix faders on all channels. Weight: 10.5 kgs, size in mm: 670 x 482 x 120.



\$829.00

PMB-1050D POWERED MIXER

500W 10 channel Stereo Powered Mixer with Effects. 250W/RMS per channel into 4 ohm, 6 XLR + 2 stereo mic/line inputs, 24-bit digital multi effects, +48V phantom power, 3 band channel EQ, 1 group sub plus 2 master faders, 7-band master EQ's. Weight: 11.5 kgs, Size in mm: 490h x 390w x 125d.



\$569.00

PMB-1270D POWERED MIXER

700W 12 channel Stereo Powered Mixer with Effects. Ultra low noise, 350W/RMS per channel into 4 ohm, 12 XLR inputs, 24-bit digital multi effects, +48V phantom power, 3 band channel EQ, 2 group sub plus 2 master faders, 2 x 7-band master EQ. Size in mm: 646h x 450w x 150d.



\$899.00

PMH-1260D POWERED HEAD

600W 12 channel Stereo Powered Mixer with Effects. 300W/RMS per channel @ 4 ohms, 6 XLR + 2 x stereo mic/line inputs, 3 band channel EQ, dual 7 band master EQ's, +48V phantom power, digital multi-fx, tape-in/rec out RCA's, headphone output & volume control, individual + master auxiliary /external fx control, dual 10 segment bargraph meter. Weight: 14 kg. Size in mm: 525w x 305h x 320d.



\$699.00

Wharfedale Pro EVP-X SERIES SOUND REINFORCEMENT SPEAKERS

- Exceptional sound quality
- Broad bandwidth and dynamic range
- High power/ High efficiency
- 1" compression driver
- Trapezoidal enclosure for easy array and sonic accuracy
- Titanium diaphragm
- Pro-Tech Driver protection system
- Sophisticated crossover design
- Easy carry handle
- Rugged protective steel grill.
- Low resonance enclosure design
- Two 1/4" jack & 2 x speakon sockets.

**EXTENDABLE
3 YEAR
WARRANTY**



EVP-X12
\$349.00



EVP-X12M
\$359.00



EVP-X15
\$399.00



EVP-X15M
\$399.00



EVP-X215
\$649.00



EVP-X15B
\$599.00



EVP-X18B
\$749.00

EVP-X SERIES

The Wharfedale professional EVP-X series loudspeaker systems are the latest evolution of the highly successful EVP family. The new EVP-X full range speaker system has been built around the development of the exceptional new compression driver. The 44mm HF driver brings unprecedented levels of dynamic pure clarity and sound quality, the crossovers network has been designed to limit and protect the system from overloads. The ProTech driver protection system that is only seen on higher priced speaker systems, the sound performance out of these boxes doesn't match the price tag. You will have to look twice the quality and finish of each model is well worth a look. The trapezoidal design gives low resonance and sonic accuracy in the low frequency range, The enclosure is built tough enough to withstand the rigours of the road, covered with a tough black industrial carpet, top hat for speaker stands and large handles with tough curved steel front grill. The speaker range comes in a 12" and 15 inch two way, monitor wedge design and 15" + 18" sub. The sub system features a dual voice coil woofer and low pass filtering when the job requires that kick ass punchy bass. Arguably this is the best value for money speaker system performance combination seen on the market today...

SPECIFICATIONS	EVP-X12	EVP-X12M	EVP-X15	EVP-X15M	EVP-X215	EVP-X15B	EVP-X18B
RMS Power	250W	250W	300W	300W	500W	400W	600W
System	2 Way Trap	2 Way Monitor	2 Way Trap	Wedge	2 Way Trap	Rectangular enc.	Rectangular enc.
LF Driver	12" Woofer	12" Woofer	15" Woofer	15" Woofer	2 X 15" Woofer	15" Woofer	18" Woofer
HF Driver	1" Ferro Cooled	1" Ferro Cooled	1" Ferro Cooled	1" Ferro Cooled	1" Ferro Cooled	—	—
Freq Response	55-20KHz	60-20KHz	45-20KHz	50-20KHz	40-20KHz	45-250Hz	38-250Hz
Crossover	2 way passive	2 way passive	2 way passive	2 way passive	2 way passive	Hi Pass output	Hi Pass output
Max SPL Peak @1w / 1m	98db	98db	98db	98db	100db	99db	100db
Dimensions W/D/H mm	430 x 370 x 590	424 x 441 x 560	460 x 450 x 675	445 x 473.5 x 645	502 x 467 x 1058	460 x 510 x 591	522 x 610 x 610
Weight Net (kgs)	19.3kg	18.5kg	25.9kg	23.4kg	43.2kg	33.5kg	47.4kg

Wharfedale Pro SVP SERIES SOUND REINFORCEMENT SPEAKERS

- 1" exit compression driver. Waveguide elliptical horn technology.
- Trapezoid enclosure.
- Pro-Tech Driver protection system. Rugged protective metal corners Durable Black carpet covering
- Rugged protective steel grill
- Teardrop Handle
- Steel stand adaptor
- Low resonance enclosure design
- Two 1/4" jack sockets.

**EXTENDABLE
3 YEAR
WARRANTY**



SVP-10
\$199.00



SVP-12
\$249.00



SVP-15
\$299.00



SVP-215
\$499.00



SVP-15B
\$419.00



SVP-12M
\$259.00

SVP SERIES

The SVP range stands for (SUPER VALUE SERIES) this new range of sound reinforcement loudspeaker is designed for reproduction of live music at high volume levels with minimal distortion. The enclosure is lightweight yet built tough enough to withstand the rigours of the road, covered with a tough black industrial carpet and rugged protective metal corners, teardrop handles and steel grill. Trapezoidal enclosure for easy array and sonic accuracy. The range comes in a 10", 12" and 15 inch design the two way system gives better low resonance and sonic accuracy in the low frequency range. The newly developed drivers are designed to perform and are made with the highest quality components the top end boasts a 25mm voice coil compression driver with an exceptional Waveguide HF horn never before seen in this price range. The crossovers are even protected with the ProTech driver protection system that is only seen on higher priced speaker systems.

SPECIFICATIONS	SVP-10	SVP-12	SVP-12M	SVP-15	SVP-215	SVP-15B
RMS Power	100W	150W	150W	200W	250W	250W
System	2 Way Trap	2 Way Trap	2 Way Monitor	2 Way Trap	2 Way Trap	Sub Bass
LF Driver	10" Woofer	12" Woofer	12" Woofer	15" Woofer	2x15" Woofer	15" Woofer
HF Driver	1" Compression	1" Compression	1" Compression	1" Compression	1" Compression	High Output
Freq Response	65-20KHz	50-20KHz	50-20KHz	45-20KHz	40-20KHz	45-250Hz
Max SPL Peak @1w / 1m	96db	97db	97db	97db	102db	98db
Dimensions W/D/H mm	317 x 288 x 494	355 x 428 x 554	428 x 554 x 415	638 x 463 x 390	1014 x 463 x 390	587 x 548 x 429
Weight Net (kgs)	10.28	15.58	14.9	19.26	31	31.52

EXTENDABLE
3 YEAR
WARRANTY

LA SERIES

Moulded Sound Reinforcement Speaker System. Comprising of strong construction, High impact, "GiG" tough acoustic resin. Complex Trapezoid design for grouping of cabinets in array. Integral easy carry handles. High freq. Horn coverage can be altered for 60 x 40 or 40 x 60 degree coverage. Integral High Freq. driver overload protection system.



LA-15
\$549.00



LA-15PB
\$799.00



LA-15B
\$499.00

LA-15P
\$849.00

SPECIFICATIONS	PASSIVE		ACTIVE	
	LA-15	LA-15B	LA-15P	LA-15PB
RMS Power	250W	200W	250W	200W
System	2 Way Moulded	Sub Bass Moulded	2 Way Moulded	Sub Bass Moulded
LF Driver	15" Woofer	15" Woofer	15" Woofer	15" Woofer
HF Driver	1" Dynamic Driver	—	1" Dynamic Driver	—
Frequency Response	40-20KHz	30-150Hz	40-20KHz	30-150Hz
Max SPL Peak @1w / 1m	100db	98db	100db	98db
Dimensions W/D/H mm	480 x 380 x 700	480 x 380 x 700	480 x 380 x 700	480 x 380 x 700
Weight Net (kgs)	26	26	26	26

EXTENDABLE
3 YEAR
WARRANTY

EVP-XP & SVP-P

The new EVP-XP & SVP-P powered loudspeakers incorporate a powerful and well protected amplifier module that can be played at maximum levels over long periods without fear of system failure. The built-in 2 channel mixer with line/Mic inputs and bass/treble control make it ideal to plug and play without a mixer needed. The SVP also features a 3 Band EQ.



EVP-X12P
\$799.00



EVP-X12PM
\$799.00



EVP-X15PSB
\$1099.00



SVP-12PM
\$549.00



SVP-15P
\$599.00



SVP-15PB
\$699.00

SPECIFICATIONS	EVP-X12P	EVP-X12PM	EVP-X15P	EVP-X15PB	SVP-12PM	SVP-15P	SVP-15PB
RMS Power	300W	300W	300W	400W	150W	200W	250W
System	2 Way Trap	2 Way Monitor	2 Way Trap	Rectangular enc.	2 Way Monitor	2 Way Trap	Sub Bass
LF Driver	12" Woofer	12" Woofer	15" Woofer	15" Woofer	12" Woofer	15" Woofer	15" Woofer
HF Driver	1" Ferro Cooled	1" Ferro Cooled	1" Ferro Cooled	—	1" Compression	1" Compression	—
Frequency Response	55-20KHz	55-20KHz	45-20KHz	44-20KHz	50-20KHz	50-20KHz	40-150KHz
Crossover	2 way passive	2 way passive	2 way passive	LPF:150Hz /24db	—	—	—
Dimensions W/D/H mm	590 x 430 x 370	645 x 460 x 450	675 x 460 x 450	591 x 460 x 510	415 x 428 x 554	638 x 463 x 390	587x548x429
Weight Net (kgs)	22.9	27.4	29.5	35.1	17.5	21.76	32.54



STUDIO-8.1P
\$149.00



STUDIO-8.1A
\$299.00



STUDIO-8.2P
\$199.00



STUDIO-8.2A
\$399.00

Diamond 8 Series Active & Passive Studio Monitors.

SPECIFICATIONS	STUDIO-8.1P	STUDIO-8.2P	STUDIO-8.1A	STUDIO-8.2A
RMS Power	100W	100W	60+40W	60+40W
System	2 Way Passive	2 Way Passive	2 Way Bi-Amp	2 Way Bi-Amp
LF Driver	5" Woofer Kevlar	5" Woofer Kevlar	5" Woofer Kevlar	6.5" Woofer Kevlar
HF Driver	1" Super Tweeter	1" Super Tweeter	1" Super Tweeter	1" Super Tweeter
Frequency Response	50-24KHz	45-24KHz	50-24KHz	45-24KHz
Max SPL Peak @1w / 1m	106db	108db	106db	108db
Material	IRIDIUM Color Laminate	IRIDIUM Color Laminate	IRIDIUM Color Laminate	IRIDIUM Color Laminate
Dimensions W/D/H mm	295 x 198 x 252	364 x 212 x 257	295 x 198 x 280	364 x 212 x 322
Weight Net (kgs)	5.2	6.2	7.5	8



QUAD-12LA
\$1349.00



QUAD-12LP
\$699.00



Quad Series Active & Passive Studio Monitors.

SPECIFICATIONS	QUAD-12LP	QUAD-12L ACTIVE
RMS Power	100W	60+40W
System	2 Way Passive	2 Way Bi-Amp
LF Driver	6.5" Woofer Kevlar	6.5" Woofer Kevlar
HF Driver	1" Soft Dome Tweeter	1" Soft Dome Tweeter
Frequency Response	45-24KHz	45-24KHz
Max SPL Peak @1w / 1m	110db	110db
Material	Black Piano Hand Rubbed Finished	Black Piano Hand Rubbed Finished
Dimensions W/D/H mm	357 x 205 x 260	357 x 205 x 308
Weight Net (kgs)	5.2	7.5

**EXTENDABLE
3 YEAR
WARRANTY**



- Affordable arrayable trapezoidal cabinets
- 2" Driver with Titanium Diaphragm
- Large Waveguide Elliptical horn for superior control and smoother Hi freq. Control
- Plywood & composite construction
- Strong internal bracing for better sub response
- Linear, full range frequency response
- Pro-Tech driver protection system
- Cast aluminium speaker stand mount adaptor
- Recessed 1/4" & Speakon connectors

LX SERIES

The first thing you will notice when you pick up these boxes are they feel and look like a serious touring speaker box with strong internal bracing which prevents bass loss and distortion, the design is the popular trap shape suitable for FOH or array systems, it comes with two cover styles hard wearing tough industrial carpet or the black super strong epoxy paint finish with fly points for rigging hardware, substantial handles and casters on the larger boxes makes them easy to get around. The LX I think should stand for LOUD XTREEM that's the way these boxes have been designed, the extra large Waveguide elliptical horn which uses a huge 500mm titanium diaphragm and a massive 1200g large magnet driver that delivers unprecedented levels of clear quality high frequency characteristics. The 12", 15" and 18" drivers are all aluminium cast frame loudspeakers with massive voice coils featuring extended excursion capability, large magnet structure gives this series high efficiency and reliability in demanding professional applications. Each crossover in the range uses the highest quality components and designed specifically for that system the ProTech driver protection system designed to take care of the HF driver against demanding signals caused by overloading. Beware this range is for the serious sound professional with a price tag which is well under the nearest rival.

SPECIFICATIONS	LX-12	LX-12M	LX-15	LX-15M	LX-215	LX-15B	LX-18B	LX-218B
RMS Power	400W	350W	400W	350W	700W	700W	800W	1600W
System	2 Way Trap	2 Way Monitor	2 Way Trap	2 Way Monitor	2 Way Trap	Sub Bass Trap	Sub Bass Trap	Sub Bass Trap
LF Driver	12" Woofer	12" Woofer	15" Woofer	15" Woofer	2x15" Woofer	15" Woofer	18" Woofer	2x18" Woofer
HF Driver	2" Titanium	2" Titanium	2" Titanium	2" Titanium	2" Titanium	—	—	—
Frequency Response	50-20KHz	60-20KHz	40-20KHz	55-20KHz	40-20KHz	42-170Hz	38-150Hz	30-1.5KHz
Max SPL Peak @1w / 1m	97db	97db	98db	99db	101db	98db	99db	100db
Dimensions W/D/H mm	636 x 393 x 373	349 x 580 x 398	760 x 504 x 472	880 x 504 x 4E9	1220 x 610 x 501.5	580 x 506 x 481	715 x 574 x 545	1220 x 610 x 501.5
Weight Net (kgs)	28	20.2	36.37	40.16	64.2	30	36.57	62.8

**EXTENDABLE
3 YEAR
WARRANTY**



TWIN SERIES

Co axial Driver Compact Sound Reinforcement Speaker System. Proprietary design, High power, high efficiency, Wharfedale Pro coaxial two-way full-range driver units. Sophisticated crossover system. High power output, low distortion sound quality. Trapezoid array design. Low profile ceiling mounting. Low profile floor monitor. Strong construction using 18mm BIRCH PLYWOOD. Pro-Tech driver protection system. Painted in Black Duralex paint. Fly Points for ease of installation. 2 x Speakon connectors.



LX-E SERIES

The LX-E Series has the same model line up as the LX Series but with extra features to make them suitable to the professional performance and installation market with hard wearing 2 stage epoxy black finish, constructed from premium grade Birch plywood for extra strength and acoustic properties. The LX-E also includes flying points for ease of installation.

SPECIFICATIONS	TWIN-8X	TWIN-10X	TWIN-12X	TWIN-15X	TWIN-15SBX	LX-12E	LX-15E	LX-215E
RMS Power	100W	150W	200W	300W	600W	400W	400W	700W
System	Co-axial	Cc-axial	Co-axial	Co-axial	Sub Bass	2 Way Trap	2 Way Trap	2 Way Trap
LF Driver	8" Woofer	10" Woofer	12" Woofer	15" Woofer	Horn Loaded	12" Woofer	15" Woofer	2x15" Woofer
HF Driver	1" Titanium	1" Titanium	1" Titanium	1" Titanium	15" Woofer	2" Titanium	2" Titanium	2" Titanium
Frequency Response	65-20KHz	60-20KHz	55-20KHz	45-20KHz	40-160Hz	50-20KHz	45-20KHz	35-20KHz
Max SPL Peak @1w / 1m	94db	96db	98db	99db	99db	99db	99db	103db
Dimensions W/D/H mm	373 x 288 x 250	434 x 322 x 319	496 x 362.5 x 364	562 x 454 x 422	646 x 460 x 618	671 x 393 x 450 With Fly Points	760 x 506 x 471 With Fly Points	1116 x 506 x 471 With Fly Points
Weight Net (kgs)	11.2	5.5	17.8	27	45.5	28.8	38.45	58.5

Wharfedale Pro PM SERIES POWERED AUDIO MIXERS

PM-500 POWERED MIXER

- 6 channel input
- 120 W/RMS power
- Digital delay
- Record out
- Two band channel EQ



\$369.00

PM-600 POWERED MIXER

- 7 channel input
- 230 W/RMS power
- Fan cooling system
- Tape in/out in master section
- Digital Delay
- 3 band eq. on output
- Phantom power
- Rack-mountable model also available



\$479.00

PM-700 POWERED MIXER

- 7 channel input
- 300W/RMS @ 4 ohm
- 450W/ 2 ohm amplifier
- 7 band graphic equalizer
- Dual DSP chip
- 8 preset FX
- Adjustable 'Time' and 'Repeat' delay effect



\$669.00

Wharfedale Pro BX SERIES MOULDED CASING POWERED AUDIO MIXERS

BX-1060SD POWERED MIXER

- 300W+300W@4ohm
- 7 balanced mic input
- 1 super Hi-Z input
- 3 Hi-Z inputs
- 3 stereo line inputs
- 7 band EQ
- 24bit 8 preset reverb and limiter



\$799.00

BX-1360SD POWERED MIXER

- 300W+300W@4ohm
- 7 balanced mic input
- 2 super Hi-Z inputs
- 5 Hi-Z inputs
- Two RCA inputs and 3 stereo line inputs
- 9 band EQ
- 24bit 8 preset reverb and limiter



\$899.00

BX-1780SD POWERED MIXER

- 400W+400W@4ohm
- 7 balanced mic input
- 3 super Hi-Z inputs
- 5 Hi-Z inputs
- Two RCA inputs and 5 stereo line inputs
- 9 band EQ
- 24bit 8 preset reverb and limiter



\$999.00

ALL WITH EXTENDABLE 3 YEAR WARRANTY

Wharfedale Pro EZGO & PM SERIES PORTABLE PA PACKAGES

EXTENDABLE 3 YEAR WARRANTY

EZGO SERIES

Portable PA System Packages. Come with 6 ch. self powered Mixer / Amplifier, 2 x speakers and 2 x Speaker Stands. The mixer and 2 speakers lock together to make one portable rollaway PA system.



EZGO-12/200
\$1199.00

200 W Powered Mixer with 6 channel input, two band channel EQ, Black Carpeted and two 12" woofer 2-way speakers, plus 2 speaker stands in a sturdy carry bag.

ROLLAWAY CASE



PM SERIES

Portable PA System Packages. Come with self powered Mixer / Amplifier, 2 x speakers and 1 x DM-01 Dynamic microphone.

EXTENDABLE 3 YEAR WARRANTY

PM-500SYSTEM: 120 W powered Mixer with 6 inputs, 2 band eq on each ch. Record out, Digital delay, plus two PT-10 two way 10" loudspeakers and one DM 1.0 dynamic microphone.



PM-500SYSTEM
\$679.00

PM-600SYSTEM: 230 W powered Mixer with 7 inputs, 2 band eq on each ch. Record out, Digital delay, Effects send/return, 3 band master Eq, two PT-12 two way 12" loudspeakers and one DM 1.0 dynamic microphone.



PM-600SYSTEM
\$879.00

PU120 UHF WIRELESS SYSTEM

Compact, entry level diversity system comprising:

- UH-120 M handheld transmitter
- Microphone with cardioid dynamic capsule
- PU-150 R receiver
- 9.5" Rack space wide



\$499.00

PU-120 WIRELESS SYSTEM

The PU-120 Performer series offers professionals the combination of UHF frequency operation with the highest audio performance at an extremely affordable price. The PU-150 receiver includes quartz-controlled design to ensure frequency stability and a high level of rejection of unwanted signals. The PCB circuitry and components are the highest grade possible using only low noise pre-amplifiers and transducers, there are 12 fixed frequencies and up to 6 simultaneous frequencies.

PU901 UHF WIRELESS SYSTEMS

This compact and powerful digitally controlled diversity wireless microphone system features digital pilot tone control, digital squelch control, output volume control, battery status LED on receiver, removable antennas with 16 user switchable frequencies. The PU-901 provides a high-quality wireless connection with ease of use and high reliability.

PU-901MD: \$649.00

Vocal-Set featuring hand transmitter with dynamic cardioid mic capsule & 901R table top diversity receiver.



PU-901L: \$629.00

Presenter-Set featuring lavalier mic, pocket transmitter & 901R table top diversity receiver.



PU-901DHM: \$749.00

Head-Set featuring headset mic, pocket transmitter & 901R table top diversity receiver.



PU-901G: \$599.00

Guitar-Set featuring instrument cable, pocket transmitter & 901R table top diversity receiver.



TOURING RACK & UHF IN EAR MONITOR SYSTEM

TOURING RACK

Complete with 6 x 910R receivers in rack completely pre-wired with 6 x 910M handheld dynamic cardioid transmitters and 6 x 910L miniature Lavalier transmitters, all usable as a 12 channel system. Includes AS6 antenna splitter.

Also included are 2 x RDA-900 (Remote Directional Antenna), optimises operating reliability and increases the possible range. Can be mounted on mic or speaker stands. Includes all weather cover. Stands not included.



DB-TOURRACK \$8999.00



PROFESSIONAL IN-EAR MONITOR SYSTEM

This UHF in-ear monitoring system breaks all price barriers with more and more musicians using the in-ear system over conventional stage monitors. Major benefits are individual mixes with complete control, feedback on stage is eliminated, faster sound checks, reduced audio level on stage, less equipment to carry. The Dynamic range has to be heard to be believed. Our latest system have been developed employing unique compander technology coupled with a dynamic range of 105dB to produce a level of performance unavailable in previous systems. All other wireless systems use compression in the transmitter and expansion within the receiver to control the transmitted signal. Our unique approach to IEM ensures the minimum loss of dynamic range and the highest signal-to-noise ratio. For critical applications such as monitoring it is vital that you hear the widest possible frequency range, including low bass frequencies.

IEM-2200 \$1850.00



IEM-2200 Professional 16 channel UHF Stereo Monitoring System including:

- Rack-mountable transmitter with large LCD display
- Variable limiter for almost transparent control of peak levels
- Belt pack receiver also includes large LCD display for operating freq and RF strength
- Selectable 16 CH UHF frequencies
- Pair of high power Sony earphones, plus silicone ear pieces

PORTABLE POWERED SPEAKER SYSTEM



OPERA-110MOBILE \$1650.00 (EXTRA \$300 WITH MIC TRANSMITTER)

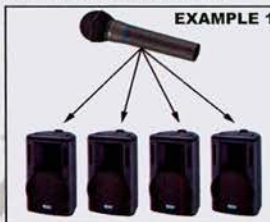
OPERA-110 BATTERY \$1150.00



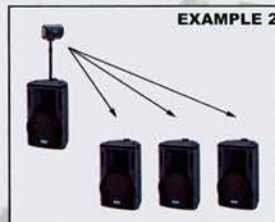
- Master Volume inc. LED limiter
- Optional Delay on TD model
- Volume control Stereo-Aux
- Input controls: external mic gain control, internal wireless gain control, tone control, wireless frequency selector.
- Optional wireless receiver
- Mic/line input socket combined XLR/6.5mm jack. Input sensitivity switch.
- Stereo aux. inputs (cinch)
- Unbalanced line output
- ON/ OFF switch
- Battery status control indicators. Variable (3-12V) dc output socket.
- 12V-dc input
- 115/230 V a/c input & fuse

OPERA 110 MOBILE

When we say mobile we mean completely mobile, no wires needed. The Opera 110MOBILE is the most intelligent active speaker on the market today. With maximum flexibility and features such as integrated mixer, optional wireless UHF receiver, Dynamic soft-clip limiter and protection on the input/output stage of the amp module. The specially developed power amplifier with auto-sleep mode allows powering, regardless of the volume level for up to 8 hours, it also has switchable 3-12V powering output that can power CD players, laptops or a NS110 transmitters to enable you to transmit to another db unit in any 16 UHF switchable frequencies. The OPERA-110BATTERY is also available which is the same unit as above but without the UHF receiver.



You can use as many Opera 110 MOBILEs as you like within the wireless range of 70-100m, no more coverage problems, you can put them anywhere you want.



If you are using program music and microphone or signal from a mixing console, this can be achieved with the NS110 unit which plugs straight in the rear ready to go where you want to go.

STAGE OPERA ACTIVE SERIES

All elements of this Italian manufactured series are tuned to give a maximum of performance. High efficiency, best acoustic performance, ease of handling and absolute reliability are the hallmarks of this superior system. The Trapezoidal enclosures are manufactured from 20mm multiflex, and are finished with black structural paint. Flying Gear as well as a functional transport wheelset are available as optional accessories.

When it comes to touring with the best possible rig out there nothing else comes close. The perfect harmony between powerful loud speaker system and size, DB have tuned the output stage and the loudspeaker system perfectly to each other, the acoustic requirements can only be achieved by perfect sound control and the highest quality components, so we only use bi-amp & tri-amp configurations, the active excitation enables a clean linear frequency response which produce the highest possible sound efficiency and thus producing a very high feedback limit.



OPERA-SUB12
\$1450.00

OPERA-4115
\$1995.00



OPERA-6118
\$2695.00



OPERA-4212
\$2350.00



OPERA-8215
\$3995.00



SPECIFICATIONS	OPERA-4212	OPERA-8215	OPERA-6118	OPERA-4115	OPERA-M124	OPERA-SUB12
RMS Power	300+100W	500+200+100W	600W	400W	225+5CW	400W
System	2 Way Active	3 Way Active	Active Sub Bass	Active Sub Bass	2 Way Monitor	Active Sub Bass
LF Driver	2x12" Woofer	2x15" Woofer	18" Woofer	15" Woofer	12" Woofer	12" Woofer
MF Driver	—	1x6.5" Mid	—	—	—	—
HF Driver	1" Compression	1" Compression	—	—	1" Compression	—
Power Module	Bi Amp Class H Full Protection	Tri Amp Class H Full Protection	Class H Full Protection	Class H Full Protection	Class H Full Protection	Class H Full Protection
Frequency Response	60-20kHz	50-20kHz	20-15kHz 3 X-Over Points	30-150Hz	70-18kHz	40-150Hz
Max SPL Peak @1w / 1m	127db	130db	133db	130db	128db	127db
Material	Birch Ply, Tuff 2 Pack Poly Coat	Birch Ply, Tuff 2 Pack Poly Coat	Birch Ply, Tuff 2 Pack Poly Coat	Birch Ply, Tuff 2 Pack Poly Coat	Birch Ply, Tuff 2 Pack Poly Coat	Birch Ply, Tuff 2 Pack Poly Coat
Dimensions W/D/H mm	1000 x 430 x 480	1400 x 500 x 500	410 x 424 x 610	450 x 500 x 500	644 x 459 x 332	520 x 360 x 500
Weight Net (kgs)	35	59	59	24	19	18.9

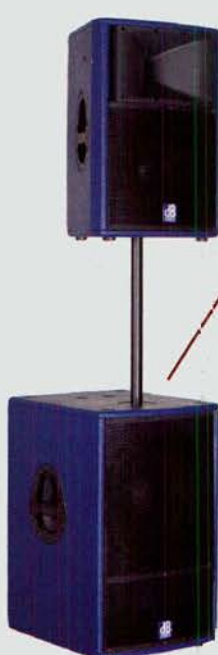
FORTY LINE SYSTEM

FORTY LINE

Based on the amplification concept of the successful FIFTY LINE system, the new FORTY LINE system offers high sound pressure levels with professional audio quality. Compact cabinet measurements, and lightweight enclosures make the FORTY LINE the perfect choice for professional public address systems. Useful for most sophisticated applications, the FORTY LINE is easy to handle, small in size and totally portable, making it the ideal solution for single person installations.



FORTY LINE SYSTEM 151 : \$10,500
1600 W/RMS. Includes 2 QL-12 + 2 QL-15.



QL-12 PASSIVE MID-HIGH : \$1995

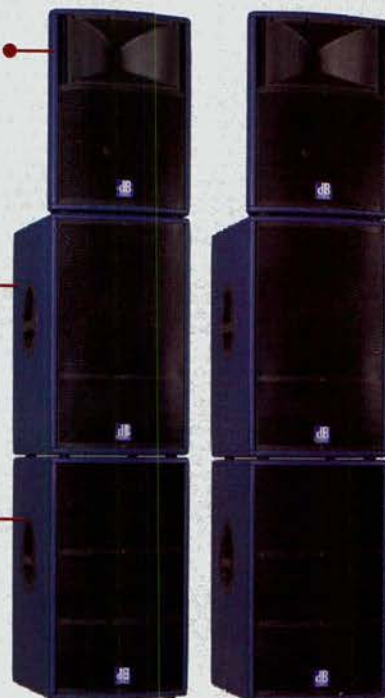
- 12" Woofer
- 2.5" Voice Coil
- 1" Comp. driver
- 200 - 19,000 Hz
- SPL 123 dB peak
- Dispersion 90° x 60°
- Speakon NL4 connector
- 3 x M10 flying points
- 23.5 kg
- 435 x 600 x 400 mm

QL-15 ACTIVE WOOFER : \$3250

- 15" Woofer
- 3" Voice Coil
- 500 - 200 + 100W RMS Tri-amp
- Integrated Audiocontroller
- Fill wave limiter per channel
- 4-speed fan
- Peak 55 - 200 Hz
- SPL 130 dB
- 31.2Kg
- 435 x 700 x 500 mm

QL-152 ACTIVE SUB : \$3250

- 2 X 15" Woofer
- 3" Voice Coil
- Class H Amplifier with 800W RMS
- Integrated Audiocontroller
- Fill wave limiter
- 4-speed fan
- 40 - 90 Hz
- Max. SPL 134 dB
- 42Kg
- 435 x 700 x 700 mm



FORTY LINE SYSTEM 152 : \$16,990
3200 W/RMS. Includes 2 QL-12, 2 QL-15 & 2 QL-152.

OPERA ACTIVE SPEAKER SYSTEM

This is now the Fourth generation of this worldwide popular highly successful Italian made active speaker. All the models are fitted with high-grade Bi-amp H-class output stage and have intelligent electronics, such as the active phase-optimised diplexer or the dynamic soft clip limiter, which protects the system from overload and allows reliable operation right up to the power limit. More bass with more punch at higher sound pressure levels are due to the latest output stage technology and the 12", 15" woofers developed with an extremely light diaphragm material, generously dimensioned magnets and oscillation coils with low gap size provide high efficiency and convert the available power perfectly into sound pressure, the light weight moulded cabs are made from extremely stable polypropylene which makes them super light for stacking or flying.

- INTELLIGENT SELF-PROTECTION SYSTEM
- BI-AMPLIFIED ACTIVE LOUDSPEAKERS
- CAN BE STACKED AND ARRAYED
- EASY TO HANDLE & INSTALL
- VERY LOW STAND BY NOISE
- LINE & MICROPHONE INPUT
- JACK & XLR CONNECTION
- DURABLE AND EASY
- TOTAL RELIABILITY
- READY TO GO



OPERA-TWIN128
\$850.00



OPERA-210
\$850.00



OPERA-405
\$1450.00

TECHNICAL DATA	OPERA-TWIN 128	OPERA LIVE-210	OPERA LIVE -402	OPERA LIVE-405	OPERA-201	OPERA-302	OPERA-305
Power (RMS)	Active 100W	Active 200W	Active 300W	Active 300W	Passive 200W	Passive 250W	Passive 350W
Freq. Response	80-20 kHz	68-18 kHz	60-18 kHz	60-18 kHz	68 - 18 kHz	60-20 kHz	45-20 kHz
Crossover	2000Hz	2000Hz	2000Hz	2000Hz	2.3 kHz	2000 Hz	2000 Hz
Maximum (SPL)	118 dB max	120 dB max	128 dB max	128 dB max	121 dB max	120 dB max	123 dB max
Speaker Components	2 x 8" woofer 1" Driver	10" woofer 1" Driver	12" woofer 1" Driver	15" woofer 1" Driver	10" woofer 1" Driver	12" woofer 1" Driver	15" woofer 1" Driver
Dimen's in cm (HxWxD)	55 x 31 x 28	55 x 31 x 28	66 x 40 x 35	65 x 40 x 35	31.2 x 55 x 29	70 x 44 x 22	70 x 44 x 22
Weight	10 kg	13kg	18 kg	19 kg	8.6 kg	13 kg	14 kg
Recommended Retail Price	\$850.00	\$850.00	\$1350.00	\$1450.00	\$499.00	\$850.00	\$999.00

OPERA MODULAR SPEAKERS

MODULAR LIGHTWEIGHT SPEAKER.

The fourth generation of this worldwide, highly successful active speaker from dB Technologies, supplied with new, innovative features like the module slot for optional modules, three switchable sound characteristics and infrared remote control. All models in the OPERA series are fitted with high-grade Bi-Amp Class H output stages and have intelligent electronics, such as the active phase-optimized diplexer or the dynamic soft clip limiter, which protects the system from overload. Due to its optimal shape, the integral 90° x 60° tweeter with 1 fittings, achieves a clean sound distribution with broad, uniform radiation of the trebles.



OPERA-412M
\$1495.00

OPERA-415M
\$1595.00

DB-RC1
\$115.00



MOD-UR
\$400.00



MOD-AFP
\$250.00

SPECIFICATIONS	OPERA-412M	OPERA-415M
Power (RMS)	Active 300W	Active 300W
Speaker	12" dB Bass 1" B&C Compr.	15" dB Bass 1" B&C Compr.
Frequency Response	50 - 20000 Hz	50 - 20000 Hz
Max SPL	126dB	126dB
Crossover	2000 Hz	2000 Hz
Sensitivity	-50 bis 0dB	-50 bis 0dB
Input connection	Neutrik Combo®6 3mm Jack unbal. / XLR bal.	
Output connection	XLR bal., parallel	
Impedance	20 K Ohm bal., 10 K Ohm unbal.	
Dimensions W/D/H mm	700 x 440 x 320 mm	
Weight Net (kgs)	19 kgs	20 kgs

MOD-UR: UHF Diversity Receiver. 16 frequencies.

MOD-AFP: Anti Feedback Module

DB-RC1: Infrared Remote Control.

BASIC LINE

BASIC LINE

This new self powered speaker line provides a high quality product with great audio features and performance at an accessible price. Basic Line is designed to meet the needs of entry level applications such as DJ's, schools, and churches alike, where budget orientated solutions are required. In spite of the very attractive price, dB Technologies has not compromised the performance and reliability of these enclosures, featuring Bi-Amp technology, a frequency response of 65-18.000 Hz, XLR + Jack input and Mic-/Line Level switchable.

BASIC-100

1 x 10" woofer + 1" tweeter, max. SPL 117 dB, bi-amp 70W + 20W RMS.

BASIC-200

1 x 12" woofer + 1" tweeter, max. SPL 118 dB, bi-amp 120W + 40W RMS.

BASIC-400

1 x 12" woofer + 1" compr. Driver, max. SPL 125 dB, bi-amp 225W + 50W RMS.



BASIC-100
\$599.00

BASIC-200
\$699.00

BASIC-400
\$899.00

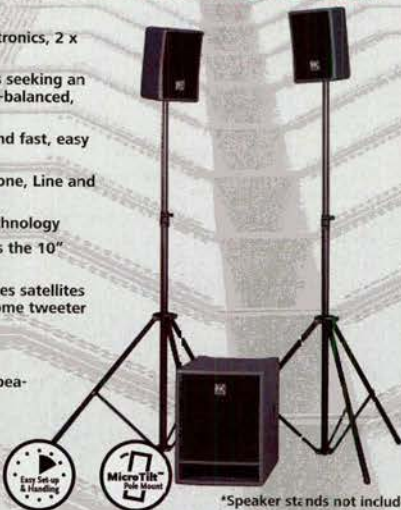
LUCAS XT

LIGHTWEIGHT ULTRA COMPACT ACTIVE SYSTEM



LUCAS-XT 3 WAY ACTIVE 370W SYSTEM: \$2995

- 1 x 10" subwoofer with built-in electronics, 2 x 6.5"/1" dome tweeter satellites
- The right solution for all entertainers seeking an extremely compact system with well-balanced, solid sound
- Ideal for multimedia presentations and fast, easy installations
- Independently variable XLR Microphone, Line and Aux inputs
- 2-way active circuitry with OFR™ technology
- 250 W RMS digital power amp drives the 10" subwoofer
- 2x 60 W RMS stereo power amp drives satellites loaded with a 6.5" woofer and 1" dome tweeter
- Total system power: 370 W
- Multi-Band Limiting technology
- HK AUDIO MicroTilt™ for accurate speaker to audience alignment
- Total system weight: 30 kg / 66 lbs



*Speaker stands not included



LUCAS 1000

LIGHTWEIGHT ULTRA COMPACT ACTIVE SYSTEM



LUCAS-1000 2 WAY ACTIVE 900W SYSTEM: \$4695

- 1 x 15" subwoofer with built-in electronics, 2 x 8"/1" dome tweeter satellites
- Ideal for solo entertainers, mobile DJs, and acoustic acts requiring more power and greater headroom
- 15" subwoofer, factory-equipped with casters
- Two satellites, each loaded with an 8" speaker and a 1" CD horn
- 2-way active circuitry featuring OFR™ technology
- 600 W RMS bass power amp featuring DynaClip™ Limiter
- 2x 150 W RMS stereo power amp with Opto-Limiter for the satellites
- Total system power: 900 W
- System weight: 61 kg / 135.3 lbs



*Speaker stands not included



LUCAS 600

LIGHTWEIGHT ULTRA COMPACT ACTIVE SYSTEM



LUCAS-600 3 WAY ACTIVE 600W SYSTEM: \$3995

- 1 x 12" subwoofer with built-in electronics, 2 x 8"/1" dome tweeter satellites
- Ideal for sound-savvy solo entertainers, small bands and mobile DJs
- 12" subwoofer, factory-equipped with casters for effortless load-in and tear-down
- Two satellites sporting an 8" speaker and a 1" CD horn each
- 2-way active circuitry featuring OFR™ technology
- 300 W RMS power amp drives the 12" subwoofer
- Two 150 W RMS power amps drive the satellites
- Total system power: 600 W
- HK AUDIO MonoTilt™ for optimum sound-to audience alignment
- Total system weight: 43.3 kg / 95 lbs



*Speaker stands not included



LUCAS 2000

LIGHTWEIGHT ULTRA COMPACT ACTIVE SYSTEM



LUCAS-2000 3 WAY ACTIVE 2000W SYSTEM: \$8895

- 1 x 18" subwoofer with built-in electronics, 2 x 12"/1" dome tweeter satellites
- Ideal for entertainers, bands and mobile DJs who require great sound and more power
- 18" subwoofer, factory-equipped with casters
- Two 12"/1" CD horn-loaded satellites
- 2-way active circuitry featuring OFR™ technology
- 1,200 W RMS digital bass power amp drives the 18" subwoofer
- 2x 400 W RMS digital power amp drives the satellites
- Total system power: 1,700 W
- HK AUDIO DuoTilt™ serves to zero in on and align sound to your audience
- System weight: 85 kg / 187 lbs



*Speaker stands not included



Sweet sound at a budget-friendly price?

PowerWorks makes it happen!

Be it a party sound system, a PA for bands and DJs, or a fixed installation, PowerWorks offers topdrawer sound even at peak levels! HK AUDIO engineers developed the PowerWorks line in a state-of-the-art acoustics lab. PowerWorks enclosures are exclusively equipped with high-quality Eminence loudspeakers, custombuilt in the USA especially for PowerWorks.

All the considerable experience of HK AUDIO engineers, painstakingly matched components and crossovers, and the quality of true Old World craftsmanship endow the PowerWorks line with the power to deliver rich, full, commanding sound.

Featuring a wide selection of passive and active models that may be mixed and matched in a variety of configurations, PowerWorks offers the right solution for the most diverse applications. And it does so at such reasonable prices that anyone can afford to enjoy audio quality engineered by HK AUDIO.



*Speaker stands not included

SOUNDHOUSE-2 ACTIVE 600W SYSTEM WITH 12" CABS: \$2895

- Features:
- RS-15SUBA bin
 - 2 x RS-112 cabs

SOUNDHOUSE-1 ACTIVE 600W SYSTEM WITH 8" CABS: \$2595

- Features:
- RS-15SUBA bin
 - 2 x RS-82 cabs



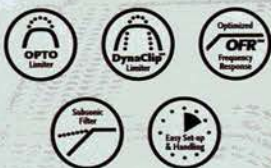
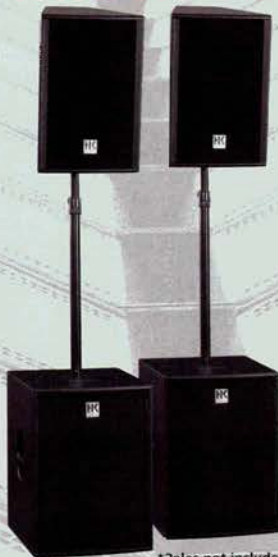
*Speaker stands not included

ELIAS PX



ELIAS-PX 3 WAY ACTIVE 1600W SYSTEM: \$7995

- 2 x 15" subwoofer + 2 x 12"/1" satellites with built-in electronics
- 12"/1" mid/high cabinet with integrated 400 W RMS power amp with Opto Limiter
- mid/high cabinet switch-able to full-range mode
- 15" subwoofer with integrated 400 W RMS power amp and DynaClip™ limiter
- Mid/high cabinets with DuoTilt™ pole mount adapter
- Integrated flying points
- Subwoofer with M20 pole mount adapter
- Subwoofer with 100 mm blue wheels



*Poles not included

ACTOR DX



ACTOR-DX COMPLETE ACTIVE 3200W SYSTEM: \$15,495

- 2 x 15" subwoofer active, 2 x 15" subwoofer passive, 2 x 12"/1.4" satellites
- 56-bit D.D.O.™ system controller
- 8 controller presets
- 3,200 W RMS of total system power
- 2x mid-high units (12"/1.4"), 600-watt PWM power amp and DuoTilt™
- 2x active bass cabinets (15"), 1000-watt PWM power amp
- 2x passive bass (15")
- ergonomically formed hand-grips



PROJECTOR



PROJECTOR COMPLETE ACTIVE 3600W SYSTEM: \$28,995

- 4 x 18" horn-loaded subwoofer, 2 x 12"/2" horn-loaded satellite
- The heavy-duty power pack for big gigs
- Fully horn-loaded—plenty of punch even at distances of 150 ft. and more!
- Basic system: four 18" subwoofers, two 12"/2" mid/high-range enclosures (flyable)
- 3-way active system electronics with OFRTM technology in every cabinet
- 600-watt RMS power amp with DynaClip™ limiter in every subwoofer for chest-slaming bottom-end punch
- 2x 300-watt RMS power amps with OPTO-Limiter for transparent sound in the mid/high-range cabinets
- Subsonic filter protects power amp and speaker from harmful ultra-sub-low frequencies
- 24 dB/octave electronic crossover for a cleaner signal
- 3-colored LED for monitoring the limiter visually
- Balanced XLR inputs/outputs
- Mid-High Units equipped with mid/long-throw switch
- Locking Powercon® socket
- Ground-lift switch to eliminate hum
- Factory-equipped with castors for easy transport



COHEDRA COMPACT

COHEDRA COMPACT™, in turn packs this same premium technology into an even more compact and flexible format, bringing the benefits of advanced engineering to new and smaller application scenarios.



CDR-108C

COHEDRA CompactMid/High Unit
1 x 8" / 2 x 1, 4", 17.9 kg



CDR-210SUB
COHEDRA Compact Subwoofer
2 x 10", 48 kg

Cohedra Compact™ Technical Specifications

	CDR 210F Sub	CDR 108 C	CDR 210 C
Power-handling peak	2400 W	1000 W	2400 W
Power-handling program	1200 W	500 W	1200 W
Power-handling nominal	600 W	250 W RMS	600 W
Frequency range - 10 dB	40 Hz - fx	79 Hz - 19 kHz	40 Hz - fx
Frequency response +/- 3 dB	47 Hz - fx	88 Hz - 16 kHz	47 Hz - fx
Coverage		100° CD Horn	
Sensitivity 1W@1m	94 dB	97 dB	94 dB
Max. SPL peak	40 dB	97 dB	140 dB
Nominal impedance	8 ohms	16 ohms	8 ohms
Low/mid woofer	2 x 10"	1 x 8"	2 x 10"
High frequency driver		2x T, 2" wide coil	
Crossover frequency	Controlled by DFC	800 Hz, 12 dB/octave	Controlled by DFC
Connectors	2x Speaker NL 4	2x Speaker NL 4	2x Speaker NL 4
Weight	32 kg/ 70.4 lbs.	17.9 kg/ 40 lbs.	48 kg/ 105.6 lbs.
Dimensions (w x h x d)	110 x 32 x 40 cm	50 x 26 x 32.5 cm	50 x 60 x 63 cm
	43 1/8" x 12 1/4" x 15 5/16"	19 5/8" x 10 1/4" x 12 3/4"	23 5/8" x 19 1/16" x 24 13/16"
	F: 65 x 48 x 60 cm		
	25 5/8" x 19" x 23 5/8"		
Optional accessories	Protective Cover	Touring Flight Case	Protective Cover
	Dolly with Casters	Standard Rigging Frame	Dolly with Casters
		Touring Flight Case	Lightweight Rigging Frame



CDR-210F

COHEDRA Compact Groundstack

PREMIUM PASSIVE SPEAKER SYSTEMS PR:O

- 1" driver
- High maximum SPL (128 dB)
- Ergonomically formed handles
- Comes standard with flypoints
- Integral hi/low-pass crossover in the bass unit
- DuoTilt™ speaker-stand mounting cup
- M20 pole-mount cup in the bass cabinet
- Speakon® connectors
- Recessed connector panels for plug protection
- Casters available as an option



PRO-12: \$925
12" / 1", 400 W, 8 ohms



PRO-12M: \$895
12" / 1", 400 W stage monitor, 8 ohms



PRO-15: \$995
15" / 1", 400 W, 8 ohms



PRO-18: \$1295
18", 500 W subwoofer, 4 ohms



PRO-15X: \$1095
bi-functional housing, 15"/1", 400 W, 8 ohms



D.A.R.T
DIGITAL ACTIVE
REINFORCEMENT TOOL



DART-112AM ACTIVE 310W F.O.H. OR MONITOR: \$2150

- Delivers strong and clear monitor sound without the hassle of endless tweaking and tuning
- 12" speaker for punchy low mids and excellent speech intelligibility
- 1" driver with 60° x 40° CD horn for transparent midrange and crisp top end
- Digital power amp with 250 watts RMS and over 90% efficiency for powerful lows and low mids
- Power amp with 60 watts RMS for the 1" driver
- Two-way active circuitry featuring OF-RTM technology reproduces the full spectrum of sound at any level
- MultiBand limiting for key frequency ranges
- Multi-functional design with DuoTilt™ speaker stand mounting collar
- Balanced, separately adjustable microphone and line inputs
- RCA connector for patching in signals from CD or tape
- Tricolor LEDs for displaying limiter status
- Included two-band EQ makes sound-shaping fast and easy



F.A.S.T
FLEXIBLE ACTIVE
SOUND TOOL



FAST-112A ACTIVE 300W MULTIFUNCTION SPEAKER CABINET: \$1495

- 300 W power amp
- 12" Low/Mid speaker
- 1" CD horn 60°x 40°
- XLR microphone input
- Combination XLR - 1/4" jack line input
- DynaClip™ Limiter
- OFR™ technology
- Subsonic Filter
- DuoTilt™ speaker stand mounting collar (lines up sound to project toward the audience)
- Multifunctional housing



MindPrint DIGITAL RECORDING TOOLS

The people who have joined forces to comprise the MindPrint team share many years of experience helping musicians translate their musical ideas into audible reality. From tube technology, pro audio and mixing consoles, to today's key studio problem: ensuring that digital remains musical, MindPrint have the solutions.

MP-TRIO : \$899.00

T.R.I.O. The total recording solution! The TRIO by Mind Print combines all of the products needed to make great recordings with your existing computer interface. The TRIO contains a three-way speaker selector, dual headphone outputs, built-in talkback, zero latency monitoring and a great sounding class A mic pre-amp. Other features include •48 V phantom power, •HiZ instrument input by Hughes & Kettner, •Analog Compressor with Adaptive Response™, •Low Cut Filter for MIC/INSTR., •2 Band EQ for MIC/INSTR., •2 Band EQ for LINE, • Analog Insert Send/Return for external processors, •Dedicated direct out, •Simultaneous use of MIC/INSTR., LINE, AUX, DAW analog and DAW digital for a total of 9 channels, •24Bit/96kHz Digital Interface S/P-D F compatible with most DAWs and sound cards, •Dynamic Range >105 dB(a).



MP-ENVOICE : \$1099.00

EN-VOICE MK II, combines a high-quality tube recording preamp with advanced compression. Features •mic input with 48V phantom power, •instrument in, •line in, •balanced insert, •Low-cut 80Hz switchable filter with 3-band parametric EQ, •Attack/release circuit with 8 presets, •USB connectivity for interfacing with other gear, •Switched-mode power supply ensures you're protected from power surges and fluctuations, •Tubecompressor with adjustable Tube-Saturation, •low-cut 5 dechain-filter, 300Hz, 6dB/Octave, •Balanced Line-Out XLR and Jack, •Optional digital I/O available.



MP-DTC : \$3295.00

DTC Dual Tube Channel, high-end recording front end with 2 channels of boutique quality microphone preamplification. An advanced 4-band parametric EQ processes in parallel, which means selectable frequencies are handled by each band concurrently for highest quality. Compressor/limiter uses tubes and optocouplers to deliver the ultimate in fresh, crisp sound. Special "Adaptive Response™" circuit tracks signal amplitude and envelope, adjusting attack and release times immediately as necessary. 2 AKM DI-MOD 24-bit/96kHz A/D/A converters enable outstanding input and output sampling quality. Other features include •AD converter: AK 5393 VS, •DA converter: AK 4393 VS, •S/PDIF coaxial IN and OUT, •S/PDIF optical IN and OUT, •AES/EBU IN and OUT (DI-MOD 24/96 AES/EBU), •44.1/48/96 kHz sampling frequency in MASTER mode, •Syncs automatically between 32 - 108 Hz in AUTO mode, •All digital inputs can be used as sync reference, •Can use different sampling rates for DA and AD in master mode, •Stereo monitor out for DA. Dynamic range: >113dB(a).



FIFTY LINE

This Fifty Line Long Throw active system is the most flexible PA system for professional use making this system a compact system ideal for concert, touring and open-air productions. The heart of this Italian made professional system is the Tri-amp 3 channel integrated power amplifier that is electronically controlled with such features as Powercon connections with link out, 4 speed ventilator with an easy access filter system, a -3dB switch to link the FL10 top box and a independent full-wave limiter for each power amp channel, an intelligent status LED is used to indicate failures such as low electrical power, limiter activities and so on. The construction feature of the Fifty line use 19mm Birchwood and plenty of bracing internally makes it a well balanced design. The unit offers 2 35mm flanges for space bars, 4 M10 rigging point and nine align points for stacking, the size of the units makes it easy for transporting and rigging the outside is covered by an extremely strong 2-component Polyurethane protection system, the grill is super strong 1.5mm thick steel.



Pick the Sexy Italian...

FL10 PASSIVE

- 10" woofer horn loaded
- 1" B+C Comp. driver
- driven by FL 15
- 250 - 19,000 Hz
- SPL 131 dB peak
- Dispersion 75° x 50°
- Speakon 4 connector
- 23.5 kg
- 500 x 500 x 650 mm



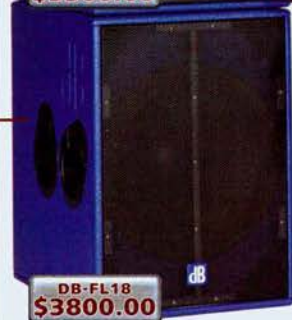
FL 15 3-AMP ACTIVE

- 100 + 300 + 500W RMS
- 15" Bandpass-Woofers
- 53 - 250 Hz
- Max. SPL 132 dB
- Crossover out at 250 Hz
- 2 x Neutrik Powercon
- 1 x Neutrik Speakon4- Out for Bi-Amping FL10
- 42Kg
- 500 x 500 650 mm



FL 18 ACTIVE

- 600W RMS
- 18" B&C-Speaker
- 40 - 100 Hz
- Max. SPL 133.5 dB
- Crossover out at 100 Hz
- 2 x Neutrik Powercon
- 50 kg
- 500 x 700 x 650 mm



3000W/RMS STEREO STACK \$19,600.00

www.cmi.com.au

FIFTY LINE

D.E.A.CON

Dynamic Enhancement And Controlling System



DEACON COMPLETE ACTIVE 3200W SYSTEM: \$18,995

- 2 x 12" mid/high unit, 2 x 18" sub A active, 2 x 18" sub B passive
- A compact PA system for bands, featuring powerful sound and effortless handling for large events
- 12" / 2" mid/high units equipped with a 600W RMS digital power amp and digital system controller
- DDO™ controller technology for naturalsounding, true dynamic response at every volume level; affords reliable protection of the entire system
- Mid/high unit featuring full-range mode switch, DuoTilt™ and M10 flight rigging points
- 18" subwoofer equipped with a 1,000-watt-RMS digital power amp and a connector for an additional passive bass bin
- Subwoofer with 80 mm casters (3-1/8" wheels)
- Extraordinary flexibility: D.E.A.CON may be deployed with four, two or no subwoofers.
- Accessories: Protective cover, flight frame for mid/high unit, D.E.A.CON tilt unit



YOUR BRAND DETECTIVE

Ether ES Sound

ETHERSOUND PROMISE 512 AUDIO CHANNELS ON A SINGLE CABLE

Ethersound expect to ship a Gigabit-EtherSound by mid year for 512 audio channels at 24 bit/48 kHz over a single cable (256 in each direction).

Digigram's EtherSound is an elegantly simple and open standard for networking digital audio using off-the-shelf Ethernet components. The specifications of Gigabit-EtherSound that will include 512 audio channels over a single cable (256 channels in each direction) as well as a bandwidth of 100 Mbit/s for control and IP data transport, while maintaining ultra-low latency of only 125 microseconds.

EtherSound in its current stage is configured for 100 Mbit/s networks and offers a maximum channel count of 128 channels of 24-bit/48 kHz linear audio (64 channels in each direction) as well as a control data throughput of 768 Kbit/s maximum.

Beyond the obvious advantages of a quadrupled audio channel count, Gigabit-EtherSound will also dramatically enhance the capabilities to control connected devices and to use the EtherSound network to transmit other data, for example IP control or media streaming. Not only will Gigabit-EtherSound multiply the available data bandwidth by 130 to typically 100 Mbit/s; even more importantly, this non-audio-data will travel on the same cable using a dedicated data path, which means that every IP/Ethernet data can be routed through a Gigabit-EtherSound network.

Today, daisy-chained EtherSound devices create a virtual bus, where all audio channels are available to all connected devices. Gigabit-EtherSound will build on this capability to connect the "last" device of a daisy-chain to the "first" device. In case of a cable or device failure, which interrupts the signal flow in the ring, the system will automatically determine the new first device of the daisy-chain, which then maintains the virtual bus and thereby signal path integrity throughout the network. The system will automatically return to its normal operation mode as the ring is restored.

www.digigram.com



CRESTRON INTRODUCES NEW TPS TOUCHPANELS

Crestron introduces the new Isis TPS-G line of touchpanels featuring high-resolution computer graphics and HDTV capabilities, expanded memory and dual-window video display. TPS-G touchpanels are available with 12" and 15" displays in a variety of styles including desktop, tiltcase and wallmount designs. The touchpanels are wireless 802.11g capable via compact flash, and include a bi-amplified speaker system, built-in microphone, and three Crestron QuickMedia (CM) ports.

The TPS-G Series accepts baseband video, HDTV signals up to 720p and 1080i, and high-resolution graphics up to 1600x1200. Screens feature a dual-window display to view full motion video and high-

resolution RGB. The touchpanel GUI can be output to an external display along with speech audio from the built-in microphone and stereo program audio.

Video signal enhancement features such as the built-in scaler with motion adaptive deinterlacing, gamma correction, time-base correction and 3:2/2:2 pulldown maintain the optimum, high-quality video images on the touchpanel display.

The touchpanels also include a PC card slot for wireless 802.11g LAN capability, built-in 10/100BaseT Ethernet, two QuickMedia (QM) input ports and one QM output. QM is Crestron's technology that streamlines presentation system design and simplifies installation by transmitting virtually all audio, video, and computer signals over a single CAT5e or CAT6 type cable.

www.crestron.com.au



GREEN HIPPO AND SCENECHANGE MERGE

Scenechange and Green Hippo announce the merger of the two companies under the name of Green Hippo Ltd.

Up until recently Scenechange the digital media specialists had been working very closely as the exclusive worldwide distributors of the award winning Hipotizer media server, but as the sales and the worldwide distribution network began to grow, it was time to

look at the future.

James Heron, director and part founder of Green Hippo explains:

"It's become more and more apparent over the last year or so that the combination of Green Hippo and Scene Change as a force for furthering the Hipotizer has really been a meeting of like minded enthusiasts. Like two heads sharing one brain! Relationships have been so closely bonded that we could not see any sense in operating as individual businesses."

www.hipotizer.com



VALE IAN BOWIE

Theatre technical personality Ian Bowie died suddenly in Sydney in October. He keeled over at home, without warning.

There once was a bloke who liked to smoke & Ian was his name. His claim to fame was the theatrical game, and because of his fashion, drums were his passion. He knew how to have the best of fun helping us with our music a-tonne, he always loved dogs and went to the beach wearing togs. Then sadly one day our uncle Ian passed away, leaving us all behind. But the beautiful memories we have & the fun times we had all shared, he will always be in our hearts & our mind. Lisa & Tom Bowie.

Ian was born in Sydney on the 19th of July, 1953. He was to become the oldest of four children, one of whom, Allison, died within hours of being born. He spent most of his childhood and teenage years at Blakehurst in Sydney. He is survived by his brother, Greg and his sister, Susan.

Stories about Ian's drumming and lifestyle including one when he lives in a block of units which looked like a very old house in Bronte. Apparently Ian had his neighbours collecting egg cartons so that he could soundproof a room in the complex. His time at Bronte allowed him to develop his slightly Bohemian lifestyle and his occasionally eccentric character. It was wonderful to visit him there and he was always proud to introduce us to the people with

whom he co-existed. It was at Bronte in the seventies that Ian made a collar for his beloved dog, Ned, that flashed red lights. Ian would put 'Disco Ned' on the back of his Ute on a Saturday Night and Ned would stand by proudly being the subject of attention from passing motorists.

Ian's zest for life was always evident. He was excited about a drumming gig in his forties as he was always in his twenties and would ring to share his joy about where he had played and how it went. One of his most recent achievements was to play the drums at the Opera house. Part of the excitement there was the fact that for once he was not the 'roadie' on the job. Ian's resume provides an insight in to what an extraordinarily diverse and talented



Ian's contribution to the entertainment industry and particularly small theatre will be sorely missed.

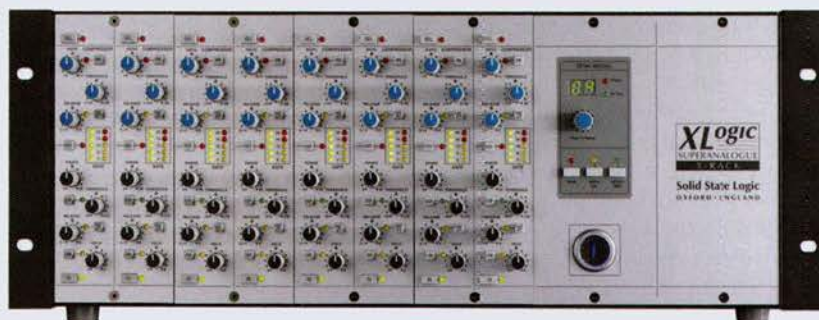
person he was and whilst it would be too lengthy to state every position that he held, it would be remiss of us not to mention the enjoyment he got out of the eight years or so that he spent touring with the Delltones.

In the last 15 years Ian had the opportunity to bring his creative and design talents to new heights when his involvement with the entertainment industry morphed into an indispensable role with small theatre. He designed and built sets, did the lighting and the sound systems and in some cases filled in for the actors. He actually performed in a play at the Nimrod many years ago playing the role of a drummer...of course. CX

NEW UNIT BRINGS XL 9000 K SERIES DYNAMICS PROCESSING TO THE OUTBOARD RACK FOR USE FROM STUDIO TO DESKTOP

Solid State Logic has released the **X-Rack Dynamics Package**.

The X-Rack Dynamics Package offers up to 8 x mono dynamics processor modules based on the XL 9000 K Series SuperAnalogue console in a 4U rack-mount frame complete with Total Recall capability. The modules replicate the performance, look & feel of the XL 9000 K through a vertical control layout. Compressor controls feature



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The Total Recall facility offers 32 local flash memory recalls and Save/Load switches for custom setup

and recall of entire settings. An external interface allows integrated connection to the AWS 900 console. A daisy chain connection of multiple X-Rack units is also available. Total Recall data is easily saved from the X-Rack into the AWS and from there onto a DAW.

From www.ambertech.com.au CX

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Adam Burbury is a freelance engineer specialising in orchestra work, he came and demonstrated the transducers at Juliusmedia college recently. The benefits are obvious, the plate works from resonance so extraneous sounds are excluded. Feedback is minimised.

One issue is that some orchestra members are wary of having the plate attached to their instrument, despite the attachment causing no damage. That is mainly an education issue, and is understandable when you consider that a full orchestra travels with instruments worth up to \$10 million.

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Adam Burbury

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MPEG

**THE BEE'S KNEES
OF SQUEEZE**

4

MPEG-4 has been lurking in the compression corridors for what seems like eons. Now the brilliant codecs are barnstorming into our audio/video lives, changing the way most programme material is transmitted, received and stored.



By Brian Coleman

At a time of high-flying technological change, MPEG's latest and greatest compression codecs seem to have been on a holding pattern. MPEG-4 AVC (Advanced Video Coding) also known as H.264 (which uses about half the storage and transmission space as MPEG-2), and MPEG-4 AAC (Advanced Audio Coding), actually met final approvals by the Moving Picture Experts Group (MPEG) at meeting number 66 in Australia in October 2003. Ironically, the unhurried change to MPEG-4 can partly be attributed to the success of MPEG's own predecessors: video codec MPEG-2, the broadcast and DVD standard, and audio codec MPEG-1 Audio layer 3—the ubiquitous MP3.

MPEG-4 development saw a lot of 'parts', but when parts 3 and 10 were unfolded the real picture (and sound) became very clear. Part 3 is the audio codec MPEG-4 AAC (which has increased audio performance at stereo bit rates down to 64Kbps and

below), and part 10 is the video codec MPEG-4 AVC/H.264.

Names as complex as MPEG-4 Part 10 AVC aka H.264, and MPEG-4 part 3 AAC can be confusing, but fortunately the much-talked-about video and audio codecs are now commonly referred to as H.264 for video and AAC for audio.

During its seventeen-year compression reign MPEG has enjoyed enormous success,

saw that prevail as the standard (MPEG-3 should not be confused with MPEG-1 audio layer 3, which became known as MP3, now also on the outdated hit list)—and now there is MPEG-4.

Apple made 'quick time' in the early days of MPEG-4 to embrace the developing technology—so much so that it is often mistakenly believed to be Apple's own codec. This early codec was in fact MPEG-4 Part 2,

“H.264, stunning video quality from 3g - mobile phone technology - to HD (High Definition).”

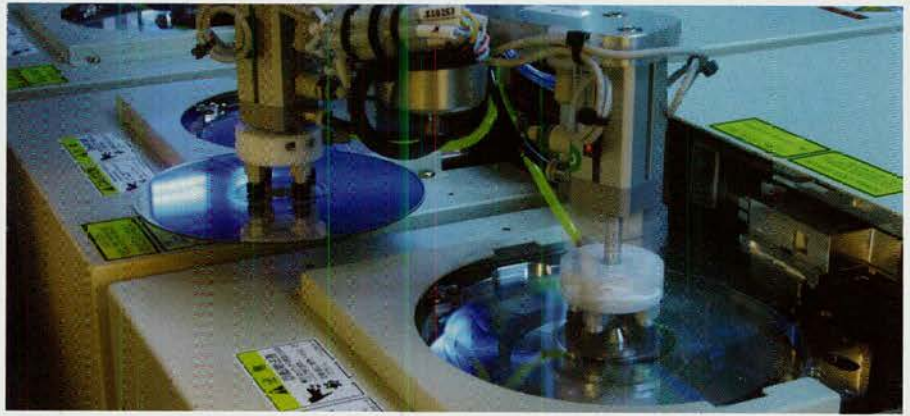
delivering all the mainstream industry standards: MPEG-1 (now outdated), a low quality (but much used) video compression for Internet video clips, CD ROMs and VCDs; MPEG-2, which is the current compression standard used on DVDs and in television broadcasts; MPEG-3 (now discontinued), which was supposed to be the video standard that handled broadcast transmissions including HDTV, but modifications to MPEG-2

which had been around since 1993 and was incorporated into Apple's Quicktime Movies in 2002. Apple's newly released Quicktime 7 now boasts H.264, and their current catchphrase is “H.264, stunning video quality from 3g (mobile phone technology) to HD (High Definition).” Apple have H.264 encoded versions of the movie trailer, Serenity on the website (Google: apple + serenity). Download the free Quicktime 7

player, and if you've got the bandwidth and a good resolution monitor, watch it in full HD, 1080p (progressive scanning).

It wasn't surprising that Apple also embraced MPEG-4 technology when they launched iPod. Although commonly referred to as an MP3 player, iPod's computer software interface, iTunes actually uses the MPEG-4 AAC encoder to create iPod's m4a audio files. Of course iPods do store and play MP3 files, along with Apple Lossless and even WAV files—if you want to drastically reduce your storage space.

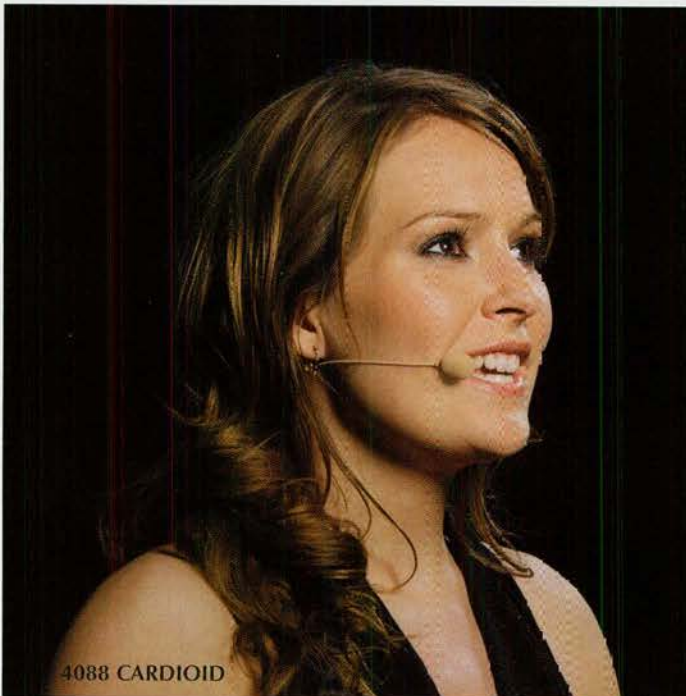
Apple's new authoring and encoding package, DVD Studio Pro 4, which incorporates the H.264 codec, allows users to encode HD content using an existing DVD burner onto existing DVD media. The package also has support for the revolution that HD DVD and Blu-ray disc will bring when they start to hit markets in 2006. Whilst the format war between the Sony backed Blu-ray disc and the Toshiba (now joined by Intel and Microsoft) backed HD DVD will be a long fought one, the codec issues have already been resolved, with both H.264 and Microsoft's VC-1



HD DVD discs using MPEG-4 encoding in production.



Euro 2000 was Europe's first dedicated HD broadcaster, and the first to transmit in MPEG-4 AVC/H.264.

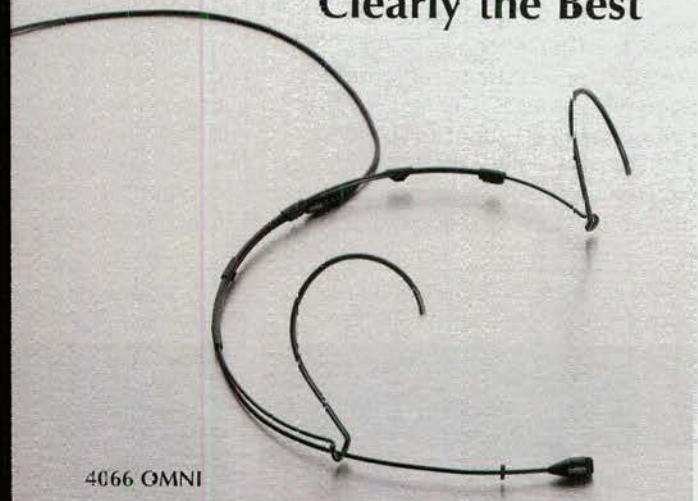


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Yoshihisa Fujii, President of Toshiba's Digital Media Network Company at a HD DVD conference.

gaining approvals for the new high density, high definition discs. MPEG-2 will still be used to encode Standard Definition versions of content onto both disc formats.

Since the inception of the Internet there has always been a separation of technologies between broadcast and cyberspace—the Internet always being the poorer cousin of broadcast. But H.264 is a broadcast standard codec that has captured the imagination of world terrestrial, cable, and satellite broadcasters—now the Internet has become that level playing field that has been talked about for so long. This is quite significant with Video On Demand (VOD) picking up around the world. Now a broadband

connection and a set-top-box with the H.264 codec can become the cable of the future.

When Apple unleashed their new Mac OS X Tiger recently they posted the CNBC (US) news broadcast of the release on their website as a demonstration of how a television broadcast encoded with H.264 in Standard Definition (SD) would look on a computer. The clip was 640 x 480 pixels, NTSC 29.97fps, encoded at approximately 675Kbps. It was picture perfect and in reality demonstrated that even a broadband user on 512K could watch and record H.264 broadcast programmes that were actual television quality on a computer with very little buffering. Stand by for an invasion of Internet

broadcasters—broadcasting television quality signals. Or why not set up your own Internet TV station?

Euro1080, which officially launched on January 1st 2004, was the first European Television group to broadcast exclusively in High Definition (1080i), which they transmit via satellite and cable to European households, digital cinemas and large venues. Euro 1080 utilise the Belgian Alfacam OB vans to shoot world sports, special events, and entertainment. They commenced using the industry standard codec MPEG-2, but in June of this year Euro 1080 added another channel, HD2, creating the very first channel to broadcast HDTV in MPEG-4. The group also announced that they were planning to phase out the world broadcast standard, MPEG-2 with a switch-off date of 1st January 2008 when the simultaneous MPEG-2 transmissions on satellite ASTRA would end.

In November, 2005 Tandberg Television's High Definition video encoding and distribution system will utilise H.264 to encode HDTV in Germany for DPC (Digital Playout Centre), who are preparing for the launch of HD services to Europe's largest TV marketplace. And in France on September 14th, 2005 French broadcaster, TPS transmitted a short HDTV movie encoded in H.264 from the Eiffel Tower. The HD channel was inserted in the existing multiplex and was 11Mbps in total. The quality of the transmission was compared with the same material encoded in MPEG-2 at a bit rate of 18Mbps, and no quality differences were reported. MPEG-4 SDTV transmissions have already been authorised for all commercial digital terrestrial television (DTT) services in France.

Some of the Sony here. Sony equipment in opposition HD DVD encoding chain.



HD-DVD is supported by Toshiba, NEC, Sanyo and Thomson (Thomson also supports Blu-ray).



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Another major coup for H.264 was DIRECTV, America's leading and fastest growing digital multichannel television service provider, who claim more than 13.9 million customers. The digital network recently chose H.264 when they launched Spaceway F1, a satellite that is capable of delivering hundreds of HD signals to customers across the US.

Currently, in Australia all cable, satellite, and terrestrial transmissions are in MPEG-2, and that includes the 20 hours per week per channel Government mandated HD broadcasts. MPEG-4 is being used in broadcast production for off-line proxy editing—that is, taking a smaller MPEG-4 copy of a file and

When Australian broadcasters were allocated the r share of the Australian frequency spectrum, with consideration to transmit digital television, MPEG-4 wasn't on the agenda. Few will dispute that the free-to-air broadcasters argued for maximum amounts of the spectrum so as to keep out looming opposition broadcasters, and not as they indicated to utilize the bandwidth to bring Australian consumers broadly into the HDTV spectrum. But with multichannelling legislation looking like getting the green light by the Federal Government, free-to-air broadcasters may look to H.264 to squeeze more content down their multichannels, including HDTV

standard. But even though it is highly unlikely that Foxtel Digital will transmit HD in the near future, the savings on bandwidth and storage by using H.264 even at SD may be too tempting to resist.

iPod's computer software interface iTunes actually uses the MPEG-4 AAC encoder to create iPod's M4a audio files.

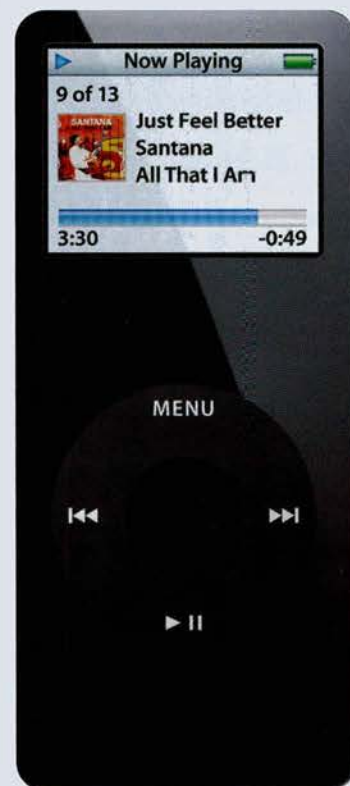
“iPod's computer software interface, iTunes actually uses the MPEG-4 AAC encoder to create iPod's M4a audio files.”

editing off-line for speed and convenience, to be later matched to the original.

Australian broadcasters are very happy with the quality of MPEG-2, but are aware that MPEG-4 uses roughly half the storage space and half the transmission bandwidth. Where MPEG-2 might use up to 20 Megabits per second for a HD broadcast MPEG-4 will use around 8 Mbps.

broadcasts. But like broadcasters around the world Australian broadcasters have millions of dollars invested in MPEG-2 infrastructure.

When NCS (who originally set up DIRECTV in the US) set up Foxtel Digital in Australia, Foxtel Digital had no intention to either transmit High Definition or to utilize MPEG-4. Foxtel Digital unashamedly wanted to transmit maximum Standard Definition content using the existing






Euro 1080 shoot live sporting events in HD, and now transmit in MPEG-4 AVC/H.264.

Another group that was keen to improve the quality of its transmissions (which were mostly squeezed down ISDN telephone lines at varying transmission speeds from 64Kbps up to 512Kbps) was the video conferencing industry. Industry giants, Tandberg and Polycom have both embraced the H.264 codec in their range of video conferencing equipment—H.264 making the equipment very viable over IP (Internet Protocol). Mobile phone colossus, Nokia, along with other cell phone companies, use H.264 technology in their 3G systems, and H.264 is installed in Nokia's new DVB-H (Digital Video Broadband, Handheld), which is now trialing in Sydney. DVB-H receivers will be able to receive television and selected broadcasts on a portable device slightly larger than a mobile phone.

MPEG's main challenger in the compression stakes comes from Microsoft, who developed their WM9 (Windows Media 9) codec to compete in the broadcast, production, and High Definition DVD markets. This offspring of WM9 was named VC-1, but was originally called VC-9 (just to add to the confusion). In 2003 Microsoft proposed its VC-1 codec to SMPTE (Society of Motion Picture and Television Engineers) as an industry standard, but during the long haul through SMPTE's

standardisation process MPEG-4 gained considerable ground. It is also fair to say that Microsoft's proprietary policy is not considered as favourable as the open standard of the MPEG-4 codec. It is doubtful that VC-1 will become a dominant broadcast standard, however since Microsoft are looking hard at VOD, the codec will certainly be installed in a number of VOD set-top-boxes, and it's already approved for High Definition DVD media.

Compression encoding companies such as Tandberg Television are hedging their bets by incorporating both VC-1 and H.264 codecs in their encoders. At this year's September IBC broadcast exhibition in Amsterdam, Avid Technology and Microsoft announced a collaborative development initiative: Avid plans to provide native support for VC-1 in upcoming versions of its digital nonlinear video-editing products, as well as its Digidesign and M-Audio digital audio production solutions. But Avid is also a big supporter of H.264.

When CX went on location at the Hunter Harvest Event (see article this issue), which one80 Digital Post shot in 1080i HD (one80 also shot The Eagles Farewell Concert), it was inevitable that we would ask Graeme Armstrong, Client Services Manager, his opinion of MPEG-4 AVC/H.264. His reply: "We've tried it; it's fantastic." 



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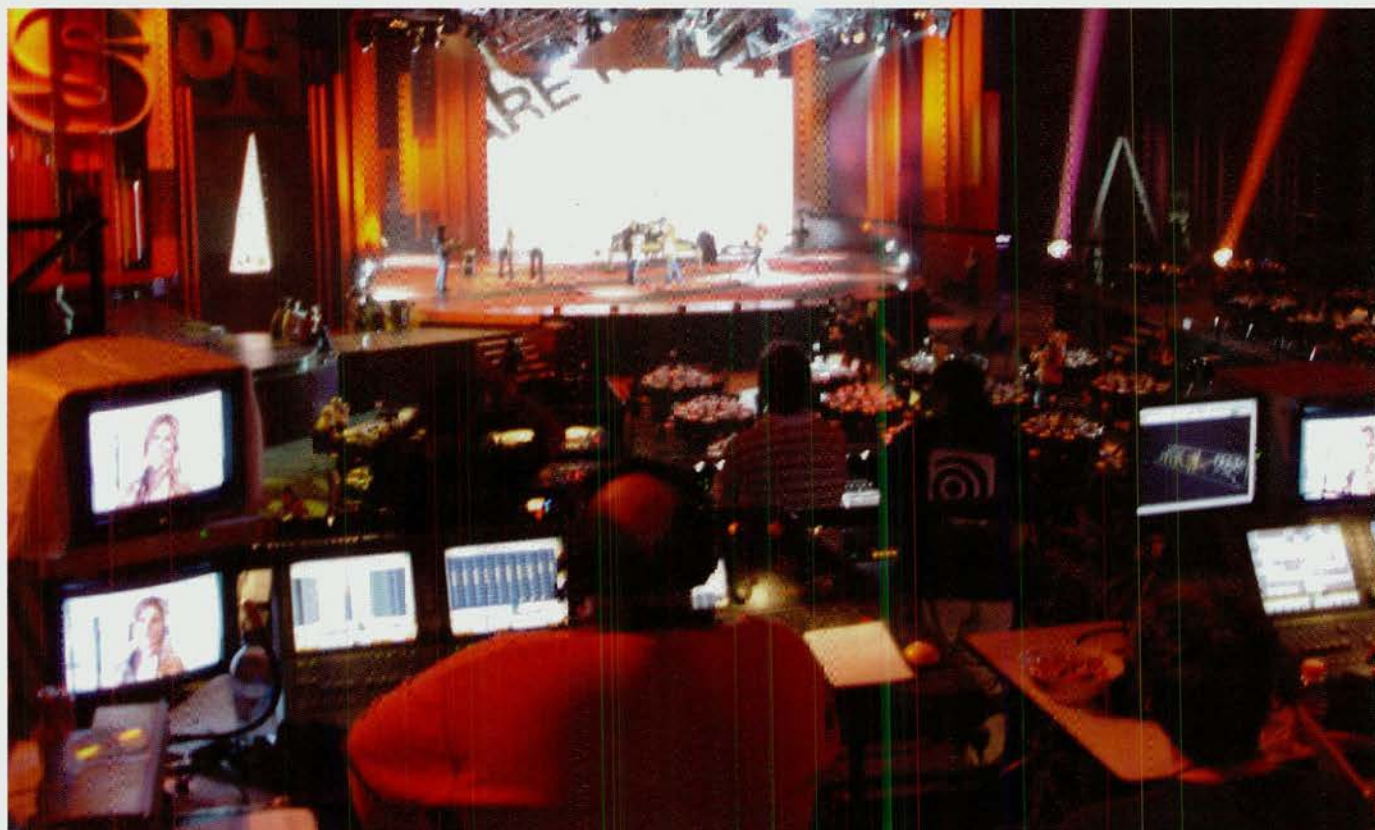
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LIGHTING THE ARTS



Controlling the behemoth via two GrandMA lighting consoles with fixtures spread across eleven DMX streams.

There's no other annual event like the ARIA awards that brings together such an amazing array of Australian talent, both on and off the stage. The 2005 awards were no different – staged at the Sydney Superdome on October 23.

By **RICHARD NEVILLE**

Francesco Calvi returned to design the lighting for the awards, with Paul Collison acting as programmer. When asked for his description of the lighting rig, he replied "there's shit everywhere, and you can quote me on that!" – A statement that was more than true for the scale of the show.

The stage design for the 19th annual awards revolved around two performance stages either side of a smaller host stage with an integrated mosh pit. The remainder of the Superdome's floor was built up to several different levels to accommodate around one hundred tables for the various guests. General admission seats were then sold for half of the venue.

Lighting the room and stages is no simple task. Francesco used some 376 Par64 NSP and 30 Mac2000 Wash fixtures just to light the tables and audience. Heaps of truss was flown to accommodate the audience fixtures

with an average trim of thirty metres above the stadium floor.

The two stages featured dramatically different lighting designs. The main 'rock' stage, where acts such as the Rogue Traders, Jimmy Barnes and Grinspoon performed, featured a tangled design of chrome box truss suspended from a large mother grid of pre-rig box truss. Mac2000 Washes and 14 bars of ACLs helped give the stage a rocky but random feel. Hidden for most of the show, this stage also had five truss 'pods' that were lowered and moved during Jimmy Barnes' performance. Each of the hexagonal pods held four Molefay duets: an Atomic strobe and four Mac2000 Profile fixtures. If all of this wasn't enough, a further eight Mac300s lined the sides of the stage, and a host of other effects were brought in for different acts, including a dozen 5k Fresnels on stands for Grinspoon's performance.

On the other side of the room, the nine metre circular stage was lit by two 16ft chrome triangle trusses, which

were again controlled to move and change angle throughout the evening. Each triangle held 48 Par64s, eight Mac2000 Washes and nine VL3000 Profiles. A rear truss filled with more VL3000s and Mac2000 Washes provided Francesco and Paul with more than enough backlight and set lighting.

Nestled between the two larger stages, the presenter stage was lit with more VL3000s, Mac2000 Washes and a compliment of 2k Fresnels. While for a moment it looked like no LED fixture had found its way on to the ARIA set, Show Technology were quick to answer Francesco's call to find something to add a little more depth to the stage. 20 of Show Technology's new LED tubes (known to the crew as 'Happy Tubes') were installed in vertical sections to compliment the set design. Also built into the stage design were a number of frosted panels that housed conventional fluorescent tubes, while the set itself was lit for above with 28 Source 4 Pars.

All up, the lighting inventory was of a more than considerable size – 66x



The main 'rock' stage featured a tangled design of chrome box truss suspended from a large mother grid of pre-rig box truss.

Martin Mac2000 Wash, 40x Vari*Lite VL3000 Profile, 26x Martin Mac2000 Profile, 18x Mac600, 12x Atomic Strobes and 4x 7k Space Cannons. 484x Par64 NSP, 20x Molefay Duets and 36x Source 4 Pars completed the rig. Control was via two GrandMA lighting consoles with fixtures spread across eleven DMX streams. One console controlled the house lighting system while the other provided control for all of the stage lighting.

Bump in began eight days before the event, with equipment supplier Bytecraft unloading what seemed like a never-ending stream of semi-trailers. Seven busy days of bump in, camera rehearsals and dress rehearsals followed, with the lighting crew kept on their toes continually due to the large amount of equipment moving around both on and above the stages. Rigging crews were kept more than busy for the first two days as Pollards hung around 130 points for lighting, audio and scenic motors while both Jands and Bytecraft worked on the stadium floor assembling their rigs. By late Tuesday, the lighting system was powered and flown to allow the enormous set and scaffolding to be constructed for the remainder of the week. While the bulk of the work was done early in the week, the lighting crew were kept more than busy with the set lighting and array of moving set pieces that featured in Francesco's design. Bytecraft Superscreens were

also on site, installing several sections of brand new video wall that the company recently bought.

On the stage deck, 16 Mac600s were stationed in various positions, and a number of practical fixtures were used for specific acts. Grinspoon's appropriately named Hard Act to Follow performance was backlit by a dozen 5k Fresnels on film stands scattered around the stage.

Following the exceptionally smooth show day, a day and a half of intensive bump out followed, with the entire venue cleared a little under 48hrs after the last guest left on the Sunday night.

Nikki Koumos was Bytecraft's crew chief and responsible for putting together the enormous dimming and distribution system that ended up pulling around 1,500 amps per phase. Nikki was assisted by eight other Bytecraft technicians from both Sydney and Melbourne and up to twenty two Australian Crewing workers. A further six follow spot operators were brought in for the event who were called by Hugh Tarant. In addition to supplying all of the event's lighting, Bytecraft Superscreens were responsible for the five LED screens installed around the set, including the enormous wall that formed the backdrop for the rock stage.

In the roof above the lighting crew, Pollard Productions supplied the rigging expertise to hang well over 110 rigging points for lighting, audio, video and

staging. Fortunately, Francesco's lighting design worked around the infamous Superdome 'gondola' (the large video and scoreboard display module that hangs in the centre of the room, and is notoriously difficult to move and rig under).

The 2005 ARIA Awards were hugely successful and the lighting created some great moments that were conveyed nicely by the well-directed television coverage. While the intricate design kept the riggers and lighting crew busy, the result was a unique, well designed lighting rig that worked incredibly well with the stage design, performances and scale of this year's ARIAs. CX



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ON THE ROAD WITH THE SPAZZYS

Trevor J Cronin hits the road for a quick trip around the Australia and files this report for CX magazine.



The Spazzys cranked out their unique brand of punk on the Coke Live 'n Local Tour.

Brisbane, Sydney and Adelaide Entertainment Centres, Perth Challenge Stadium and Melbourne's Rod Laver Arena- the Coca-Cola Live 'N Local tour has just winged its way around the major Australian City's.

The tour featured some of the Industries top rock & Hip Hop artists. Each night the show was a 5 hour music feast (with a bit of marketing thrown in) for the 10'000 odd audience members. Coca-Cola put in a major effort to promote the

tour along with co sponsors X box, Motorola and HMV.

Many of the 40'000 ticket holders were witnessing their first big rock concert, all made possible from collecting a few soft drink labels and logging on to a web site...

The shows headliners 'The Living End' had just emerged fresh from the recording studio armed with some new material from their upcoming album.

Spiderbait, P Money' Dallas

Crane' and The Spazzys along with MC's Weapon X & Ken Hell completed the line up.

In each State a band competition was held and the winners were given their big break, opening the show in their home City. It was a full on multi media arena show- no expense was spared in producing a world class event for the predominantly under 18's audience.

Frontier touring company produced the shows with the very experienced Ian Smith at the Helm.

The ladies from Mushroom marketing made sure that the gig didn't go unnoticed.

Production equipment and technical crew were supplied by some of Australia's most successful operators: Jands for the sound, Chameleon for lighting and Big picture for the extensive visual presentations.

3 semi trailers transported the equipment around the country, the logistics were made much simpler as all bands are based in Melbourne, which was the location of the last show....

It was a fairly massive undertaking with over 70 touring personnel to be taken care of on the road. Show Travel looked after the massive number of Airline tickets and Hotel rooms that were required each day. The brief was to 'look after the talent' and all band members and their crew had their own rooms at deluxe hotels.

Locally sourced on site caterers fed the troops for breakfast and lunch with an extensive dinner for all in the evening.

THE SOUND

Each act brought along their regular sound Engineer for front of house mixing duties. Yours truly, was without warning presented with the wonderful Digico D5 for

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The front of house boys give the all clear.



The impressive light show entailed a heap of moving lights and fixed luminaries.

the 1st time at a live show.

I was very happy that I had a play with the machine at the Entech trade show last year! I must admit being fairly nervous about my ability to mix the usual Spazzys show off the bat with this console, however all was well and over the duration of the tour, I returned into the usual sound guys comfort zone. The beauty of this console is that it is very analogue like in layout and operation.

A sound check was allotted for each act before the first show and settings were saved internally as well as on a USB drive. As extra backup (you never know on the road) I also backed up on to my own drive.

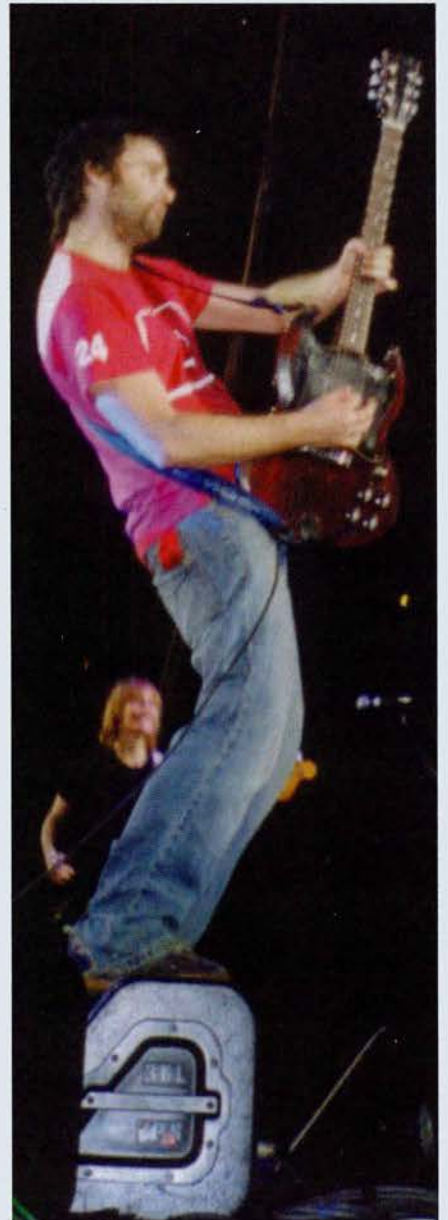
With the Spazzys we use our own key microphones at each show so the Digico file will no doubt be relevant as a good starting point at future shows.

All Engineers were at first a little apprehensive with having to mix on the console, but after a sound check with everything dialled in, the console's instant recall feature ensured the show sounded great for all acts.

Jands supplied the exact same gear at each show with the exception of the Front of house speaker system that was sourced locally in each state. V dosc, Ver-tec and X-Array were provided in various combinations to suit the venues.

Greg Rosman was the Audio Director and looked after the Bands Front of house Engineers.

Monitors were looked after by Matts Frankel using the Yamaha PM 5D, the recall facilities being a great help to get a consistent stage sound for each Artist each night. A couple of the Headline acts brought along their regular monitor



Whitt and Janet from Spiderbait go off!

engineer. Rolling risers were used for all the drum kits, so each kit was set up, miked up and ready to go- to aid in achieving a rapid change over schedule.

The Lights - Cameleon supplied 3 key crew and an impressive light show with a heap of moving lights and fixed luminaries.

Video - Big picture had an extensive multi screen set-up and ran big screen projection when the acts were performing. The camera work and vision mixing was at a very high level with some great close up shots up on the giant screens for the Kids to get a closer look at their favourite performers. Between acts Coca-Cola and the other tour sponsors had their wares presented to the audience. A roving camera captured lots of behind the scene action back stage, in the Tarago and at the Hotels.

This footage is also being shown on commercial TV 'Video hits' show.

On entry the public were presented with a bunch of Merchandise from the supporting corporations and the bands.

Locally sourced security looked after the kids (with a light hand) who were generally well behaved and pretty mellow, a few crowd surfers rebelled and were quickly discouraged.

Competition winners were drawn during each show and won

a variety of cool stuff- musical instruments, x box and mobile phones. Each night the bands also treated the kids to a 'meet N greet' session.

Local staff and clients from the promoters and sponsors were given passes to a hospitality area decked out with video and audio feeds and bar.

The tour started well with an open bar for band and crew at 'The Point' Kangaroo Point Brisbane the night before the first show.

It ended just as well with another open bar at Robarta, St Kilda.

The shows went very smoothly with no major problems, the vibe was fantastic as all the shows were "sold out".

All involved had a great time and carried out fabulous professional work.

A great concept carried out from some of the Industries finest.

Yep there was no Pepsi on the rider...



RUNDOWN OF A DAY IN THE LIFE OF THE COKE TOUR

Venue - Sydney Entertainment Centre

Hotel - Vibe Rushcutters bay

Flights - 70 Qantas flights from Brisbane

Car hire - 20 Tarago's picked up at the airport

8.30am Crew breakfast

9.00am production Crew call

11.00am Coke crew call

11.30 Crew Lunch

5.00pm Local support sound check

6.00 Doors open

6.00 Videos & Messages

6.30-6.45 Local band 'Krill'

6.45-6.50 Break 1 - M'c's and major Coke message

6.50-7.20 The Spazzys

7.20-7.35 Break 2 - M'c's and messages

7.35-8.05 Dallas Crane

8.05-8.20 Break 3 - M'c's and messages

8.20-8.50 P-Money

8.50-9.05 Break 4 - M'c's and messages

9.05-9.50 Spiderbait

9.50-10.05 Break 5 - M'c's and messages

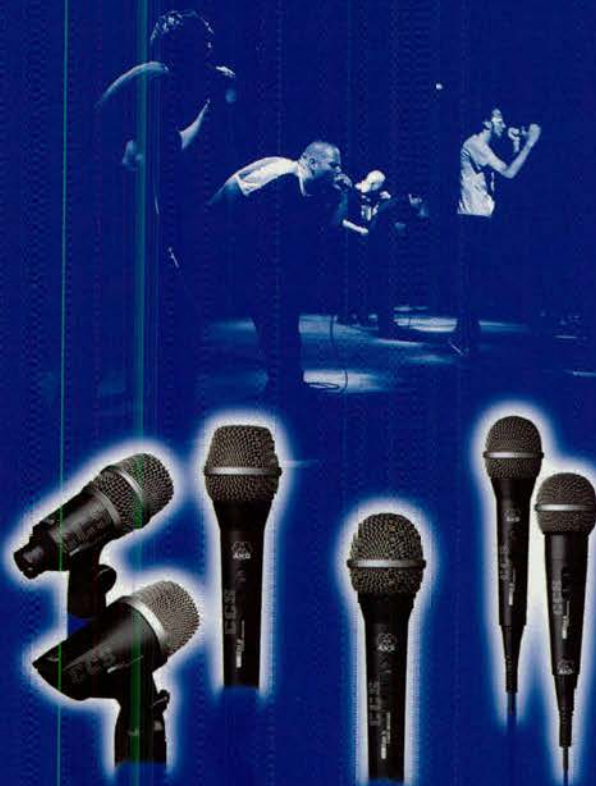
10.05-10.50 The Living End

10.50-10.55 Outro's

12.00 Midnight - Trailer doors close

Teardown pack up load-out, Venue cleaning

AKG ACOUSTICS



D 22

D 11

D 77 S

D 88 S

D 55 S

D 44 S

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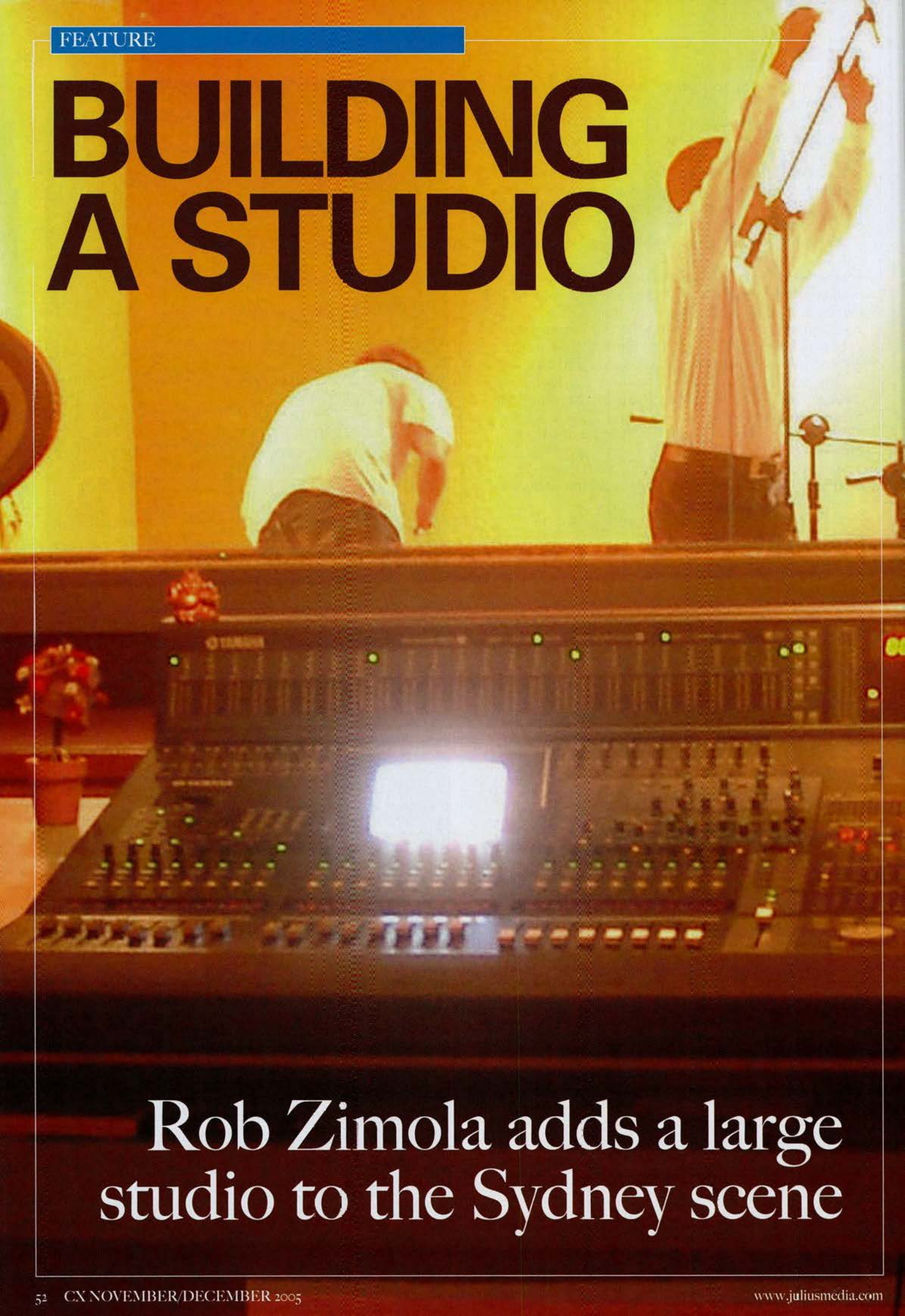


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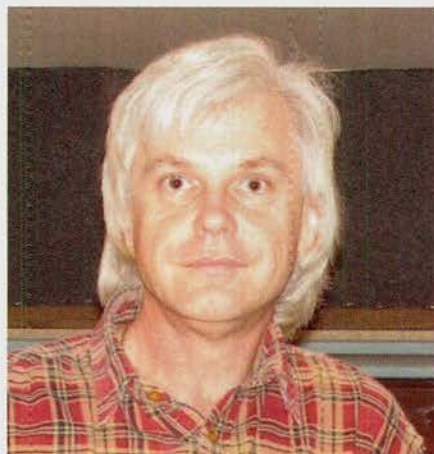
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BUILDING A STUDIO



Rob Zimola adds a large studio to the Sydney scene



"The rest of the class was a variety of people, from 16 to one guy aged 60 – and deaf. He told me he wanted to get into the music industry. After 10 weeks we lost 10 people, and after 20 weeks we lost another 10 people. By the time we finished the course, there were 21 people left."

"Practical time at SAE was first in,

"I booked the studio for my practical" interjects Steve James who works with Rob at Juliusmedia and who also attended SAE. "I booked the musicians, and turned up on the weekend about midday. The place was locked up. There were four students involved in the practical, plus musicians. I asked Tom about it: he

Rob Zimola has designed three studios – at Seven Hills, then Blacktown. The Blacktown studio remains, as RR Recording Studio. His new studio is here at Juliusmedia in the college.

Rob was a budding musician when he left school, playing acoustic guitar with vocals. "I saw the light. Reality set in, the rock and roll industry was not as easy to get into as once thought, and rather than have egg on my face I thought I'd go and do the background stuff, remaining in the industry. If you want to be a rockstar, you have to work really, really hard."

He enrolled in SAE in 1980, at the time the only recording studio school, and did the Diploma in Audio Engineering. "I was in class of 44 people, we were all standing there, wondering how we fit in the classroom. We sat down. A blokey woman started the class, introduced us to SAE, and we were plonked into rooms."

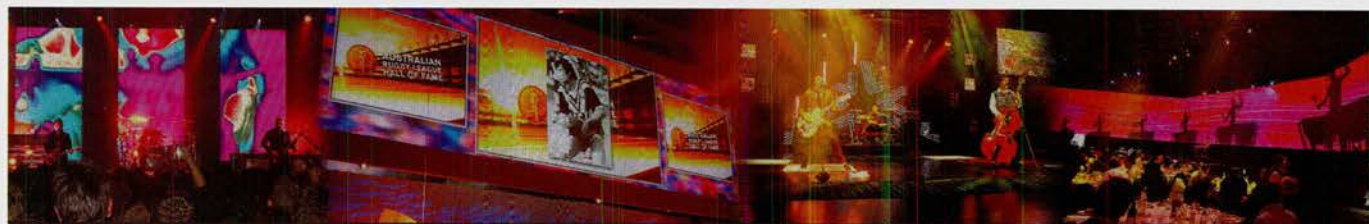


The original (remaining) RR Recording Studio, retained for student projects.

best dressed, which left me doing the 10pm until midnight session and having to commute to Blacktown afterwards. I wasn't one of those extremely forward people who got the good time slots. If you were there constantly, you could get the practical time."

said 'too bad re-book it'."

Steve and Rob recall spending most of their money on the SAE course, and they both say that they didn't get anything like what they expected to get from the course. Their experiences have helped them in their current



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Double everything. Two walls, two floors, and two layers of plaster board on the internal walls.



First run of floor joists sit on rubber, second run stabilise them. Rubber on top, then particle board, then floorboards



You can't rush a job like this; everything was subtly changed, delays were standard.



Setting up for test time, the first musical noise is about to be made.

vocation; at Juliusmedia college.

After SAE Rob went searching for casual studio work, or live work. "I had to learn the live sound skills on the job – we weren't taught anything about live. I worked with some friends who needed someone, and built up the casual work. But I always had a love for the studio."

What is it that you love about the studio? "The isolation, the control, the ability to adjust the volume – instead of all the live factors. If I didn't like the band, I could pull down the fader."

"I had a dream to build a studio in the Western Suburbs (of Sydney) and was told it would be the wrong spot. But I saw growth in the west. So I decided to do it. The year was 1982, the height of the Australian rock industry."

"I was an extremely good saver – I have saved \$16,000 and borrowed another \$12,000 – which allowed me to purchase equipment; rent space in Seven Hills, and build my studio. In 1982, \$16,000 in a bank account for a 22 year old was pretty good. But then I was broke, and remained that way."

"I looked at books, and liaised with people who knew more about acoustics than I did. I learnt my mistakes through what I heard, and adapting the acoustics as I went. Seven Hills was a 6m x 5m studio, and the control room was 4m x 4m, which was average for the day. There were more than a dozen big studios back then. Now there are about five, including my new one – and I hear one is closing soon."

After Seven Hills, Rob built a home styled studio in a double garage at Blacktown, which was considerably smaller. "I wanted to get away from the demo market, which needs space for live recording. It led to more production work, album work, and advertising projects. It's been eight years now."

In 1990 Rob opened the Western Sydney Audio Academy, "there was a lack of professional expertise in the studio engineering market – and I wanted to show how students should be taught. I didn't want to teach the way I was taught." The academy was always an adjunct to the studio.

In 2004 Rob could see that the audio training market was growing, and he joined forces with Juliusmedia to build a purpose made teaching facility, which is now operational.

THE STUDIO

Control room: 5.5m x 5.2m.

Studio: 5m x 5m

Vocal booth: 1.2m x 1.2m

The idea was to build a teaching studio, so the control room needed to be as large as possible. Students need to be able to see exactly what is in the control room, so you can walk around everything. Visually, everyone can see what is going on as well.

The monitors are free standing, detached from the walls, so there are very little reflections off walls.

Ambience and finishes are extremely important, to create a calming, relaxing environment which brings out creativity. We chose vibrant colours.



Testing the acoustics in the newly finished studio.

"I thought it would take 3 months, going full bore, to build the studio. It took over 5 months, there are unforeseen setbacks. It all took time. It's hard to say to someone that if you think it takes a week, put three weeks aside, but that's what you need to do."

The walls are double skinned, with 2 layers of Gyprock (plaster board) and Rock Wool filler and an air cavity between the two walls. The overall wall thickness is about 240mm. The floor sits on rubber, raised about 300mm with insulation in the cavities. There are floorboards over particle boards. Likewise it is double sheeted and insulated.

For the wall and ceiling finishes, Rob and his wife fashion designer Ratka Zimola choose front runner, which is an acoustic fabric for walls which is used extensively in the audio industry. It can be glued on – but it wasn't. "Once before we glued it, but it left patches. So we decided to staple and stretch it, which gave us a flat, even finish."

The ceiling was treated with a Calico material to soften the reflective vibrations. It is stapled and stretched; it was cut and sowed to measure, which is difficult. It hangs free of the ceiling by design. Instead of cornices, there are foam tubes which act as bass traps.

For the corners of the studio there are wave panels. The studio is half carpeted, and half bare boards.

On the left wall of the control room, is an acoustic resonator treatment, essentially wood slats. The opposite wall has a tapestry hung, chosen as thick as possible to absorb low frequency reflections.

Tannoy Ellipse 8 monitors are used, with Genelec 8030a as secondary near field monitors.

At commissioning, the rooms came alive. It was always intended the control

room would be not entirely dead, and soft furnishings can attenuate this.

Between the control room and the studio is an air lock, which is also a vocal booth. It'll mainly get used for voiceover work rather than singing vocal work. It can also be used as an isolation booth for an amplifier.

The glass window is 2.4m x 1m – big for a studio. The sheets are 10mm thick, laminated, and weigh around 100kg. There is a layer of Silica Gel along the base, to absorb any moisture that may amass in the cavity between the two sheets of glass.

Wiring took around a week solid, connecting the studio, vocal booth and console with the patchbays.

Commissioning took a little longer, learning how to softpatch the console, a Yamaha DM 2000.

ProTools HD1 and a G5 were acquired, and synchronised to the console – where the Yamaha acts as the controller for ProTools took time. There were Sync errors that kept coming on the desk. A student actually helped and showed me how to fix it.

The Blacktown studio remains, as a project facility for students, while the new studio is the primary teaching space. It adjoins the student café, and mix rooms are planned nearby. There is a computer lab upstairs.

Rob teaches an Accredited course, which also has a live sound component to help studio graduates understand the real world, and find employment. The studio is within Juliusmedia college, which is dedicated to practical, hands-on learning and career outcomes.

"One thing's for sure" says Rob "my experiences at SAE mean that my students won't ever find themselves crowded into a room or unable to get practical time. This place is real."

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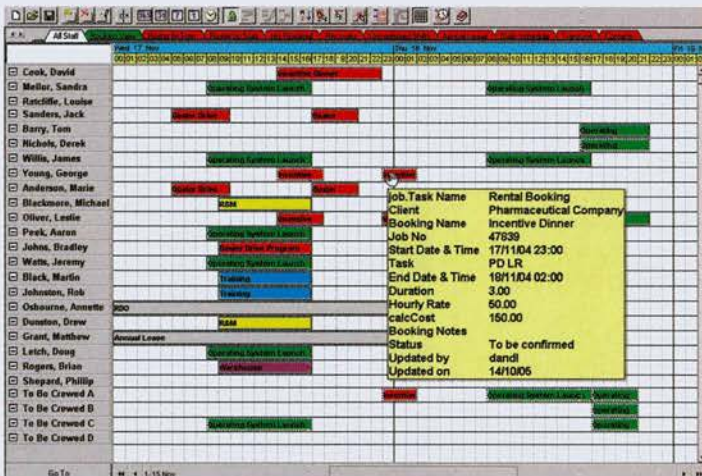
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IS RETAIN RIGHT ON TIME

Getting the right people, with the right skill, at the right time and cost is a crucial task in an industry as dynamic as ours.



A easy to use wall chart interface is utilised to enter, edit and review bookings.

By JULIUS GRAFTON

It is also one of the more time consuming and complex tasks, and if not performed in an effective manner causes difficulties, delays, errors and oversights that can have expensive and far reaching implications for your business.

If your still struggling with spreadsheets and whiteboards Retain International have a solution to replace fragmented, multi solution scheduling methods with a highly intuitive, featured packed centralised system that is powerful and flexible enough to cater for a diverse range of industry applications.

The core product, Retain Resource Planning, uses a graphical wall chart interface to enter booking details and task information against resources. Resources are generally staff but can just as easily be contractors, rooms,

vehicles or equipment. From the information entered, Retain can generate comprehensive schedules, along with a host of reports that assist you to optimise overall staff and resource allocation.

Retains' resources have a series of standard

attributes such as name, department, grade, charge rate, phone and email, plus there are a number of user definable attributes that can be tailored to suit your requirements. For example you could include information such as skill, licences, hourly costs or general information notes.

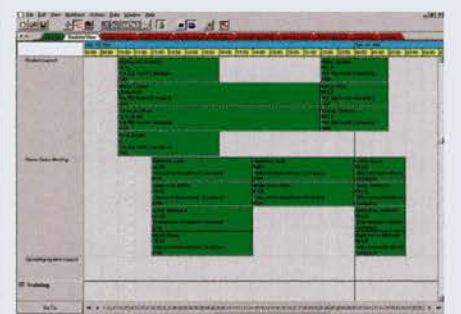
Bookings can be anything you want – clients, shows, tours, office work, meetings, RDO's, or holidays; each of which and can be classified by department or type and have an individual charge rate applied. Each booking can be assigned a sub task, or component such as 'Setup' or 'Testing'. Users are able to create new bookings or select existing bookings relevant to their role or location. For easier viewing bookings can be colour coded to define by types or location, and a booking status, such as 'Unconfirmed' can be applied and visually highlighted on the wall chart for easy reference. A very



A sample of the type of reports users can create. This one shows an expanded view of a labour recovery forecast.

useful feature in the wall chart view is the 'Tip Fields' which displays further details when you roll your mouse over any booking bar.

A key benefit over other systems is the inbuilt report generator. This feature is designed to query and analyse the information stored in Retains' database and display results as user defined reports like rosters, daily schedules, cost and revenue forecasts, staff utilisation and availability, leave reports, vehicle allocation and more. In fact you can generate reports using a combination of any database field, for



A wall chart view rotated to show staff by job



Another report, this time a daily schedule showing times, client, staff, tasks and delivery details.

any period with the option to print or export to other software for further analysis.

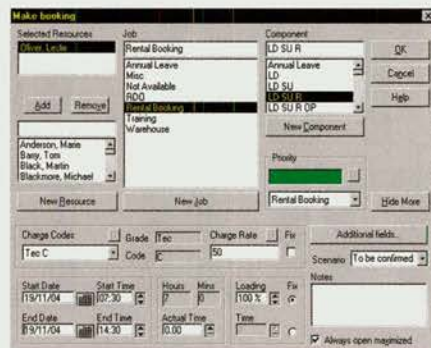
Multiple wall charts are possible, each with a view configured to display the relevant information. For instance you could view booking details by employee as well have alternative views to display by client, location or booking status.

Combinations of wall charts and reports can be saved as Notebooks. Standard Notebooks can be setup for all users or tailored to meet the needs of individuals. This is good for situations where you have staff and bookings across multiple departments or sites, or working to different deadlines –

Managers in another location can make bookings in advance while operations staff can look at the schedule for the next day.

Retain comes in a range of editions that are suitable for different types of installations. Planner, the entry level system allows concurrent access to a fixed database via LAN, WAN or dial up. Retain Notes Edition uses a Lotus Notes database platform and facilitates resource planning by means of Notes replication. Retain Client-Server is designed for larger scale installations or when you want to interface directly with other SQL or Oracle databases.

Retain also offers a host of add-ins and companion modules that extend the functionality of the core resource scheduling application. These include automatic email notifications, MS Outlook calendar integration, comprehensive skills recoring and database search module, web viewer and booking requests, a complete time and expense recording system and Enterprise Reports which extended report writing capability to include planned Vs. time and cost reports, times series reporting and user defined custom formulae.



The Make Booking dialog provides an easy method to enter booking and task information

Whether you are an event management company, a rental and staging organisation, an installation firm, a venue, or offer a crewing or transport service Retain can provide a range of powerful and highly flexible solutions that are scalable to meet your needs.

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100 VOLT LINE RULES! IF YOU OBEY THE RULES.

Constant voltage distributed audio systems are commonly referred to in Australia as 100 volt line systems. They are often maligned, misunderstood, and sometimes subject to installation miscalculations that dramatically impact on system performance—but they remain the most versatile and widely used distributed audio systems in the world.

By **BRIAN COLEMAN**

Low impedance audio zealots have long cold-shouldered 100 volt line distributed audio systems, relegating them to perceived inferior domains such as supermarkets, tourist busses, and railway stations. And unfortunately, the lack of adherence to basic rules by some installers often results in those all-too-familiar distorted 'supermarket audio' announcements that add to the misapprehension. But grossly overloaded speaker lines that exceed the amplifier's output capacity, combined with ill-trained staff shouting into microphones that are often numerous paralleled prior to the microphone input, are mostly to blame.

The reality is that constant voltage systems, which internationally can include, 100 volt, 25 volt, 50 volt, and 70 volt line, provide intricate matrix zoned quality audio to major installations around the world, including national airports, multimillion dollar hotels, casinos and amusement venues. And just about anyone can work out the seemingly complex numerical equations that constitute these large systems using the simple mathematical tool, Ohm's Law.

If German mathematics lecturer, Georg Ohm had descended from Mount Sinai in biblical times with Ohm's Law etched into a stone tablet he would ultimately have been sanctified for delivering to the world this elementary bible of electronics.

100 volt line systems are extremely



Wiring the primary connection of a 100 volt line speaker's transformer.

efficient at delivering audio over large complex installations with varied requirements. Low impedance technicians know all too well that you can drive a minimalist amount of speakers down to a dead short very quickly, destroying everything in the path. So a large low impedance system would have to draw on various combinations of series/parallel; and still there would be a lot of amplifiers; and realistically only a whole line of speakers on a particular amplifier could be volume adjusted. And when one speaker dies in a series, so does that series.

The simplicity of 100 volt line systems is that all speakers are wired in parallel, and very long lines of speakers can be run on inexpensive

figure eight speaker cable. All speakers have transformers for correct impedance matching to the amplifier, and individual volume settings can be achieved by changing the tapings on the primary side of any transformer in a line of speakers.

100 volt line speakers are usually purchased with the transformers attached, but the transformers and speakers (which are low impedance speakers) can also be sourced separately (few do this). The transformers have primary and secondary connections. When purchased complete, 100 volt line speakers have the secondary connection already wired to the speaker's low impedance terminals. Transformers can also offer choices



"Passengers are advised that this audio system is based on the nineteenth-century Ohm's Law"

of 4, 8 or 16 ohm connections; and toroidal transformers can greatly improve audio quality in demanding audio environments.

The primary connection is the high impedance connection, which 'looks at' the amplifier, and there are often several wattage choices, descending from the speaker's maximum RMS output capacity down to levels as low as one third of one watt (often used in office complexes). This is all dependant on which wires are chosen from the transformer to connect in line with the amplifier. The tapings are labelled in watts to simplify things, but in effect they are impedance changes. For example, a 5 watt tapping on a 100 volt line system means an impedance on that speaker's transformer of 2000 ohms, which will draw a current of 0.05 amps. How do we know this? Well, at this stage a whack in the head with a short piece of 4x2 can instantly stop the ol' cerebrum from over-complicating the very simple Ohm's law formula.

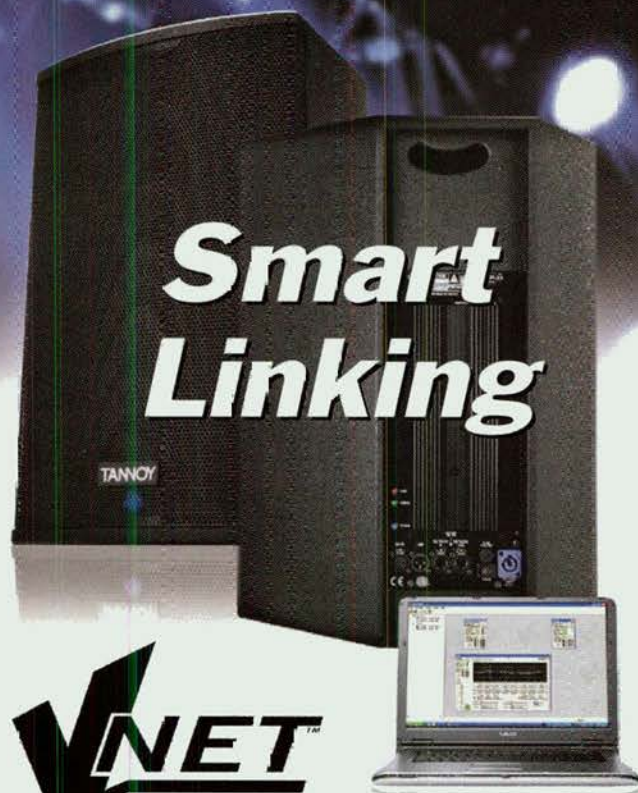
Most lighting guys know that you can't power 16 Par 64 cans for a backyard bash from a domestic power supply—and those aware that Ohm's Law is not a new TV police drama will know why. Ohm's Law tells us very simply what current (I) those 1000W lamps (W) will draw from the domestic 240V (V*) power supply. $I = W/v$. That is, the current draw (which is measured in amps) is worked out by dividing the watts by the volts. Sixteen thousand watts divided by 240 volts is 66.6 amps—devil's number destroys domestic fuse.

Before worrying about applying Ohm's Law to 100 volt line or any constant voltage audio system, it should be noted that calculations aren't usually necessary at all. That's because the rule is to just match the sum wattage of all the speaker tapings with the maximum output wattage of the amplifier, allowing 20% headroom for losses in wiring etc. Then just parallel up all the speakers with figure 8 cable. It really is that simple. And in a world that has been so oversimplified for us, with calculations so automated that you can't ever make an 'honest' mistake on your tax return, we find a fascinating U.S. website: www.csghnetwork.com/ampspeakerpower.html www.csghnetwork.com/ampspeakerpower.html

This is listed as a 70 volt line (the U.S. constant voltage system) calculator. If you tell this amazing calculator how many speakers you have in your system, and the wattage of the speaker tapings, it will cleverly calculate that you need an amplifier that matches that amount. In all fairness, it does calculate the 20% headroom—for those U.S. citizens that can't divide by 5. Apparently the site gets a lot of hits.

The rule in mathematics, that if you have two out of three values in an equation you can often work out the

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third, is applied in Ohm's Law. The equation needed for working out the impedance (R) on a constant voltage system is $R = V^2 / W$ (divide the watts into the volts squared). In a 100 volt line system the volts will always be 10,000 (100V x 100V)—so just divide the total watts into 10,000 and you have the impedance. The formula for working out the wattage is $W = V^2 / R$. Just divide the impedance into 10,000 and you have the watts.

You will notice that there is no reference to watts/power—the units of energy (named after James Watt) used to measure amounts of light, heat, and sound etc., on the Ohm's triangle diagram. But you can find these equations on the Ohm's pie chart.

In Australia the greater majority of installers use the 100 volt line output of the current voltage amplifier, but some will also hook up to the 70 volt line output—and there are some very good reasons for doing this. Here's one: Suppose an installer has to double the amount of speakers to do some extensions to an installation where a 200 watt amplifier is already powering 40 speakers tapped at 5 watts (for simplicity let's forget about the headroom). In the scenario where 5 watts may have been more than loud enough in the first instance, the installer has the option to install the extra speakers and move the line onto the 70 volt line terminal. Now the 80 speakers' wattage will be subject to a different calculation that will deliver approximately half the wattage, without changing a single tapping. Ohm's Law: $W = V^2 / R$. As the existing tapping on the transformers would have been 5W @ 2000 ohms (the manufacturer has calculated the wattage based on the transformer's impedance connected to a 100volt line amplifier), that 2000 ohms is now divided into 4,998.49 (70V line actually being 70.7V squared). Answer: 2.499 watts, multiplied by 80 speakers = 199.9 watts. Close enough.

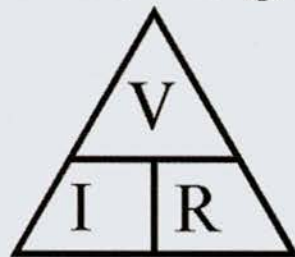
The widely U.S. used 70 volt line system was originally a 100 volt line system measured at 100 volts peak—which is 70.7V RMS. Whilst car radio aficionados might think that 'peak to peak' is an efficient measurement of the 1000 watt subs in the back of the Valiant, the peak measurement has long been

turfed out in the pro audio world. One reason for the popularity of the 70 volt line system in the U.S. is that inexpensive 18 gauge 'figure eight' cable can be legally used in most states with this voltage.

Constant voltage systems have become popular for their simplicity as well as their zoning ability. A bowling club, for instance, may have speakers wired in parallel throughout the club. Some speakers may need to be attenuated all the time due to the differing requirement of the areas that they are in. So the constant directivity horns out on the bowling green could be tapped at a cutting 5 watts, and the restaurant area may have ceiling speakers tapped at one third of one watt—all off the same amplifier.

A matrix configuration occurs when a number of zones are accessed via a number of stations (often paging stations), which can be delivering microphone paging or line level audio such as music or even the Melbourne Cup race call. There may be background music playing in one section of the club, and when a paging announcement is made, that music can be automatically 'ducked'; this 'ducking' is usually ramped down and ramped back up after the announcement for listening ease by cards inserted at the amplifier rack. The announcement can also be zoned not to go to certain zones, and with special equipment, not to go into certain zones at

Ohm's Triangle



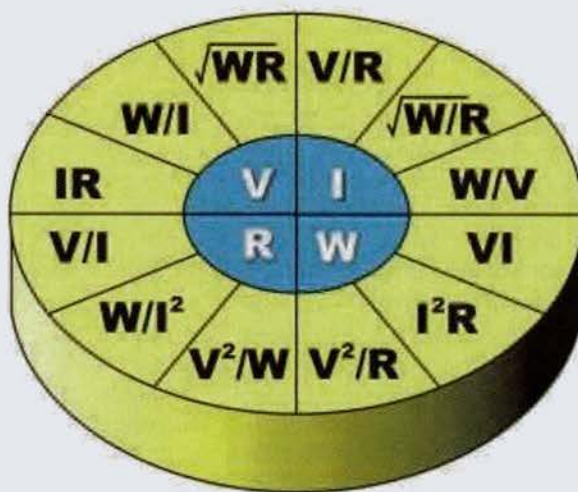
Cover the variable you want to find and perform the resulting calculation (Multiplication/Division) as indicated.

Ohm's Law Triangle



Goldline's ZMP1 impedance meter.

Ohms Law



Ohm's Law Pie Chart.

certain times.

Media Matrix, a Peavey product, is a programmable digital audio processing tool that is now nearing 500 installations in Australia alone, including Sydney Airport. This DSP powered routing, processing and control system, which can also drive low impedance systems, is now a popular choice in intricate 100 volt line installations around the world, and is currently in operation in installations such as Disneyland and the U.S. Senate. The system is distributed in Australia by Audio Telex, who also has DigiPage, which they describe as "an audio routing and control system that allows multiple sources to be selectively targeted to different areas in a large number of combinations." Australian audio supplier, Altronics also has the A5300 Digital Matrix Mixer, which

is an 8 x 8 programmable matrix switcher.

WHAT HAPPENS IF YOU DON'T FOLLOW THE RULES?

An installer called out to an installation, either to troubleshoot a fault or to make alterations to a constant voltage distributed speaker system, MUST have an impedance meter (surprisingly a lot don't). These meters, after measuring the impedance on any line, will also do an Ohm's Law calculation to give you the wattage. If that adds up to more than the amplifier's maximum output wattage, you have a problem. An impedance meter is definitely not to be confused with a multimeter, which only measures resistance—if you have been using a multimeter to measure line impedance, probably with



Constant voltage, constant directivity horns for railway station announcements.

disastrous consequences, you might consider quietly burying the evidence in your backyard one dimly lit evening.

There are major pitfalls if the simple rules of constant voltage systems are not followed. One installer at a plus new club once blew amplifier after amplifier (which he returned under warranty). When I eventually got to talk to the angered installer at the club, via telephone, I asked him how many speakers he had hanging off the 60 watt amplifier that he had purchased. And I also asked what each speaker was tapped at. "What do you mean by tapped?" he enquired, "I just left them the way they were." Alas, these 100 volt line speakers came in enclosures, similar to hi-fi speakers, but with factory set tapings that required the back to be pulled off to change the tapings. "Well," I advised, "that particular mode—as a factory tapping of 10 watts; how many speakers do you have connected to your 60 watt amplifier?" There was a pause, presumably some counting, and then the reply: "Twenty five."

Constant voltage amplifiers often don't just blow fuses when misused—in fact there can be major meltdowns. I once took a call from a very confused installer, quite new to the game, who was about to simulate the 'China syndrome'. "This is a very important installation," he nervously advised. "Where is the installation?" I enquired, only to be stunned by the reply, "It's the Lucas Heights Nuclear Power Plant." True story.

Footnote: There's a good Ohm's law calculator at this site:

www.hydrogenappliances.com/ohms_law/ohmslawcalculator.html



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ENTECH delivers equipment, solutions, services and education for the Pro Audio, Broadcast, Audio Visual and Lighting Industries



Entertainment Technology: A Growth Industry!



For thirty years, the entertainment industry sat mainly unmeasured and aside from government funded arts support, there was not much recognition. When the Keating government announced a new vocational training framework in 1992, all industries were measured together. In 1993 the first entertainment training package was released, and the industry was better understood by the government.

Another industry review was undertaken in 2001 and 2002, followed by the revised training package which was released in 2003.

In 2004 Juliusmedia published the first complete survey of economic activity within the entertainment technology industry, with a breakdown of the share enjoyed by the technical production industry. This is made up of sound, lighting, musical instrument sales, staging, vision and corporate audio visual provision – along with all the support services for those activities within the sector.

From ENTECH 2006 the industry has been surveyed again, with the inclusion of labour information for the first time.

The majority of financial data in this report originates from the Australian Bureau of Statistics.

THE INDUSTRY IN 2005

Overall Entertainment revenues were last surveyed by the ABS in 2000/2001 and we can assume growth of around 5% per year since. This would increase the total activity to \$3.12 billion in 2004/2005.

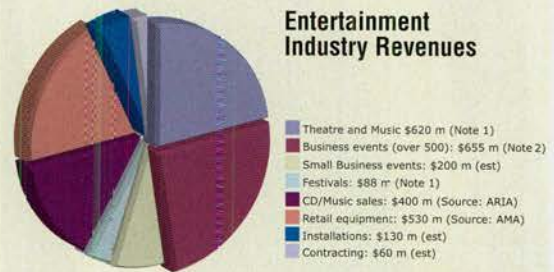
The survey excludes broadcast, film, radio and cinema takings – these are not included in the \$3.12 billion overall activity.

Our industry turnover figures exclude these as well, except where existing service providers supply equipment or services to film or broadcast and that market is included within their existing turnover.

Corporate and business events were measured in 2001/2002 and many people in the industry have stated that they feel the estimates were low. Example: the technical component of business events (\$75m) and small business events (\$20m) totals \$95m in our study, but one provider alone (Staging Connections) had forecast revenues of around \$80m recently. We have subsequently updated our estimates for that sector.

INDUSTRY REVENUE

The Entertainment Industry generates in excess of \$3.12 billion annually in Australia. This is made up of:

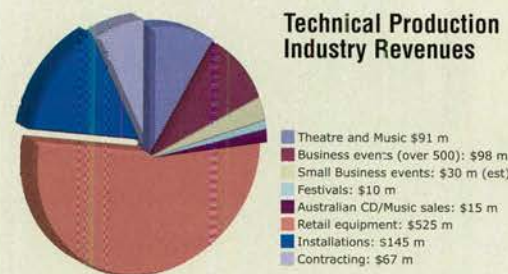


Note 1: Australian Bureau of Statistics 2002/2003

Note 2: Australian Bureau of Statistics 2000/2001

Of the total revenues of \$3,125,587,000, the technical production industry share is approximately:

For a total of \$981 million.



Of the \$525 million in Retail Equipment, we have included provisions for lighting equipment (not surveyed by AMA) and pro vision equipment. The latest AMA survey shows pro audio equipment at import value of \$45 million, which extends to a value of \$12.5 million. The AMA has identified around 500 retail outlets for musical and audio equipment across Australia.

Ian Harvey from the Australian Music Association told Juliusmedia that he relies on an IBIS Consulting study which measures total musical economic activity in Australia at around \$5.6 billion dollars – against which the \$525 million in retail equipment sales is realistic.

Our numbers do not include broadcast equipment, or film and TV production.

INDUSTRY PARTICIPATION

The Cultural Minister's Council have surveyed work activity in the performing arts, music and broadcast industries. The survey covers people aged 15 or over, going paid or unpaid work. It covers the 12 months up to April 2004.

Music: 230,800 performers of which 64,300 were paid.

Music: 69,100 people not performing of which 19,500 were paid.

Theatre: 272,700 performers of which 40,400 were paid.

Theatre: 75,200 people not performing of which 32,000 were paid.

More than 15% of all people worked more than 10 hours per week.

NEW ENTECH Conference



With over 500 brands on display, live demonstration rooms, a fully equipped auditorium and a new conference program, ENTECH is A MUST SEE event for all professional entertainment technology users.

ENTECH has the solution for everyone including; recording, broadcasting, clubs and bars, churches, corporate spaces, venues and all areas in between. Set to be the biggest International Conference and Trade Show of it's kind in the Southern Hemisphere, ENTECH will display all the latest pro sound, broadcast, lighting and audio visual equipment, systems and services.

Held in halls 5&6 at the Sydney Convention & Exhibition Centre from 13-15 February 2006, ENTECH is set to be ACTIVE, LIVE & BRIGHT!

The response has been overwhelming:

"We expected a great response - it's been two years since the last Entech, and there is so much new technology and product to show - but this is fantastic. It's fantastic not only for ULA, but also for the industry to get hands-on with the products. Many people, especially end users don't normally have that opportunity to see it all in one place".

Cuono Biviano, ULA Managing Director

For ENTECH 2006 we have introduced a NEW Seminar and Conference program focusing on Audio Visual, Broadcast, OH&S, Pro Audio and Lighting as well as the ever popular Business Laws conference to keep you up to date with the industry.

A series of full and half day, industry specific conferences are offered with delegates able to register for each conference individually.

Conference sessions will run from Sunday, 12 - Tuesday, 14 February 2006 in Tumbulong Rooms 1&2 at the Sydney Convention Centre.

The response has been extremely positive with seats filling quickly so REGISTER TODAY at www.entech-tradeshow.com!

"I am excited about ENTECH 2006. It is always worthwhile to attend and obtain information to assist with our purchasing decisions. The exiting new developments in the Conference really add value to the Broadcast and Vision Markets and I look forward to sending my staff along to the show."

Bruce Kruger, Nine Network Engineering Manager



The Conference Program

NEW Industry Specific Conferences will include:

OH&S Course presented by Juliusmedia

Sunday, 12th February 10am - 5pm

Hosted by Andy Mackenzie

The OH&S course at ENTECH 2006 is a certificate accredited course based on modules from the Juliusmedia training college. The OH&S course will cover the following modules and upon completion an industry recognised certificate will be awarded.

OHM-01 Height Safety – 10am-11am

Details kinds of safety equipment, arrest and rescue requirements, ladders and high reach devices. What is acceptable, what is not.

OHM-02 Manual Handling of Show Equipment 11.30am-12.30pm

With practical component. What is your legal lifting limit? Shows the best and safest methods for handling large, heavy or un-usual items of equipment.

OHM-03 Show Electrical - 2pm-2.30pm

Starts with basics, what is three phase, what is single phase, relationship between watts, amps and load, earth leakage breakers, and power essentials.

OHM-04 Show Practices - 2.30pm-3.30pm

Jargon of the industry, glossary of terms, which is 'prompt', etiquette of the stage, etc.

OHM-05 The Induction, The Laws, and You - 4pm-5pm

Gives individuals the shocking realisation they can be heavily fined, along with their employer. Details what to look for at a venue, or with a new show.

Course Cost \$149 (Including GST)

"How else can I really see what is going on behind our industry?"

Warren Gable

Introductory Cram Course for Industry Beginners presented by Juliusmedia

Sunday, 12th February 10am - 5pm

Hosted by Julius Grafton

This is the entry portal to the sensational world that is ENTECH. In one action packed day you'll be given a crash course in what all this 'stuff' does. This is a new idea, where Juliusmedia a college attempt to infuse you with almost all the jargon and acronyms you need to know! This course suits all beginners and sales and admin staff who work alongside technical people!

We delve into sound, lights, vision and staging. This isn't a nationally recognised or endorsed course, BUT everyone doing this course gets a credit voucher so the entire cost of this ENTECH cram course can be claimed against any Juliusmedia course in any state during 2006!

Course Cost \$149 (Including GST)

InfoComm Academy@ENTECH

Monday, 13 February 9am – 5pm

The InfoComm Academy at Entech is a series of four, 90 minute Seminars designed to aid buyers and users of Audio Visual technology from Building, Corporate, Education, and Government sectors. The presenters are people from the Audio Visual industry with many years experience. They will present information focused on current trends and technology from their area of expertise.

AV Infrastructure Co-ordination for Installation Projects – 9am-10.30am

Rod Brown, CTS-D, Managing Director & Principal Consultant, Integrated Media Systems (Australia)

Project planning has huge budgetary implications. This cost of getting it wrong, can be devastating to a project. Infrastructure co-ordination between AV and other aspects of a project is critical. Yet all too often, the technology that enables a space to live up to its intended purpose, is overlooked until the project is almost complete. This causes costly re-works in the late stages of a project when both time and money are tight.

This seminar will deal with Architectural and Engineering items that need to be considered throughout the project. In particular, you will learn to Understand the importance of identifying items and issues requiring co-ordination with other project areas. You will also learn to create comprehensive co-ordination checklists for distribution to other disciplines and trades. Finally you will learn to understand design requirements and limitations for co-ordination items and how to negotiate where there are conflicts with other requirements. Tips and examples will be given, with reference to general design concepts and good design practice.

The Conference Program

Signal Management for AV Systems 11am- 12.30pm

*Presented by InfoComm Academy Instructor –
Fairfax VA, USA*

With such diversity in Audio Visual technology, is it any surprise that the signals in an Audio Visual System travel in many formats across many different cable types or frequencies. Without a clean signal your Audio Visual System will re-produce nothing but noise.

This seminar will look at Audio Visual signal types and their application. We will discuss how Audio Visual Signals travel from the source, through various types of processing equipment to the output device. We will also discuss the potential effects that the physical environment can have on Audio Visual Signals and what to do about it.

Characteristics of Audio Visual Display Devices 2pm – 3.30pm

*James Waldron, Senior Product Manager –
Business Display, Sony Australia*

Selection of the "Right" Audio Visual Display Device, is critical to getting your message across to your audience. This Seminar will look at the different types of display devices available in the market today (CRT, LCD, DLP, Plasma, D-ILA, LCoS, LED, and OLED) and where future product development is likely to take us.

We will discuss how the different display devices work and the Pros and Cons of each one, as used in typical business and educational settings, taking into consideration, the Audience, Material Presented, and Environmental Factors

Audio Visual Presentation Support – 4pm – 5pm

*Presented by InfoComm Academy Instructor –
Fairfax VA, USA*

Be Seen, Be Heard, That's the Goal of everyone that has to present information to an audience, be it to 1 or 1000. Your presentation deserves the best treatment it can get, after all it includes valuable information.

This seminar is designed to give you the utmost confidence that your message will be seen and heard.

It will look at the relationship between your presentation content, the venue and its layout, current presentation technology and how you as the presenter take control of your presentation, whether your pushing the buttons or not.

Cost \$198 (including GST)

"Our church invested five hundred thousand dollars. ENTECH helped sort out the major players"

Alex Marchant

The ENTECH Pro Audio Conference supported by Juliusmedia

Monday, 13th February 9am - 5pm

Hosted by Julius Grafton and Andy MacKenzie, with a host of industry gurus from some of these manufacturers:

- Ethersound (Digigram) • Aviom • Media Matrix • Rane
- BSS (Soundweb) • Crown • Opticore • Netcira (Fostex)
- Whirlwind

Some are PPPP: People producing proprietary protocols.

Welcome to the new era of distributed audio on Cat 5 and Fibre. This conference deals with shifting files, and shifting formats. We will enter at the A/D converter and spend the day streaking around the conference room at the speed of data.

The whole conference session is literally devoted to routing audio and the various formats and protocols that do it and enable it. Cables, software, networks, and TCP/IP.

Whether you work in live sound, contracting, or studio, this conference will assist your understanding of what is the state of the art in getting sound in and out of more places, cheaper, faster and patched remotely.

Cost \$198 (including GST)

The ENTECH Broadcast Conference presented by Broadcastpapers Content + Technology

Tuesday, 14 February 9pm-5pm

Audio Post-Production 9am-10.30am

Using real world examples, this session will look at the complexities of modern audio post-production and the latest tools available. On-set, on location and in the mixing suite, you'll hear what has to be done to control the sometimes uncontrollable.

Radio & Mobile - 11.30am - 12.30pm

*Presented in Conjunction with Commercial
Radio Australia*

Digital Radio - Australia is gearing up for Digital Radio and the standard is Eureka 147 DAB. CD-quality audio, data and picture services are all part of an exciting future for the oldest electronic medium. This session will not only examine what the standard can deliver, but also coming business models and what you can do to get your facility 'up to scratch'.

MP3 - Audio is now on the move with podcasting, ringtones and music download services. Hear the latest for the local industry and the offshore potential.

The Conference Program

Audio For Broadcast Television 2pm-3.30pm

Digital TV has not only brought audiences clearer pictures, but also clearer sound. Get an update on the state of audio for television, including Dolby AC-3 & E, as well as live sound in the studio and on location.

Film Sound In Focus 4pm - 5pm

If you think today's visual effects for film are complex, lend an ear to the art of sound design. With examples from recent feature film releases, this session will demonstrate that not all is as it sounds, but it all goes to believing what you're hearing.

Cost \$198 (including GST)

The ENTECH Business Laws Conference presented by Juliusmedia

Tuesday, 14 February 9am – 12.30pm

This conference is chaired by Julius Grafton, publisher of CX Magazine and CEO of Juliusmedia College.

Featuring:

Col Peet (Operations Manager, Parramatta Riverside)

Michael Kent (Technical & Safety Supervisor, Playbill Venue Management)

The new entertainment employment landscape

(Incorporating laws and nightmares in the real world)

In 2006 we are at the peak of a legal eruption that threatens to clog our enterprises with paperwork, legislation and unworkable remedies. Our conference addresses the issues and outlines some sensible pathways.

This is not a seminar of lawyers and apparatchiks who dish up more questions than answers. This is a gathering of like minded individuals who battle red tape on a daily basis.

Join us as we detail:-

Self regulated OH&S implementation that works for employers.

- What are the steps? What are the main issues? How can this be simplified?
- How far do we need to go as an industry?

Filling skills gaps, how to recruit and retain trainees

- How to best use Government training funding
- Employer sponsored migration – can it work for you?
- Validating existing skills – how it works for you and your staff.

The Big Picture

A snapshot of the entertainment industry, what it is worth, where the opportunities lie, what are the career pathways, how we can better keep our skilled people motivated.

Cost \$99 (including GST)

The ENTECH Lighting Conference

Tuesday, 14th February 2pm - 5pm

Presented by Rohan Thornton, leading Lighting Designer

Our first dedicated LIGHTING conference will be very exciting!

Join us as we explore MEDIA SERVERS and LED PANELS driven by DMX!

This is the red hot new thing for lighting. Suddenly vision and lighting are coming from the same place, as lighting directors fire video clips and effects using their existing DMX consoles. Media Servers store clips and files, and lighting consoles can now cue, fire, and stop multiple clips to multiple LED panels - a whole wall of images, or a cluster of panels each with discrete imagery.

This keynote conference will be hosted by leading Lighting Designer, Rohan Thornton. Rohan is lighting supervisor at GTV 9 and has a stellar portfolio of work spanning TV, theatre, large scale events, concerts and architectural. He is considered one of the top practitioners of his art in Australia, and travels overseas regularly.

"Imagine the creative director says he wants a desert look. You send clouds to the LED screens, and have yellow light on the talent. Then there is a storm - the panels flash white at the same time as the lights. You can only do all that, perfectly sync'ed, from the lighting desk", he says.

The conference is designed for busy people who wish to visit the trade show in the morning and then attend the conference in the afternoon.

See: the new equipment - Media Servers and the latest LED panels

Discuss: the costs, the issues, the amortisation and the trends

Explore: the possibilities, the content, the looks and the issues

Cost \$99 (including GST)

For the latest program or to register go to www.entech-tradeshows.com

You can also register by faxing or posting the registration form over the page to **02 8268 4445** or GPO Box 4088, Sydney NSW 2001.

Floor Plan



EXHIBITION & CONFERENCE
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AmberTec Screens
American Audio
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Anchor Hoists
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RIGHT OFF THE DIAL



By IAN MACRAE

NEW ORLEANS RADIO IN STORMY TIMES

In the aftermath of Hurricane Katrina there was a lifeline for the over four million people who live in the South-East U.S. that no iPod, satellite network or internet radio station could replicate. Local radio.

Fifteen stations that managed to get back on air after Katrina

hit combined programming and engineering resources and simulcast continuous news, information and coverage of local relief efforts, with live feeds from street reporters, interviews and updates from local officials and relief coordinators.

This was a joint effort between stations that in normal times would be rivals to provide the region with reliable and consistent coverage of emergency recovery and relief information.

For me, listening on-line to the broadcast streamed from the powerful 50Kw station WWL brought home the magnitude of this disaster and the awesome job being done by broadcasters who, no doubt, saved many lives.

How could anyone forget such incidences as the near hysterical on-air caller who said she was wading through water up to her waist and there were bodies floating all around her?

It's at these times of emergency, when there's no newspapers, TV or even internet access, that radio comes into its own. So when those other media run stories about alternatives to AM and FM radio and that radio is dead it's worth bearing in mind situations like New Orleans when radio came into its own.



SMARTPHONES GET SMARTER

Having given a thumbs up for traditional radio I have to report on another challenge to it.

In an increasing number of U.S. cities owners of Treo Smartphones, (which are a unique combination of colour Palm PDA's and regular mobile phones) are now able to get real-time traffic updates.

Yellow, orange or red circles flash over a road map on the screen. You tap on one of the flashing circles for detailed written information or one of the dots which will indicate the speed of traffic at that point or if there are major delays.

You can also zoom into the part of the map that affects you most and bookmark spots of greatest interest.

It costs US\$4.99 a month to get

updates for each city whereas radio reports, of course, are free.

Also on the downside, compared to radio, unless you have a passenger, you can only safely use the Treo before you start driving unless you want to finish up as the cause of the next accident report.

ROLLING STONES PROVE THEY'RE STILL RELEVANT

What could well be the successor to the CD launches in stores this month.

This is the gr_vi (small g, rhymes with groovy. Gedditt?) removable music card which is a new flash memory card from the US company SanDisk Corporation.

Millions of cards have been shipped to handset manufacturers for use in mobile phones worldwide. Roughly the size of a fingernail, the gr_vi card comes with an adapter that can expand it

to the size of a larger SD™ card, thus enabling it to be played in a variety of SD-compatible devices including laptop computers and PDAs.

And guess who are the first to utilise this format? The Rolling Stones with their first studio album in eight years called "A Bigger Bang".

Not only does the "Bigger Bang" card contain the Stone's latest album but also has catalogue access which allows users to preview and purchase a selection of the band's earlier music.

The "Bigger Bang" gr_vi music card will cost around \$39.95.

But what were the SanDisk marketing people thinking when they put that little line thing over the letter "u"? Now anyone who wants to type the name correctly in Word has to go mucking about in the 'symbols' drop-down to find it! Good luck.

ALL HITS RADIO

Those verbal fights in the family car over who has control of the radio pale into insignificance following the story of the man from Bloemfontein in South Africa who killed his brother during an argument over a radio.

The 21-year-old man and his older brother, 28, had been arguing on their way home from a tavern. The younger brother had allegedly accused his sibling of taking his radio without his permission.

They started fighting and a friend, who had been with them at the time, intervened and calmed the two down. When they got home, the older brother allegedly

resumed the argument and started beating up his brother.

Their mother went to fetch their uncle to come help and upon her return, found her elder son dead on the floor.

It seems the 21 year old had hit his brother with a brick behind his ear in self-defence.

WARNING - FOLLOWING STORY CONTAINS STRONG LANGUAGE NOT SUITABLE FOR GRANNIES

BBC Radio 1 has been slapped on the wrist by the broadcasting authority Ofcom for broadcasting an elderly lady reading swear words and "offensive phrases."

The 7pm show, Most Punk, presented by Zane Lowe, was preceded by a warning about the strong language.

But immediately afterwards, the voice of an elderly lady said: "Hello ladies, boys and girls, I thought that you might like to know - in the spirit of punk rock - the following show includes, what we often refer to as language."

There followed a string of swear words and sexual references then the voice said: "So if, like me, you are offended by such words and phrases ... then you might wish to turn over, or f**k off - thank you."

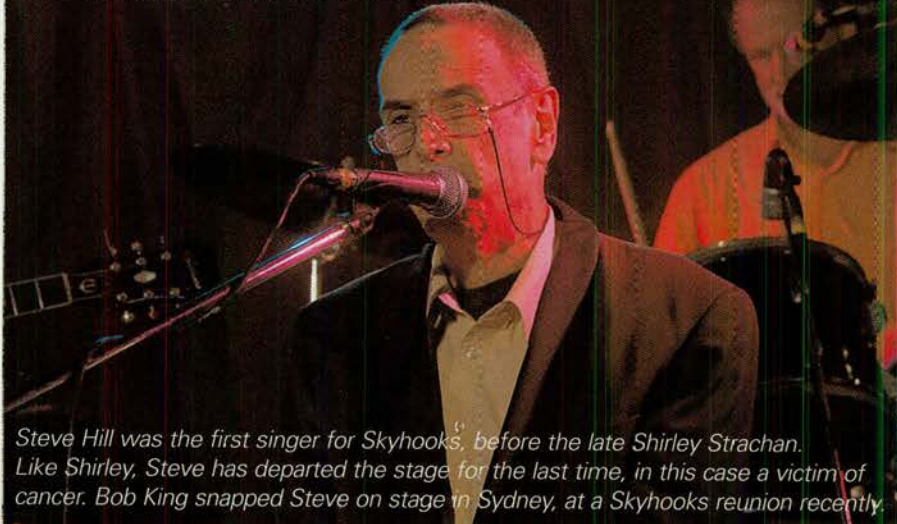
The BBC said the grab was aired at the beginning of June's show about punk culture because the programme was meant to be thought-provoking.

Gotta agree with that. Does make you think.

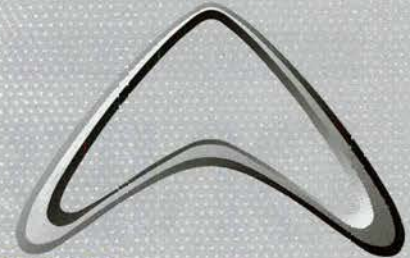
Any comments, questions or contributions? Email me. ian@allaboutradio.net



VALE STEVE HILL AN ORIGINAL SKYHOOK



Steve Hill was the first singer for Skyhooks, before the late Shirley Strachan. Like Shirley, Steve has departed the stage for the last time, in this case a victim of cancer. Bob King snapped Steve on stage in Sydney, at a Skyhooks reunion recently.



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EVP-X SERIES

The Wharfedale professional EVP-X series loudspeaker systems are the latest evolution of the highly successful EVP family. The new EVP-X full range speaker system has been built around the development of the exceptional new compression driver. The 44mm HF driver brings unprecedented levels of dynamic purity and sound quality, the crossovers network has been designed to limit and protect the system from overloads. The ProTech driver protection system that is only seen on higher priced speaker systems, the sound performance out of these boxes doesn't match the price tag. The trapezoidal design gives low resonance and sonic accuracy in the low frequency range. The enclosure is built tough enough to withstand the rigours of the road, covered with a tough black industrial carpet, top hat for speaker stands and large handles with tough curved steel front grill. The speaker range comes in a 12" and 15" inch two way, monitor wedge design and 15" + 18" sub. The sub system features a dual voice coil woofer and low pass filtering when the job requires that kick ass punchy bass. Arguably this is the best value for money speaker system performance combination seen on the market today...

ONE80'S HARVEST OF HEAVENLY HD

In sharp contrast to the 'technocrawl' of conservative religions, modern evangelistic events are now rapidly embracing leading edge broadcast and recording technology. CX goes on location with Newcastle's one80 digital post at the Newcastle Entertainment Centre, NSW to see how they shot touring US production, Harvest 05 in High Definition digital video.



Harvest's FOH operators.

By **BRIAN COLEMAN**

CX recently attended the Newcastle Entertainment Centre to witness one80 Digital Post roll out their HD (High Definition) OB (outside broadcast) van to record the Hunter Harvest '05 event. And unless you've been living in an ashram in Rishikesh for the past decade you would know that evangelistic events such as these are gaining enormous momentum around the world, swallowing up latter-day technology, including glorious HD digital video for broadcasting and archiving purposes.

US evangelist Greg Laurie, who founded Harvest in 1990, has been described as the "evangelist of the

future." Harvest organisers, who claim to have brought together more than 200 churches throughout the Hunter region for the event, wanted to record the event in HD. From this production a one-hour documentary and a DVD will be produced.

one80 Digital Post, which is housed at NBN Newcastle's television facility, owns Australia's first and still the only HD OB van in the country. They have the unique ability not only to record live concerts and events in HD or SD (Standard Definition) digital video, but also to multitrack record the audio, and provide full post production facilities. They have done similar events for Hillsong using 8 and 9 HD cameras, and projected the performances live

onto large projection screens—as well as doing the post production to produce broadcast footage and DVDs.

Graeme Armstrong, Client Services Manager, one80 Digital Post, told CX, "We can cover any event, and bundle up everything—do a top quality job—and the promoter or record label can walk away with a 'glass master' DVD at a very reasonable price."

But why all the fuss about shooting in HD when all DVDs around the world are currently Standard Definition? Well, Blu-ray and HD DVD are set to roll out probably early 2006. Also, the HD footage can currently be broadcast on any number of HD television channels around the world.

Armstrong also stresses that there is great interest in capturing the HD resolution so that losses in editing, compression, and various forms of cable and terrestrial transmissions, including broadband, will be minimised.

Because we see the HD logo flash up on a number of local television programmes there may be the misconception that we're up and running with HD in Australia. The fact is that Australian television channels are only broadcasting the Government mandated 1040 hours per channel per year (20 hours per week), which includes advertisements—and major sporting events in Australia are not shot in HD. One80 have done a lot of HD 'tests' for the big networks, including a cricket coverage for Channel 9 in



HD Camera Operator, Paul Burns.

January of this year. "This coverage was a 'parallel' coverage," says Armstrong, where Global Television used 18 SD cameras, and one80 used 6 HD cameras. Armstrong adds, "Channel 9 were blown away with the picture quality."

Ironically, the Federal Government seems to be leaning towards passing multichanneling legislation that will actually slow HD transmissions in Australia. Armstrong agrees that the future of HD in Australia will largely depend on whether or not Government legislation will allow free-to-air channels to multichannel (multichanneling is transmitting additional programmes not related to the main programme [which is currently allowed] via existing channels). If multichanneling is allowed (which is where the smart money is) the networks will certainly jump at the more channels, more content, option (as Foxtel Digital did). This is a more attractive option for the networks than using their limited and valuable bandwidth to transmit HD signals to the smaller audiences that have invested in HD set-top boxes and monitors.

The more promising future for HD in Australia may well come via independent transmissions of sporting and special events aired live in theatres (perhaps licenced clubs) and shown on big screens, as they do very successfully in Europe. But as so, most producers want to 'future-proof' their productions because of advancing new technologies such as HD DVD

and Blu-Ray—and once you have a high resolution you can minimise losses brought about by various forms of transmissions. There is also major interest coming from the film sector, including "made for TV" for HD productions.

In November 2004, one80 Digital Post won the contract to shoot and record The Eagles in HD on the Melbourne leg of the World Farewell Tour. The subsequent DVD is now the largest-selling DVD around the world. Apart from The Eagles flying in their own director and producer and one of the jib operators, almost the entire crew for The Eagles Melbourne concert was supplied by one80. In total one80 used eleven HD cameras; equipment included, two jibs, a 'telescopic crane', a dolly, steadycam, and 13 HD tape decks, which ISO recorded (International Standards Organisation recording code) the event. one80 didn't do the post production on The Eagles DVD but they have full world class facilities to do the post. "We can actually author the DVDs and cut the concert—all in HD, pure High Def—uncompressed," says Armstrong.

Even though The Eagles concert DVD is distributed in SD, the footage will certainly be re-released in Blu-ray and HD-DVD formats in 2006. The hip-pocket news for the new High Def DVD formats is that consumers will need to purchase both a HD DVD player and a television monitor or projector capable of reproducing HD content. Some consumers may be disappointed to find that not all

plasma screens (the current large screen of choice) can display 1920 x 1080, and will simply down-convert the signal to whatever amount of pixels that they can accommodate. Armstrong's view is that the 1080i system is the best quality signal, "and we can produce both 1080i/50 and 1080i/60 (NTSC). We haven't had any requests for 720p (progressive scanning)."

At the Hunter Harvest event one80 also projected the stage performances in HD onto large projection screens—and this is where the strength of HD really shows. Whilst there are varying HD formats, one80 only uses 1080i, which is a resolution of 1920 x 1080 pixels, interlaced—put simply, the more pixels you have the better they look when you project them onto a big screen. After all, HD was mainly developed to emulate the quality of film projected onto a large screen. Performing artists, which included, Delirious, Rebecca St. James, Planetshakers, Hillsong/Darlene Zschech, Steve Grace, and the Harvest Band were all projected in crisp HD and shown live to the enthusiastic Harvest audience.

Audio in one80's truck was processed on a Yamaha DM2000 digital mixer. Sound Engineer Mark Husband, says, "It's a very versatile, very powerful little mixer. It's got EQ, compression, gating, FX on every channel, delay on every channel—every output channel. So we can overcome the problem of coming from High Def down to Standard Def, down to analogue, by putting different delays on the signals so they all match up." Husband does some of the programming on the desk before arriving on location using a laptop computer, "...just synchronise it and it's ready to go," he adds. "There's lots of scene memories so you can store heaps of stuff...hundreds...it's a really good mixer. You can also gang two of them up. If we get a big job we just get another one and tie the two together." Husband says that the desk has performed faultlessly since its installation, "...you can't even find a little glitch anywhere."

On location at Hunter Harvest 05 one80 had six HD LDK 6000 Thomson cameras, all run on 1080i/50 and mastered on HD CAM. There was also a four channel HD EVS (Enhanced Vision



Trevor Bush getting close-up HD footage.



one80 Digital Post's HD OB Van and Multitrack Recording Van at Hunter Harvest.

System), HD monitoring systems, Clearcom talkback system, HD router, 11 up-converters and 11 down-converters. Armstrong says, "We can output in HD, SD, Analogue, 4:3, 16:9...whatever format there is we can output it. It's not the biggest truck in Australia, but by far it's the best picture quality; there's no equal to it...it's a tiny truck with a lot of grunt." one80 also runs a separate tape-truck for multitrack recording, which can communicate with the main OB van.

one80 Digital Post have 19 full-time staff involved in operations across their six edit suites, two audio production suites, 3d and 2d graphic design facilities, and 2 x 260m2 studios complete with lighting grids. Armstrong says, "We can back the trucks up into the studio and use them as a High Def control room, so the studios are

basically the only independently owned studios available for 'dry-hire' that can produce HD content. Our possibilities are endless. We probably average about three OB jobs per month, which is quite comfortable for us; and our production facilities...the edit suites, have about a 95% occupancy rate."

one80 was also the first Australian media production firm to purchase a complete Avid HD DNA workflow solution. This includes: Avid DS Nitris, Avid Media Composer Adrenaline (two systems), Avid Xpress Pro with Avid Mojo (nine systems), and an Avid Unity LANshare EX. one80 has two audio studios: one equipped with a Digidesign Pro-tools HD running on a Mac G5, and the other equipped with a Fairlight station.

one80 currently shoots boxing



Sound Engineer, Mark Husband mixing Harvest 05 on the Yamaha DM2000 digital mixer: "...you can't even find a little glitch anywhere."



Harvest brought their own Director from the US, who operated the Grass Valley Kalipso switcher.

for Fox Sport—even though Fox and their Fox Digital service only transmits SD signals, Armstrong says, "the truck always goes out in HD, and we just down-convert it for them...but we have the HD masters for future broadcasts or projects. About 65% of all US sports and events are now shot in HD. All the enquiries that we're getting from overseas are for HD—it's all HD, HD; 'what can you offer,' says Armstrong, who adds, "We have the truck and the post; we can do a 5:1 mix; we can author DVDs—it's a complete package." A 'complete package' can include a 5 or 6 camera OB, with a jib and steadycam—and all the post production for approximately \$60K.

Being inside one80's High Def OB van at Harvest 05 was what one imagines a NASA control room would be like. As Harvest is a US show, strong American accents were pouring in over the Clearcoms, making the event sound as serious as a space launch. These directions were obversely mangled with good old down to Earth Aussie speak that could well have been a team of plumbers and drainers—but in reality was a team of world-class technicians creating a world-class production.



TRUST ME, I'M A MIXER



By **DUNCAN FRY**

It's always been a mystery to me that people seem totally amazed when you can actually do what you say you can do. Maybe it's the proliferation of people without the necessary skills, or are we just becoming a nation of bullshit artists?

To illustrate my point, here are a couple of examples from the fabled Fry archives.

Many years ago one of our customers came to the factory with a secondhand mixer he'd just bought. It was a pretty old mixer even at the time, but he thought it was a classic

Turned out it worked just fine, he said, but he wanted to use it for recording and it was a little short on available ins and outs. Would it be possible to put a direct out and also an insert point on each channel?

Col took the back off, had a look had a look around and said sure, no problems. He gave him an approximate price, and told him we'd give him a call when it was ready.

So I carefully drilled out the appropriate holes on the rear panel while Col beavered around with the wiring and sockets, put it all together and called him to come and get it.

When he arrived we ran it up, plugged bits of equipment in to show that it worked, and that was that.

The guy was ecstatic, over the moon, and couldn't believe that everything worked as he had expected it to. He handed over the money, wrestled it into his car and off he went, a satisfied customer.

After he'd gone we couldn't get over the way he was totally blown away by how we'd delivered on what we said we would.

Personally, if I'd paid a substantial sum of money to get something modified or repaired, and it didn't work as I had explained I wanted it to, then I'd be getting both mad and

even. If they said to me: 'OK we've done the mixer but you can only use odd numbered channels unless it's a month with an R in it', or maybe 'we've fixed your VCR but whatever you do don't put a videotape in or it'll void the warranty', then I'd be searching for some serious compensation.

The same lack of trust goes for mixing.

Sometime in the late 80's I remember getting a phone call from the leader of a well-known cover band. Let's call him Andy, not his real name but close enough. He had a regular gig at the Palace, a large nightclub complex in St Kilda. Could I do a walk-in mix for them on Saturday night? The price he offered was good, so I said yes.

It was a pretty big venue and had a comprehensive house system, but it was more tuned to the doof and tish requirements of the DJ, not the band. So they brought in their own system, a couple of Turbo TMS 4 boxes which they sat on each side of the stage. Although fine for most venues, it was a little light for a room this size, so they ran into the house system as well.

Andy was a bag of nerves. He was what we might call today a total control freak.

He ran the band, managed the band, owned the system, drove the truck, chose the songs and was lead singer. If he could have been out front mixing as well he would have been happy, but he couldn't, and so was permanently anxious. "Why aren't you using your normal mixer?" I asked.

"Mate, last time we were here it sounded terrible, and nowhere near loud enough." He replied. "I think he's just not up to working in a venue this size."

He wandered off to worry about something else while I put on a CD,

ran up his system first, then the house system, and made a few level and EQ adjustments.

I checked the mic lines to make sure everything was coming down to the desk OK, then set up each channel's EQ the way I liked it.

I guess it took me about 20 minutes all up, so when I was finished draped a cloth over the mixer, waved and called out 'see you tonight' and went outside.

Andy came racing after me.

"Where are you going? You can't be finished yet?"

"Yeah, everything's OK, it's all working fine, there's nothing else to do." I replied

"Are you sure?" he insisted, "You know it's gotta be loud and big sounding, and no feedback. Jeez it fed back all night last time we were here."

I returned to the gig about ten o'clock that evening, and the place was packed to the rafters with happy punters. The band was backstage, so I went and said hello, got a song list, reassured them, and went out front.

After giving the desk a final once-over, I set up some effects for the first song, Jimmy Barnes' 'Working Class Man' and waited for the band to come on.

As everyone with ears would know, the song starts with solo vocals, and the band comes in on the final 'man' in the line 'wo-o-o-o he's a working class man'.

I cranked up Andy's vocals for the intro, and when he hit the final 'man' - Whammo - I pushed the band subgroups right up so that drums, bass, keyboards and guitar all exploded at the same time.

The audience took two steps back en masse as the wall of sound hit them. I eased the levels down slightly, and I could hear Andy say 'OK Dunk, I think that's loud enough!'

Now he believed me.

CX

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What he knows, what he does, and who he's done it to telescopes through the last significant half century of music production before landing squarely in the halls of the greats. Ladies and gentlemen: Bruce Swedien.





by JOHN PAYNE



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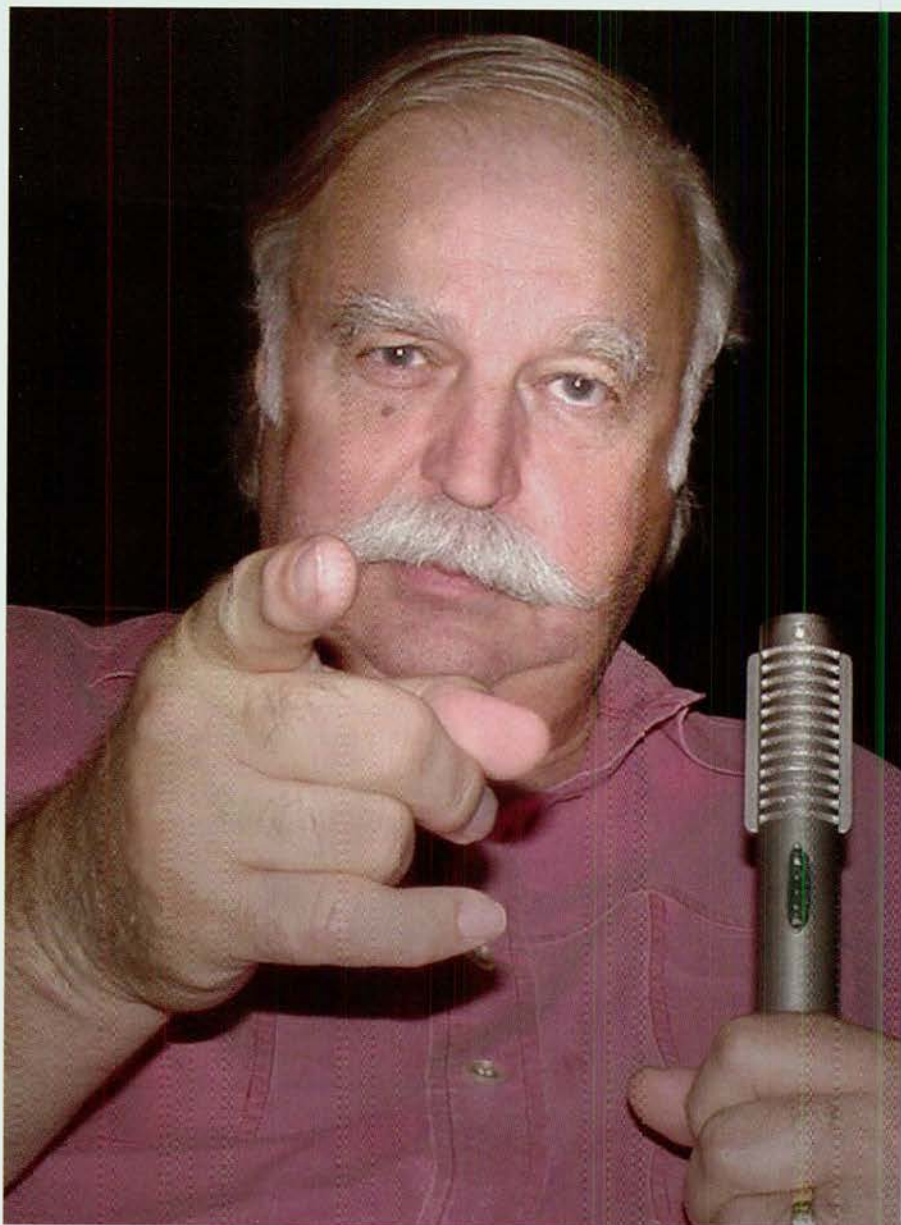
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Bruce has made some of the best scunding recordings ever. Listen up!

above each other, in bi-directional, and record the saxes and spread them across the image . . . And it just worked beautifully. It was quite a departure from ordinary recording at that time."

Of course, the musicianship of the band itself played a big part in the beauty of the recorded sound. Says Swedien, "The saxes in Basie's band would pretty much balance themselves. But my idea was to have the saxes in a full circle around these two mics. The lower mic was on a floor mic stand and vertical. It was set for bi-directional, or a figure-of-eight pattern. The upper mic was suspended, and also set for bi-directional, or figure-of-eight, but the pattern of the two mics were crossed. The upper mic was suspended as close as I could get it to the lower mic, almost touching, an eighth of an inch or less. The object of this technique is to get the mic capsules as close together as possible.

This application of this microphone technique was the beginning of my continuous use of the Classic "Blumlein Pair" microphone technique. Then I arranged the five saxophones in a full circle around these two microphones. And these guys were so incredible, if there was a solo or something, I would ask them to stand up or move in, or whatever. . . ."

The advent of stereo was not exactly heralded as the coming of a new dawn in recording technology though. "In 1960," he says "the record labels didn't want to know about stereo stereo was a non-issue as far as recording music. But there were a few of us guys who were very interested in it — me, Al Schmitt, Phil Ramone, and Tom Dowd. A few of us would talk about it all the time, and for a few of us, stereo was gonna be a big deal, but the record labels didn't want to know about it. As a matter of fact, some of the labels, if they saw a stereo tape

ROYER R-122

One Saturday morning, John Jennings of Royer Microphone Labs called me and said, "Bruce, I have a new ribbon mic and you simply must hear it!" Now, when my old pal John Jennings says something like that to me, it makes me want to listen to his new mic ASAP!

Well, I listened! All I can say is "WOW!" This new Royer Active Ribbon mic really takes the art of the ribbon microphone to a whole new level! Making the R-122 into a true active ribbon mic, plus the addition of the larger output transformer, makes this fantastic mic a space-age contender for first choice for highest quality music recording.

machine in the control room at the start of one of these big band sessions, they would make you move it out. You know why? They didn't want to pay for the tape."

Neo-post-modern Luddites aside, it's the people he's worked with that've made Swedien the musical thinker, forward-thinking engineer, and sonic philosopher he is today. Such as Bill

NEUMANN U-47

I bought this fantastic microphone new in 1956! It cost \$390! In those days that was a lot of money! I bought two of them. I brought both of them with me when Bea and I moved to Chicago from Minneapolis in 1957.

When I began my work at Universal Studios in Chicago, the first world-class artist that I recorded with this lovely microphone was Nat 'King' Cole. The next major artist to sing into this very microphone was Sarah Vaughan. Next, Joe Williams with Count Basie's Band, followed by Ella, Michael, and, a few months ago Jennifer [Lopez].

The original U-47s were actually made by Neumann and distributed by Telefunken, as well as being sold under the Neumann name.

One of my cherished U-47's was stolen in 1981 when we were recording the Michael Jackson album *Thriller*! An absolutely incredible microphone, isn't it amazing to think that a 50 year old mic can still be the undeniable first choice for many high profile sound sources?



Bruce Swedien pioneered many techniques for drum kit mic placement.

Putnam, "literally the father of modern recording," he says. "He built Ocean Way in L.A., as well as Universal in Chicago. If you look at a modern recording console, the position of the dials and effects, the way things are located on a console, all that originated with Putnam's imagination. He was my mentor. I literally followed him around in Chicago, and he would let me do things. I was with him for a year before he went to California, and actually Studio B was not complete yet, but was to be my studio to work in. I was at Universal for 11 years; then I built a studio for an advertising music company. For Richard Marx's father, who was an incredible piano player, Dick Marx."

Swedien's old friend Quincy Jones, too (with whom Swedien did *The Wiz* soundtrack, among many other projects) was a huge inspiration not just for the genius of his musicianship but for his gourmand's way of enjoying food, fun, and life itself. "Anytime you could call him in the middle of the night with a problem, and he'd be there for you. He was a lot of fun to be with in the studio."

But it was Duke Ellington who ultimately changed Swedien's life in the most major way. "When I got to Chicago from Minnesota, as a young Swedish-American, I'd come from a place where you weren't supposed to like what you did for a living, that just

wasn't done. That always bothered me 'cause I didn't understand it. In Chicago, one of the first bands I worked with was Ellington's. And just the way he dressed, you could tell that he was excited about music and his life. I remember sitting and talking with Duke and asking him, 'Is it okay to like what you do?'"

"This is all I've ever done," says

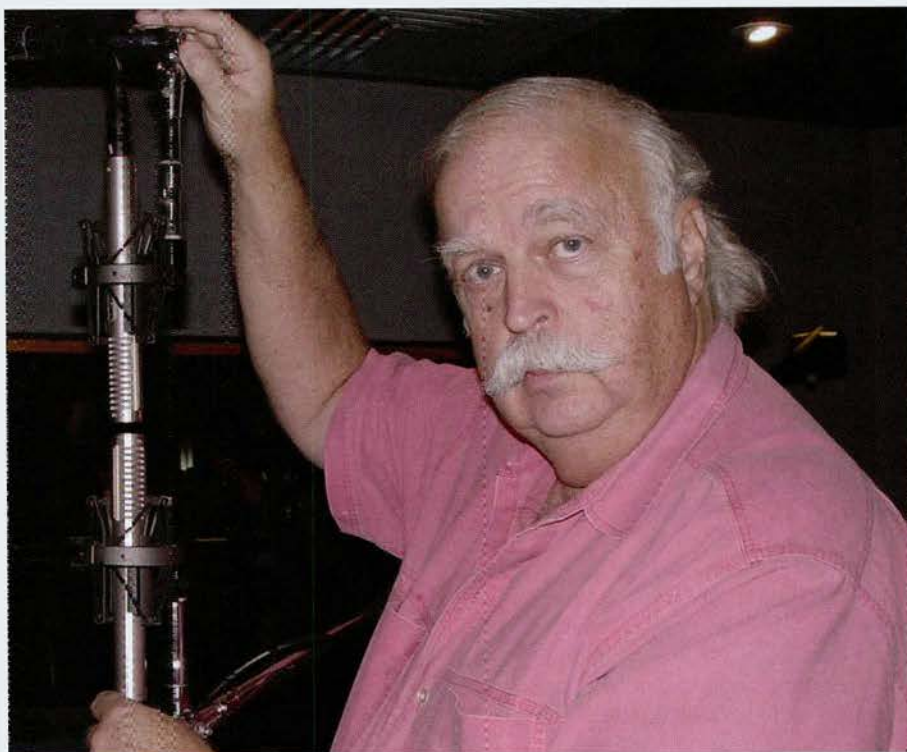
NU-47

This is an extremely high quality, prototype microphone designed and built by my good friend Martin Kantola, who hails from the Swedish-speaking part of Finland. I first met Martin in 1992 in Helsinki, when I was doing a Master Class at the Sibelius Academy. Both Martin and I are fascinated by the art of microphone design. The basic concept behind the NU-47 was to make the most capable hyper-fidelity microphone possible, designed expressly for the recording of featured solo sound sources in modern music recording. Of course, it's a fantastic vocal microphone. There have been very few NU-47's made. One was made for Icelandic singer Björk, who absolutely loves the sound of this incredible new microphone. She told us that, "It captures both the small and the big sounds that I make!"

Swedien. "I've been lucky. All I've ever wanted to do is record music. Liking what you do is a plus, in fact. I've always loved what I did, and I'm just as excited about it today as I ever was."

"I've got two last bits for you.

Music first. And another thing: Microphones are the secret weapons of recording engineers and producers. Microphones are literally voodoo. They'll capture you."



Microphones are the secret weapons of recording engineers and producers.

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- Certificate II PLUS either Adv Sound or Adv Lighting. Jan 2 - 27.

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- Basics (3 days) Jan 9-11
- Adv: Moving Lights and desk (5 days) Jan 16-20 (Do Basics first)

SOUND courses

- Basics (3 days) Jan 4-6
- Basics (3 days) Jan 16-18
- Adv: Analogue & digital desks (5 days) Jan 9 - 13
- Studio Basics Jan 23-25

OTHER courses

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- Vision Basics (3 days) Jan 23 -25.
- Wiring, tagging, soldering Jan 16 - 20

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SOUND courses

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At Brendale

Melbourne

Certificate III

- Start Jan 9, finish Jan 25

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- Basics (3 days) Jan 16-18

SOUND courses

- Basics (3 days) Jan 23-25

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LIGHTING courses

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- Adv: Moving Lights and desk (5 days) Jan 23-27 (Do Basics first)

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HYATT GRAND OPENING WITH ROBE

Over 100 Robe ColorSpot 170 moving heads and Anolis Arcsource RGB LED fixtures have been installed in the newly refurbished banqueting and ballroom facility at the Grand Hyatt, Melbourne, Australia.





Looking down from the box, over the Jards Vista.

By JULIUS GRAFTON

The new facility's fabulous multi-purpose function areas now cover two levels, offering 2100 square metres of conference facilities, and were recently opened in a blaze of glory, including the new Art Deco style Mayfair and Savoy Ballrooms.

The banquet room facility is designed to meet the highest international standards and is unparalleled anywhere else in Australia.

Lighting was integral to the whole interior design. The lighting scheme was designed by Michael Huggins and the installation completed by two companies - Premier Lighting (for the Robe element) and Lightmoves (for the Anolis fixtures).

Robe Show Lighting and Anolis brands are both distributed in Australia by ULA.

The Savoy Ballroom features over 100 Robe ColorSpot 170s which are discreetly located in the ceiling panels, carefully positioned so they can light virtually any part of the room in a range of colours and gobos.

The Mayfair Ballroom's natural light-filled atrium features another 10 ColorSpot 170 ATs, rear projecting images onto glass panels on the floor and in the ceiling.

Robe's ColorSpot 170 AT is designed for multiple applications. It is particularly good for architectural lighting, bars, restaurants, shops, retail environments, product launches and special events and for use as an image projector.

This fixture was specified at Hyatt for its many features, including a rotating gobo wheel, a revolve colour wheel, remote focus facility, Robe's renowned "SLOT&LOCK" colour and gobo

changing system, the remote lamp on/off and its very fast movement. It utilises a long-life lightsource – a great bonus for all types of installation. Onboard master/slave programming enables 300 scenes to be stored in the fixture's onboard memory – ideal for stand-alone operation and scenarios.

Both ballroom foyers feature glass panels which have been imaginatively backlit with 48 Anolis ArcSource 6 RGB LED fixtures. These provide a myriad of intense colours, transforming the dynamics of the spaces into virtual artworks.

The Anolis ArcSource 3 RGB, 6 RGB, and 7 RGBW fittings combine cutting edge Luxeon emitters and lighting technology with industry standard MR16 fittings to create top quality lighting systems. The Anolis brand is characterised by utilising the best materials and precision manufacturing techniques. A top end interchangeable optical system ensures that the desired effects can be achieved across the widest range of applications. The fixtures also offer all the positive environmental benefits and cost efficiency of LEDs.

Gala Opening

The Hyatt Melbourne unveiled the results of its 6 month refurbishment project with a Grand Opening Night, attended by over 1600 VFS including Australia's top conference organisers. They received large amounts of Red Carpet treatment including a light and sound extravaganza.

In addition to the installed Robe ColorSpot 170AT's, Premier Lighting boosted the illuminations for the opening event using Robe ColorSpot 1200 ATs, ColorWash 1200 ATs and



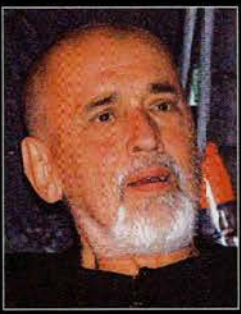
Probably the best lit floral arrangement in Melbourne!

ColorSpot 575 AT's, plus Robe smoke machines.

Ricki Lucca ignited the evening in the Savoy Ballroom while the Sarah Wallis Jazz Quartet eased into it in the Mayfair ballroom. Later in the evening the B# Big Band had people swinging and dancers jiving to their tunes and later in the Savoy Ballroom, Vanessa Amarossi topped the night with her own special style of music and light.

The opening event rig was designed by Andy McKay. Everyone enjoyed the awesome ambience of the new facilities and appreciated the achievement and the central role played by 'light' in launching Hyatt's new venue on the world conference scene.





PETE WELLS BENEFIT

The music industry doesn't enjoy government handouts or grants, and doesn't occupy government funded venues either.

It is a business that must run on a purely commercial footing. When a performer needs help, there can be an uplifting outcome. Think about the Ted Mulry benefit shows in Sydney in 2001.

Recently leading promoter Michael Chugg threw his support behind Pete Wells who is ill with cancer. The resulting benefit concert at Sydney's Enmore Theatre was an outstanding success.

CX was there disguised as an old rock enthusiast, complete with can of VB.

The show was organized by a committee, made up of Micheal Chugg, with Billy Thorpe (as musical director), and Oana Gilbert was the production manager.

Rina Ferris handled publicity, Nick Chugg did marketing, and Greg Clarke looked after production. Also on the committee were Paul Demarco and Lucy Desoto

The concert proceeds are managed by Support Act Limited, which is a non profit organisation that looks after musicians who need help.

www.supportact.com.au

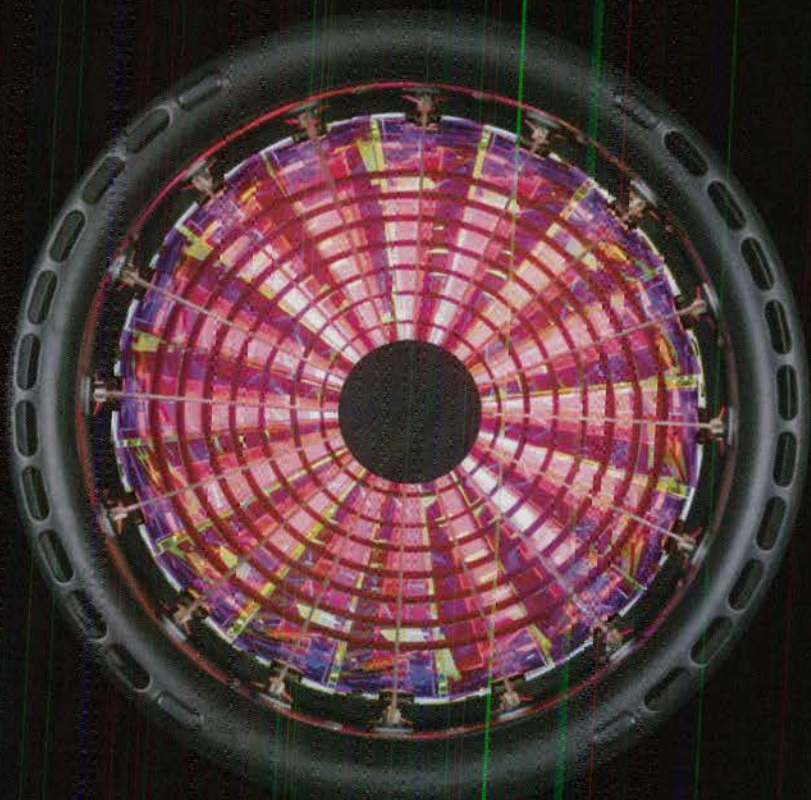


These are classic shots, of a classic working rock band from the dark days of the 1970's. Originally named Big Swiftly, The Radiators went on, and still go off today. Bob King has captured a band, putting on a show. Which is what it is all about.



PICTURES BY BOB KING

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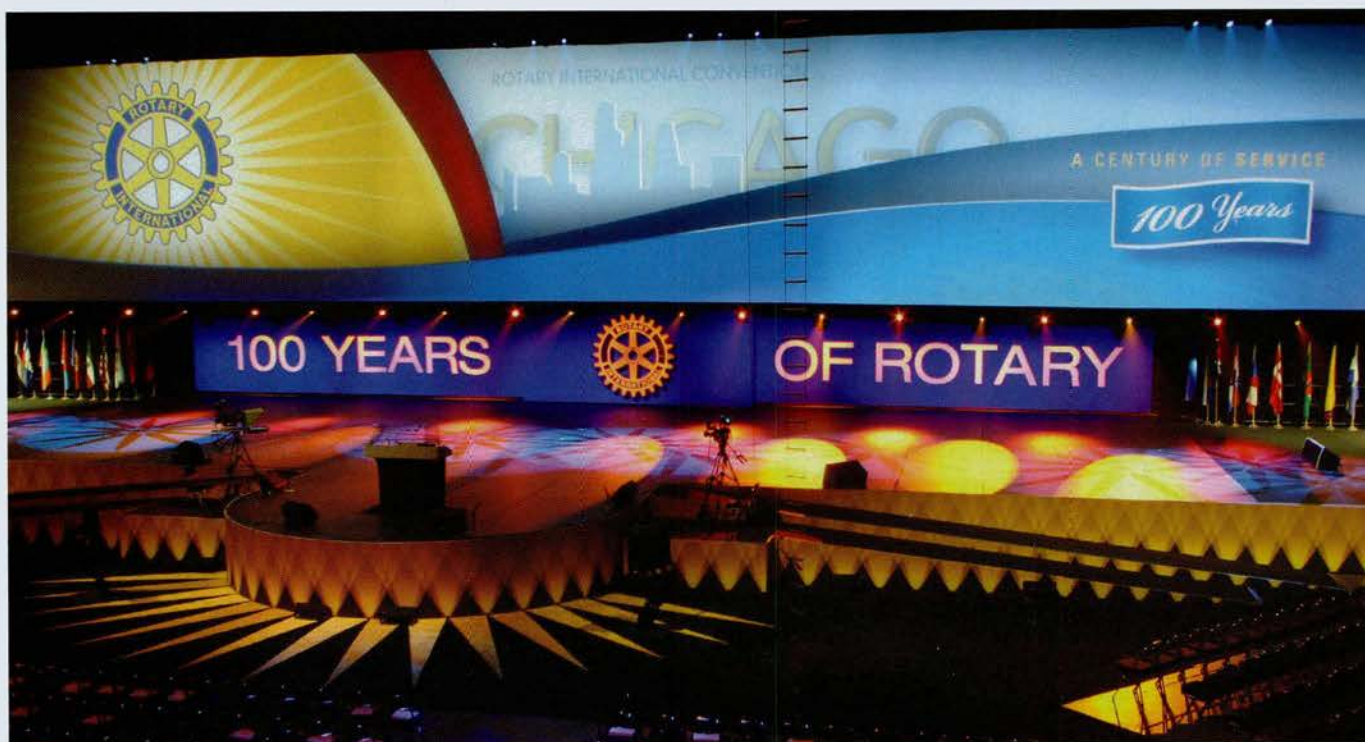
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Rotary International Centennial Convention – Chicago 2005



We've all heard of Rotary. We often see their famous "spoked cog" logo at the entrance to almost every country town throughout Australia. Unfortunately most people don't know what Rotary clubs do, what they stand for and how many there are, not just in Australia but all around the world.

Rotary is actually a worldwide organisation of business and professional leaders that provides humanitarian service, encourages high ethical standards in all vocations, and helps build goodwill and peace in the world. Approximately 1.2 million Rotarians belong to more than 31,000 Rotary clubs located in 167 countries.

Each year Rotary conducts an International Convention in different countries as diverse as

Japan, Spain, Korea, Australia and the USA just to name a few. As you may well imagine, these conventions are huge and attract Rotarians not just from the host country but from all over the world.

Paul Haines from Inspiring Events International (IEI) in Sydney first became involved with Rotary International when its convention was held in Brisbane in 2003. It was a coup for Paul and Australia because until then, no matter where in the world the event had been staged, it had been produced by the same American production company for over 20 years.

"When we first got wind of this enormous event coming to Australia we really didn't know what to expect" says Paul. "We were not given any budget parameters so we just proposed

production standards and a scale we thought would be appropriate for the 7,000 seat venue at the Brisbane Exhibition and Convention Centre. When the budget started to tally up into the millions, I thought we'd never win the business. As it turned out, we had proposed considerably more than Rotary had ever been given before and we were by no means the most expensive tenderer."

The key to Haines' production was large screen projection for which IEI and their creative content team have now become recognised around the world.

The success of Brisbane led to Paul becoming Creative Director for the 2004 Rotary Convention in Japan. This time the event needed to seat 43,000 in an indoor baseball stadium. At the time Osaka was



Brisbane Exhibition and Convention Centre featuring large screen projection for which IEI and their creative content team have now become recognised around the world.

the biggest motion picture project on screen in the world. At 80 metres wide and 17 metres high it was considerably larger than IMAX. Even then, 80 meters wide became small in comparison to the 135 metre wide screens at Rotary's 2005 Centennial convention in Chicago that Inspiring Events have just completed.

"In anyone's terms this was a big show," says Peter Neufeld the Sydney based lighting designer, "however as production manager and LD for the Brisbane event, I knew what to expect". Brisbane's auditorium held 7,000 at a time. Chicago was nearly three times bigger at 18,000

The famous Chicago teamster

union's staffed the venue, so Peter and the team were well aware how critical the crew and set up scheduling had to be. "For a show of this magnitude and duration (11 days from bump in to bump out) any deviation in the schedule could have massive cost repercussions". By some estimates, if the lighting ever went into overtime it could cost as much as JS\$15,000 an hour. "Needless to say, I had to do my homework!" Peter says.

On the day, the local crews had great respect for the Australian team and all at Inspiring Events International were delighted at the speed and efficiency at which the show came to be built. "Actually much faster than anything I have

seen elsewhere and I've worked on some very large scale, big budget events," Says Peter. "We had over 300 points and almost 2 kilometres of trussing and a lot of lighting. The rigging was complex yet it was a lot and working in barely two days."

"Sure the screens were huge" Says Paul. "The stage was like an aircraft carrier, everything was big but that scale was necessary in the vast stadium. What's more important though, is what you put on the big screens." IEI believes "Content" is the most important driver. Technology should be transparent to the audience. "We want the audience to exit the venue chanting our clients' mantra

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Hollis Johnson (program manager, Potary, and Paul Haines from Inspiring Events.



3 miles of truss!

not whistling the set". He says. "We chose the company, we felt would do the best job for the event which happened to be from Australia" Says Hollis Johnson (program manager for Rotary International). "Having worked with the IEI creative team on two previous events, we were familiar with the quality of the work and the attention paid to the desired communication to the audience. The event was a celebration of Rotary's past, present and future. IEI wanted to give the audience some idea of global importance of Rotary's humanitarian work. Individually, each Rotarian plays a small role but collectively they have a major impact on improving the lives of millions of people".

It took 4 months to gather dozens of Rotary case studies and IEI sent two film crews in different directions around the world with

the new Sony HDV cameras to capture the stories. From this material they produced 33 Audio Visual modules which looked incredible on the enormous screens. "44 standing ovations later, I guess we must have done something right." Says Paul.

There were over 20 performance acts, rolling and flying sets and much more. Peter adds: "We had a lot to contend with. It amounted to five different shows - including the spectacular opening and closing ceremonies performed and operated three times and twice respectively so all 45,000 participants could attend". All up, with the three main sessions we had to rehearse and perform nine shows in four days. "I pride myself in being efficient with the design and there was absolutely no fat on the lighting rig at all. It worked superbly saying so myself with the

relative light levels very much meshed with the visuals".

The presentations included this year's Nobel Peace Prize winner, the Secretary General of the United Nations, Kofi Annan, and the President of the United States, George W Bush. Even Paul McCartney gave his thanks to Rotary for their support of his pet project Adopt-A-Minefield.

When asked why Inspiring Events from Sydney was chosen to produce this incredibly important Centennial event for Rotary, Hollis Johnson replied. "I'm not convinced that nationality plays a significant role - it has more to do with the individual talents and personalities. However, I truly appreciate the straight forward manner and sense of humour of Australians in general because it makes a much more efficient and enjoyable work process. It is also true that given the location, Australia gets a broader view than most other places because both the American/European influences are there AND the Asian influences are there as well. This is important to an international organization like Rotary in that our audience comes from all over the world.

"Inspiring Events International was honoured to have produced Rotary's Centennial in Chicago". Says Paul, "It's testament to the fact Australian production companies are up there with the best in the world.





Osaka was the biggest motion picture projection screen in the world.



Richard Lindsay (Creative Director)



Scott Higgins (Pehearsal Dir) & Peter Neufeld (LD).



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It's up and up for
Technical Direction Company...

SURFING THE BIG VISION WAVE



By JULIUS GRAFTON

Technical Direction Company has cemented their reputation as leaders in the small but fast growing event vision market. It's been a short and sharp trip. It seems like yesterday that the firm was mainly specializing in Clarity video cubes. Now they have an inventory that fits most large vision and display requirements, including more Barco LED panels than anyone else south of the equator.

Vision is such a buzz business right now. Every corporate event wants vision. Most conferences now want proceedings captured to vision as well as shown on the screen. Plus we are in such a content hungry society, material captured today is the webcast of tomorrow.

Corporate events started using multi screen slide presentations with banks of up to 40 Kodak Carousel projectors as far back as the early 1970's. The corporates have always demanded big screen reproduction of simple Powerpoint shows through to full high resolution video imagery.

Getting crisp, clean and bright imagery on demand is the dream of all designers, and the corporate presentation market has the

requirements and the budgets to let it happen. Technical Direction Company are now at the forefront of this special ad industry.

It isn't TV, it isn't film, and it sure isn't 'multimedia'.

Just a few years ago, large screen projection started to become a requirement of audiences at concerts, and now it's a brave act that takes to the stage in any venue with more than 5000 seats and no big screens.

TDC has pioneered a new image blending technology, which enables multiple video projectors to act as one large image. A recent example had a screen 40 metres long, and just 3 metres high – with ten video projectors working in unison. This display was used to devastating effect for a major fashion launch, where the models walked as the projected camera image panned along the screen at the same speed – seamlessly from one projector, to the next.

TDC is owned by Michael Hassett, who has a firm grasp on his growing market. He moved away from providing traditional audio visual services, such as screen, sound, lights and staging. "We got out of that years ago, as soon as possible. There are too many competitors" says Michael.

The business has three streams, concerts, corporate and broadcast. Large TV shows where TDC has provided LED displays include Big Brother and Australian Idol. And it is the high resolution LED wall that has underpinned the majority of TDC's business over the last two years. The firm invested very heavily in the first Barco LED product, and have added more and more ever since.

Barco's LED panels are possibly the market leaders worldwide, and the firm has rolled out progressively higher resolution models, the latest of which offers a 3mm pitch between pixels. Even the now-standard 10mm pitch panels work incredibly well as long as an audience is not seated up close. These are seen regularly at concerts, where lighting designers have grabbed the technology very enthusiastically. The big difference for a designer is that the LED panel is black when it is inactive, whereas using a projector requires a screen that is always white. Plus the LED panel produces extraordinary light output.

There are a growing number of firms offering rental and sale of LED panels but the business is still so new that capital costs are very high and expertise is thin on the ground. TDC fit



Michael Hassett.



Toby Whaley.

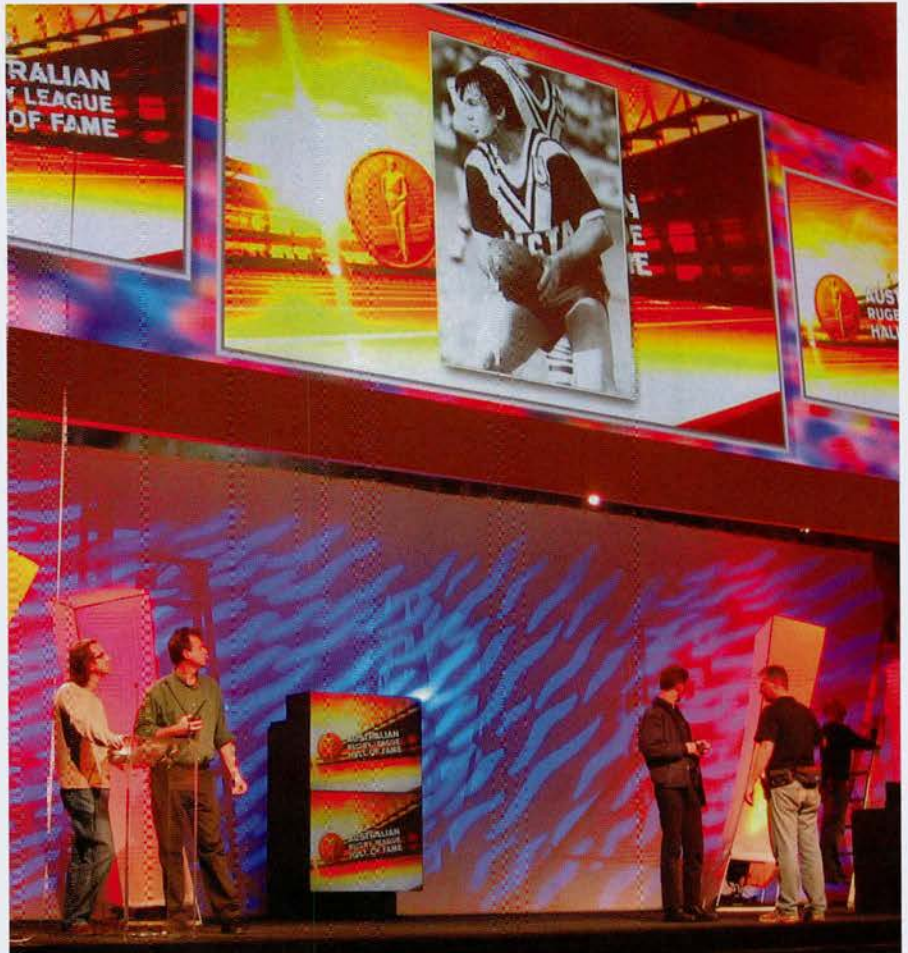
the bullet and invested several million dollars in year one to get their LED product out into rental, and have kept spending millions each year since.

The allied equipment doesn't come cheap either, they have a fleet of Barco R12 projectors, which require a lamp that costs around \$10,000 and a bunch of lenses that cost as much as the projector.

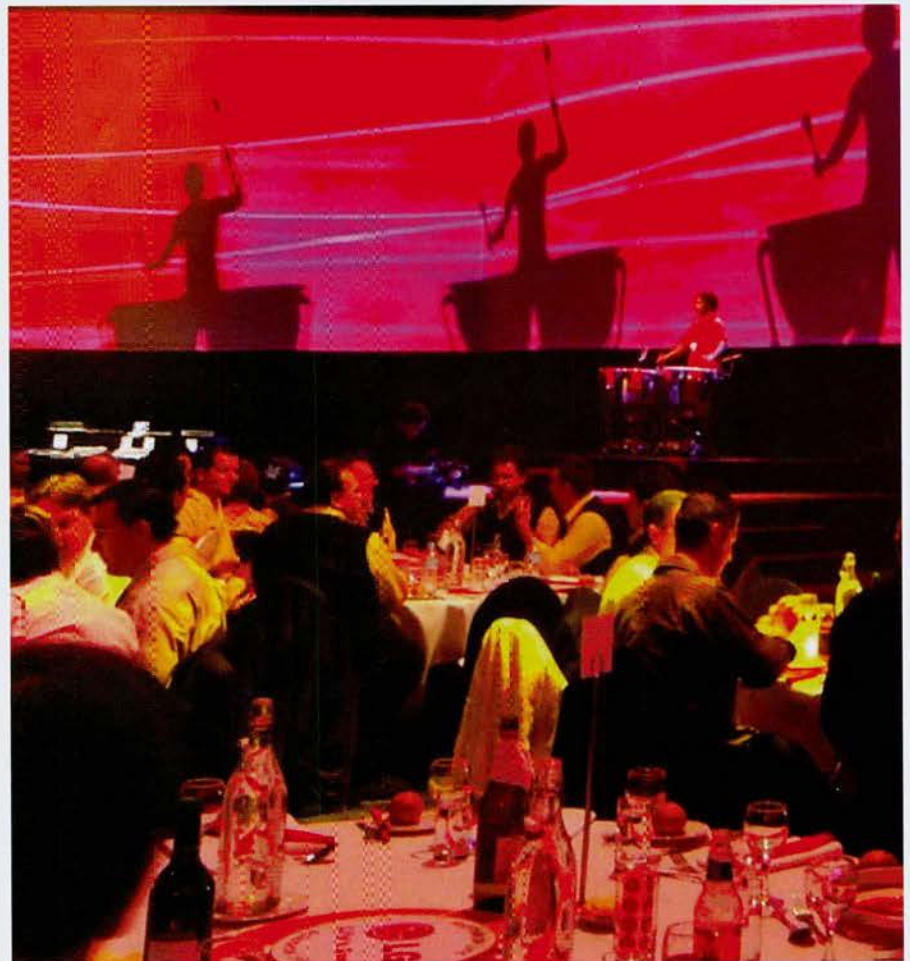
Sending signal to the varied fleet of devices is an art form too, with new technologies like Folsom's Encore Switching system and Dataton's Watchout enabling things that were not possible even a few years ago. TDC invested in High End Systems Catalyst when that system was pioneered.

These days TDC offer camera and video capture and edit services, alongside replay and large screens. The industry is increasingly competitive and Michael Hassett has found that he is often quoting against overseas suppliers, who have considerable critical mass in their markets. It is relatively fast to ship equipment around Europe, and the market is many, many times larger than in Australia.

Plus, an overseas act or an international corporate client visiting Australia is pre conditioned to paying for things in a unit cost mindset – meaning they may only be prepared 100 US dollars or 100 Euro's in those markets, and refuse to pay more than 100 Australian dollars here. Despite the disparity in exchange rates, which obviously means 100 Australian dollars are worth only 74 U.S. dollars or 62 Euro's. This mindset means that sometimes, if the unit cost is greater than the client perceives as fair, then they will ship the equipment into Australia.



The Dally M awards night.

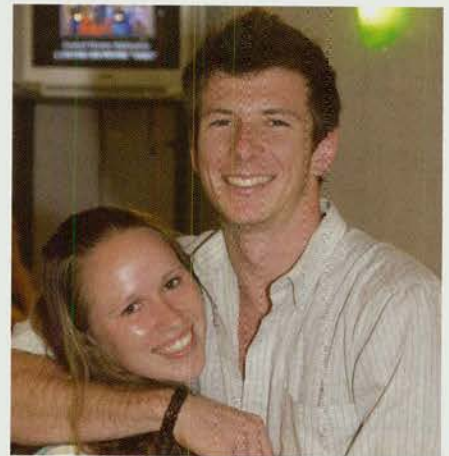


The LG Roadshow.

Out and about....caught with CX's ever watchful camera at Juliusmedia's studio opening party... If you have any good quality happy snaps please submit to mail@juliusmedia.com.



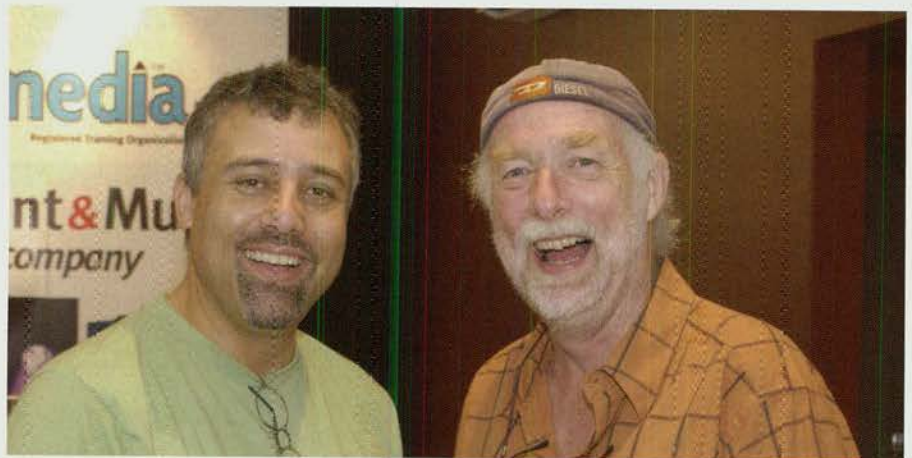
Doc Neeson, partner Amy, Julius, Paul Mulholland (Jeds), Chris.



Keira Harris extolling the virtues of the new studio to a good friend .



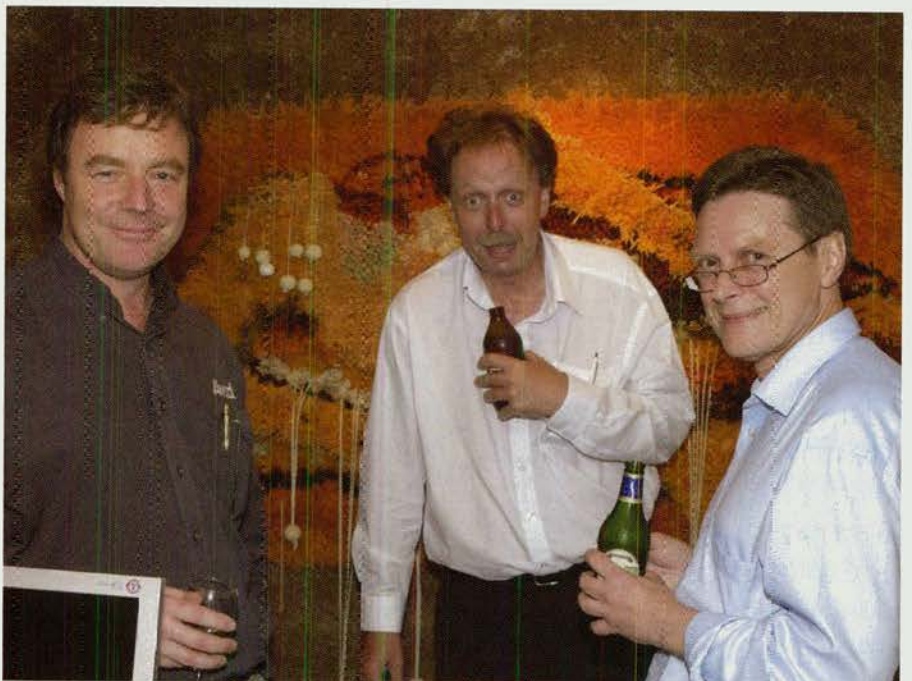
Louise Brooks enjoying the festivities.



Jose Auditore and Bob King share another very funny but unprintable story.



Robert and Ratka Zimoia looking pleased with their next venture.



Peter Amos, Ralph McCleery and Leon Hart from Amber Technology.



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