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# CX

MAGAZINE



technicians survival manual • ex Connections

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- ✓ A very affordable price.
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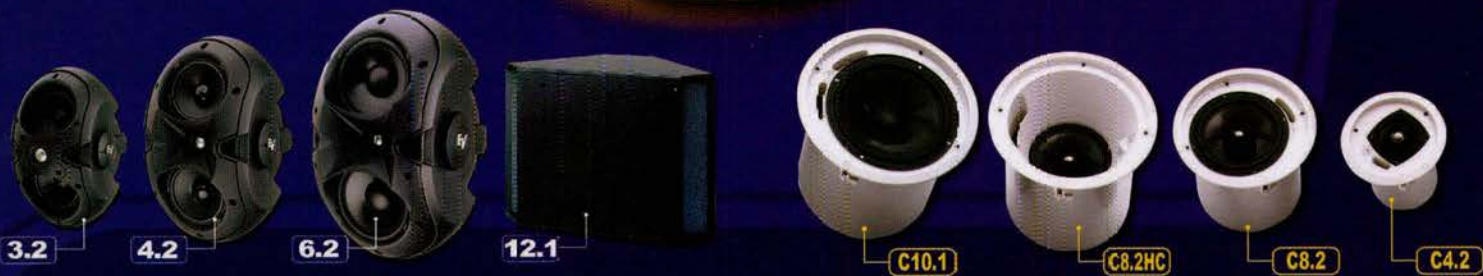
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## The new order - for YOU!

We have three main kinds of readers.

Audio people. Lighting people. And Vision people. The latter number the fewest, since it is the newest trade.

So what technical issues affect you, forward from right now?

Let's start with A, for Audio. If you work there you are at a great turning point, grasshopper. The reason why is that audio - live and installed - is FAST embracing digital, and your work and efforts will be recalled in the future.

Lighting people have a hierarchy where shows get designed by a designer and operated by someone else.

Audio people now face the same. It's because the elusive dimensions of room acoustics and show settings can now be recalled. It's increasingly the case that we recall live room settings and get the same sound in the same room.

The console settings, per song, per cue, per SMPTE moment, are right now recallable, in real time through dynamic automation. Studio meets live.

You'll probably have a USB key like this one, with YOUR show settings onboard.

This little device, hanging off your lanyard or keyring, will be your system settings interface for the next decade or so, or my name isn't Julius! DiGiCo have a USB key port on the D5 console already.



Then your only problem, as a sound person, is who owns your settings? You EQ a room, programme a song. It can be all kept and reused. Think about that one.

As Robbie McGrath, Great Sound Engineer for The Rolling Stones says, "Look after yourself!"

So on to the Lightie.

You've already been in a programmed world, where you store and recall thousands of DMX cues and strings. Your big new order is with Vision. Enter Catalyst.

No device has incited so much Lighting Designer interest as this High End Systems invention which converts Apple Mac graphics into cues that DMX can command. In this issue alone are two instances where Catalyst

commands discussion: with the band TaxiRide, and in the Michael Hasset profile.

Vision people are coming into the fold at an increasing rate too, no self respecting show or church dare not have big screen images. Except Cliff Richards. (See story this issue).

Now to the recorded mediums.

Ten years ago we had a very different audio and visual technology landscape.

Consider this precept:

Anything prerecorded will be copied.

My children's friends all download MP3 tracks from the net. Just a few short years ago they would meet at the mall on Thursday night or Saturday morning to buy CD singles. Not anymore. The CD single is dead.

Movies are next in line with DVD security getting cracked and DVD burners freefalling beneath the \$1000 barrier.

Against this, the recording companies are just in denial. Why else would you have the absurd reality of a plain old CD that cost well under 100 grand to release - and under 50c to replicate - selling for more retail dollars than a DVD of a movie that cost \$100 million?

Just how out of touch is the music recording business? Try this. In the 1930's the Hollywood studios used to contract their movie stars for three or five years, and X number of releases. The practice was thrown out by Congress as it was a form of indenture and manifestly unfair. Yet the recording companies still do it! Don't let anyone you know sign a contract like this. The ONLY way to build a stable future as a recording artist is to retain control over your catalogue.

I've seen some of the worst examples of excess, arrogance, stupidity and unfair behaviour emanate from people who, at the time, worked for record companies. I've seen brilliant young musicians plucked from safe obscurity, promised the world, dined, partied, fed drugs, and signed up for five years - with EVERY possible cost charged and loaded against THEIR contract. In many cases there was no release. The act was dropped to wallow for years until the contract ran out.

I've seen how a record company accountant defines profit and loss, and I'm here to tell you: your LOSS is their PROFIT. Be scared.

- Julius Grafton, Editor.

## Pssst! Hey! New readers! Over HERE!

For ten years I ran Connections Magazine, the forebearer of this magazine. My readers were predominantly in the entertainment business, so they demand to be entertained.

That raises the stakes somewhat! This is the fourth mag I have launched, and the feeling of trepidation is strongest with this one. It has large boots to fill, because by any measure Connections was a great success for ten years.

In this debut issue you'll find things you never would have found in Connections.

- Product comparisons with an actual winner based on performance.

- More reading, longer articles, more pictures.

- Less advertisements - which in our case means the same number of ads but with extra pages inserted to spread the ads out more. Costly, but done.

- No more Market Reports or Tracking Guides. Gone! Now on the web at our internet news site: [www.juliusmedia.com](http://www.juliusmedia.com)

- More accurate subediting, better use of grammar, spelling and that apostrophe thing. Enter Anton Jarvis as sub editor. Complain as required!

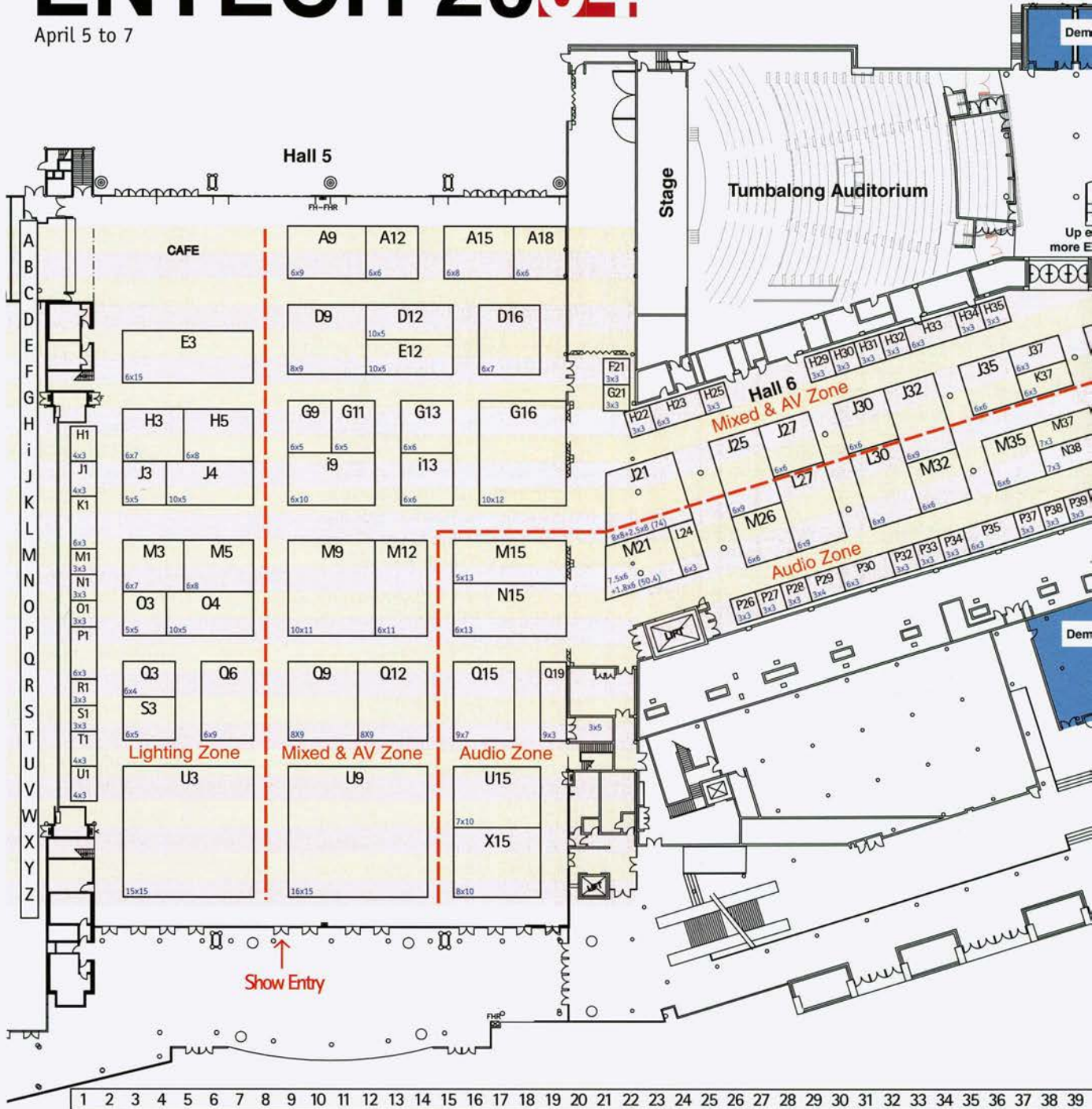
This is my new bimonthly magazine. It sits well alongside my new Internet news site, [www.juliusmedia.com](http://www.juliusmedia.com) - where I am breaking news as it happens. You can get onto my email news list there too. I undertake to keep your email address private at all times.

PLEASE - let me know what you think of CX Magazine!

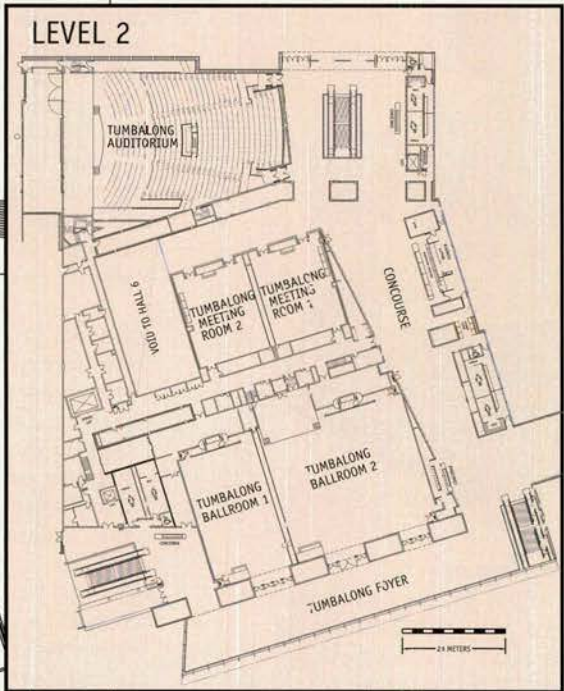
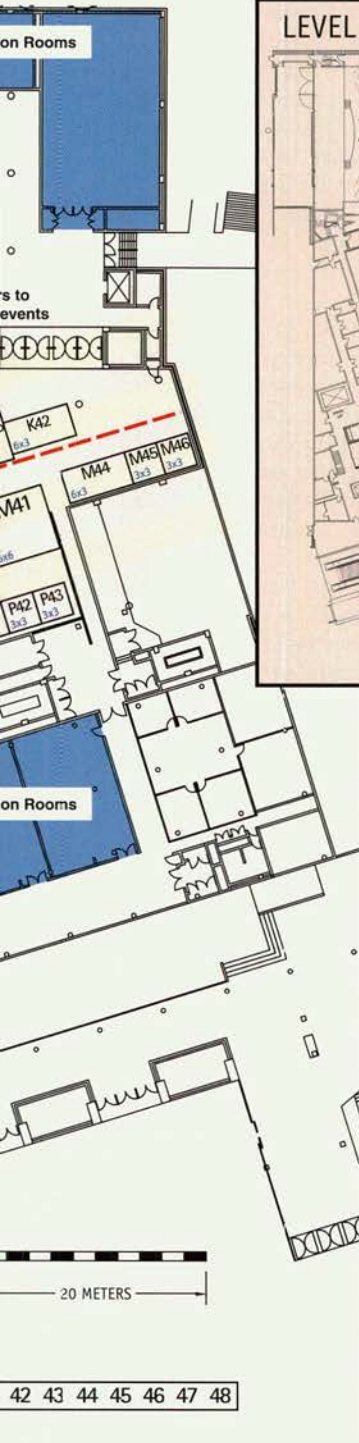
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# ENTECH 2004!

April 5 to 7



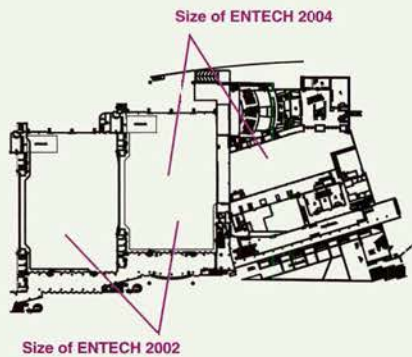
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Email [louiseb@juliusmedia.com](mailto:louiseb@juliusmedia.com)





## Barnabas Studios Destroyed

A cruel and terrible blow to musical youth of Canberra resulted from the devastating fires that levelled over 530 homes in six suburbs early this year. Also completely destroyed was the New Creation Ministries Centre in Holder - and the adjacent very large NCMC Youth Arts centre - which among other things has been the home of Barnabas Studios since 2000. "It's completely devastating, a total loss" said Keith Matthews, studio engineer, the studio having only just been completed after a move from Conder in 1999.

## Amphenol's T-Series Phone Plug.

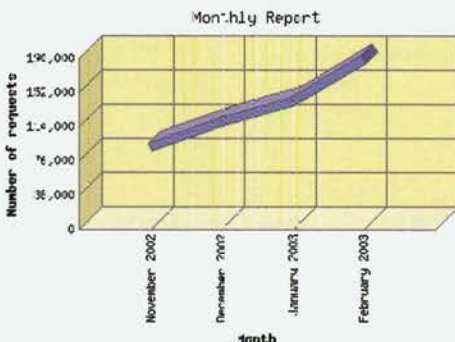
Amphenol Australia has released its T-Series 6.35mm plug range. In addition to the new



plug's "sexy, eye catching looks", its stylish, ergonomically designed shell ensures easy handling when mating and unmating. Amphenol has incorporated a version of its unique 'Jaws' cable clamp. [www.amphenol.com.au](http://www.amphenol.com.au)

## www.juliusmedia.com, truth n proof

The chart below shows traffic booming at our website. Come and read the latest news as it happens, at [www.juliusmedia.com](http://www.juliusmedia.com). We have upgraded hosts due to heavy patronage.



## CDA debut low cost mover

The FX Range ClubYoke 250 gives you a low cost profile moving yoke, at A\$2,850 inc gst, including lamp. It boasts a 250w MSD/HSD/NSD discharge lamp, 9 colours + white, 7 gobos + open, strobe, prism and motorised focus. Ph. +61 (0)3 9467 8666, or go web: [www.cdaust.com.au](http://www.cdaust.com.au)

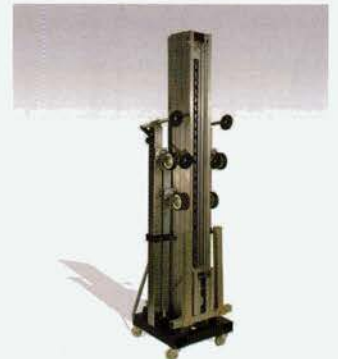
## LEGAL LIFTERS

PENN FABRICATION offer a tough range of lifters which meet European standards. Ranging from 100 to 300kg in lift, and 3.8 to 7.0 metres in lift, there are 7 models in the range. The TL75 Magnum is pictured at right. Call +61 3 9335-6455 or [www.pennfabrication.com](http://www.pennfabrication.com)

produced a Ground Support Tower System to adapt its 500mm Alloy Box Truss to 400mm Alloy Box Truss legs. This has enabled the company to make available locally produced Ground Support Towers for Sale and Hire. Concert Lighting Systems +61 3 9682 6111  
Web site: [www.clsa.com.au](http://www.clsa.com.au)

## Barndoor for MAC 2000

Designed especially for use in theatrical environments or situations where greater control of the beam of an automated wash light is required, Martin has developed a fully motorized and fully closing set of barndoors for the MAC 2000 Wash. Quarter-turn screws allow users to easily remove the standard front lens and replace it with the



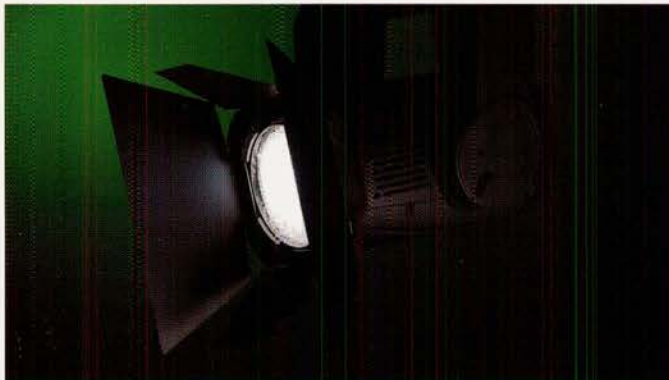
## CLS GROUND SUPPORT

After 12 months of development CLS has





barndoor module, complete with lens. No cables are needed as the module plugs directly into a socket already equipped on every MAC 2000 Wash fixture. Call Show Technology, +61 2 9748-1122 or go see [www.martin.dk](http://www.martin.dk)



#### DiGiCo Australia and NZ Distribution

Random Audio is pleased to announce that it has been appointed to distribute Digico mixing consoles in Australia and New Zealand. The Digico D5 Live audio console, is a digital mixing system comprising the D5 Live console, a front-of-house Digirack, a stage Digirack and 100m of fibre optic cable. The design team behind the D5 Live's engineering has 10 years of experience with the Soundtracs family of digital recording consoles, and over 400 digital sales worldwide. +61 2 9667 3411. [www.randomaudio.com.au](http://www.randomaudio.com.au)

#### Image Design Technology for Cinde

IDT have been appointed as Australian distributor of the Cinde range of audiovisual equipment. Cinde products are designed and manufactured in Melbourne Australia and have been successfully proven in the Australian and New Zealand markets for over 10 years. The company's philosophy is to build broadcast compatible equipment at competitive pricing. The product range includes video and audio distribution amplifiers, switches and optoisolators. All of Cinde's products comply with the Australian

CTick standard. You can view the complete line at [www.cinde.com.au](http://www.cinde.com.au).

IDT: +61 2 9417 4924 or [www.idt.com.au](http://www.idt.com.au).

#### MILO JOINS MEYER LINE ARRAY

Milo is the name, the new system (above) is designed to be used with a subwoofer. When the M3D was launched with its rear mounted dual 15 inch low frequency beam steering module, Meyer thought it wouldn't generally be used with subs. But many people have done so. Enter MILO, a new design, but offering M3D sized power at a lower price. This brings the Meyer line array range to four units, with small, smaller and M3D all voiced in a similar way. Go to [www.meyer-sound.com](http://www.meyer-sound.com) for more.

#### TCP AND GROCON

When Grocon came to Total Concept Projects (TCP) to design and fittout their Sydney and Melbourne video conferencing facilities, the motivating factor was time. Time spent in transit and not in the office and more importantly with their families. TCP installed two dual 50" plasma screens, one for presenting documents and models, the other for viewing conferencing at both ends. See pic, below.

#### Strop in New York

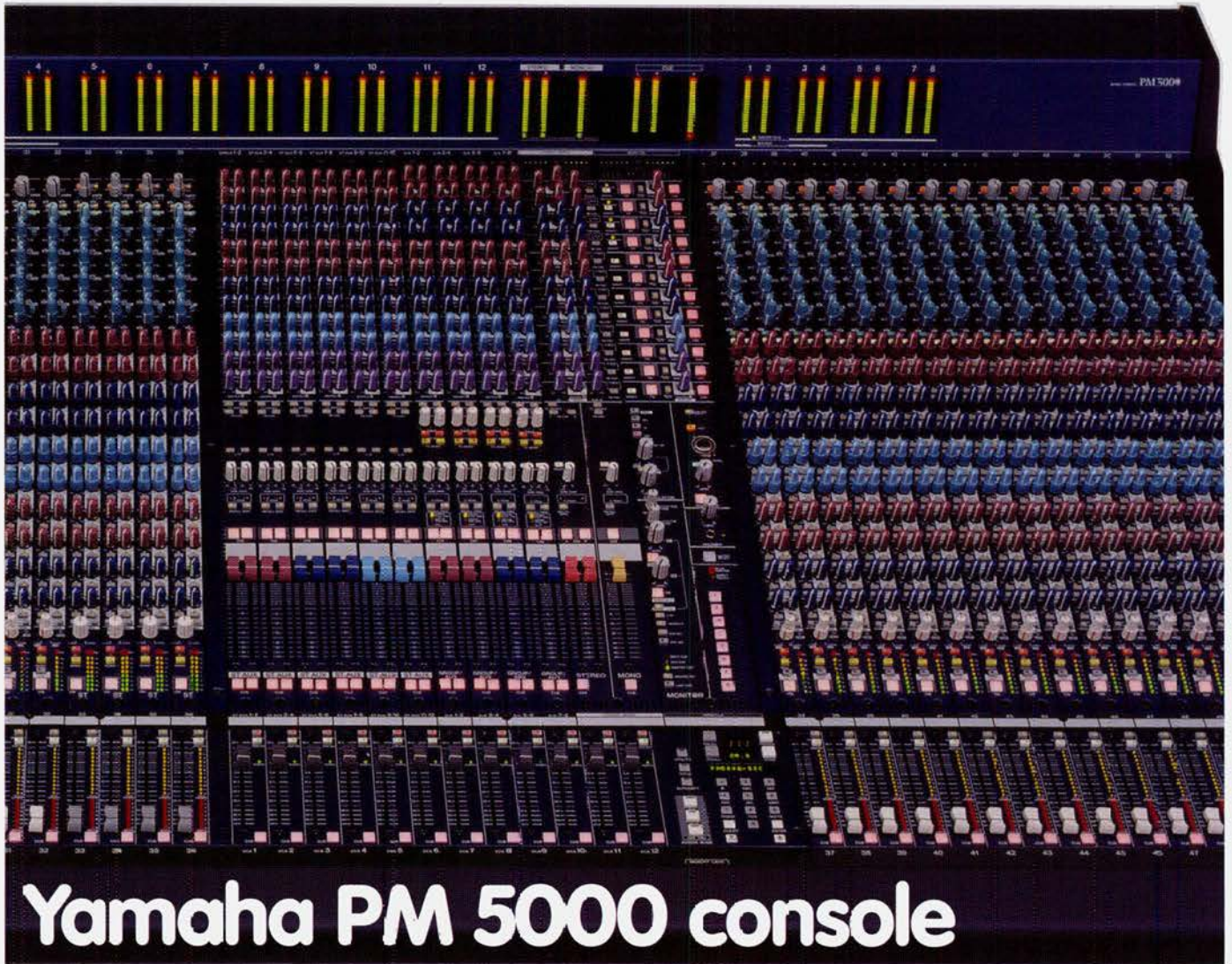
Well known for club installations in Sydney, Strop is working with Phazon in New York on projects. "I went to help out on a large club install



with JBL Vertecs and was then offered a partnership soon after. Phazon will setup in Australia, having designed Home nightclub in Sydney. Strop will return and run the business from Sydney, also servicing Japan.



# NEW



## Yamaha PM 5000 console

In the rarefied top echelons of live sound exist the BIG consoles - Midas XL4, Soundcraft series 5, and Yamaha PM 4000. Yamaha's all digital PM1D and the new D:GiCo DM5 make up the most typical rider lists. Now there is a PM 5000.

"There is still, however, a strong demand for analogue consoles with their familiar, efficient control interfaces, plus a demand for digital-style recall capability in the analogue format", says Yamaha.

The new '5k' boasts 35-buss configuration for FOH or monitor applications, 12 VCA groups and 12 (4 Stereo + 8 Mono) matrix.

New variable SUM GAIN controls are provided pre-fader on all master sections. Previously, when overload or clipping occurred at a console's summing amplifiers it was necessary to adjust the input channel fader and/or head amplifier levels of all related channels. The SUM GAIN control

provides variable 0 through 20dB attenuation immediately prior to the corresponding summing amplifiers, eliminating the need to readjust numerous channel level settings.

While handling all audio signals in the analogue domain, the PM5000 offers advanced digital scene recall capability. Recallable parameters include channel ON/OFF switching, assignments, and fader positions. Up to 990 complete scenes - with user-assigned titles - can be stored in the PM5000's on-board memory. And because motor faders, illuminated switches and LED indicators immediately respond to the recalled parameters, console status can be visually confirmed in an instant.

The RECALL SAFE function has proven to be a valuable feature on the all-digital PM1D and also been included in the PM5000 scene recall system. Scenes can also be stored on external Compact Flash memory cards.

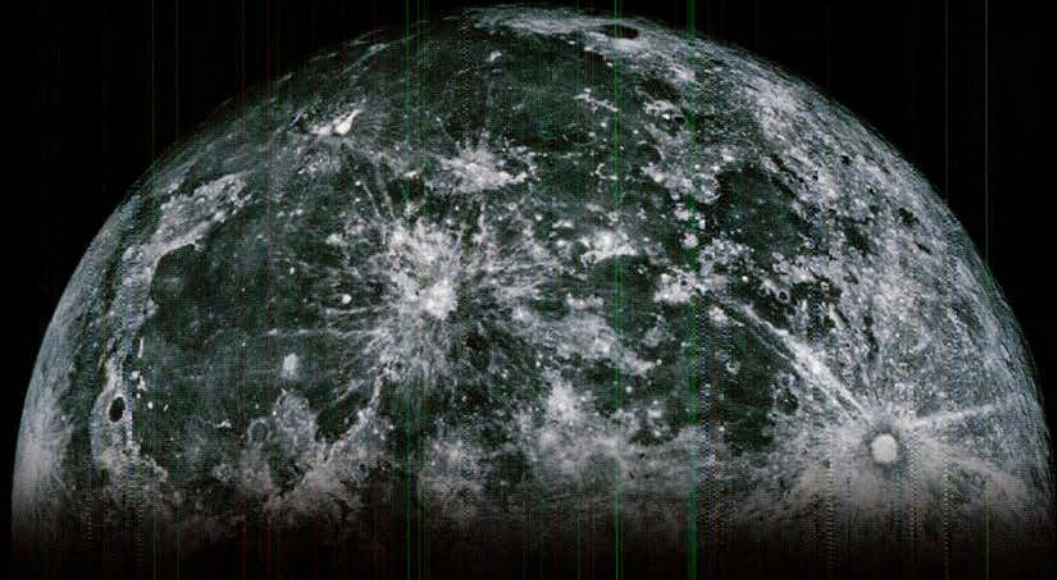
### Mission:

Confuse, then surround the enemy. Yamaha's all digital PM1D concert desk is widely expected to spawn a love child soon, something that will occupy the middle ground and bother Innovation. Delivering a new fully featured analogue concert mixing console was the last thing anyone expected Yamaha to do.

### Price Points

Yamaha say the 52 channel version of the 5k should cost under A\$200,000 list. See [www.yamahaaproaudio.com](http://www.yamahaaproaudio.com) for more info, or call Yamaha Australia on +61 3 9693-5120

# One small lavalier... One major development in microphone technology



## Sony's new ECM-88... minimises cable noise!

The ECM-88 and ECM-88PT (pig tail) are extremely miniature, omni-directional electret-condenser microphones, ideal for quality-critical applications in broadcasting, theatre, and field productions.

These microphones achieve a high-sensitivity, flat-and-wide frequency response and low noise characteristics, while offering great enhancements over the market-acclaimed Sony ECM-77 Series lavalier microphones.

A water-resistant architecture reduces the risk of water or perspiration entering the microphone capsule. The microphone capsule is 3.5 x 3.5 x 16.8mm, allowing for easy, natural-looking concealment in a stage costume. A new dual-diaphragm mechanism, contributes to their high sensitivity and low inherent noise characteristics. The diaphragm and back-plates are fixed vertically to the microphone capsule, which effectively reduces the mechanical noise caused by cable vibration and friction. In addition, the diaphragm for each microphone uses a rectangular 'tray' instead of a fragile ring, which minimises deformation of the diaphragm to maintain sound quality.

Whenever size, quality and reliability are of paramount importance, the new ECM-88 Series offers the perfect solution.

Email [proaudio.au@ap.sony.com](mailto:proaudio.au@ap.sony.com) or call your local B&P sales office for more information.

Check-out 'Microphones' in the Pro Audio web [www.sony.com.au/proaudio](http://www.sony.com.au/proaudio)



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# NEW



## JBL AE loudspeakers

JBL's Application Engineered loudspeakers are designed for installation use with each box carrying a common sonic signature. That's the hardest part of speaker design, in a world where different models of same branded loudspeakers can sound appreciably different. This is what JBL have worked hard to avoid across the 30+ boxes in the AE line.

The 6000 Series models are the highest powered speakers in the AE Series. 4000-Series models give medium power and 2000-Series are at lower power points for applications not requiring high power capability.

JBL's completely new horn assembly for AE is known as a Progressive Transition Waveguide. Cone Midrange Compression Drivers and included in all the cone midrange models. In addition to providing increased output and lower distortion, this cone-based compression driver design extends bandwidth (both up and down in frequency) to cover the entire vocal range. JBL say it allows for better waveguide pattern control by reducing the projection aperture, and improves phase coherency of the midrange signal for clearer, more intelligible audio quality.

Mid-high frequency versions of some models can be used for use in voice-only PA, or as delay-fills that match the character of the full-range main speakers.

"AM" models are performance-maximized for

the greatest pattern control to the lowest frequency possible. "AC" models are compact speakers that fit in areas where a smaller frontal profile is required.

In the AM models, the same waveguides are utilised for both high output and lower output drivers, resulting in maximum pattern control at all power levels.

The installation space often dictates how a speaker needs to be oriented. All "AM" two-way and three-way models include a rotatable waveguide, allowing the speaker to be installed in either vertical or horizontal orientation.

All AE Series speakers (except single driver subwoofers and LF cabinets) offer selectable crossover modes. Three-way speakers can be operated in either tri-amp or bi-amp mode with built-in passive mid-high crossover. Two-way speakers can be operated bi-amp or passive. Dual-driver LF and subwoofer cabinets offer selection between parallel-drive or individual driver access for maximum LF damping or for wiring of individual "home runs" to the amplifier.

Jands auditioned various AE models in a series of seminars across Eastern Australia in February - and ran some comparisons with other brands.

• More on AE at [www.jbl.com](http://www.jbl.com)

### Mission:

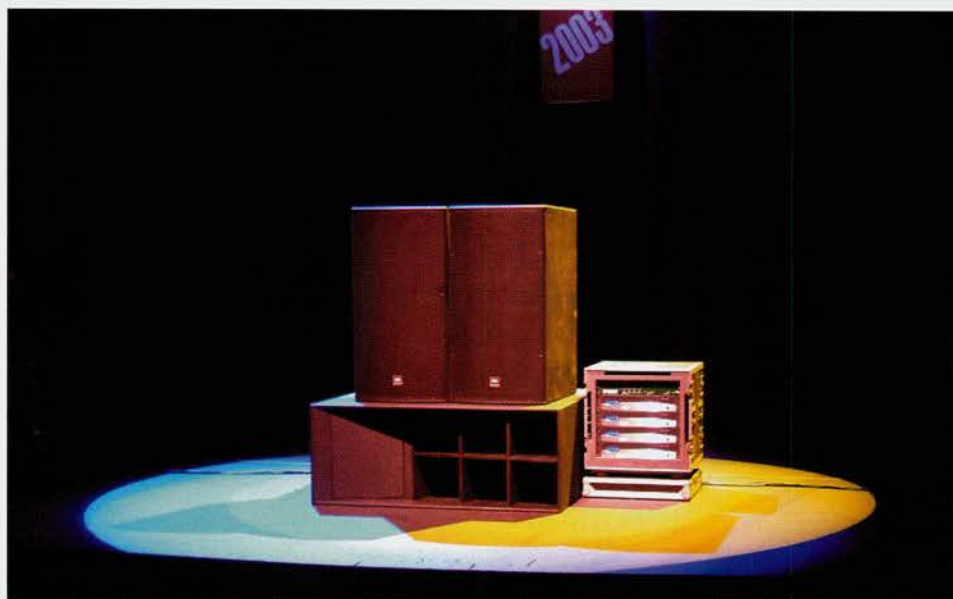
JBL are probably the leading, or best known, professional loudspeaker brand in the market. But they have stubbornly avoided success in some parts of the packaged speaker market. JBL have done real well with component sales to other people who make loudspeaker boxes, and very well recently with their VERTEC line array.

The problem has been in the middle of the market, where product groups like Marquee, Soundpower and Venue just didn't make it to greatness.

The solution is AE, which stands for Application Engineered - a comprehensive new line of packaged loudspeaker systems that for once all share a common sonic signature.

It's a big range, with a big effort in design behind it.

JBL assert there is an AE box for almost any application.



*Jands pulled out all stops with a major release tour for AE in February. It certainly demonstrated the product stands comparison with other brands - that's what is pictured above!*

# This GL2200 just paid for itself.



Allen & Heaths GL2200 has to be the hardest working/best return product in any hire inventory. It's a flexible investment that gets the job done at FOH or monitors.

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TECHNICAL AUDIO GROUP



## Fostex D2424 24 track recorder: TESTED LIVE

The 24 track hard disk recorder market is a battleground - Mackie and Tascam are slugging it out. Fostex are there too. If it's a recorder with a desk attached 'all in one', then add Roland and Yamaha. Julius Grafton took a Fostex D2424 on the road to see if it delivers.....

I needed a reliable, simple 24 track hard disk recorder that I could use to play out multitrack material for my training courses. Although mine is a live sound course, I needed to approximate multiple inputs at the desk. Plus whatever I used needed to be airline proof, since I was hopping up and down the coast.

Someone suggested a Fostex D2424 and it did the trick very well. The carton was trashed at the end, but the D2424 kept on keeping on.

Designed more as a tape recorder replacement than as a fully featured workstation, it is a very solid device that has 8 balanced jack inputs (more are optional), and 24 balanced jack outputs as standard. The neat control surface can be attached to the front of the rack mount device, or sit neatly on a desktop.

It is radically simple in digital editing. Tascam and Mackie have both gone out of their way to compete with DAWs (Digital Audio Workstations), offering the ability to connect a computer running dedicated visual editing software in the case of the Tascam, and the ability to directly plug in a monitor, keyboard and mouse with the Mackie.

By contrast, Fostex's hard disk editing is more like a digital razor blade, but for a great many people this will be quite sufficient. If what you're after is really an analogue tape machine replacement, you might not need it to be able to give you a display like a computer sequencer.

D2424 has six recording formats: 24-bit/

96kHz, 24-bit/88.2kHz, 24-bit/48kHz, 24-bit/44.1kHz, 18-bit/48kHz & 16-bit/44.1kHz.

It comes with a 20 gig hard drive that'll give as much as 4 hours of recording time at 16bit/44.1k - recording data on all 24 tracks.

D2424 costs a fair bit less than its competitors and allows 88.2kHz and 96kHz recording out of the box. There's a good range of backup methods, plus a DVD-RAM option. It can export and import audio in WAV format.

There are only 32 (or 48) virtual tracks, and recording modes can't be mixed on one drive. Video sync is only available from optional board.

D2424 (with 20GB HD) - A\$5,599.00 list. Street price somewhat less.



### Fostex family

Perhaps Fostex is not quite as well known as Tascam - or even Mackie - but they've been around a long time. The D2424 has some siblings that are worthy of consideration.

VF160 (with 20GB HD + CD BURNER) - \$2999 (at left)

VF80 (with 20GB HD + CD BURNER) - \$2098 (Top)

And the sexy little red MR8 which uses a compact flash card - 128mb - for data, at just A\$999.

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"I've been using the System 6000 as a four engine device connected to my console at BackStage studio in Nashville. Configuring the unit for each application could not be easier allowing me to use it for stereo as well as 5.1 mixes.

I must say, at this point, I do not think I could get along without it!"

Chuck Ainlay

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- AND MORE...

Marissa Jenson is a clinical psychologist, and HR head within an arts complex. Send your dilemma or request to: [mail@juliusmedia.com](mailto:mail@juliusmedia.com). Marissa regrets personal correspondence cannot be entered into.



## Hit or no Hit?

A reader had an encounter of the unwanted kind over the holiday break. Let's call him Brett. He found himself the only mature male at a quiet beach with the kidlets and spouse, where a quartet of antisocial 15 year olds were throwing rocks and pushing smaller children around.

Brett finally had enough and sauntered over, directing the youths to desist and depart in blunt terms that only a tech could deliver. They squared up in a defiant and physical way, so Brett decided to seize the offensive - and hit the leader with a huge open handed slap that echoed off the cliff and toppled the goon. The other three ran, the offender leapt up and fled blubbering and mouthing threats about dad and brothers returning to pulp Brett.

**The dilemma:** Dorothy (Mrs Brett) rounded on Brett and chastised him for his actions. "I expected some support, we needed to pack up and leave in a hurry in case trouble came. I was downhearted that Dorothy didn't back me up".

**Marissa says:** *Understandable for a male, but Dorothy was frightened of the consequences – legal and physical. She thought Brett could have talked his way out of it. She saw beyond the immediate situation – as a mother, and as a woman. Sorry to say this, but Brett threw the first punch, so he was wrong.*

## Corporate Hi-Jinx

This little scenario arose in discussion during a recent OH&S course. The technicians were from a major audio visual events company and the client was a top 50 public company. The event was a seasonal product launch, which had an incentive component to keep the troops well focussed.

It was a big show, with sets, vision, sound, lights, dancers, pyro and dinner to follow. The show had been rehearsed to within an inch of everyone's sanity, and a full runthrough had been done that day.

The account manager for the audio visual events firm discovered the executives who presented the launch were deeply participating in some covert drug taking. Let's just say they were powdering their noses.

**The dilemma:** What should the accounts manager, and the head technician, do about this? Surely it can't go unchallenged.

**Marissa says:** *Absolutely correct. The AV firm was at great risk because any of those executives could have fallen off the stage, or walked into a microphone and chipped a tooth. The AV firm would certainly be sued for a large sum as a result. The only option is for the account manager to advise the client that no one affected by any substance is allowed on the stage. Let them override, but be sure the situation is noted. This is a difficult case requiring tact and calmness.*

## Sex in the City

I would like to comment on the scenario in the Forum at [www.juliusmedia.com](http://www.juliusmedia.com) where a tech was fired from a venue for continuing an inappropriate relationship with another staff member.

Depending on what jurisdiction you work in, there would appear to be a direct case for unfair dismissal on the information presented.

At my organisation we have a policy about staff fraternisation during working hours, and it would indeed be a breach for two staff members to become intimate while on the premises. In our case we would counsel them both, issue written warnings, and even roster them apart.

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## Mercedes Benz Sprinter Van

REVIEWED BY GREG KEAN

It's your most important piece of equipment, yet somehow it just isn't right any more. You know you have been getting looks from the punters. Too much noise, that hiss, the squealing...everything else is state of the art but the speakers just don't fit any more, it always seems cramped behind the FOH console and it just doesn't go to eleven!

The van has to go.

As strange as it seems, your van or truck is your most important piece of equipment. It and it alone will decide if you get to the gig and at what time. True, the newest truck can be let down by tyres or fuel problems (although with fuel it usually is a lack of it so you need to demand a larger float!) but for most of us we have to rely on a van or truck to get our equipment to a venue.

Here at Lots of Watts it was time to replace two of our vans. The perfect replacement would be, of course, a Tardis but as it hasn't been invented yet, we settled for the next best thing: Mercedes Benz Sprinters.

Our Sprinters are the long wheelbase, high roof model, with dual rear wheels. They are huge inside. With an internal clearance of 1855mm most people can stand up in the back. Load length is 4215mm so even truss



fits in. The walls are relatively flat so the cargo area is huge and useable. The cargo floor is lined as standard with a decent piece of timber.

We have lined the whole of the cargo area (see pic, below) as experience has taught us that this is very important at trade in time.



### SPECIFICATIONS

- Engine 4 Cyl diesel with turbocharger and intercooler  
Displacement 2150cc  
Max. output 95kW@3800rpm  
Torque 300Nm@1600-2400rpm
- Transmission 5-speed manual  
Drives Rear Wheels
- Other Standard Specifications  
Clutch hydraulically actuated,  
Steering Power assisted  
Brakes Disc front and rear  
Fuel tank capacity 75 litres  
Battery 12V / 88Ah  
Wheels 5.5J x 15 steel  
Tyres 195 / 70R 15 (Dual rear wheels)
- Weight Ratings (Kg)  
Front axle load 1750  
Rear axle load 3200  
Gross vehicle mass 4490  
Payload capacity 2427  
Wheelbase 4025  
Vehicle length 6590  
Vehicle width 1994  
Vehicle height 2610  
Load length 4215
- RRP from \$49,260

Got a review for us?

E-mail [mail@juliusedia.com](mailto:mail@juliusedia.com)

## Mercedes Benz Sprinter Van (continued)

The current model features a 4 cylinder 2.1 turbo diesel as against the old model's 5 cylinder 2.8. Both engines easily handle the job of moving the vehicle even when fully loaded as the new motor, although smaller, has slightly more torque and it arrives over a wider RPM band. The older model was heavy on oil but this seems to be improved - however it is still early days.

The Sprinter is easy to drive and the gear change is now mounted on the dashboard. This allows an optional bench seat to be fitted giving seating for 3 people all with inertia reel lap/sash seat belts. With this famous Mercedes safety evident in their commercials, it is easy to see why these vans are popular for camper conversions.

The cab also features a Radio/CD player as standard, pen holder, notes clip and drink holder. The seats are very comfortable and doors open wide for easy access. There are lots of places to store first aids kits, street directories, log books, extra tools etc so nothing needs to float around the cab. A neat tool kit is located in the passenger front floor. Options are aplenty: aircon, load barrier, auto, ABS, extra windows even a power take off! Air bags are optional (which we were not even told about) but I cannot think of any reason why these aren't standard.

Negative points? There is always some. The handbrake is a long way from the driver when disengaged.

It also needs two lights in the cargo area, the second cut-out is there, just no light. Powered mirrors should be standard. You shouldn't need two people to adjust the passenger side rear vision mirror! Very important when you have multiple drivers.

Hinges are available that allow the doors to open through 270 deg and magnets then hold them in place against the body - thus allowing you to reverse into tight spaces with doors open. A great idea but they should be standard if for no other reason that when you option them, like we did, pre delivery don't seem to be able to make the doors line up again. Also the great



stereo is fitted locally but due to incorrect installation both of ours could be slid straight out of the dash - see the picture. We have now fitted them properly but we shouldn't have to! Maybe some extra training is required in pre delivery land.

We looked at other vans but nothing else offered the huge size, features and quality build in one package. It may seem extravagant to spend so much on a van, list price is \$49260. Sure most operators would rather spend money on more equipment but it is way easier to HP or lease a van than a PA or lights, keeping your cash for equipment.

Servicing is at 22000km intervals, which is also easy on the wallet. At the end of your lease/HP your correctly maintained Merc should be worth more than the residual - as the market for second hand vans is much larger than for used PA or lighting equipment.

Bottom line is that if your van lets you down on the way to a gig it doesn't matter how good you or your equipment is. It's also impressive to punters, just like FOH consoles with lots of LEDS and buttons or computer monitors on lighting consoles with lots of numbers and colours showing.



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lcd touchscreen	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
joystick/trackball	Joystick	2	Trackball
number of playbacks	20	16	10
vga monitor required	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
dedicated offline editor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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dimensions(mm)	520w	908w	635w
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1. for advanced screens 2. for service mode screens 3. uses Hog II offline editor. Some features unavailable on Hog 1000 4. \$995 inc. GST.

Hog1000 and Ultra-elite MA pricing as per Connections Magazine, Dec 2002 Market report (prices include GST). Specifications are from the High End and MA Lighting Web Sites and were correct at time of compilation (Feb 03). © & O.E.



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## GAME, SET AND MATCH TO SEVEN AND EUPHONIX

While Andre Agassi and Serena Williams triumphed on court at the 2003 Australian Tennis Open, behind the scenes host broadcaster Network Seven put together a championship-winning performance of their own. With the help of three Euphonix audio consoles, including two of the new all-digital Max Air systems, Network Seven not only provided exclusive Australian coverage for their own broadcasts but also delivered feeds to 25 international broadcasters.

With over 300 Network Seven staff involved in technical installation and operation 'The Open' is the largest annual OB in Australia. Network Seven's host broadcasting commitment necessitated that all matches, on any of the five major courts (Rod Laver Arena, Vodafone Arena, Margaret Court, Show Court Two and Show Court Three), were constantly available to international broadcasters as separate mono, stereo and multi-format live feeds.

With a minimum compliment of 16 microphones on each court capturing FX, player comments, umpire adjudications, crowd response plus commentary, the technical challenges for both man and machine were

significant to say the least. The complexity of coverage also included archive recordings of a complete audio package with commentary from each court plus separate mono 'Full Mixes' for network headphone feeds. Cabling to and from the broadcast compound, which housed all of the OB vans, de-mountable huts, edit suites, offices and control rooms for Network Seven and the International broadcast right holders, consisted of around 1,000 pairs of line level Cat 3 plus fibre optic from Vodafone Arena.

Previous years had seen the three main courts being mixed simultaneously on analogue consoles with the other two monitored through a central FX room. This had proven to be not only difficult to route, but very limiting once it was set up and operating.

'The increased system complexity made the analogue or digital decision for us,' said John Hancock, Head of Technical Production, Network Seven, Melbourne. 'After seeing Max Air in October last year we were confident that it had all the facilities and operational flexibility that we needed – and we were right!'



Andre Agassi (top), a winner. Anna Kornikova (bottom) pictured because she is cute

The JBL logo is displayed in white, bold, sans-serif capital letters on a solid orange rectangular background.

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## About Max Air

'Max Air' is a 96 channel digital audio mixing console based on the proven technology of the Euphonix 'System 5' but focused on the specific requirements of on-air broadcast production and live performances.

Capabilities extend to snapshot recall of all console settings, 96 channels, 32 mix/group buses, 24 matrix outputs, talkback/IFB on every channel, 12 aux sends, flexible mix minus architecture with dedicated bus and over-specified redundancy.

Two Euphonix Max Air systems were employed: one in the 'FX Hut' mixing the three main courts and monitoring the other two, and the other in a temporary on-site studio mixing the network downstream audio 'Full Mix' (the output from the 'FX Hut' plus commentary, on-site studio presenters, music and tape packages).

Those at the wheel found Max Air to be a very pleasant drive. For me 'Max' was power and control with heaps of both, it's a wonderfully flexible, sonically accurate, intuitive broadcast mixer' said George Hennessey, Audio Supervisor Network Seven Melbourne. 'Originally we had the 'FX' Max Air set up with three Dolby surround encoded FX mixes, three mono FX mixes, three mono 'Full Mixes' monitoring for all the above plus surround monitoring for the two main courts. In addition to all this we had an urgent requirement to add another three Dolby surround encoded 'Full Mixes' including commentary plus monitoring and we were able to achieve this remarkably easily!'

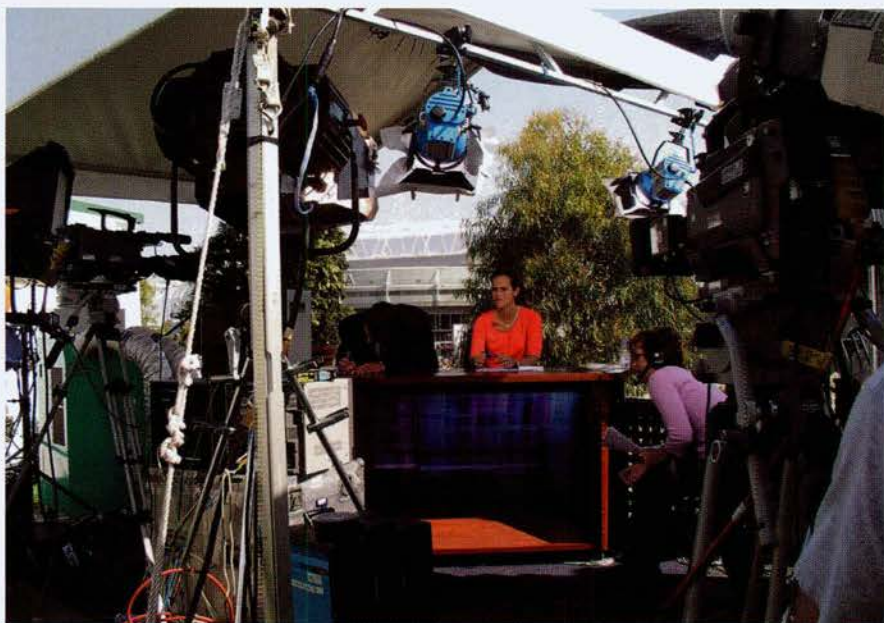
'The downstream network Max Air was operated by people with limited knowledge of the unit, however, with a couple of days of 'hands-on' instruction everyone was fully confident. Throughout the whole tournament, 14 days of competition plus 7 days of setup, we found the consols to be easy to operate, easy to setup and completely stable. Added George.

Scott Findlay, Freelance Audio Mixer ('FX Max') agreed 'Changing routing, inputs

configurations and buss structure on the fly became a crucial requirement this year and the Max Air and I handled it brilliantly! This is my first time on a digital Euphonix and that speaks for itself.'

Network Seven was the first broadcast organisation to purchase a Euphonix console back in 1991 and now has a total of ten Euphonix consoles, seven CS Series, in stations and OB trucks across the country, one of which sub-mixed the Rod Laver Arena, and three System 5 digital consoles in the Docklands Digital Broadcasting Centre.

**Euphonix is distributed in Australia by Technical Audio Group. +61 2 9519 0900 [www.tag.com.au](http://www.tag.com.au)**





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Max Peak SPL 125 dB  
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### M2D

39.00" w x 12.10" h x 17.50" d  
(991 mm x 307 mm x 445 mm)  
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### M3D

54.00" w x 20.00" h x 30.50" d  
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"One thing I learned from Bill Granam is that collectively, our ultimate goal is to please the audience. No matter how big, no matter how small."

John Meyer  
President & CEO





Lighting Director **Cam McKaige** with the Sanyo projector at the desk position. It throws 20+ metres.

The High End Catalyst generates effects like the one on the screen (above) via a Mac G4 which connects the projector to the lighting desk via dmx. Ore operator for vision effects and lighting. That's the way of the future!

# There's love in the room

If your band appeal to those aged between 10 and 50, and if that band generate a lot of chart action, then a road tour of the eastern states of Australia is profitable. That's what TaxiRide reckon, achieving show grosses of between 12 and 20 thousand dollars a night.

Dave Rees heads up a six man crew who motored the winding roads at the tail end of summer, putting on a show that was better than last time when last time was pretty good too. "Last tour we put on a bloody big show. It didn't necessarily sell incredibly well, but this tour has. The band know they could make twice as much money if they sacrificed the production, but they won't do it".

That sums up a winning attitude, that has paid off. Do a tour with great production, then go back out and do it again. The punter numbers increase.

This tour boasts some new technologies, like Deluxe Audio's EAW KF 760 line arrays. Plus the Innovason Compact 48 console, which weighs 100kg. "Sure beats the shit out of carrying a 400kg XL4 up here!" Dave enthused.

Walking into the show you notice what looks like a little projector on a stand over the lighting desk. It actually pumps out 3,500 lumens – and delivers video to a 4m screen onstage, 20+ metres distant. With a standard lens. This is the new look for music shows, with a High

End Systems Catalyst providing the interface between Cam McKaige's lighting desk and the projector.

"It's just a standard Sanyo projector", Cam says, "The band bought it just before the tour. I knew we'd need to put it at the desk sometimes because we couldn't guarantee a consistent front truss".

As you may guess, the show the band put on has high production values. The sound is ultra modernised, mixed by Dave with the newest technologies. Lights include the projector, driven by Catalyst which is first and foremost an effects generator with the ability to run Quicktime video clips, all fired off a lighting console by DMX.

The production comes out of a twelve tonne truck and goes up in under three hours. The truck driver and owner – James Leydon – helps the other five crew, who arrive in a Tarago, with the set up. Generally the crew don't hire loaders. This is hard yards touring of the kind that wore

me out two decades ago, yet this crew don't appear frazzled. Far from it.

"There's a lot of love. The band don't separate from the crew. That's what it takes not to lose your sanity", says Dave, who also handles tour management, production management and represents the bands overseas management company in Australia. On top of all this Dave owns half of the Melbourne based sound company Deluxe, with partner Tony Shanahan.

Talking about live sound with Dave, it becomes apparent he does a lot of research. Before Deluxe purchased their EAW KF



*“The band know they could make twice as much money if they sacrificed the production, but they won't do it”*

## TOURING WITH TAXIRIDE



terrific lightshow with plenty of 'wow' factor. As he was showing me some states, the doors opened and he quickly killed the desk. "I don't want to give away the show" he explained.

750 system, he visited the USA to see how they were made, and to speak to the people at EAW. Deluxe now have two EAW rigs, one made up of 16 KF 750's, and the other the new KF 760 line array system. All are driven with Crest amps.

When I visited the tail end of the TaxiRide tour, the line arrays had been sent back to Melbourne for a large gig, and six KF 750 boxes were substituted - atop eight subwoofers.

The Innovason digital mixer was winning the hearts and minds of the support band engineers too, I saw Gary Maddox have his first encounter with the Innovason, and he was happy. Dave asserts this has been the case through the tour.

### MR LIGHTS

Cam Mckaige is young and tall, and put on a

The stage was set with 30 bog standard Q1 floods, each on its own channel. "They take up space, and make the stage seem larger than it really is". The circular screen has some FlameLights around the top half.

4 Mac 600 washes do the grunt work, while 12 SGM Victory 250 waggly mirrors supply colour and movement. "I can get three of them for the price of a Mac". The rig came neatly packaged from Phaseshift Productions.

But it's the video that draws the production values higher.

Cam has started mixing some direct vision in from his DV Cam, and has imported some Quicktime clips. The Catalyst is a rack mounting box that sits between a Mac G4, the DMX stream, and feeds RGB to the projector. "Each image just comes up as a beam palette" he says, referring to the Hog 1000 desk.



Dave Rees (below) with the Innovason Compact 48 digital FOH desk.



# NEW

## TANNOY V SERIES SOUND REINFORCEMENT LOUDSPEAKERS

Responding to input from the marketplace, Tannoy has launched the V Series, a new range of Point Source, Dual Concentric™ sound reinforcement loudspeaker systems.

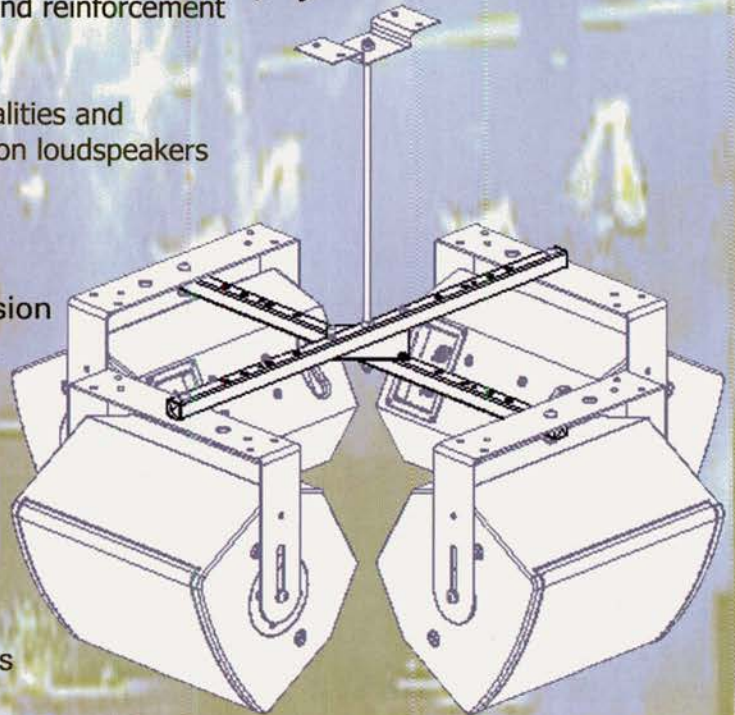
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- ∴ Theme parks & leisure venues

# TANNOY.

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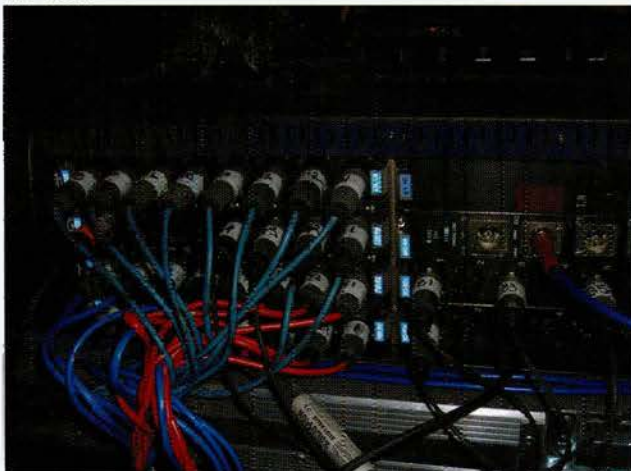
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There's the show (above). That Catalyst image is projected from just above the mix position, a Sanyo 3500 lumen projector sits on a stand. Despite the 20m+ throw, with a standard lens there is more than enough punch.

## TOURING WITH TAXIRIDE

The Inovason console is all digital, with mcs: connections on stage (at a rack full of processing and AD converters). A couple of AD and DA cards allow patching of external analog effects from the desk (below). The stage feed is a pair of 75 ohm cables - see the blue output at top right of the desk



The Catalyst is the one r/u device at the top of the rack (right). A Mac G4 is in the rack.



**James Leydon (below) owns this 12 tonne Scania. He says there is more than enough touring work around of this size.**



## TOURING WITH TAXIRIDE



Here is the Innovason rack, where all the AD (analog to digital) and DA (digital to analog) conversion takes place. The two blue cables are the FOH feeds and returns, simple 75 ohm cable.

Dave Rees says his KF 760 line array boxes are ideal used as a pair stacked on top of four subs. "The bottom box sits about 6 and a half feet off the floor, I get enough coverage. It is a fine sounding box on its own anyway!"

The line array boxes are simply sat flat on top of the subs, and **Dave uses the** inbuilt rigging system to angle the top box.

The tour uses a crew of six. **Dave Rees** (FCH), **Cam Mckaige** (LD), **Ben Shapiro** mixes six pairs of in-ear monitors from a Crest XRM 20 console. **Richard Blackadder** looks after stage gear. **Dan Arnet** takes care of merchandising. **James Leydon** drives his truck, and assists. "Everyone pitches in", says Dave. "Over the years the band has assembled the best crew in Australia!"

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 **PHONIC**

# Fantastic Plastic!

The biggest selling sector of the loudspeaker market is this one, the powered (amplified) 12" 2 way plastic loudspeaker box. Our Market Report shows around 16 boxes on the market, our Shootout here managed to attract a representative 8 of them.

It's worth noting that JBL don't have a 12" entry, the EON comes in a 10" variant that we didn't test. EV, Quest, Peavey, DAS, and a few others didn't / couldn't / wouldn't supply a test box.

The arguments in favour of powered loudspeakers like these centre around the benefits of integrating amplifier, processing - such as horn EQ and limiting - and speaker.

The sum of whole is usually better than if we were to go find an external amplifier, and set our own crossover and limiter and horn EQ with external processing. The speaker designer gets to tailor the sound of the product knowing all the variables.

For this reason, Meyer have chosen to internally amplify ALL their products. Surprisingly few other top end manufacturers have followed.

But at this, the bread and butter end of the biz, everyone has an amplified plastic box.

## HOW WE DID THE SHOOTOUT

The very kind people at Parramatta Riverside

## WHAT ARE THEY GOOD FOR?

These are the swiss army knife of loudspeakers. Use them alone for voice - they all accept a microphone, direct into the back. As well as line level from a mixer, of course.

Use them as a vocal PA - a stereo pair would handle voice and guitar or keyboard quite well for an audience of 50 or less. Use them as a party system with a CD deck plugged directly into two boxes for stereo.

But as soon as you need bottom end extension, use a separate subwoofer.

They are all quite suitable for general useage stage monitor duties - and some have either a cabinet angle making them sit on their side, or a screw in spike that angles them the right way for this.

But it is not suitable to use more than two of these together side by side, because the high frequency horns are not terribly accurate and they will interfere if two are sat together. That's when you

need a larger, application specific, box.

Any loudspeaker will interfere with its neighbour when placed alongside, and always in the crucial high frequencies including vocal frequencies. It's called comb filtering or lobing, and is defeated by accurate high frequency horn design and specific angling of the box - something more upmarket boxes are way better for.

So go ahead, plug and play. These are the easy way to make sound!



Crest Iq 12P, Mackie SRM450,



FBT Maxx 4G



dB Technologies Lyric Opera, Phonic PA 450, Mackie ART 300A



Yamaha MS 300, Mackie ART 200A

- Crest LQ 12P • Mackie SRM450 • FBT Maxx 4G
- dB Technologies Lyric Opera • Phonic PA 450
- Mackie ART 300A • Yamaha MS 300 • Mackie ART 200A

Theatre let us use the venue on a dark day. It is quite suitable since the acoustics are benign and the space large.

The test was blind, meaning all the speaker boxes were lined up, each on a K&M stand, evenly spaced across the stage, and covered with a black cloth. The boxes were numbered one to eight.

I matched gain from an eight send mixing console (Allen and Heath GL3000) so that each output, when run at unity (0dB) was producing identical gain from each box. I used an SPL meter at an equal distance from each box to do this, and pink noise. I used the input gain control on each box to alter its level so they all produced the same output level. This is crucial in any comparison.

At this stage my panel of listeners arrived, and I gave each of them an appraisal sheet, numbered one to eight. We talked about what were doing, and choose a variety of CD tracks for our listening test.

Each box had a slightly different layout at the input panel, so where there was a switch provided that was marked 'music', or in the case of the Mackie 'Air', it was switched on. This kind of EQ setting usually has a hump at 100Hz and another at 10 or 12kHz or so, to provide boom and tizz. If the box had it, we used it. If not, there was no EQ added. The input signal from the desk was flat, unaffected.

We listened to each box in sequence - one to

eight, with the first track. Immediately it was obvious that each box sounded quite different. This is true of all speaker comparisons I have done, the only time you find different models of loudspeaker boxes sounding similar is when they are the same brand, and that brand have gone to a LOT of trouble to engineer the same sonic signature across different models.

This is rarer than you may think.

**FEATURE SETS**

These all come with essentially the same package, but there are some differences. The Phonic had the most comprehensive rear input panel, with 2 microphone inputs, a line input, master volume, master link output, and high and low EQ controls.

Most of the time you need only one mic input, and one line level input, with respective gain controls. That's the way these boxes are used.

Some boxes had a power on LED on the front - which to my mind is preferable, so you can see that you do indeed have herbs flowing to the thing, Mackie SRM 450, dB Technologies Opera, and the Phonic all had this.

You may be wondering why there are 3 Mackie boxes. That is because the SRM 450 is the box Mackie designed, and the ART 200 and ART 300 are RCF designs. Mackie purchased RCF in Italy and rebadged their equipment as Mackie Industrial. It now has a separate distribution channel in this part of

**LOUDEST?**

One way to really find out which is technically the loudest is with a dummy load and an oscilloscope. We choose the Julius method, involving music, eyes, ears, and an SPL meter.

We ran music up until one of two things happened. If the box had a LED that denoted LIMITING or PROTECTION, we ran the music up until that LED was just starting to flash.

If the box didn't have an LED we run the music up until we started to hear the amps clip. This CAN be heard if you are trained to listen for it.

The results..... (drum roll)

In descending order, loudest first:

1. Crest LQ 12P
2. Mackie Art 300
3. Mackie SRM 450
- 4, 5 and 6 all equal:  
Phonic, Yamaha, Art 200.
- 7: FBT Maxx4a
- 8: dB Technologies

*(continued over)*

Speaker	Dimensions (HxWxD)mm	Weight	Frequency Response	Claimed Power Rating	List Price	Distributor	Phone	Web
<b>Crest LQ-12p</b>	601x451x356	20.5kg	54Hz-18kHz	400w rms for the woofer and 100w rms for the driver-horn	<b>\$ 2,295</b>	Production Audio Services	+61 3 9415 2585	www.productionaudio.com.au
<b>Mackie SRM 450</b>	660x390x376	23.2kg	55Hz - 18kHz	300W rms for the woofer and 100W rms for the driver-horn	<b>\$ 2,595</b>	Australian Audio Supplies	+61 3 8415 2466	www.ausaudio.com.au
<b>FBT Maxx 4a</b>	634x407x330	19kg	50 Hz - 20kHz	300W rms for the woofer and 100W rms for the driver-horn	<b>\$ 1,850</b>	LSW Wholesale	+61 2 9568 2100	www.lswonline.com.au
<b>dB Technologies Opera Lyric 212</b>	700x400x320	15kg	65Hz - 20kHz	120W rms for the woofer and 40W rms for the driver-horn	<b>\$ 1,199</b>	CMI	+61 3 9315 2244	www.cmi.com.au
<b>Phonic PA 450</b>	660x390x370	29kg	40 Hz - 20kHz	165W rms for the woofer and 55W rms for the driver-horn	<b>\$ 1,350</b>	CMC Music	+61 2 9905 2511	www.cmcmusic.com.au
<b>Mackie ART 300A</b>	620x390x312	18kg	55Hz - 17kHz	300W rms for the woofer and 60W rms for the driver-horn	<b>\$ 2,295</b>	National Audio Systems	+61 3 9434 1888	www.nationalaudio.com
<b>Yamaha MS 300</b>	637x406x348	23.7kg	50Hz-16kHz	225W rms for the woofer and 85W rms for the driver-horn	<b>\$ 1,595</b>	Yamaha Music Australia	1800 805 413	www.yamaha.com/proaudio
<b>Mackie Art 200A</b>	620x390x312	18kg	70Hz - 17kHz	120W rms for the woofer and 40W rms for the driver-horn	<b>\$ 1,895</b>	National Audio Systems	+61 3 9434 1888	www.nationalaudio.com

## SPEAKER SHOOTOUT

the world, so the two Mackie varieties are in fact competing. And they are assuredly different, as our test proved.

### BEHAVIOUR

The rated wattage on the chart below is not always provable or reliable. We did a simple test at the end, so we didn't trash our ears. This is discussed in 'LOUDEST', at the side of the previous page.

My panel was made up of some fine humans: Ricky Vargas, Thea Gange, Ian Marshall, Michael Orland, Brett Wheeler, Daniel Grafton, and myself. That's 7 people.

Our listening comprised music tracks by The Coors, U2, Jimmy Little, Simply Red, Grace Knight, Flood, and some weird Croatia Dance Act with a sexy blonde and a kiss on the cover, dedicated with *luurve 'xxx'* to Michael, who had worked with them. Wow!

We listened in various cabinet order, each time knowing each cabinet only by number. We listened at various gains, in various places near and far, on and off axis.

### Conclusion

These are not sonically accurate instruments. They exhibited wildly different nuances and tone. The Mackie ART 300, which was one of the first boxes of this kind introduced onto the market years ago, was the winner.

These are some of the comments about it:

"Warm bass, louder, more dynamic, sweet tops, most 'hi-fi', copped well with high spl.

It's worth noting when the ART 300A (and its little brother the 200A) starts to Limit, a wild and savage amount of gain reduction is applied automatically with a long release time of some seconds. This is purely a protection mechanism.

You'll buy what you buy. This should help. None of these boxes was actually bad by any stretch of the imagination. They were all quite competent. But the ART 300A is the best.

- Julius Grafton

### Winner: Mackie ART 300

Released at least 4 years ago, we've seen the ART 300 (formerly known as an RCF ART 300) used as frontfill PA for large shows, as delay zone speakers, and as main sound for fashion shows. They are reportedly very reliable. Mackie Industrial has a different distribution channel to Mackie, and the Mackie SRM 450 is a totally different box.

### PEOPLE

**Thea Gange** did the Connections CPAU Course. She is a theatre sound tech.

**Brett Wheeler** is also a theatre tech, although specialising in lighting he considered himself OK as a listener.

**Ricky Vargas** runs Vargas Sound Productions and mixes music for a living.

**Michael Orland** runs TPAC, and is a sound industry veteran.

**Ian Marshall** is a theatre sound tech, mostly working at Parramatta Riverside.

*Not pictured:* **Daniel Grafton** has worked in sound and lighting for over 12 years.



### LOUDEST (continued)

It's worth noting some caveats on my methods....

Firstly, where the box had a limiter, who is to know where (at what point) the LED is set? In some cases it could be up to 2dB under clip. So the boxes without a limiter will go that little bit louder in this test. And die when overpowered.

Second, the differences were not astounding. The quietest box measured 98dB against the loudest at 106dB, measured at the same distance.

Finally, these boxes are NOT designed for high sound pressure levels. Spend more to get more.

I don't think absolute power handling is the be-all, but I do think sensible limiting is essential. Both the ART boxes had the best limiters - they simply cranked down the overall level and held it down for a couple of seconds, once anything crossed the threshold. Brutal but effective.

There are a stack of ART 300A boxes out there, it was the most popular box on the market when it was branded RCF, and I can't think why it still shouldn't sell a storm now.

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#Mixers must be in working order. ^RRP is \$20,995 inc GST.



# Inside the BLUE ROOM

Melbourne Theatre Company have kicked-off 2003 with a bang. David Hare's play 'The Blue Room' has proved to be a well-judged risk with audiences flocking to see the production known for its nudity and frank depictions of sexual encounters. The play was a sell-out hit on the West End and Broadway several years ago, made all the more popular in the media by the casting of Nicole Kidman in the female role. Soon after Sydney Theatre Company attempted a production starring Elle McPherson, but poor ticket sales closed the show before it could get off the ground. Now, MTC boasts the Australian premiere of 'The Blue Room' with TV favourites Sigrid Thornton and Marcus Graham strutting their stuff in the 10 demanding roles.

Just days before opening, MTC announced sales of tickets for 'The Blue Room' had smashed box office records with over \$52,000 in sales in a day. That result led to the extension of the Melbourne season and suggestions that the three week season in Perth next month and a four week season in Sydney later this year will be equally well received.

The creative team for 'The Blue Room' is made up of set designer Stephen Curtis, costume designer Tracy Grant, composer Iain Grandage and lighting designer Matt Scott, all under the artistic direction of Simon Phillips.

Speaking about the evolution of the lighting design, Matt Scott explained 'The Blue Room' was not a typical example of the MTC design

process. Matt's involvement in the project began in December last year amidst the distractions of Christmas and New Year celebrations and shutdown periods. The fact that he lives in Queensland was another complicating factor, and Matt's time on the project was limited to 21 days. Other than two major design meetings and sitting in on rehearsals at various stages, Matt worked on the design in isolation from the rest of the team.

"We really only had one or two major meetings, the rest of the time I was sitting in on rehearsals and seeing how Simon was working with Marcus and Sigrid, and how he was structuring it," explained Matt.

"Because I really only had 21 days access to the project I found I worked really intuitively. Sometimes it paid off and sometimes it didn't, but when it came down to it, 50 per cent of my ideas came intuitively just from watching what Simon was doing. Simon, Stephen and Tracy have been really deliberate in their designs and I guess I've tried to follow that. Fortunately, there's been a little bit of accidental synergy between us, especially in our uses of colour."

The play is a series of interludes between men and women in the lead up to various sexual encounters. The stories interweave into a complex plot consisting of ten different characters portraying a range of stereotypes including a prostitute, a cab driver, a politician, a student, and an au pair. Each scene dovetails into the next and the transitions between the scenes are as much about the

## "The Actress & the Aristocrat"

We were going for a warm closed space - whilst still maintaining that cool blue feel that pervaded the whole play as much as possible. I was trying to suggest the interior of a backstage dressing room.

Even though it was a very open set, I tried to make it float more than the other scenes. Using heavy warm sidelight it was heavily keyed from the dressing room mirror lights - I tried to get in as much warm back light as possible (Lee205) matched with warm high & low side light (Lee009).

Tris was combined with the blue reflective front light (Lee85) that was used as a base for most of the scenes which blended with the side to give the scene a pinkish hue which was also the key colour for the set & costumes for the scene.



### "Politician & Model"

Post sex scene - the lights are out - the ultraviolet light leeches in from outside - enough said. - (L200 from Op & R385 from PS)



### "Student & the Au Pair"

A warm late afternoon in a swanky upper class kitchen - hot yellow light through venetians (Gam 355 - not very visible in photo) from front warm side light fill from PS (Lee009), cool fill from OP (Lee200), & warm back light (Gam 410) reflecting off bench top.

All supposed to suggest a sleek but sweaty atmosphere - desperation in amongst the cool. The venetians are later "closed" to fade to a very backlit space that relies heavily on the reflective light of the bench top.

story-telling as they are about the mechanics of staging.

"Stephen's set is an urban abstract world and it's very beautiful. A blue box with a ceiling forms the main stage area and that is framed by a proscenium that has been treated to look like the cement framework of a car park or a pre-fab building. It has a light-well down one side that extends up into the rig area, and on either side of the proscenium are these

revolving rooms inside perspex boxes."

The design relies heavily on automated set changes to transform the blue box into different settings. Minimalist but highly styled sets are trucked into the blue void to create the world of the characters, while the perspex booths reinforce the transitions between each state by establishing the characters before they step into the new setting.

### Integration of the lighting design:

"I guess the lighting design started out with a very strict agenda that was based on the parameters allocated by Stephen's set design (colour definition, scenic placement etc) but ended up having the same fluid association with the set as Tracey's costume design did.

The three elements worked singularly towards giving each scene a distinct identity within a spare minimalist environment, but with each design element having its own unique connection with the 'realism' of the scene. It all helped with alienating aspects of the scenario.

"Colour was the main key element that linked each design element together, but the individuality brought three versions of the colour to each scene, thus making it all the more richer and seem less deliberate which I liked. The other key was to make it go for the architectural - there was a very strong architectural flavour to Stephen's set which opened up all of the urban qualities of the script.

## LOOKS OF THE BLUE ROOM

"At the first meeting in Sydney we discussed the overriding design concepts and laid down in rough terms what we were going to do scene by scene. Our initial discussions were that it should be very dim and it should be quite liquid. Simon wanted the lighting to be atmospheric. He wanted to make the transitions very important because they are to the story.

"Something that had been laid down by Stephen quite early and that I picked up and ran with, was that each scene is colour coded in a way. It's deliberate but it's subtle - it doesn't dominate the scene. There are certain colour combinations in the costumes and settings and Simon and Stephen were keen to include these colours in the lighting transitions between each state. So each state has a little bit of that colour element running through it in the general light."

Matt approached the lighting of the set from an architectural perspective which he explained was inspired by images of a highly stylised designer hotel in London.

"It all started when Stephen showed me a magazine article about a Philippe Starck designed hotel in London that an architectural lighting designer designed the interior

lighting for. There are huge panels in each room with an internal neon system that colours the walls. And that was really the starting point - Stephen said he wanted it to look like that and I agreed. In an ideal world I would have loved to have used some Digital Light Curtains because they would have been perfect for the job. As it was, I had to make do with 8 par cans to light the walls, but that's ok - it keeps the numbers down."

Matt explained that Stephen's design for the set included elements of lighting including practicals, on-board lighting, and effects. Most scenes other than a couple which occur in daylight have practical light sources in the set which provide a key for the lighting state of the scene. Room lamps, a television, and even an illuminated cigarette machine provided Matt with a basis for the lighting states for each scene.

The main 'effect' which combines set and lighting is a large digital clock built into the proscenium. The clock was devised by MTC technical guru Kerry Saxby and Victorian Arts Centre board operator Deryk Hardwick and is basically a series of light boxes with separate circuits that are programmed to light up in numerical sequences to represent minutes

### *Integration of the lighting design (continued)*

I was trying to also reflect that in the my design as well - the use of the dichroics in the revolve booths, the specific lighting on the cement pro, highlighting and key lighting the stage with broken light, the exclusion of much fill light. All this was striving for an architectural effect - the feeling of being a voyeur into these lives, looking through the 'rear' window, very 'Hitchcockian' and filmic.

This all came out of the first discussions with Simon and Stephen and developed through rehearsal and mostly once we were in the theatre - just playing with space using colour and texture, relating each scene to the same space (the blue room) whilst still referencing some 'location'. Heightened realism I guess."

**Matt Scott,**  
Lighting Designer  
(pictured below)



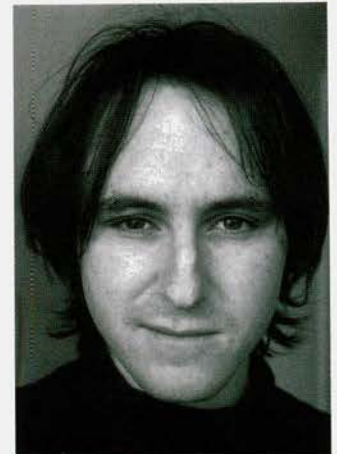
### "Politician & The Married Woman"

Ultimate sterilised domestic bedroom - the light was keyed from the two bed lamps of the separate beds - very chic but very "plastic".

In this photo the married woman's bed provides the dominant warm key helped by a 650w fresnel from behind the false pro of the set (Lee 206).

The fill light is provided by cool lilac (Gam 915) & blue (L085) from FOH. The warm key played across the texture of the bed head to create a "prison bar" like effect.

The intention was to provide a seemingly warm but artificial environment - which was keyed off the very staid symmetry of the set. The colour was soft warm grey - odd and disconnected.





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## LOOKS OF THE BLUE ROOM

and seconds passing. The clock is used in each scene as a narration on the length of time for the blackout which represents each sexual encounter, usually for comic effect.

"The clock runs on the second playback of the Strand desk. There are about 60 or 70 cues per sub-routine, and there are about 3 or 4 sub-routines for each clock cue, so there are hundreds and hundreds of cues just for the clock alone. It turned out to be an incredibly complex effect. It's run off 38 dimmers and synchronising it with the music has been quite difficult and time consuming.

"It's funny because the audience have been reacting really well to the clock each time it comes up - there are a few that are more of a joke than the others. It really is a marvellous thing though because it's hidden inside the concrete proscenium so it just looks like the wall until it lights up, and then it almost has the quality of projection. It has these fancy round bulbs inside it and because of the warm glow of the tungsten we had to go through about 30 different filters to get the right shade for that digital yellow, but it was



worth it because it looks so good."

Without a doubt, the biggest challenge of integrating lighting into the set design was due to the complexity of the revolves. Not only do they involve complex automation systems, but being perspex boxes, getting light into them and controlling it proved to be difficult.

"The biggest challenge initially was to work out how to light inside these mini-revolves

### "Girl & Cab Driver"

The first scene - the only exterior scene apart from the side room suggest on of the aristocrat in the red light district. It was the ultimate urban space - roadside - streetlight was the only key.

We attempted for a very selective light space - characters caught in shafts of cold light - low side light (Lee 200 & Lee 711) from OP - high side light as if from a streetlight (Lee 20'). - all very cold & grey - setting the tone for the play.

### "The Aristocrat & the Girl"

This scene was set in a room above a sex shop in a red light district. The script described it as being lit from early morning sunlight through a window. We gave it an open industrial sized window from PS - like a warehouse loft.

It is realised at first by a red flashing window gobo to represent neon, then slowly increasing to warm yellow sunlight through the window - first as a thin shaft of warm light (Rosco 08) hitting the girl on the bed then a full golden window gobo (Lee 764).

To support this, I added blue shading from OP (Lee200 & Lee068) & low yellow shading from PS (Gam 410).

Being the last scene of the play the light was intended to feel very open & warm - the window was a gateway to somewhere else, offering more hope & promise than what had existed inside the space before. The yellows & blues combined well to create this airy rarified feeling.



### What the director wanted from the lighting design:

"The lighting was hugely important to me because I wanted the play to be very sexy, erotic and even romantic at times. Hare describes the quality of the light quite often in his stage directions and, together with the textual references to smell. I like the atmosphere of sensuality that that builds up.

Even though it looks like quite a lavish production, we'd reduced the furniture elements in each scene to quite minimalist items in a blue box, so I needed the light to wrap around the actors and be quite specific so they'd glow in this quite large, spare space. The

## LOOKS OF THE BLUE ROOM

rooms because they're completely contained. The revolve box is fronted by three sides of perspex which block it off so I had to light them from within. The lights I ended up using are those retail or exhibition type track lighting fixtures that you see in department stores. They're just 12 volt MR16 fittings but we ended up using blue dichroic bulbs in them so both of the rooms ended up evolving into blue rooms. Stephen used a lot of blue in his settings, so it made sense that these rooms should be blue as well."

Not surprisingly blue light features heavily in Matt's design. Sixteen different shades of blue gel are used to achieve the depth of colour layers. Colour correction is also relied upon to cut back the harshness of open white light while allowing necessary highlights on the actors, and gobos are used to break-up the colour corrected light in order to create softer and more dissipated beams.

"Marcus and Sigrid were perfectly cast for this piece because their bodies look really good in the light. They actually have quite similar skin tone which works really well. Because we were going for low atmosphere and high contrast, the best scenes are the ones where there's a very high colour contrast, like where

there's a practical lamp giving out an amber key and there's some Rosco 69 frontlight from the scrollers, and it all mixes on their skin. Amber light with blue just looks fantastic on skin."

In the same way the actors make use of radio mikes to create a sense of intimacy in their dialogue, Matt used low and atmospheric light levels to suggest intimacy, and for more practical purposes, as a way of masking the nudity on stage. Even though the play has received a lot of attention for the nudity, Matt explained it is actually fleeting apart from one major scene, and even then he described it as "tasteful".

"I don't think it's the kind of show that voyeuristic people would get anything out of. Marcus is certainly more naked than Sigrid is in the play, but it works really well because when the female nudity does occur it makes it all the more powerful. There's a naturalness to it, and the way it's lit is kind of traditional in that the lights go down and get softer. There's always a driving softness to it when they're about to have sex and there's this softness to it afterwards. It's really a representation of what sex really is - the way you always want it to be soft and romantic, but

sensuality of the set lies in its hard, glistening, reflective surfaces, so I needed the light to counter that with a soft but intense chiaroscuro.

I thought Matt achieved this brilliantly. There's never more light on stage than there needs to be. It's very tightly controlled, and by careful keying and refined use of colour not only does he create a very different atmosphere in each scene but the actors always look sculptured and sensual.

They're pretty easy on the eye to start with but Matt played a huge part in creating the atmosphere of desire which has to govern the piece."

**Simon Phillips,**  
Artistic Director

*Set models (below)*

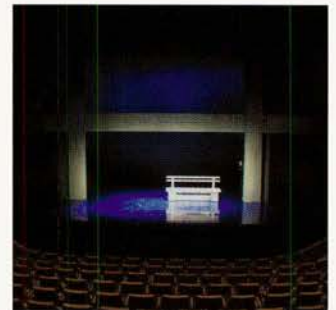


### "The Politician & the Model"

This scene was set inside an inner city Metropol Hotel - very urban, very intense. The colours were all based around purples & blues - ultraviolet was what I was going for in terms of mood if not literally.

This photo is from the pre-sex scene cue - the lighting was intended to be very alienating - angular down lights on bits of random furniture, cold white & blue - the sort of room that looks very cool initially but after a while the halogen spots just end up blinding you & give you a headache.

It was an uncomfortable scene that was very drug fuelled & I wanted to reflect that - especially in the opening cue.



## LOOKS OF THE BLUE ROOM

sometimes there's darkness.

"The darkness is a metaphor for the harshness of the situation. It shows up that with all of these sexual encounters there's an underlying emptiness to it. There are moments of fleeting happiness and they work really well and then there are these really depressing moments. The married couple have this cold cliched conversation and when they have sex and you can sense the emptiness in their relationship, whereas the cab driver and the prostitute it's visceral and rough. The cab driver and the au pair have a similar experience but the cab driver is changed by the softness of the au pair afterwards so the lighting reflects this."

As with all designs, Matt explained his lighting design for 'The Blue Room' changed dramatically between initial discussions and opening night. While the basic tenets of the design remained true, Matt said the rig was scaled down significantly, primarily to reduce FOH in order to make the states darker and more atmospheric.

"It started off at about 300 units and now its down to 200 and something and it will be less when I finally do the next version which will be the touring design. I cut lots of FOH because it didn't end up needing as much. This venue has got a very big Juliat boom position that goes from floor to ceiling and we are using a lot of sidelight in the scenes, but trying to incorporate that into the design for the touring show is difficult.

"It's a very minimalist rig now in terms of what's on at any given point. I guess some people would say its a bit dark, but it works. It's sharper and more mixed up than I thought it was going to be. I thought each place would be really de-lined, and even though each scene looks different, there are strong similarities to the look of each scene. The dynamic build for each state is also quite similar. The build for each transition has a dynamic to it which I didn't think it was going to have.

"There's a commonality to it all which is good because it's the same two actors playing five totally different characters. And even though you know its only ever two actors, you get transported to these different worlds with a feeling of...not remoteness or disconnection from the piece, but certainly with a sense of voyeurism. That sense is made stronger by the lighting because it doesn't totally let you in. It would be different if there was lots of front light and back light, but because it's predominantly side light and angles and the light changes as the actors move around in it, it's not as

open."

Matt revealed the 'techno-boffin' in him would have loved to have used some moving lights in the design in place of scrollers so that he could have had some movement options, but said he rarely gets to use them because he just doesn't get the big budgets.

"My first thoughts were that the design really needed that intense edge of something like the VL7 to kick up the look of it, but after having discussions with Simon I realised it needed to be more atmospheric with a gritty urban edge to it. The light that comes out of an arc lamp would have been too clean for it. It's turned out quite soft, plus because the CCT gear at the Art Centre is fairly old, even though it's well looked after it just doesn't have too much kick to it anymore, so keeping light levels down has been good.

"I'm the sort of designer that doesn't get to use movers too often, so I'm pretty tentative about deciding to use them. If I want to use them I really want to think about it, and with this one I just didn't have the budget or the brainspace because there were so many other things to think about."

Matt described working on "The Blue Room" as a fantastic experience. Despite the shorter than usual time working on the project and the inevitable reluctance to consider the design finished, Matt said he is happy with the look of the show.

"It's a brilliant play and what Simon has done with it has been fantastic. It's a very funny play and Simon has managed to increase that to make it quite farcical while keeping the dark edge to it. It's the best of both worlds."



Simon Phillips, Artistic Director

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## IVAN SIMON of IJS Concert Sound and Lighting

Brisbane's quiet achiever is a mainstream player, as Julius Grafton discovered this summer

Ivan J. Simon heads one of the largest professional audio & lighting outlets in Queensland: IJS Concert Sound & Lighting, and Audio Sales and Recording, the sales & installation arm.

But this story isn't about who has the largest what. It is about what IJS do, and how they came to do it.

Ivan projects a laid back exterior that is aged some 40 years, and rules a roost that is a two story warehouse in Bowen Hills, just down from the Valley. It is cut into the side of a hill, on a busy road. The ground floor is a surprisingly full showroom for the sales business, which also designs & installs sound and lighting systems.

Up a seriously large, truck-rated concrete ramp is the production office and rental warehouse which is crammed full of EAW line array, KF 75C and other major brand PA equipment. There is also a respectable lighting dept, complete with Martin and SGM moving lights.

As far as concert sound systems go, IJS do a lot of festival work alongside the usual fare of indoor concerts. They have done the Toyota National Music Muster at Gympie for a dozen years now, this is the largest country music festival in Australia with up to 50,000

punters. The week I visited, IJS had just supplied production for Big Day Out (Pavilion Room/Green Room & Essential Stages) on the Gold Coast, and were preparing several systems for the Christian Sonfest "at Boodnah. The Livid festival is another IJS client where they supply production on the Main Stage & Loudmouth Stage.

There are no bells, whistles or receptionists, and a core staff of six achieves the workload. Jay van Lieshout looks after FOH systems and is a certified SIA Smart Live 5 operator Mick George is the stage monitors specialist, and Leon Darcy heads up sales and installations.

Inventory is growing all the time, with EAW KF760/761 line arrays the latest addition. Ivan is actually on his second set of EAW line arrays, having sold the first shipment of boxes after using them for some shows. "I had them, someone wanted them, I sold them, I bought some more". Sounds OK to me!

Amplification is now centred on Powersoft and Camco with a large Crest inventory making up the balance. Console inventory consists of Soundcraft Series 5 FOH & Series 5 Monitor (32 Sends), Soundcraft MH4, Crest 52 or XVCA /Yamaha and Ramsa.

There are Nexo PS 15 monitors, RCF Art series, and JBL HLA speaker systems too.



No mistaking who owns this EAW K750 and homegrown dual 18" subwoofer

“ I don't put it out, so I don't get it back, says Ivan, talking about the poor attitude that sometimes prevails in the showbiz industry. ”

Effects & Drive racks include XTA, Drawmer, Lexicon, Yamaha, and TC electronics. All the top devices are represented.

Sales and specification for venues is a growing area, the firm did the largest EAW nightclub installation in the world with the fittout for the Family Nightclub, where there are over 60 Avalon cabs installed. IJS also did the lights, with fixtures including SGM 250 and SGM 1200 – plus Technobeams, with the system control by Avolites Pearl 2000.

Family is probably the largest nightclub in Australia, and is now an audio benchmark.

I get the impression IJS trades the same way it appears – as a no nonsense, no hype professional outlet. It isn't the cheapest, or the dearest provider of sound and lighting. But as I saw – and experienced, since we had an IJS system for our Brisbane technical training week – they deliver what they promise, it all works, and they back it up quickly if needed.

"I don't put it out, so I don't get it", says Ivan, talking about the poor attitude that sometimes prevails in the entertainment industry. Thankfully the poor attitude era is mainly passing now, as people with emotional adjustment issues find themselves unemployed and unwanted. This is truly one of the best things about living and working in this decade.

Ivan had another life as a drummer(!) when he observed that at the end of the night the money seemed to go to the PA guy. Not only that, but at the time there were not too many

PA operators with good equipment and attitudes. So in 1982 he made the decision to build a business.

It must have been a good decision, because now he has some cool property assets, including a huge restored Queenslander on the hill at Hamilton – complete with monster sized Billiards table in the basement. He lives there with daughters Hope and Faith, and wife Debra.

\* IJS are at 66 Abbotsford Rd, Brisbane. Call +61 7 3852-2646. They have a good website with sales and hire info at: [www.ijs.com.au](http://www.ijs.com.au)



## SPECIFICATIONS

I used a rig from IJS for my audio training course in Brisbane during January. Generally to be fair to production companies I rotate amongst them for provision of gear, it also keeps me informed about standards and trends.

The IJS rig came neatly packaged straight from a Big Day Out turnaround.

There were four EAW KF 750's, four dual 18" subs - made to an IJS design, and loaded with 18 Sound drivers - and all the paraphernalia that makes up a small concert rig.

The amp racks (*below*) were made up of a Crest rack for the KF750's and a rack with 2 Camco amps for the subs. XTA loudspeaker processors did the crossover function.

Our front we had a Soundcraft MH4 console with an effects and drive rack.

Onstage an old but industry standard Yamaha 3210 monitor console came with Yamaha 1027 graphics (a favourite of mine), more Crest amps, and a slew of IJS built monitor wedges. All neat and tidy.

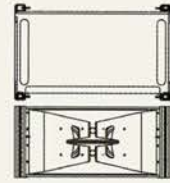


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axial sensitivity: (dB SPL, 1 Watt @ 1 m)  
MF/HF: 104; LF: 99

height: 13 in / 330 mm  
width: 28.5 in / 724 mm  
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In addition to being extraordinarily light, the super-high-strength 6061-T6 aluminum fly bar and rigging system can suspend up to 18 modules at a 10:1 safety rating. All rigging stays within the perimeter of the enclosure and all pieces stay with the enclosures in transit.

### ZERO FRONTAL AREA LOW FREQUENCY SECTION

To keep the horn mouth as large as possible, the LF drivers were moved to the sides of the system. Proper spacing then creates an off-axis null in the horizontal plane, putting more acoustical energy on-axis. The look is different, but performance is significantly better.

### BIG HORNS HAVE NEVER BEEN THIS SMALL

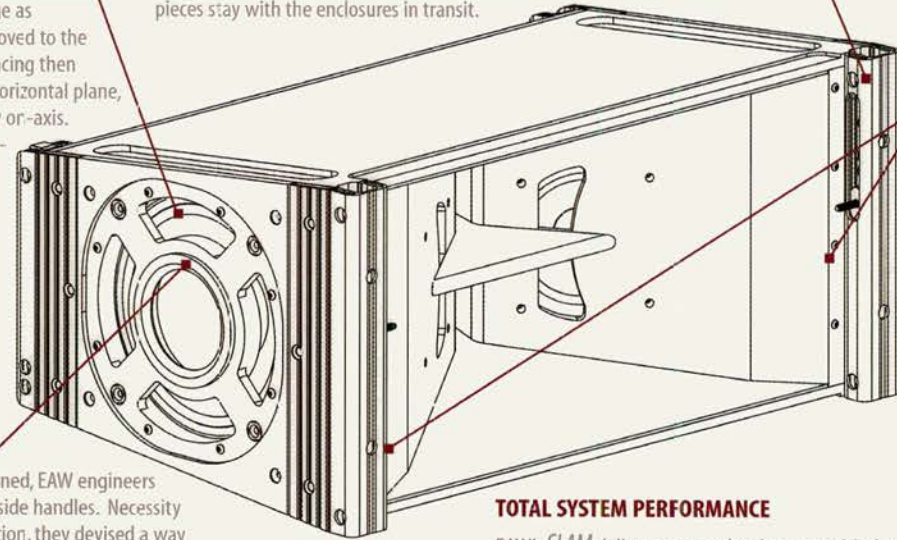
The mid- and high-frequency sections share a horn mouth that fills the entire face of the enclosure. Keeping the horn big lets the KF730 provide unmatched horizontal coverage consistency – an issue only addressed by a horn-loaded design. While line array effects may improve control in the vertical plane it has no effect in the horizontal, where most line arrays suffer significantly.

### INGENIOUS HANDLES

After the system was designed, EAW engineers had no place left to locate side handles. Necessity being the mother of invention, they devised a way to fit them into the woofer cavity.

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EAW's *SLAM* delivers concert-level output with the unmistakable smoothness and transient response that are the hallmarks of an EAW loudspeaker system. Frequency response remains consistent up to and beyond the nominal pattern edge. And our unique *Divergence Shading* technique maintains consistent SPLs at varying throw distances from 10 to 200 feet.



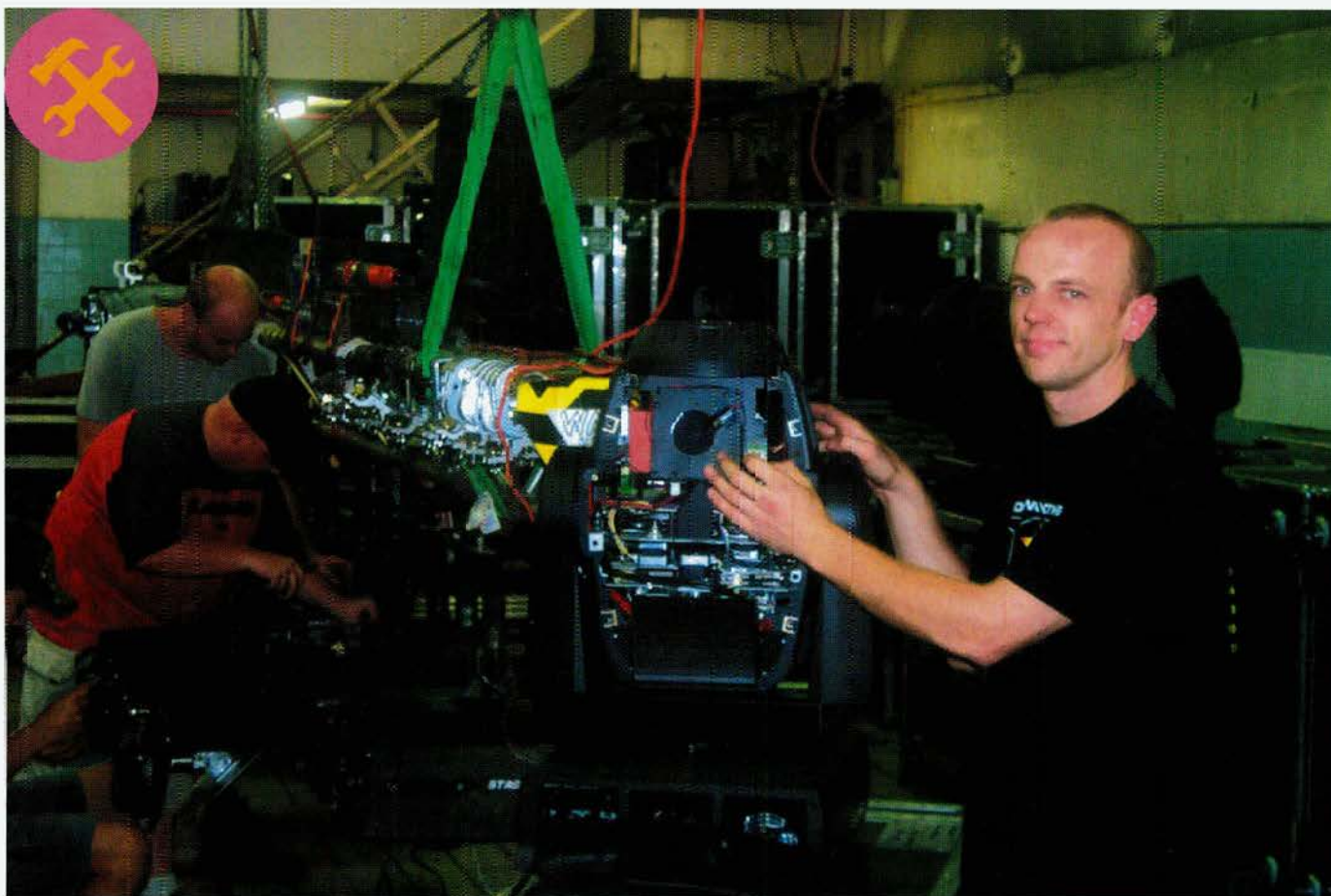
EAW's new **KF730 SLAM** sets new standards for line array size and performance, packing more punch than many "full size" systems. It's a true KF Series horn-loaded, three-way design squeezed into a package smaller than most two-way and all three-way compact systems on the market.

Visit [www.eaw.com/products/KF730](http://www.eaw.com/products/KF730) for more information.

**KF730 LINE ARRAY**

THE LINE IS DRAWN





## Moving Light Service

**What's Involved?** John Grimshaw visits a Very Large Facility to see first hand the efforts that go in to protecting a multi-million dollar inventory.

It has long been known that ownership of any moving light equipment means a pro-active service program must be implemented. With better prices, higher quality and quieter operation than ever before, many venues are considering the idea of investing in this type of light. The big unknown for people like this is just what is involved in ongoing servicing. I went to Chameleon Touring Systems to talk to Luke Radin (Pictured above, Manager, Moving Light Dept), to see how they are able to keep one of the largest stocks of moving lights up, running and reliable.

Located in a warehouse adjacent to the main Chameleon one, Luke Radin works with a team of technicians to keep the massive inventory of moving lights running well. His job involves supervising the prep of all moving lights for productions and rental, as well as providing technical support for all shows involving moving lights. Luke also tours as the No.1 moving light technician on major shows.

The day we visited Luke, he and his crew were in the middle of testing and prepping a bunch of older Stage Scans for a hire. Hung underneath a specially rigged and wired section of tri-truss, each unit was opened up, fired up,

tested, checked, repaired and checked for reasonable colour matching of the light output.

While at first glance this appears to be a quite complicated routine, Luke explained that what happens with each light, regardless of type, is that a relatively simple (mental) check list is followed to make sure each light is ready to go.

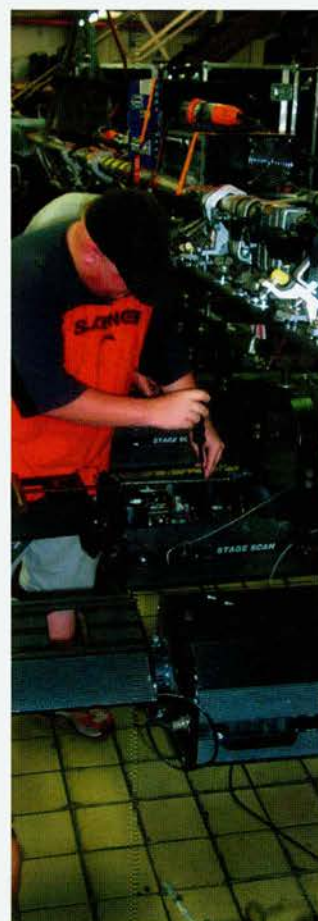
The most common issues that normally require visual inspection are:

- Dust or residue on the optics, air filters, electronics or moving parts
- Loose or missing screws, circlips, gaskets, colour filters, wheels etc
- Loose or missing drive belts
- Deteriorated light output/colour

When testing the operation of the unit, and all of its effects the service technician is looking for:

- Motors not working or just sluggish
- Loose or mis-aligned effect mechanisms

According to Luke, all of these items can be serviced by the technician – if they have the right tools and experience.





### Dust and Glunk

The first and most important thing to look for and remove is dust. It collects on moist, greasy or static-charged surfaces, as well as on parts that are in the path of a regular air flow (ie where a fan is blowing).

Some people advocate the use of compressed air to "blast" the dust out. However, this is not a good idea for two very important reasons. Firstly, all you are doing is "moving" and not "removing" the problem. Secondly, compressed air is quite moist and often carries droplets of water. Water helps to corrode metal, damages electronic parts, deteriorates electrical contacts and can leave ugly residues if there is something else dissolved into it.

The best method for removing general dust is by using a brush (like a paint brush) and a vacuum clear as shown in the picture. On glass surfaces, any window cleaning product (that doesn't leave a residue) and a soft cloth (that won't scratch the lens) works quite well. You should especially check areas where fans extract or blow air. Be aware that dust could also be collecting in the ballast (the base of the moving light).

If the dust has had the opportunity to mix with smoke/haze residue, the resulting mess may be a little difficult to clean off objects in the optical path because it has been baked on. Don't be tempted to use anything stronger than your window cleaner, because many of these items will have an ultra-thin layer of a metal oxide (in other words, a dichroic filter – see the Juliusmedia.com article on Gel), which can be removed with

enough rubbing.

Loose or missing screws, circlips, gobos, colour filters and wheels

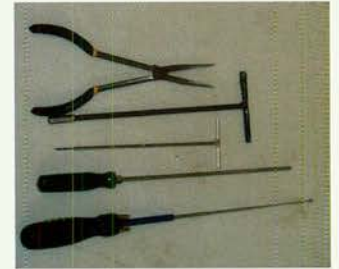
When you are performing your service, look for missing screws, and become familiar with the ones that loosen with general use of the fixture. Using a product called "Loctite" could be a solution, but be careful. Loctite comes in an array of formulas that can result in a screw NEVER coming out.

A good tip is to have spares of your common screws and bolts. If you have a huge range of metric and other thread types in different sizes to deal with, consider getting together a couple of thread kits like on the RS Components website ([www.rs-components.com.au](http://www.rs-components.com.au) – search for "screw kit"). The RS Component ones are a bit pricey, but good to use as a template for you to stock your own kit.

Another thing to realise when working in this equipment is that there are some specialised tools that are very handy to have. In the picture opposite are a couple of the key ones that Luke has in his kit. You'll notice that they are all very long! A couple of specialist tools are the T-Bar Allen Key (for grub screws on colour/gobo wheels), the T-Bar Socket Driver and the telescopic magnet (for those dropped screws!). If you take a good look at some of the other pictures here, you will soon see why these long tools are so important.

### Loose or missing drive belts

While a unit may continue to run happily for a while with a loose drive belt, it may not be



## LOCTITE ME!

A quick look at some of the options available from the Loctite website: ([www.loctite.com.au](http://www.loctite.com.au))

### Threadlocker 222

Controlled strength for small fasteners

### Threadlocker 243

Medium strength - oil tolerant

### Threadlocker 262

Permanent Strength (up to 20mm)

### Threadlocker 270

Maximum Strength

### Threadlocker 271

High Strength (up to 25mm)

### Threadlocker 272

High Strength - High Temperature (200°C)

### Threadlocker 277

High Strength for Large Bolts (up to 50mm)

If you use anything at all, the Threadlocker 222 might be the only one to consider, but follow the directions on the bottle and BE CAREFUL.

Ideally, you should test what the result will be by using the product in a test hole/bolt before you commit it to your equipment.





too long before it becomes a “missing” drive belt. While you are servicing the unit, physically check the tension on the belt. If, through experience, you realise that the belt needs adjustment (and is capable of being adjusted) this would be something to attempt self-repair if your company owns the lights, but not a good thing to do to any hired lights - unless you have permission to do so from the hire company.

The belts themselves are relatively cheap to replace, which may be a better option than re-tensioning the existing belt.

### Deteriorated light output/colour

The bubbles used in many moving lights are not like the filament based tungsten halogen bubbles used in conventional lighting – these are “arc” lamps, with the light produced by an electric arc between two metal pins. These pins wear out with use, and if used to death, will often explode at the very end of their life. An explosion is not the best thing to have happen to the delicate inner workings of a moving light. If it does happen, the explosion will typically damage numerous other components.

That is why these lamps have a defined, limited lamp life. If the manufacturer says it is a two thousand hour lamp, then that is how long you should run it – and no more. As these lights are run through their life-span, the colour temperature of the light output will also evolve. This is caused by a number of factors – distortion of the glass envelope, minute variance in the distance between the pins for the arc, discolouration of the outer glass envelope, etc.

The picture here shows two identical lamp types, one unused and one at the end of its life. The used one has an identifiable yellow band on the outside of the glass, the inner glass envelope is heavily frosted and the pins inside this envelope are visibly degraded.

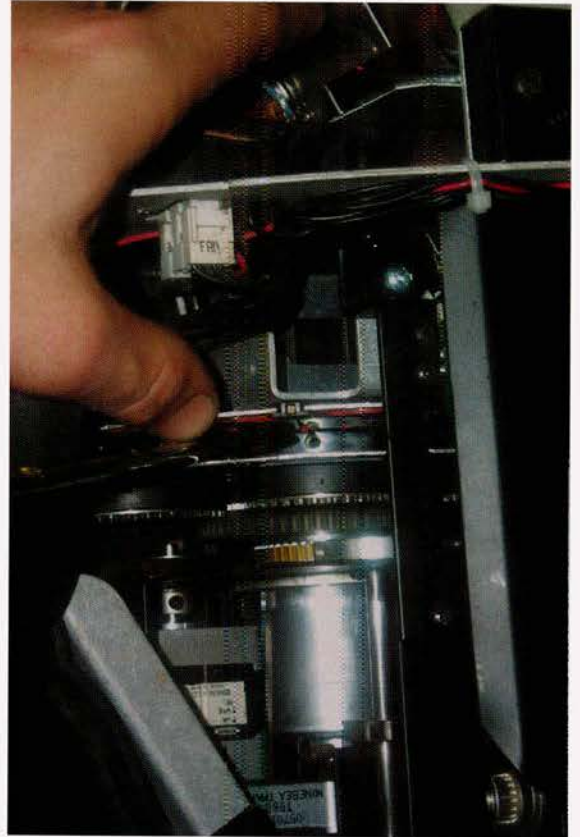
A good hire company will try to make sure that lamps with similar colour output are sent to the same hirer.

### What causes problems?

According to Luke, “Transport is the evil enemy.” The loading and unloading of equipment by inexperienced people are a direct cause of many of the faults the Luke corrects. Things like putting the work unit in the wrong case can have serious effects on the fixture.

The example Luke gave was that of the Mac500 and the Mac600 - two very similar fixtures in terms of their shape. However, a Mac500 travelling in a Mac600 case can “bounce” its nose on the floor of the case if the truck hits a bump. This translates as a smashed or scratched lens, damaged lens mountings and physical shock to the onboard electronics of the whole unit.

Another issue Luke has to deal with is the results from a dropped fixture. Depending on the height of the fall, a dropped unit could have no apparent damage, but it simply doesn't work as well as it used to. It might be more sluggish or more noisy, and quite often this kind of damage is not repairable by Luke and his team, even if they do replace the suspect parts. While full service for the unit by the distributing company can be considered, the cost of this kind of work can



### Used MSR

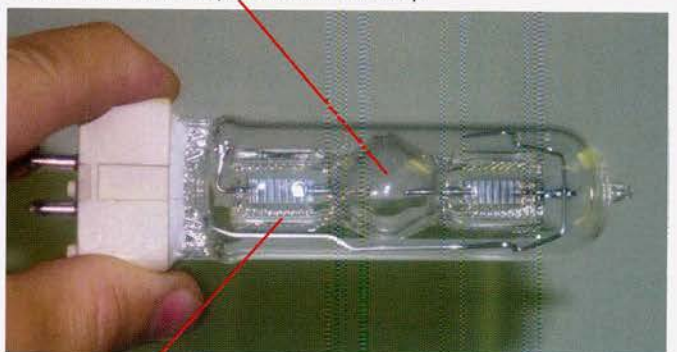
Inner glass envelope frosted by extreme temperatures



Yellow banding on external glass changes the colour temp of the light

### New MSR

Internal probes clean and sharp



All glass is perfectly clear



easily exceed the replacement value of the unit itself.

Another issue that comes under Luke's description of "evil enemy" would have to be dust. Left unchecked, Luke confidently indicated that dust would eventually choke any moving light. However, just because your venue is dusty, it doesn't mean you cannot use moving lights.

Anyone considering purchasing their own stocks of moving lights would need to consider how dusty the work environment is to work out how often they would need to service their equipment. Perhaps a good guide would be to check the units one month after installation for any sign of dust collecting in the most likely places, then regularly after that depending on the amount of dust you find.

It is for this reason that Chameleon would organise for an "installed service" for a long running, big show. Luke indicated that, depending on the terms of the hire contract, he might go onsite a few times in a three month hire to make sure everything was running to spec.

Interestingly, the "age" of a unit does not have too much of an effect on the working life of the equipment Luke looks after. Some of Chameleons stocks of Mac500s are close to eight years old and most are on hire 80 to 90% of the time. Yet, because they are well maintained, they continue to work very well. Individual components inside the fixtures are replaced as they wear out, and they are regularly checked, cleaned and tested before hiring.

For Luke there will always be the ESU problems. "Equipment Superior to User" failures happen when the hirer does not know how to use the equipment, know how to make minor repairs on hired equipment, or know when to not even attempt a repair. Hopefully, after reading this article, there might be one or two things you could try yourself before calling the hire/sales company. But one question you should ALWAYS know the answer to is:

"Who do I call if I have a problem with this light?"



**Gasket stuff** – Great for re-gluing dichroic, fixing in some reflectors and gluing gobos in place.

**Foam Cleanser** – Cleaner for anti-static surfaces in consoles (like touch screens, etc)

**Silicon spray** – Lubrication of focus shafts and other moving parts (expect bearings and high temp parts like an iris)

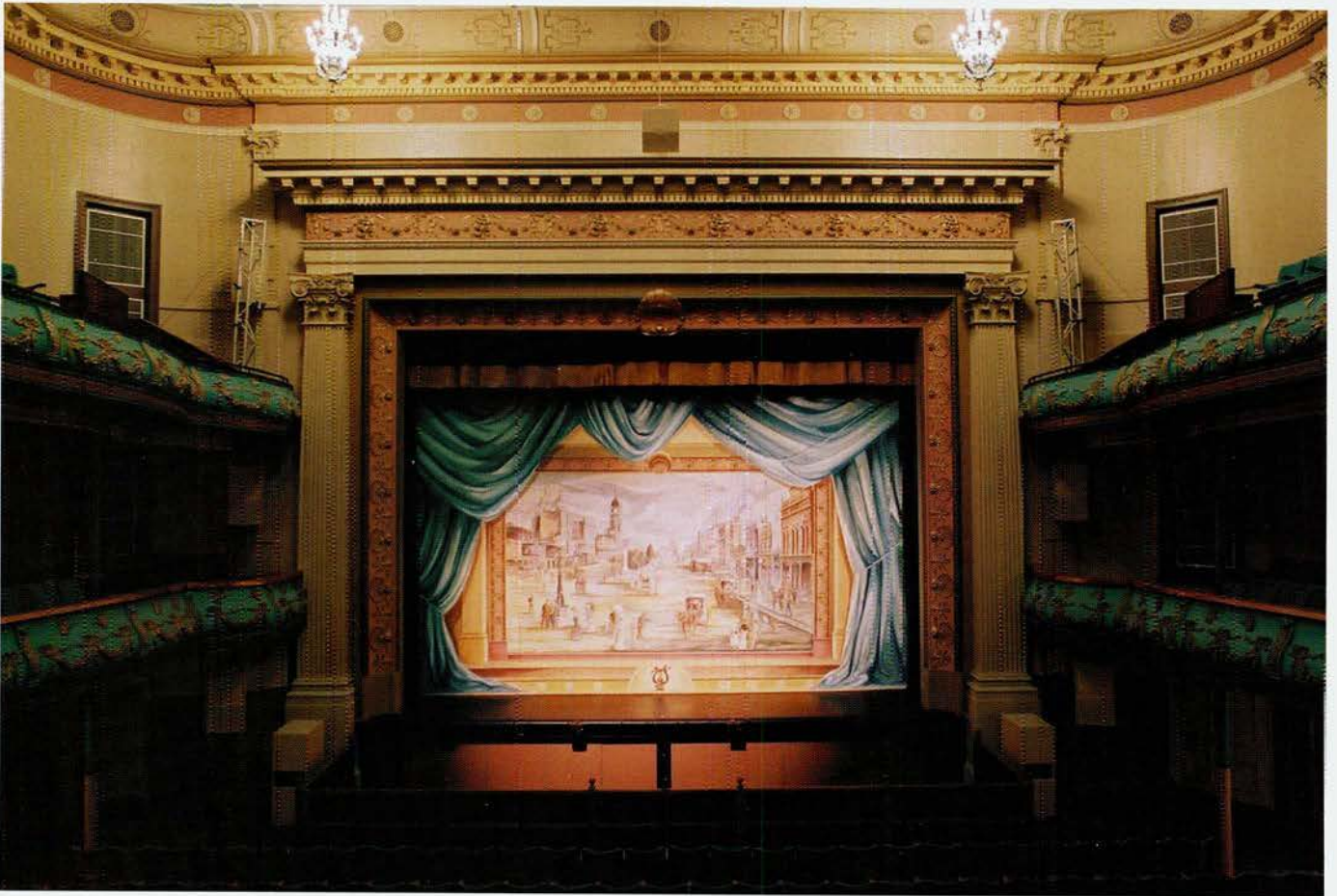
**Singer Oil** – used on faders (after contact cleaner) to maintain smooth operation

**Clay Paky Oil** – Bearing Lubrication

**Glass Cleaner** – For Lenses etc. Important to choose one that does not leave any residue

**Hot Paint** – Withstands high temps. For external surfaces to restore the appearance of the device

**Graphite Dust** (not pictured) – good for lubricating hot mechanisms like the iris.



## Ballarat Theatre Becomes Funktional

Her Majesty's Theatre in Ballarat has had a new sound system installed, to cater to the wide variety of uses it enjoys.

Funktional One speakers were chosen, this is the brand that was created by two of the founders of Turbosound in the UK. They have produced a reasonably unique set of designs, of which their Resolution Two speakers are used in the theatre.

There are three levels, so there are three speaker systems - a left/right stereo pair, on each level. The picture above features a couple of pieces of truss, hiding the top level speakers. The stalls level includes a sub.

Each Resolution 2 box is a full range cabinet, with dispersion of 50 degrees horizontal, and 25 degrees vertical.

"Because of the tier design of the theatre, the pattern being narrow on the vertical shoots perfectly on each level without hitting the balcony fronts", says Funktional One Australia representative John O'Donnell. "It works in our favour"

The sub in the stalls does infrabass duties, it is a 15 to 60Hz box that provides bottom end extension for sound effects and bands. It is loaded with 2 x 18" woofers in a bandbass arrangement. "It's Tony Andrews (one

partner) new loading technique - but he won't tell me how it does it!" says John. The box handles as much as 2,000 watts of power.

Up in the centre of the arch is a single little AX 88 device, loaded with 2 x 8" speakers and a 1" horn. This delivers from 170 Hz and up providing image definition in the centre.

Outlook Communications of West Melbourne were responsible for the installation.

The speaker crossover job is done by the BSS Mini Drive, with 2 x 334 units and 1 x 366 used. Every speaker is on a separate feed. 2 Soundwebs feed the Mini Drives, so a full matrix system can be run. The Soundweb trim aligns the whole system down to stage.

None of the Resolution 2 boxes have any EQ.

This is truly remarkable in this era, when most packaged loudspeaker boxes come with preset equalisation curves. And apart the top level stereo pair are unequalised for room acoustics too. The reason was a huge dome in the ceiling, producing reflections at around 400Hz.

"It proves the point Tony Andrew is making" says John O'Donnell, "built it right, and you don't need EQ!"

The system is amplified with MC<sup>2</sup> amps. The



• John O'Donnell is now handling the Funktional One Australia business alone, following an amicable separation with his partner, Frank Hinton of ATD Audio Controls. John has just set up office at 8 Gattan street Prahran, Victoria. Call -61 3 9525-2515.



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Sub bass has one T2000 amp.

The Resolution 2 boxes use T1500 and T1000 amplifiers. The Resolution 2 is a three way box, with one 15" woofer and a top section loaded with an 8" speaker with a waveguide. This handles a startlingly broad slice of spectrum, from a low 250Hz through to 5.5kHz - when the 1" horn comes into action. The 1" horn is passively crossed from the 8", so the box runs active 2 ways.

"The waveguide gives you directionality, presence and warmth to 250Hz. It's directional to 500Hz, then starts to wrap around. Over 500Hz the waveguide works really well", says Jan.

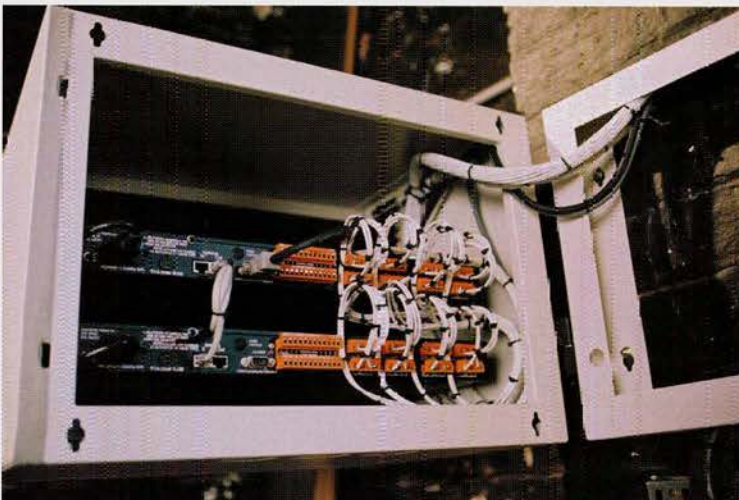
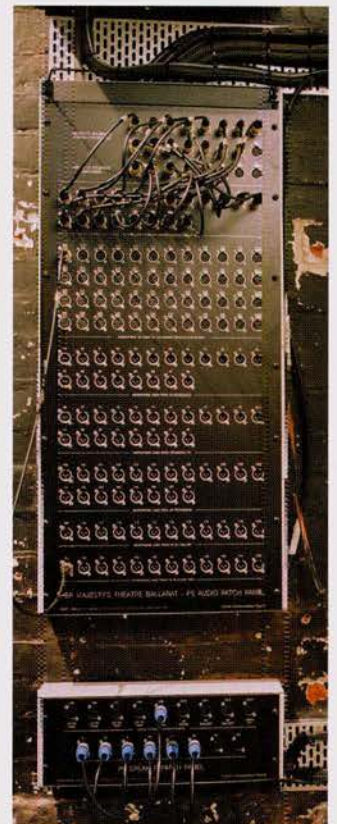
The theatre technical manager is Stuart McKellar.

The theatre has a Crest 40 ch X8 console.

The other Funktion One partner is John Newsham, who was touring with Underworld at the Big Day Out when the system was installed. He came up to Ballarat and commissioned the system - something that is usually beyond the call of duty. •



Little AX88 device with 2 x 8" and 1 x h/f horn handles centre imaging.



Hallmark of this installation is proper, neat wiring. Too many quotes and tenders are processed without regards to proper standards. Outlook Communications have obviously done a proper, professional job here.

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# Inside the LARGEST rock tour on the planet

There's industry speculation that The Rolling Stones were prepared to lose money on their tour of Australia and the Far East this summer. With 2 jumbo jets, 21 trucks and a touring party of 200 it is definitely the largest show on the road today. After Australia the tour travelled through weak currencies of Asia, Japan, China, and India before a break. Then onwards through Europe, to end 18 months after it started. For some crew, it's a two year contract. Welcome to the JCK tour. **Julius Grafton** reports....

**Mick Jagger's Physiotherapist** had a polite request of soundman Robbie McGrath. "Could you let someone sit here next show? It's the Bentley guy, you know - the one who deals direct with the Queen".

The Rolling Stones run that kind of tour.

They landed in Australia on a chartered Qantas 747-400 which flew the 200 odd party direct from L.A. to Sydney. The band slumped it in the first class sleepers, while the key crew were in Business Class. The assorted carpenters, chefs, camera operators and general hands made do in cattle class.

At the mix position just prior to the show, the Entourage assemble, with different coloured laminates to denote pecking order. Jagger children have green ones, wives red ones. The transport fleet outside also denotes a class system - several Chauffeured Mercedes' for the band, mini-buses with darkened windows for the Entourage, plain vanilla 14 seaters for the crew.

An endless row of dressing rooms and offices stretch down the ample corridors backstage at the Superdome. There are serious looking Englishmen, Americans, and the occasional Aussie - 1001 different conversations, meetings, comings and goings, before - and while - the show runs.



Video drives the show look. the 52' LED screen (above) is the largest single image system on the planet today. The 11 Synchronites (white beams) totally dominate the lighting. And EV's X-Line line array asserts high audio credentials.

• Meanwhile at right, sound engineer Robbie McGrath attempts Adonis in Midas City, while assistant engineer Jim Homan looks on. He's seen it all before!

“The band don't NEED a lightshow. Lights sometimes take over, but not with the Stones!”  
-Jim Straw, LD”



Soundcheck has been held up as the sound crew face an errant earthing hum, a 200 amp per leg generator has been ordered to try to equalise mains cycles, the band have been told by production manager Jake Berry that the delay is while the genny is commissioned. A mix of 50 and 60 cycle equipment is suspected, but no one really knows – and time is ticking. There is no panic.

Forty minutes late, the soundcheck rumbles into life, soundman McGrath is muttering at how futile soundchecks really are, since no band ever have delivered showtime energy in the stark light of an empty late afternoon venue. The band are in high spirits, Keith Richards and Ronny Woods are yelling and gesturing to McGrath, a popular Irish sound engineer who is mixing his third Stones tour.

Beside the 132 channels of Midas XL4 and six effects rack that make up a mini sound city, a more demure pair of WholeHog II consoles and a wingboard sit, with Lighting Directors Jim Straw and Ethan Webber. They are custodians of the lighting, which was designed by long time Stone's LD Patrick Woodroffe.

The look of the tour was a collaboration between Mark Fisher, Woodroffe and video director Willie Williams – well known for his work with U2, and of course for the stunning video on We Will Rock You – the Queen musical which is headed downunder.

When you walk into the Arena you see no set – the Australian and Asian leg is scaled down. But dominating proceedings is the number one budget item, the LED wall. This assembly



### Jim's Lighting World

**Jim Straw** (pictured) is a Sydney boy who tours the world as a Lighting Designer/Director. He started with Arena Technical Services and went over to work for Jands when they purchased the firm.

His story typifies the dreams of many younger lighting people.

He worked on Lord Of The Dance in Australia in 1996, where Patrick Woodroffe was the designer. Like all LDs, Woodroffe keeps an eye out for smart energetic young lighting crew, and Jim soon found himself touring with the show.

More work for Tina Turner and Cher followed, and when Woodroffe put together the latest Stone's package, Jim was chosen as Lighting Director, alongside Ethan Webber.

"It's a single persons gig" explained Jim, who locks up his Neutral Bay apartment for months on end when overseas.

### Video Outshines LX?

The use of large screen vision for concert events is now almost universal. **Christine Strand** (right) is The Stones video director. She send images to the monstrous Panasonic Ultrastar LED wall, 52' x 48', which consumes 400 amps of mains. It runs at its lowest luminescence setting in concert mode, and is capable of daylight use with truly retina-searing consequences!

The tour uses a mix of graphics, replayed off three dual Doreme hard drives, and designed by Willie Williams of U2 fame. Seven camera operators and three fixed cameras provide imag feed.

One dazzling effect is a very small camera mounted on the neck of Ronnie Wood's guitar.

The show opens with two songs and no vision, but once the graphics and images start feeding the LED screen, a whole new dimension unfolds.

New

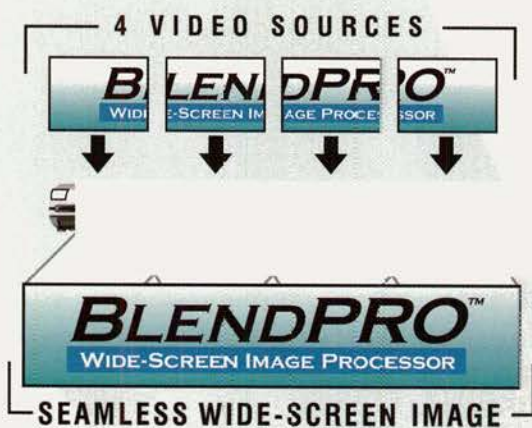
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of Panasonic LED panels forms - we suspect - the largest single wall in the world today, measuring 50' tall and 48' wide.

LED walls are a reasonably new technology and the latest have a 10mm pixel resolution. Each LED has astounding luminance, resulting in a complete wall of LED panels producing brightness that lets them be used outdoors in full sunlight. Used indoors they are downrated as much as 90 percent - and are still very bright.

With such a dominating backdrop, the lighting design needed to be assertive, and who else by Patrick Woodroffe could deliver this? He makes huge, bold statements. It's not like theatre. It looks dramatic.

Take the pods as an example.

There are seven vertical tracks running up the face of the video wall, each fitted with a drive belt and motor. On these are a pair of VL-6C's, mounted either side in a left/right orientation. The pods zoom up and down, giving the lighting director an extra dimension.

"We need them because the trim is so high" says Jim Straw. "It lets us get VL's into another position."

The pod motors are controlled by a stage carpenter backstage, working to a song list rather than being cued on a headset.

Then there are the Syncrolites. Amongst a rig of 180 lights, 11 stand out. Placed across the rear there are three at each extreme side, and five up higher spaced across the centre of the stage. These are a 3k ARC moving yoke fixture with colour scroller, made by Synchronlite in Dallas. They also make a 7k version, which the Stones have used on the USA leg of the tour.

This is a tour where there are three versions of show. The Theatre version manifested in Sydney with one concert at the Enmore Theatre, where the crew inserted a small portion of the sound and lighting rig. Video was limited to capture only, so the camera rig, switcher and Doreme racks went in too.

For the balance of the Australian dates, the Arena version was staged. An outdoor Stadium version of the show is also used,



elements of this were shipped direct to Japan where the tour would pick it up

Production Logistics are the nightmare of Production Director Jake Berry, who is extremely well regarded and clearly very competent. His hand is all over the workings of the show. Equipment is colour coded with Green, Orange or White labels for whichever show format it is destined for.

Lighting Director Jim Straw explains: "We use the same lights for all shows, but we have a different cable pack for Arena or Stadium. For the theatre shows we just make up whatever looms we need".

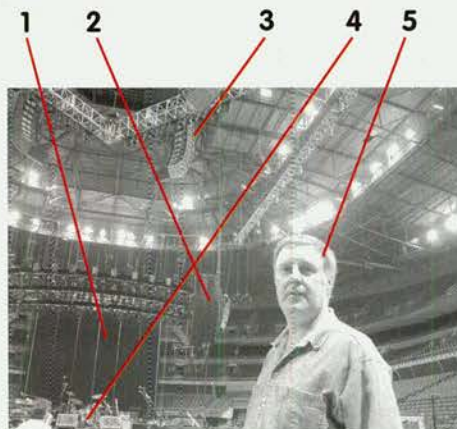
So far the scary prospect of sending something to the wrong place has not arisen. "We are acutely aware we can't misplace equipment" says Jim.

"What was hard at first was that the fixture number changes according to whether it is a Stadium or Arena rig. The Arena uses 180 fixtures, a Stadium 240."

Jim and Ethan run the show from a Whole Hog II, with a wingboard. A second Hog is

**Key to picture, below:**

1. The Panasonic Ultrastar LED wall, 52' x 48' wide - with 7 vertical POD tracks for 2 x Vari-Lite VL6cs to travel up and down.
2. FOH main line array (right), 14 X-Line and 13 subs alongside. 8 with one infill for far right.
3. 'B' stage compact line array, 12 boxes.
4. Actual 'B' stage with backline raised in show position. Descends when not used.
5. Irish sound engineer, looking pensive.

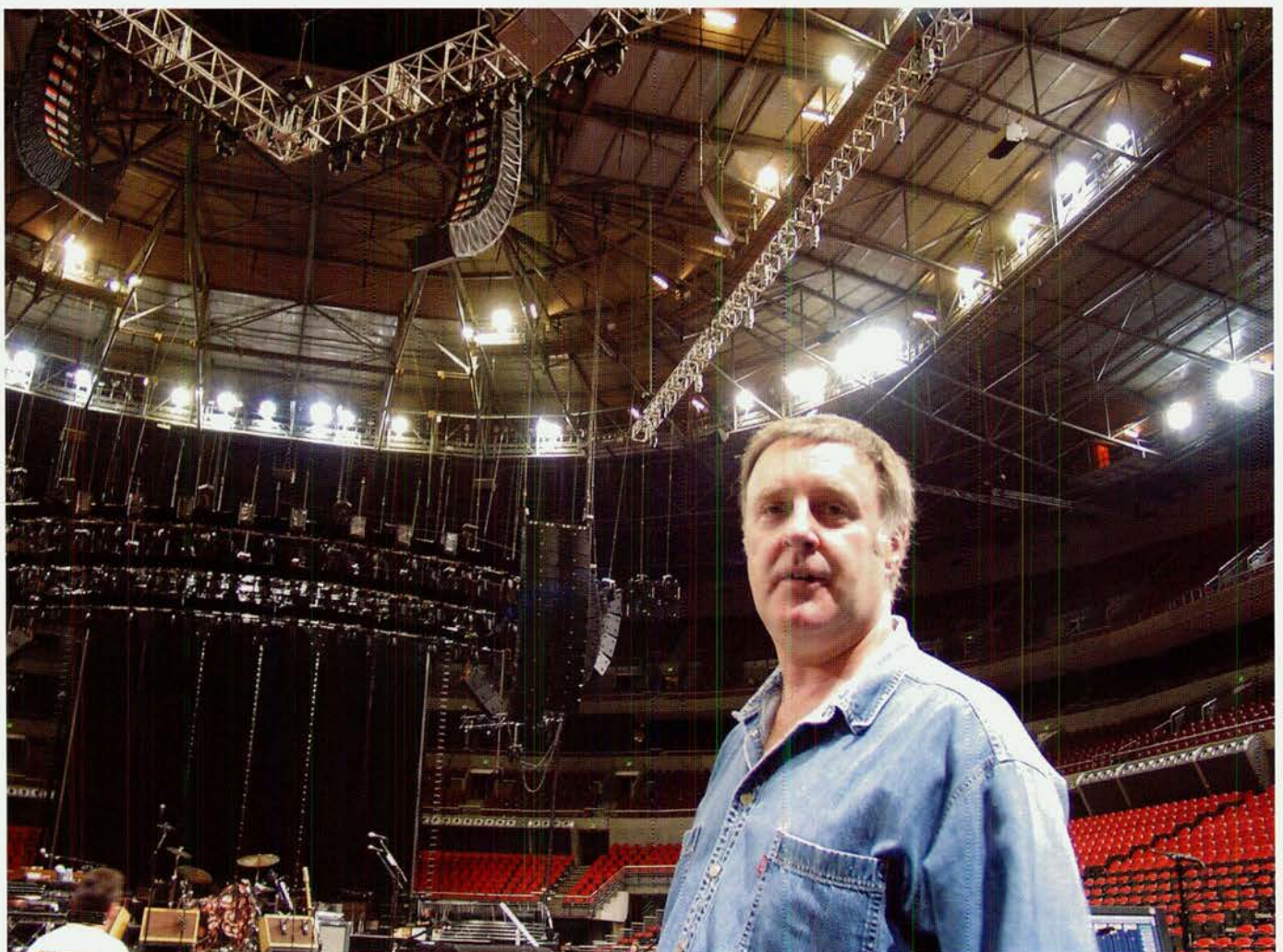


**In The Theatre**

**LIGHTS:**  
The Enmore Theatre show had 3 x 40' trusses and was driven by an Avolites Diamond 2 console. There were 48 Par 64's 24 VL6C movers, and 22 High End Systems Studio Beam PCs. Four follow spots were used.

**SOUND:**  
The tour carries a smaller 'in the round' line array system for the 'B' stage - an octagonal 30' stage that is used towards the end of an Arena or Stadium show. This system uses EV X-Line Compact line array speakers, 5 flown each side and 4 on the ground. 4 X-Subs a side were used.

The 'B' stage Midas XL4 console, and some of Robbie McGrath's seven effects racks were squeezed in.



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present for the support band, and as a backup. The entire shows lighting programming data fits on three floppy disks.

The Hogs feed 7 DMX universes - four run direct from the Hog, and three overdrive units allow 3 extra lots of 512 channels, for a grand total of 3,584 available channels.

"A lot of people thought the (Hog) console would be slower and less stable, but it's been fine. Dave Hill did the programming", says Jim.

The band themselves don't make it easy for the crew, in show terms. The rehearsed 200 songs for the tour, and can decide on any set list in any order - so sequential cues are out. "We didn't program for 200 songs", confesses Jim, "rather, we have four or five songs at a time as one look, grouping ballads together, that sort of thing".

But it keeps the crew on their toes! "It's quite different to the standard tour format", says Jim.

2 followspots are fixed to each of the four rolling stones, plus 5 more truss followspots

are used, all called by Ethan.

A standard day for the lighting crew is an 8am start, with everything ready for focus by 2.30. The show takes just 2 and a half hours to strike out.

The working day for front of house engineer Robbie McGrath is somewhat different. "I hit the shower by 11, then come to the gig for lunch by 1pm. We EQ and line check between 2 and 4, then the band do a one hour soundcheck between 4 and 5."

Like all sound engineers, Robbie finds the soundcheck slightly frustrating, because no band, ever, put much energy into it.

"After I eat dinner I go into limbo time. It's a terrible time, really, until the band go on around nine. You can't read a book, can't get amongst anything. Then I get an adrenaline rush, and my palms get sweaty. I definitely get a rush".

"You get a different place in your brain when you open the door and step into the gig. It's a beautiful place, once a show starts you always find space for it".

### Robbie's Racks

Soundland is a small city of processing and effects racks.

The rack nearest to the right hand console is the effects rack. The Eventide Ultra Harmonizer provides some flange sounds circa '60's. Lexicon reverbs handle vocals, brass and drums. The TC 2290 digital delay does great left-right delay shimmies.

Other racks: Gates and Limiters live in one rack. The next rack houses 8 x stereo BSS Vari-Curve equalisers which are inserted across main, drums, guitar, brass, backing vocals, acoustic guitar subgroups.

Then there is a system drive rack, a recording rack, and a B Stage processing rack.

• See [www.juliusmedia.com](http://www.juliusmedia.com) for a picture tour of Robbie's racks!



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The meat and potatoes of the Rolling Stones sound system is EV's new X-Line line array. DB Sound of Chicago supplied the system, made up of 14 boxes left, 14 right, 13 subs flown each side, plus 8 at each side for side seating, with one underhung box.

These are all powered by 84 EV P3000 amps, and fed from XTA DP226 loudspeaker controllers.

In Australia the main system boxes and amps were supplied by Powa Audio of Melbourne, who in turn subhired many of the X-Line boxes from Oceania Audio. Powa have an agency agreement with DB Sound that has given them a useful flow of work.

Robbie McGrath has done three tours with The Stones including this one, and has probably dissected their music more than the band members. He makes mixing the show look easy, but there is an awesome amount of hardware sitting just under the surface. An example is the eight stereo BSS Vari-Curve equalisers inserted over the 8 main sub-groups. The large array of processing and effects equipment is all properly and subtly

utilised, so that different songs have different feels.

Robbie talks about the band sounding 'organic', and about Charlie Watts drum kit needing to sound like one instrument, rather than a bunch of bits.

"It's got to be him, he is careful about his playing. He told me at the start, make it clear, not tight and gated."

"There's a scale of greatness, of ginormity, with a band like this. Every night they play they rate somewhere between 8 and 10. Everyone goes home happy."

That's certainly the impression I gained, seeing that nights show.

There was a sense of purpose, of relevance, of mission about the concert. There was even a pride, or badge of honour, in the heritage of the band.

"It's like a marriage, you're there for the good times and the bad times", says Robbie. "If you stick it out for 40 years then that's really saying something!" •

## Monitors

I arrived at the worst possible time for Chris Wade-Evans, monitor engineer. It was the first Arena show in the southern hemisphere, and an annoying earthloop was evading the attentions of the entire sound crew. I left him to do his job.

Chris mixes on a Cadac R-Type console with 72 inputs, and in the USA carried 96 (!) foldback wedges. The stage is set up as zones, with wedges every metre or so for Mick Jagger.

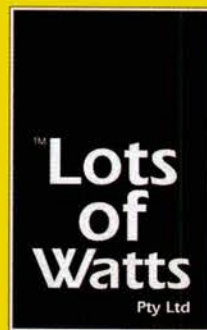
There are 28 sends, with 32 mix graphics and 8 insert graphics. Only two members use in-ear systems.

The main vocal microphones are Sony WRT 867's - "the most cable sounding radio mic", Chris is quoted as saying.

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## Entertainment Technical Training slow off mark

There are so many acronyms, and so much jargon. No one understands what competency based training means. Hardly anyone understands the qualifications framework. And many venue training managers have not actually overseen any technical training. No wonder almost no one in Australia has a Certificate Three in Lighting or Live Sound. Julius Grafton reports on why this is.....

The executive in charge of training was very happy to talk, but only if some lucrative and tangible spin-off for his venue was obvious. In the acronym overloaded training world, where RPL, ANTA, ITAB and AQF are mingled with jargon like Auspicing, Co-opertition and Competencies, training folk have carved a role within organisations that is safe from hard analysis. Because training is a brain testing and boring backwater of any company.

Some remember the Training Guarantee Levy, a sensational Government initiative where almost 3 percent of a company's turnover was mandated into training? It fell over some years back, and since then training has become a regulated world where RTOs rule. An RTO is a Registered Training Organisation. To become an RTO is a mind bending, heavy paper experience.

My executive contact at the venue didn't want to co-operate in a workshop environment

where we traded assessments to find the best possible outcome for checking future Certificate Four recipients were up to scratch. His venue would go their own way towards this outcome, he told me. To put things into perspective, I had asked the venue if we could do the workshop in exchange for some assessments they were able to do as an RTO for me. So why not share the knowledge?

Before this episode I'd been in touch with the same organisation about various training initiatives. I spoke with them because the Technical Manager had sought me out and bought me dinner a year earlier, assuring me they were interested in co-operating on training issues. "We are really committed to training" he said, and I did believe him.

But training these days means kingdoms, not unlike those weird Information Technology kingdoms that developed within corporations in the late 1990's before the 2YK experience

A training scene - the Connections CPAU and CPLX courses conclude with a live performance. This was in Brisbane, in January, at the excellent concert hall inside the Old Museum.



# TRAINING

dispelled the hype and showed the reality.

The problem is that to become an RTO (Registered Training Organisation) requires a company perform the near equivalent of a public sex act that is documented, scripted, rehearsed, and finessed indefinitely. It is the result of a correction born from the excesses of the Training Guarantee Levy, where all kinds of weird encounter weekends involving booze were chalked up against the training budget and were tax deductible.

There is a *huge difference* between a company which trains people from all walks of life (like ours) and a *venue* where carefully chosen staff are put through a training program and then Certified. It is not logical for an organisation like a production company or a venue to have to commit the equivalent of a communal disrobing and a proctology examination to be a trainer – in other words, to get RTO status. The very existence of the tough standards behind becoming an RTO was born from the need to eliminate corporate charlatans who were feasting in the carefree days of the training guarantee levy.

It would be better to have a two tier system where internal trainers did not need to do several Certificate Four courses – one to

become a trainer, the other to attain the qualification being taught – and then prepare a 200 page RTO manual answering a massive set of standards. And sit through long audits. All of this just to train house staff and crew.

Don't get me wrong; do make people like the publisher of this magazine go through what they go through, and please DO make them prove their commitment to training. We need RTO legislation to safeguard the general public who may buy their courses.

But if a local venue or production house wants to train staff, then give them a much easier option than becoming an RTO!

Our industry simply can't afford to have dedicated training managers – and I am sorry to have possibly endangered the careers of the few of you who do this job in venues and institutions across this wide brown land. I've met some of you, and I am sorry. Your job is untenable. I haven't yet met one of you who really knows that much about the core underlying business of sound, lighting, staging and vision. And I am still waiting to meet the Certificate Four (or Certificate Three) graduates you are supposed to be assessing and training in your venue

Please do knock me over in the rush. •

## Sydney Certificate Three in April

Juliusmedia are running Certificate Three courses in Live Sound, and Lighting, starting April in Sydney.

The courses comprise three parts. The Induction week is either CPAU (Sound) or CPLX (Lighting). These run nationally through April. Then there is a Cert III week in April (22nd - 26th) and a Cert III week in July (7th - 11th) - with course work between.

The whole package costs \$2,900, split into installments. If applicants have already done either CPLX or CPAU, there is a cost saving.

People with existing skills in Lighting or Sound can apply for direct entry, and start on April 22 without CPAU or CPLX - also with a cost saving.

**Call Juliusmedia (training) on 1-800-635-514 for more, or see [www.juliusmedia.com](http://www.juliusmedia.com)**



Juliusmedia class of January 9, in Melbourne, just after the final gig. Five students here were back for their second Juliusmedia course.

## Loadin time at Melbourne

Our Courses run together - the sound class and the lighting class are taught in separate spaces, then come together on the last day for technical rehearsal that is a simulated gig. This is a story about the PA system in Melbourne:

Melbourne based Johnston Audio Services has been around a long time, because it is the business side of the audio career of Bruce Johnston. He is a forty-something live sound engineer who is most famous as sound engineer to Oasis, the BritBrat band who trash aeroplane cabins.

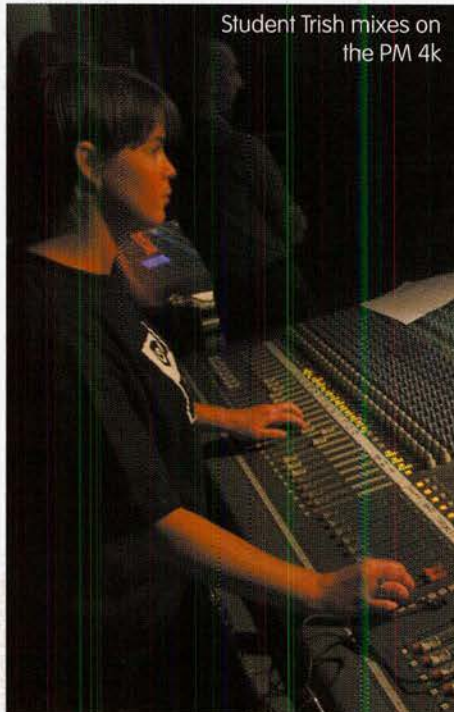
We selected JAS, as it is known, for our audio course in Melbourne during January, and told them to give us anything matching or exceeding our rider. They chose to exceed it, which is usually always welcomed by any production client - provided the system still fits the task.

Paul Polito arrived on time, and opened the truck doors to reveal what looked like a lot of equipment and cases. Most ominous was the massive Yamaha PM 4000 mixer straddling the front of the pan, sitting almost the whole 7.5 foot width and standing about five feet tall. Notice how we sound people still use feet instead of metres? Must be the American influences!

Once the loaders - who were my audio students - got over the shock, we unloaded. Paul was VERY careful with the console, after advising us all that it weighed 420 kilograms. "If it starts to topple over, just get out of the way. Don't try to save it", he wisely cautioned.

Luckily the load in was on to a level dock at the Concert Hall, then we just wheeled everything up into the venue.

Paul offered to stay as long as we needed him,



Student Trish mixes on the PM 4k

## Perth training dates slightly adjusted

Juliusmedia courses come to Perth for the first time towards the end of April, with the courses to be held in the excellent facilities at Hale School. Dates have been moved one day onwards, with the five day CPLX and CPAU courses starting Tuesday 29 April instead of Monday.

The one day COHS (stage occupational health and safety) course will now run on the Tuesday.

Info at [www.juliusmedia.com](http://www.juliusmedia.com)

## Josh gets in at NIDA

Josh Lemon (*pictured*) did our courses in 2002. He writes:

"You wanted to know if I got into NIDA, and guess what - I did! I started on the 3rd of February this year.

I also applied to 3 other uni's in Queensland that run very similar courses in Theatre Sound, Lighting and Stage Management. I was accepted to all 3 of them during the interview (before we were officially supposed to know). Some of these uni's were very impressed knowing that I had attended your courses.

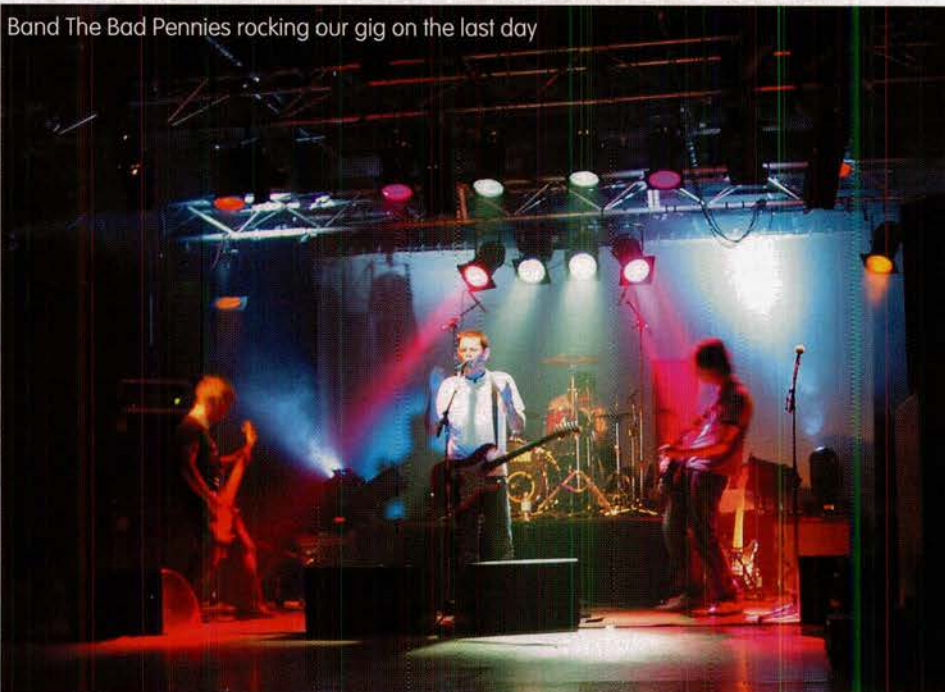
I have to give you a really big thanks with the courses that you ran. I think they gave me a really good reference with the certificates that I received at the end of them.

Thank You Again, Josh Lemon."

Well done, Josh!



Band The Bad Pennies rocking our gig on the last day



# TRAINING

and gave me the rundown on the system. The PM 4000 came with a fold up, roll it up metal desk stand which just let the desk tip straight on and over, safely and without lifting. Getting the lid off was a job for at least six people: "Lift it directly up, high enough to clear the meter bridge, and keep it that high as you walk it away" Paul cautioned. "We have had a few faders snapped off by the lid in the past".

The system drive and effects rack was loaded top to bottom with some very desirable devices. A dual third octave Klark Teknik third octave equalizer fed direct into an old but classic dbx 162 stereo compressor limiter, which did the system limiting task in a simple and very visual manner.

Yamaha's ten year old SPX 990 is still the effects unit that appears most often on riders, and it sat just above a new TC Electronic's M One reverb multi effector. There were four stereo BSS compressor limiters, and four stereo Drawmer noise gates, all available for inserting over whichever channel or subgroup they were needed.

The effects rack had three multipin connectors on back, and Paul pointed out the three headers that matched up. This system meant

that on a tour, you could leave all your effects patching connected into the back of the console, which had a generously sized cable tray built into the back of the roadcase. All you needed to do was connect the three multipin connectors to the effects rack, and it would all be in place, patched and ready. Because we were an audio class, we set up, patched, unpatched and pulled down each day.

At the other end of the room we set up the speaker stacks, which were comprised of Martin Wavefront cabinets. The subs were loaded with a single 18" woofer at one end, with a horn loaded throat at the other end, so the weight distribution was not equal. This made tipping the subwoofer onto its end easy, if you identified the end with the speaker in it, which happens to be where the



Paul Polito with the system in JAS's 12 tonne 30' pan

Sydney training scene, the lighting class program the console for the show, with plenty of haze evident. The bottle is a stage prop. Honest!



# TRAINING

badge is located on the front grille.

Construction of the Wavefront is of the high standard you would expect from Martin, the UK based loudspeaker system manufacturer. The boxes are finished in a kind of Grey scheme, and are very identifiable as a result. Clever wheel dollies protect the front grilles, and I was struck by how compact the top box was.

The little top box weighed under 80kg, and is loaded with a 12", 6" mid, and high frequency device. Martin specialize in horn loading, and have a particular skill with matching components to cabinets. The result with this Wavefront system is possibly one of the best power to weight ratios you can get.

Our two subs and two top boxes per side were powered by 4 QSC PLX amplifiers. These delivered more power than we needed, indeed we were unable to drive the amps into clip (peak) in the venue with the Martin stacks! We met and passed the room trip point (where sound becomes chaotic) and then got to the pain threshold (where sound hurts). It was time to back off the gain, especially since dust was falling from the roof.

Getting our full range signal processed was a job for a BSS Omnidrive loudspeaker management system, which was preset for the Wavefront's. Aside from having the correct cross over points, a small time delay was preset for the components in the top box, which were slightly in front of the vertical 'time zero' point, which was the subwoofer loudspeaker alignment. Perhaps I can explain this another way .... For all four components of the Wavefront speaker system to produce sound that would depart in a coherent manner, they would need to be perfectly aligned vertically. Because they sit in slightly different places in each of the two loudspeaker boxes, they benefit greatly by a little time delay, to bring each component 'in line' with the component nearest the back of the stack - the subwoofer driver.

JAS have a variety of 'stacks and racks' to suit customers - their 'A' system is the Nexo rig we wrote about in late 2002 (See 'Oasis PA'). They have some Meyer MSL-3's too.

The stage monitor system was of the 'Wayloud' variety, which is the house branding that Bruce applies to his own design. Two 12" and horn wedges come in one roadcase, which is designed to open like a clamshell so you do not need to lift the wedge out terribly high. They were bi-amped through Crown MA 24 x 6 amplifiers, which are tailor made for monitors - since the 800 watt channel is ideal for 2 x 12" drivers, while the 325 watt

channel is as much power as you would want for 2 x 2" horns.

A four send crossover network at the top of the amp rack supplied 4 x 2 way feeds for the 4 monitor amps. A separate EQ rack had 8 x 32 band equalisers on board, which were inserted into the group outputs of the Yamaha 32:10 monitor desk. This way, hitting PFL on the group outputs you could monitor yourself what was actually being delivered to the performer's wedge - AFTER the third octave equalizer.

JAS did a good job meeting our needs, all the mic's, cables, tape and accessories we needed were on hand.

## HIGH STANDARDS FROM LX CO'S

We certainly DO recommend the production companies who supply gear to our students. It's evident to them what the quality is like, and it is always very good. During our last run, we used:

MELBOURNE: **Bytecraft**

Thanks to Allan and Jay.  
+61 3 8710-2555

SYDNEY: **Chameleon**

Thanks to Martin and Tony.  
+61 2 9310-5222

BRISBANE: **Chameleon**

Thanks to Brian. +61 7 3854-1511

## The Things People Ask About....

There's no such thing as a dumb question in training. One valid question recently was about audio; *'Where do the amplifiers go?'*

**Answer:** Depends. Many theatres and installations have amplifier rooms located somewhere nearer the stage, but some put the amps up in the bio box or control room. The issues are cable length, heat dispersal and security.

There's a significant signal loss if speaker cables are long, and the impedance of the cable adds to the load. As the impedance increases, the power decreases.

General practice is to put the amps as close to the speakers as possible - some touring systems even fly the amp racks with the speaker arrays, to eliminate large bunches of cables crossing sightlines.

Wherever you have amplifiers you need plenty of mains power - an average stereo system usually needs a 3 phase (3 x 32 amp) supply.

Band 'Supersonic' in full flight in Sydney at the final day technical runthrough. The PA came from Day 2 Night and Compact Monitor Systems, lights from Chameleon.



## 12x 10amp dimmers from a 32amp 3 Phase? Can I do it?

Well the short answer is that you actually *cannot do it* – despite the fact that this is what is installed in most venues across the country. You may have thought that your dimmer, with its twelve 10amp outlets could have all channels run at full capacity at the same time, but if you actually did this (and your facility was wired correctly), then a circuit breaker should trip.

Firstly, a quick course on “What is 3 Phase”...

3 Phase is commonly described as 3 Ø – with the Ø symbol meaning “Phase”. The 3Ø socket as used in most theatrical situations has five connections. One is Earth, one is the neutral, and the remaining three are each one of the three phases of power. If the socket is rated at 32Amp, then each of those three phase “active” wires can carry up to 32A.

Take a look at your dimmer. It (usually) has twelve outlets, each of which would be individually marked by mouldings in the plastic as a “10A” outlet. The internal wiring of that dimmer is such that four outlets are connected to phase 1, four to phase 2 and four to phase 3. Each group of four 10A outlets would add up to 40A of power drawn – if you loaded each circuit to its capacity. This is where the trick lies.

Take a look what happens if you load four channels on one phase with 8 Par cans. Par 64s are 1000W each, so two (they are always used in pairs) would draw 8.3A. Four channels of par cans would be 33.3A – just over the limit for that phase and you would be in danger of tripping the circuit, thus shutting down the dimmer. However, this only happens IF all channels are at 100% at the same time. If they were all run to 96%, then the 32A limit is not exceeded. Alternately, if they always flash sequentially or are never used in the same scene at the same time, then you do not have a problem.

A careful technician would take steps to make sure that the circuit does not accidentally trip if someone brings the channels to full on the desk. Using the example above that technician could (1) “trim” the dimmers back to 96%, (2) limit the desk so that it can only take those channels to 96%, or (3) swap one

of the circuits with one that has a smaller load (and the soft-patching that change, either at the dimmer or in the desk). The formula for calculating the “trim” amount is given at the end.

Of course, you can avoid all of this if you have all 40A 3Ø plugs and sockets.

The most important calculation to remember is:

$$\text{Watts} = \text{Volts} \times \text{Amps}$$

In the earlier example where two par cans at 1000W equals a 2000W load on a circuit, and an 8A limit on a 240V circuit would, according to the previous calculation mean the max wattage would have to be 1920W, how do you calculate the “trim” amount?

When the actual wattage of a circuit (2000W) is higher than the wattage you want to give that circuit (1920W), use this formula to calculate the “trim” percentage...

Desired Wattage Limit (eg: 1920 watts, because that is all the mains you really have) DIVIDED by the actual wattage of the load (eg: 2000 watts), then times x 100. It looks like this:

$$1920/2000 = 0.96 \times 100 = 96\% \text{ trim.}$$

Trimming that dimmer channel at 96% will deliver you a maximum load of 1920 watts to the lights.



Looking dangerous. Tom Warneke during our CPLX course in Melbourne. Dressed to kill as lighting rigger extraordinaire....



12 x 10a = 120 amps, right? But the supply is 3 x 32a = 96a. HELP!

## PA SYSTEM PREFLIGHT CHECKLIST

### Before power up

- Amps turned down
- Desk faders turned down
- All mains connected
- All speakers connected
- All powered speakers 'off'
- Adequate power - check
- Location circuit breakers - check
- All speakers secured
- Worklights in place
- All leads secured

### Before system check

- Desk Eqs all flat
- Desk Auxiliary sends all off
- Input gains and pads uniform
- Phantom power off
- PFL off
- All mutes UNmuted
- Desk faders down
- System equalisers flat
- System equaliser gain at unity
- System comp/limiters at unity
- System comp/limiter ratio 4:1 or 3:1
- System comp/limiter threshold out
- All devices powered - check
- All amps powered - check

### Before Sound check

- All personnel advised of loud sounds
- Affected personnel vacate room
- Low level signal run through system
- Signal present at all amps
- All speakers working normal'y
- Your reference CD run up
- System runup to amp limits
- All speakers working to limits
- Comp/Limiter threshold under limits
- Desk output gain noted at limits
- Room 'trip point' noted
- CD turned off

### System Sound Check

- PA 'tuned' using vocal mic at desk
- PA 'tuned' to open stage mics
- Monitors 'tuned' to mic on stand
- Monitor feedback point noted
- Monitors set 2dB under feedback
- All inputs connected, noted
- Line check each input at FOH
- Line check each input at Monitors
- Set each input gain using PFL meter
- Set EQ on each input
- Set desired levels
- Note maximum levels before feedback

Pilots use checklists all the time - and live audio has some similarities to flying!

This checklist is what our students use to get a system ready for the mix. There's always a few things that can be substituted and a few things that can be left out.

The fundamentals are to be ahead of the situation, so becoming thorough in your methodology is the best way to start.

Too many times we hear of frantic searching for faults when the casuse ends up a device not turned on. So check all those power on LEDs are glowing, everywhere!

A note about 'Room Trip Point'. There are three maxium level conditions we search for when doing a system check. One is amp clipping, we run under that level. Two is where the room acoustic 'collapses'. We call it the 'trip point'. Three is the point of feedback. We run under that level too.

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STUDIO 301  
BYRON BAY

# Tom's Byron Bay dream

By PAUL SHAW

School of Audio Engineering chief Tom Misner's expansive vision for his school's world headquarters is fast becoming reality at Belongil, near Byron Bay.

The \$25-million SAE college at Belongil will offer courses in audio, multimedia and digital film and television and it will be the biggest multimedia college in the world, according to Misner.

With accommodation for up to 500 students, it also will be the largest private college in Australia.

The 14-acre main site will have accommoda-

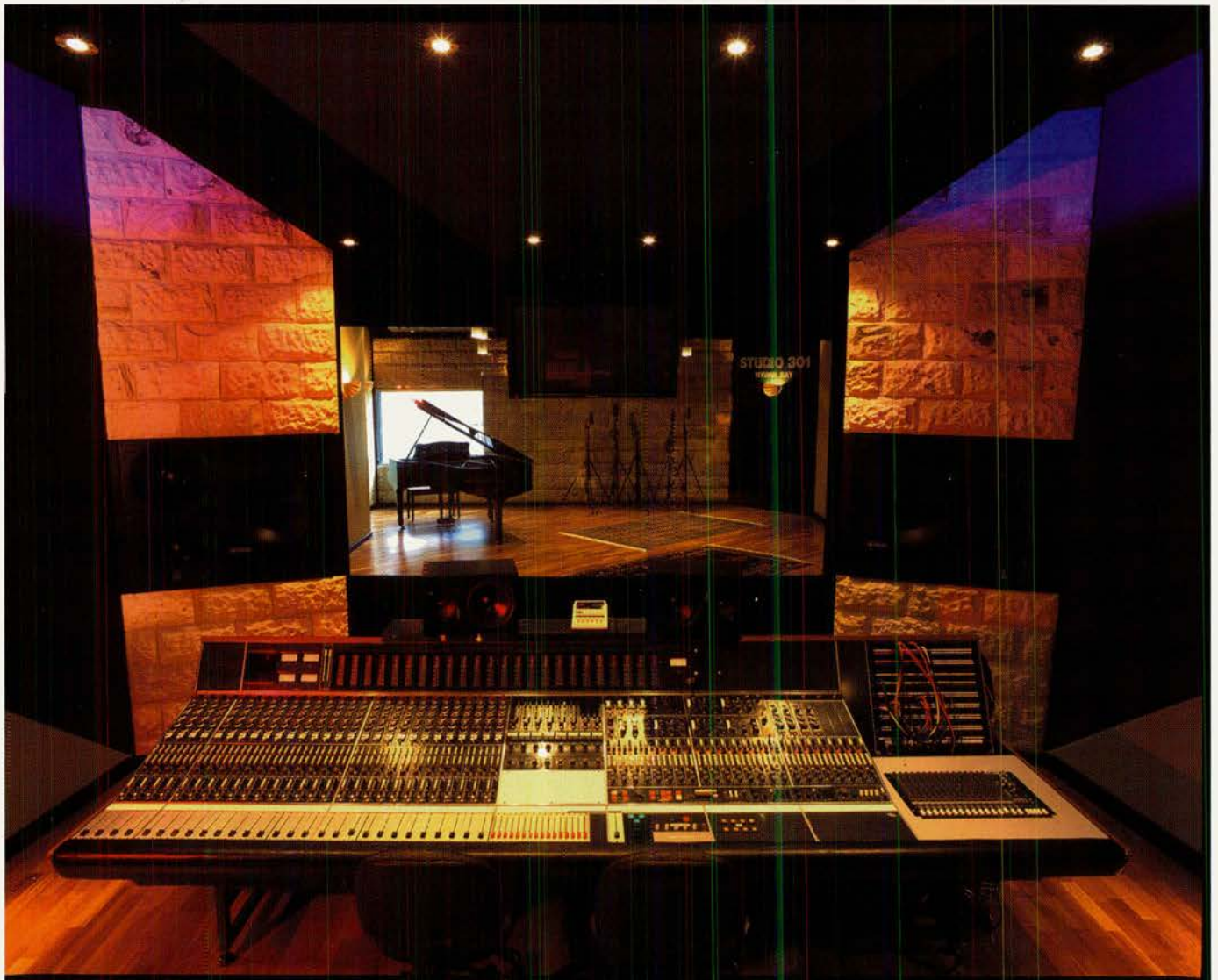
tion for about 65 students, 31 studios of various types, direct satellite feeds, more than 150 computers all with ProTools audio recording and editing, fibre-optic networking and other state-of-the-art equipment.

SAE, which has colleges worldwide with more than 25,000 students and an annual turnover of more than \$1 billion, is the world's largest purchaser of audio equipment.

It is in the Top 10 list of Apple Macintosh customers and Misner says most of its computers are renewed every six months.

A team of more than 40 builders and engineers are at work, turning his designs and dreams into reality at Belongil.

Tom is recreating the great studios with his rivers of cash from SAE's profits. His 301 complex in Sydney is a world class facility, similar in name only to the old EMI studio he purchased. Now he is remaking Festival's Studio, albeit 650 miles north of the closed facility. He has purchased Festival's studio equipment.



## TOM'S BYRON BAY 301



Misner is intimately involved with every stage of the development from conception, through design, to implementation.

"I designed everything: the school logo, the front gates, the buildings and, of course, all the acoustics," Misner said during a two-hour tour of the college.

"It all has to happen the way I want it."

Obviously, detailed architectural design for a facility of such a size is too much for one person.

Once he has sketched the ideas that he has, he hands them over to architects and designers to fill in the detail.

Everything must stand the scrutiny of his European eye for quality and that includes not only the studios, but also accommodation and facilities.

"The accommodation has been built to European standards and I have designed all the buildings to be able to withstand a cyclone," Misner said. We have enough back-up power generation to supply the entire town of Byron Bay in an emergency."

One of the highlights of the school will be the Studio 301 Byron Bay Festival Room.

"This is a traditional commercial recording studio, with the difference that all the assistants will be students," Misner said.

"I learned to engineer at the old Festival studio, in Sydney, when it was regarded as the top studio in Australia.

"They were going to pull it down, so we moved the whole studio, with most of its classic equipment, to Byron Bay."

Misner said the Festival Room and a house with swimming pool that is on site would be for rented about \$900 a day.

"I've done that to help people; to help bands get started," he said. "Rooms like that should charge about \$1500 a day. This is my way of contributing to the music industry.

"All the other studios on site will be for the exclusive use of the students, but the students also will be able to bring in bands to record free of charge as part of their practical work."

The centrepiece of the Festival Room is the 1972 Neve console that was used to make many of Australia's most famous recordings.

The studio is a combination of state-of-the-art gear such as its Genelec monitors and extensive ProTools installation, older favourites such as a pair of Studer A820-24 reel-to-reel recorders and classic gear such as Urei 1176 vintage mono valve compressors.

Misner said the Studers were for 'back-up', in case someone preferred analogue tape to the ProTools digital system.

Preliminary Specifications for Studios 301 Festival Room at Be.ongil headquarters of SAE

Control Room: 39 SqM  
Studio Live Room 1: 75 SqM  
Studio Live Room 2: 14 SqM  
Studio Live Room 3: 14 SqM  
Games Room: 75 SqM

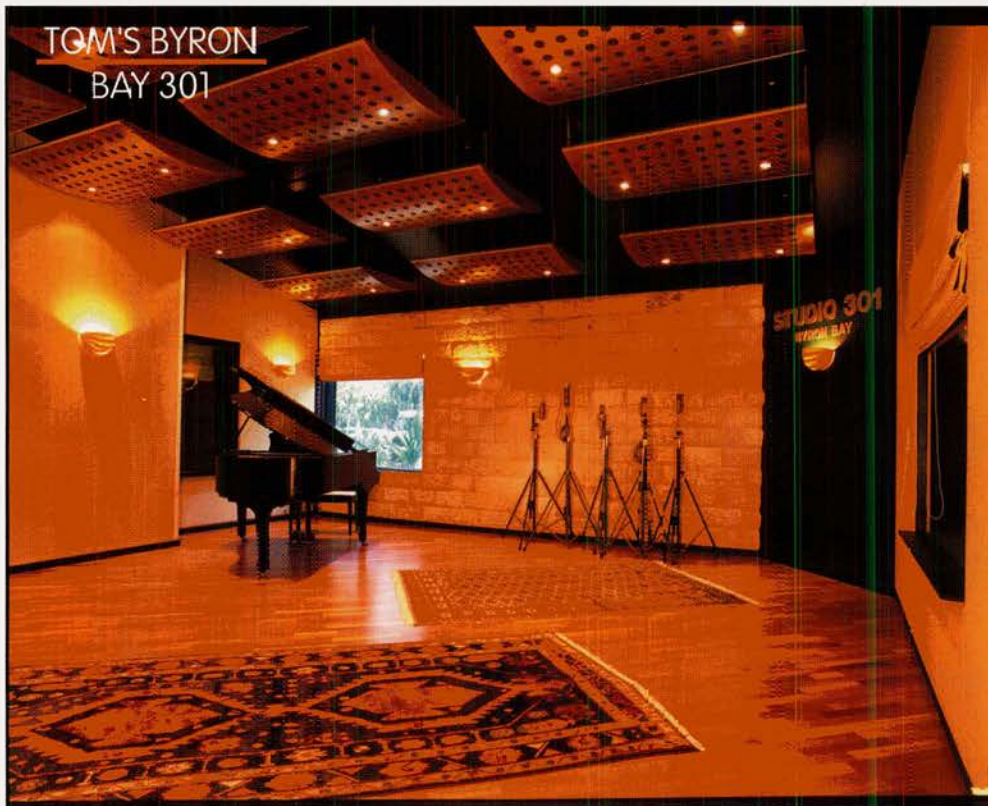
### Equipment List

(Control Room):  
Neve Mixing Console 28 in 16 Group 24 Monitor  
28 x 1081 Channel Modules  
6 x 2254 Compressor Modules  
Protools Mix Plus w 4x 888-24 for 32-Track Recording  
Protools USD  
Genelec 1039  
Genelec 1031  
Yamaha NS 100r  
1 x Auratone 5C Cube  
Crown DC300A Power Amplifier  
Bryson 4E Power Amplifier  
42" Plasma screen

### Tape Recorders :

Sony 3348  
2 x Studer A820-24

**TQM'S BYRON  
BAY 301**



**Outboard Equipment:**

- 3 x UREI 1176
- AMS RMX Reverb
- AMS DMX Delay
- Pultec Valve EQPIA
- SPL Valve EQ
- 3 x Drawmer 201 Gates
- 2 x DBX160X
- 1 x Distressor
- UREI LA3A
- APHEX Expressor
- 2 x 263DBX Compressor
- Manley Stereo Compressor
- SPL Gold
- UREI 545
- Eventide ULTRA Harmoniser
- TC M-ONE
- YAMAHA REV5
- EMT 140 Stereo Plate
- EMT 240 Gold Fold
- AKG R20 Reverb

*List supplied by chief engineer Steve Crane.*

The largest live room at the college still is little more than a concrete slab, but when it is complete it will be part of a full multimedia studio with TV/video gear, an SSL console and features to increase its aesthetic appeal.

All courses at the college are VETAB accredited and they are approved by Southern Cross University (SCU) at Lismore and Middlesex University in Britain.

"Asian students want Australian degrees, so they will be able to leave here with a degree from SCU, while the European students will be able to work for degrees from Middlesex University," Misner said.

"We have managed to fit the degree courses into two years by teaching for 50 weeks of the year.

"We have recording gear way beyond that of any university on the planet and in fact we have more equipment than all the other university audio departments in Australia put together."

SAE Byron Bay is due to take its first intake of students in October 2003 and there will be about 400 places for overseas students and 100 places for Australian students.

"I own the suburb behind the school and apart from the on-site accommodation, there will be another student village there too," Misner said.



# 250 watt moving yokes COMPARED

CX invited all of the main distributors of moving lights to participate in a shootout of moving-head fixtures with 250W to 300W lamps. We wanted to see how easy it was to rig, patch and use each of the lights, and test how loud they run and how fast they move. With only one day to rig, patch, run, test and bump-out all of these lights, there was a lot of work to do in a very short time. John Grimshaw was the ringmaster. Here is what he found.....

We accepted early on that the individual specifications for each unit will vary quite significantly. Things like how many gobos or colours they have, and additional features like movement smoothers, lamp-life extenders etc could not be compared against each different brand, so we did not attempt to really investigate these, except to try and make sure each unit was preset to a standard operating mode.

Unlike the audio comparison run on the same day, none of the tests performed were "subjective" – in other words simply an opinion of a tester. All tests had a measurable, definable outcome.

One of the first and most telling results of any shootout like this is exactly what fixtures turn up. With any product where there is a limited market and a vast array of options for the purchaser, invariably there will be some distributors that keep their stocks of any type of lamp low so that they do not have so much capital tied up in unsold stock. This makes good sense to them from a business point of

view, but to the user and potential purchaser of these lights, that means that after sales service (or emergency replacement if one dies during a season) could be a little slow.

While the absence of some brands from this shootout does not prove the above to be true for that particular brand, the presence of the ones tested certainly indicates that there is a good chance for good service support.

## Rigging the Lights

Rigging was the first stage of the process of checking out the light. By far, the quickest and easiest to rig were the two Martin Mac lights. Supplied in their generic roadcase, these fixtures have a "quick-attaching", dual hook clamp plate. Fit the plate and lift onto the bar – rigging complete in seconds.

The other fixture with some well made clamps was the SGM Giotto – also with specialised clamps, this unit was equally as easy to rig as the Macs. All of the rest either had simple holes for stand hook clamps to be fitted (be sure to get two matched height ones!), or they



Martin Mac250



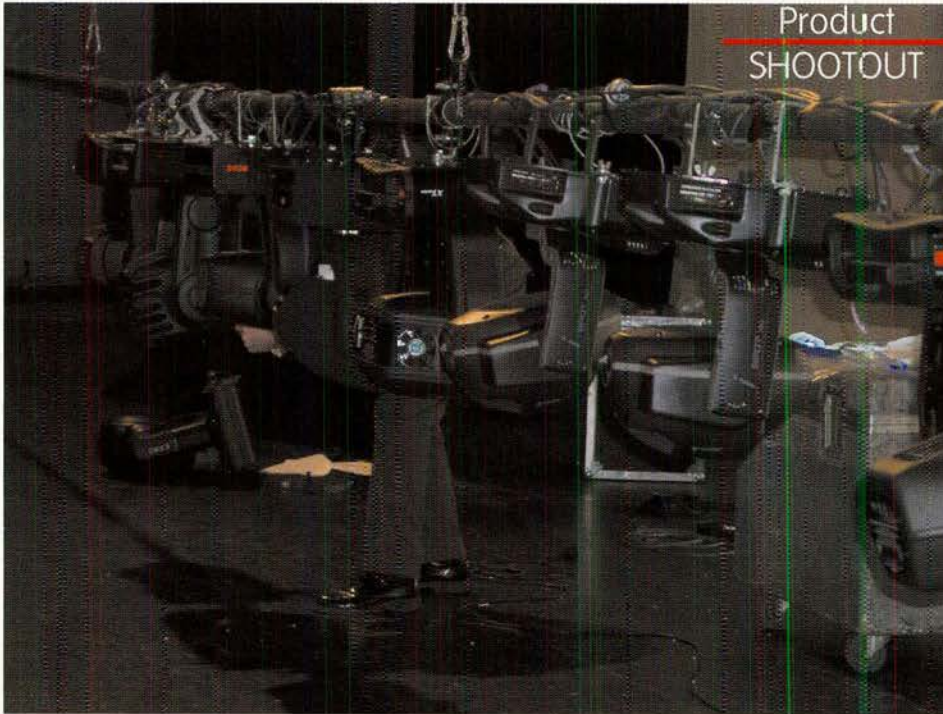
SGM Giotto Spot 250



Robe MSZoom 250 XT

Fixture	Hanging	Orientation on bar	DMX Connection	Noise @1m	Noise @100mm	Tilt Operation Quiet?	Speed
Coemar Prowash 250 LX	2x Hook clamps and nut/bolts to use in unthreaded hole	180° only	3pin XLR	56	70	-	Fast
Martin Mac 300	1x quick release attachment plate, which has 2x Hook clamps and nut/bolts	90° steps	3pin XLR	nct measurable	57	Quietest	Slow
Coemar Prospot 250 LX	2x Hook clamps and nut/bolts to use in unthreaded hole	180° only	3pin XLR	56	59	-	Fast
Martin Mac 250+	1x quick release attachment plate, which has 2x Hook clamps and nut/bolts	90° steps	3pin XLR	nct measurable	58	Quietest	Slow
PR Pilot 300	2x attachment plates (fixed by two allen-key bolts and threaded holes into unit). Needs a hook clamps and nut/bolt	180° only	3pin XLR	55	68	-	-
Robe MSZoom 250XT	2x Hook clamps and 3/8 bolts to use in threaded holes	90° steps	3pin XLR	nct measurable	56	-	-
Robe Spot 250XT	2x Hook clamps and 3/8 bolts to use in threaded holes	90° steps	3pin XLR	55	71	-	-
SGM Giotto Spot 250	2x specialised quick-release hook clamps	90° steps	5pin XLR	nct measurable	not measurable	-	Slow

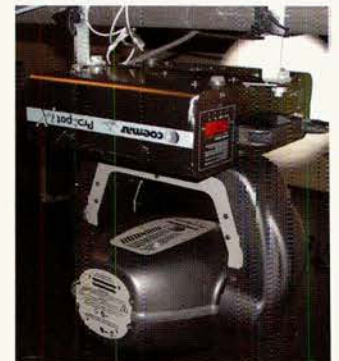
dbSFL - "A" weighted



PR Pilot 300



Robe Spot 250 XT



Coemr Prospot 250 LX

had threaded holes for the clamp. The Robe ones kindly designed their fitting to have 3/8 whitworth threaded holes (the standard bolt used in Australian venues for hanging lamps) Unfortunately, the Oly3 had what appeared to be M8 threaded nuts – which meant that the unit could not be hung for the test and was therefore disqualified from the shootout.

The PR Pilot 300 had special raised plates for the hook clamps to attach. These were attached to the unit by round edge, hex-head bolts, which would need to be removed if placing the unit on the floor – worth remembering because not many technicians walk around with hex sets (alan-keys) in their tool belts!

Once hung, all units were supplied with power and placed in the DMX loop. In the original spec for the test, each distributor was told that if their unit did not have 5pin DMX connections as standard, then they must

supply both a 3to5pin (male to female) adaptor and a 3to5pin (female to male) adaptor with the unit. As it turned out, only one of the tested units came fitted with 5pin as standard, so that we're all connected using 3pin data cables, with a 3to5pin (male to female) adaptor used to connect the SGM Giotto at the end of the DMX chain.

### General Noise Testing

Each unit was individually powered up and run for an hour to raise operating temperatures. Then the amount of noise each one generated without movement was measured.

The fittings were individually manipulated to get them to make as much noise as they could – adjusting pan/tilt so that any fans on the head lined up with fans on the ballast and checking for options in the setup to manually set fans to run. You can see the results in the comparison table.

It is not easy to describe sound levels in a

Par. Operation	Quiet	Speed	Lux @3.8m	Lamp Type	Power Consumed	Colours	Colour Correction	Beam Size, Effects	Other Features	Optional Extras	Other Information
-	-	Fast	4220 (at 3°)	HSD/MSD 250	480VA	CMY + 6 colour wheel	on c/wheel	14-31° manual zoom + 41° wide mode	Rotating beam shaping glass + flat field filter	DR1 (remote display replicator)	self test of optic sensors during reset
Quietest	-	Slow	105±0 (at 18°)	MSD250	300VA	CMY	optional dichroic filter	18° standard	variable frost filter	optional 59° diffusion lens	
-	-	Fast	5480 (at 18°)	HSD/MSD 250	480VA	1 wheel with 12 colours	n/a	12/15/18°	6 rotating gobos, rot. prism, remote focus	DR1 (remote display replicator)	Power factor corrected
Quietest	-	Slow	4170 (at 17°)	MSD250	300VA	1 wheel (12 colours plus open)	n/a	User config-14,17,21	remote focus, full control remotely	wide angle lens kit	
-	-	-	1760 (at 12°)	HTI 300W/DX	500VA	1 wheel (9 colours plus open)	n/a	12°, 7 rotating gobos, prism	Stand-Alone automatic mode Sound Activation		DMX512: 3Ch +2 for Hi Res. Pan/Tilt
-	-	-	1350 (at 15°)	MSD250/2		7+3 colours (on two wheels)	n/a	multistep zoom 15/18/24/24/26°	1 static, 5 rotating gobos		remote focus, strobe, in built macros
-	-	-	n/a	MSD250/2		11 dichroic colours	n/a	15°	remote focus, 6 indexable rot. gobos	12 or 18° lens	3facet pan, strobe, 14-16DMX channels
Quietest	-	Slow	3220 (24°) to 10060 (9°)	MSD250		8 colours plus Woods filter	2 CT filters	Zoom 9-24°	2 rot. prisms, 4 fixed gobos, 8 rot. gobos		Flicker free elec. ballast, variable frost&iris

## 250w MOVERS SHOOTOUT

print publication to a lighting technician, but one way to describe the results is that they ranged from the silent to the kind of noise levels of an operating photocopier. This test was important because one of the main reasons why this type of light has yet to break into the world of theatre and drama is that they have always made too much noise in the past. In addition, the "silent version" fixtures that any particular manufacturer makes are typically the large, high output (and expensive) units rather than the more affordable, and less bright ones.

The results of this test showed there are two lights that would be most suited to ultra-quiet environments – the Martin Macs and the SGM Giotto 250, with the latter being so quiet in general operation (excluding movement) that our instrumentation was not able to measure any noise at all.

It is worth noting that the Giotto's fans are designed to only run when heat reaches certain levels, and the speed they run depends on the temperature of the lamp. Noise level testing for all units waited until they had been running with lamp on for at least one hour.

### Patching

Next came the long and complicated process of soft patching the lights and the Jands Hog 1000 (special thanks to Jands for supplying this desk – without which this whole shootout would have been mind-bogglingly difficult to execute).

All of the lamps tested were found in the latest version of the Hog operating system, with the exception of one – the PR Pilot 300.

I was not able to spend the time creating a new Hog fixture profile, so a bunch of standard desk channels were created and used to control the unit.

No unit was particularly difficult to soft patch, and I was able to set this up without referring to the user manuals for each light. With a little bit of time and fiddling, all units were under the control of the desk.

Testing revealed another disqualification due to technical issues outside of the control of the shootout – the Robe Spot250 was not able to remove an effects wheel from the light path despite numerous re-setting. As there was not enough time to fault find inside the unit, and another Robe unit was working and still in the shootout, the faulty one was removed from the testing at this point in the shootout. It is worth noting that this is not a problem I would consider serious – as this kind of fault occurs with any moving light. In transit, a plug could fall off or a drive belt could slip, and this was the likely cause of the problem in this case.

### Movement Testing

With all of the lights under the control of the desk, a number of preset positions were plotted – Pan to OP and Pan to PS (180deg of movement), Tilt 90deg and Tilt 270deg.

With each of these presets in place, all units were simultaneously panned through 180deg continuously, with the "loudest" units eliminated until only the quietest ones were left. The same was done to identify the fastest and the slowest movers of the group. Then, the same testing procedure was done using the Tilt control.



Martin Mac300



Coemar Prowash 250 LX

Fixture	Price (each)	Price (two in a roadcase)	Distributor	Phone	Web
Coemar Prowash 250 LX	\$ 4,142	\$ 9,439	Coemar De Sisti Australia Pty Ltd	+61 3 9467 8665	www.cdaust.com.au
Martin Mac 300	\$ 5,999	\$ 13,497	Show Technology Australia	1800 646 666	www.showtech.com.au
Coemar Prospot 250 LX	\$ 4,210	\$ 9,575	Coemar De Sisti Australia Pty Ltd	+61 3 9467 8666	www.cdaust.com.au
Martin Mac 250+	\$ 5,999	\$ 13,497	Show Technology Australia	1800 646 666	www.showtech.com.au
PR Pilot 300	\$ 2,299	n/a	LSW	+61 2 9568 2100	www.pr-lighting.com
Robe MSZoom 250XT	\$ 5,700	\$ 12,000	ULA - Universal Lighting and Audio	1800 648 111	www.ula.com.au
Robe Spot 250XT	\$ 4,500	\$ 10,000	ULA - Universal Lighting and Audio	1800 648 111	www.ula.com.au
SGM Giotto Spot 250	\$ 9,000	\$ 19,000	ULA - Universal Lighting and Audio	1800 648 111	www.ula.com.au

The results of the testing were that the units that tested with quiet general operation also had quiet and slow movement. Meanwhile, the louder units in the general test also had louder movement noise, but were significantly faster than the quiet ones. For quiet operation, the SGM Giotto again stood out, though the testing indicated that its tilting noise was a little noisier than the Macs.

### Light Output

The final test was the light output. With the absence of a device for measuring colour temperature, a colour description was noted for each unit, and a photograph taken of all of the projections so that the results could be demonstrated here. Care has been taken with this image to ensure it represents a close match to the actual results.

### The Results... Profile fixtures

All who attended the shootout were very impressed with the SGM Giotto on a number of fronts – and this surprised some of those present. Quiet, bright and smooth operation made this unit stand out on the day – certainly ideal of theatre/drama applications, which does justify its price against the

cheaper competition. The other standout was the Martin Mac250, which nearly almost matched many of the SGM's abilities – though the Mac did not have a zoom feature.

### Washes

It was unfortunate that there were not more of these at the shootout on the day, but the Martin Mac300 was the hands-down winner between the two units in the features tested.

Very bright output and very smooth image combined with quiet and smooth operation made this a very impressive unit. The fresnel lens at the front of the unit is a very high quality piece of glass, with very fine concentric rings to reduce "artefacts" in the projected image.

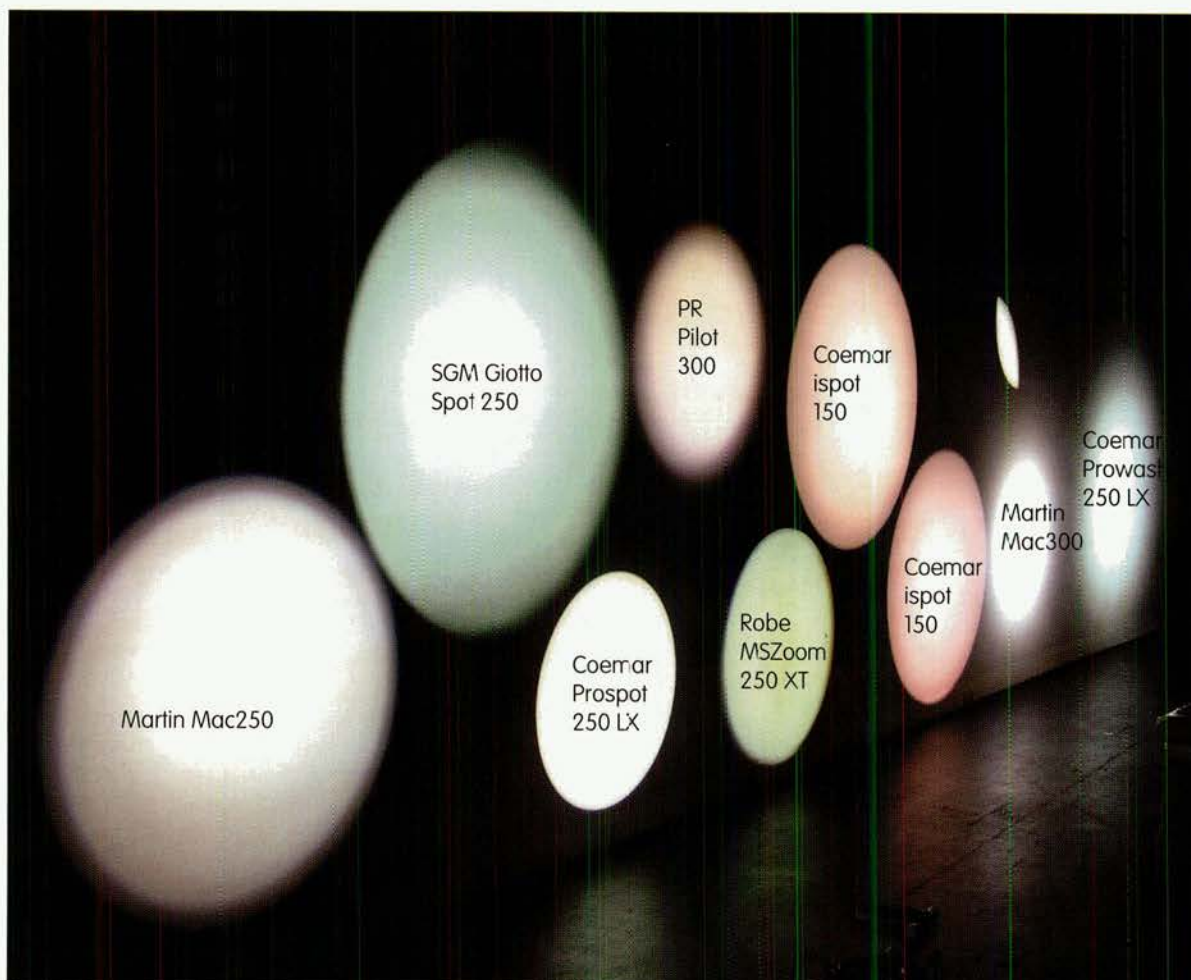
### NOTES....

Each manufacturer was asked to supply any moving head fixtures that used a 250W to 300W bubble, and that the shootout was to look at both profile and fresnel types.

They were also told to supply rigging hardware for hanging on a standard pipe, safety chair and user manual.

Coemar also supplied two i-spot 150's, because of the perception that they could match the higher output units. While these were rigged, and some testing carried out, they have not been included in this shootout.

We specifically included the 300w category out of respect for Clay Paky, but didn't receive any of their fixtures, presumably as they were out of stock. The test was done at short notice due to venue availability.





By Peter Patrick

# Noise regulations and their impact on the average gig

Does this sound familiar ??

"These heavies with a Tandy SPL meter keep harassing me when I'm doing the mix at the club! They've got their dumb meter set to dBc,- fast and won't let me go over 95. Don't they know the safety rules use dBa and a short time over the limit doesn't hurt.? How am I supposed to build a decent mix when the drummer on his own brings in the constabulary??"

Well let's see what drives the "noise police" and where their ammo comes from.

## Starting with Health & Safety ....

Noise limits imposed in entertainment areas have nothing to do with H&S regulations. You can have your band as loud as you like it provided you & the venue operator doesn't mind being sued. Venue operators are sued, successfully at times, by staff required to work their shift in the SPL's you and the band generate.

It's an SPL vs Time sort of thing.

85dBa averaged over an 8 Hour shift is the limit and the time gets halved for every 3dB over 85. That means workers get a whole day's maximum exposure in 15 minutes at 100dBa. There are other stipulation's like a maximum peak of 140dB Lin (flat , not weighted) and so forth because there are more ways humans can wreck their hearing than a dog with two bladders can humidify in a week.

Some venues impose SPL limits for the sake of employees ... like maximum 91dBa for a 2 Hr shift then move the employee from the cabaret to the restaurant. None of this has anything to do with the usual source of the Noise Police anxiety.

## It's all about environmental issues.

Environmental Noise controls are written, at least in my State, around background noise as measured in octave bands. The usual Sound Level Meter that consultants use measures statistical levels from 31.5 hz to 8KHz. Setting the statistical stuff aside the notion is that entertainment becomes offensive to neighbours when the entertainment noise impact exceeds the general background noise by 8dB ... in ANY octave band.

So how are these crazy limits arrived at?

The limits are all about a building's ability to contain sound.

The consultant sets out to measure the

difference in SPL measured inside the building and outside at the nearest affected residential property boundary ... in each octave band. The process involves setting up a reference sound field, usually fast & hard rock music, in the venue to simulate a band. The inside SPL is measured to ensure it's loud enough to meet the standard set by law, usually about 110dBa at whatever level that translates to in the octave bands. The octave band measurements can be, and indeed are, translated into dBa, dBc or dBLin by mathematical process.

Next our intrepid consultant leaves the music running and heads outdoors to take some measurements at a few neighbours property lines and tabulate the results. The result of all this measurement and extrapolation is an SPL limit, in dBc – Fast, that the venue will have to stick to in order to avoid exceeding the environmental limits for the shift-worker trying to sleep next door.

Some buildings with sound locks at the entry and exit, concrete walls & ceilings & double

## READER'S LETTER

Last night I did a mostly audio gig for a nine piece band in a venue that enforces a maximum 100dB noise limit which is measured by a bar or security person wandering around with a Dick Smith SPL meter on the 'C' weighting and fast action.

While I was happy to comply as much as possible I found it very hard to get a nice balanced mix of the two vocalists against a three piece brass section, bass, drums, keyboards and guitar with enough punch to motivate a middle to older aged crowd (not usually a hard task).

It isn't a large room and is fairly dead. Clarity and dynamics suffered because I wasn't sure what could and couldn't be a bit louder for short periods when it was needed.

Things were complicated further by the fact that I was doing a side of stage mix since the venue doesn't like leads laid out across the mostly empty dance floor, nor do they help with carpet strips or mats, besides which "the FOH mixer is unsightly and blocks sight lines"!

In the end I took the brass and bass right out of the mix unless they had solos, the guitarist was only in when she featured and I only ran an overhead on the drums because the drummer is solid but timid on her toms and cymbals.

Keyboards were all over the place depending on what sound was used and when the bass player switched from electric to acoustic upright I had to put it back in and then out again when he switched back.

I set my system compressor to limit at a level which every-



The meter at the right is showing an A weighted SPL reading at 47.8dB(a), whereas at left the same sound is monitored, but with a C weighted reading. It's higher at 54.4dB(c)



glazed windows AND air conditioning can get away with some respectable SPLs on the inside. A plain ordinary house converted into a club however, is likely to be proscribed a fairly low maximum SPL .... In dBc – fast.

**So what's the dBA / dBc thing mean to the average gig?**

Let's look at the graph. DBa reflects the sensitivity of the human ear at low SPLs and is used in all H&S regulations. Our ears are most sensitive at about 2KHz and it makes sense to regulate health issues around this sort of weighting curve. (What's a weighting curve? It's the response curve of an EQ that's switched in front of the measuring device in a

popular smiley face graphic EQ. Then we apply a correction for the fact that the kick drum is the loudest before we mic it up and the bass player is too loud with his quad stack. You can see there's a lot more LF energy in the room than anything else.

Our sample gig may read like the table above, and a sound level meter will give different readings depending on which weighting curve is selected.

The table below shows various frequencies measured on a simple, single octave, real time analyser, at a moment in time.

But the sound level meter will read a sum of

31Hz	63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
90dB	105dB	91dB	85dB	80dB	78dB	75dB	70dB	67dB

Linear dB readings at a given moment, measured using a single octave real time analyser.

sound level meter).

Take a good look at the dark blue curve and you will see it's about 40dB down a hole at 31.5Hz. This means the big bottom end we all know can never be too loud isn't going to bother our H&S limits if it's not registering on the Richter scale.

Now take a good look at the C weighting curve. It's only 3dB down at 31.5 Hz. That means the same LF grunt that our dBA meter was largely ignoring is now driving the dBc meter into orbit.

dBc readings are much more sensitive to bass than dBA.

**So why use dBc?**

Because it doesn't ignore the LF energy like dBA does. LF energy has a nasty reputation for going through walls that would stop Superman. (Pretty amazing considering it all comes from a paper speaker cone) Our shift-worker next door will find it hard to sleep if the Thump, Thump, Thump of your PA system is 30dB above the general 'Thrummm' of the local background noise.

Now let's think about the spectral content of the noise we make with our triamp system with four double 18 subs a side.

For starters the yellow line in the graph represents what the sound system manufacturer had in mind ... a flat response from DC to daylight. Then we add the light blue (cyan)

frequencies, depending on its weighting curve!

Using the table above, dB Linear would read at 105.4, dBc would read 104.6 and our H&S man with his meter set to dBA will read 85dB!

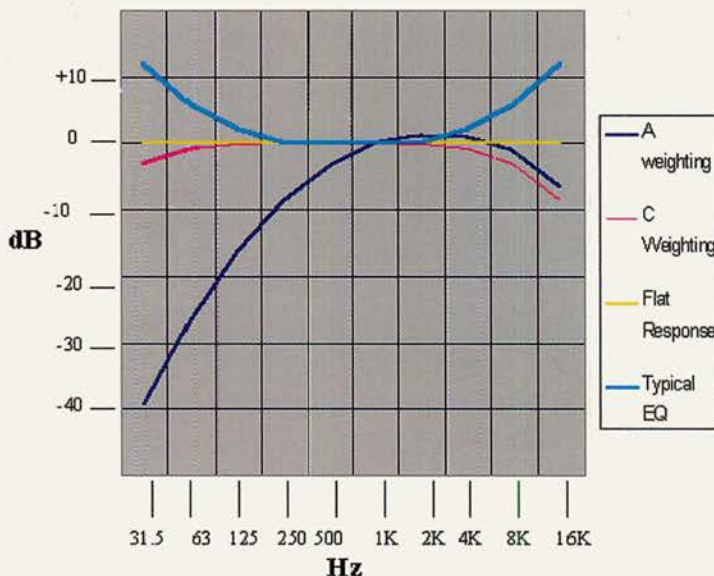
So now we have a situation where our gig is not causing a problem with the H&S regulations but still has the noise police down on us like the proverbial ton of bricks.

**So what are these guys so stressed about anyhow??**

Remember that limit that the consultant extrapolated in dBc-fast?

It's been written into the licence agreement. If the neighbours complain and the Liquor Licensing Commission people measure noise levels outside that exceed the limit, the venue pays a fine or worse still, loses its licence for amplified sound.

That would mean you're out of a job!



one concerned with the SPL meter seemed happy with and basically walked away, meanwhile the paging system could be plainly heard from the ceiling speakers above the dance floor! I spoke with the musicians at every break and they did their best to play at a moderate level but the singers still wanted more foldback which I couldn't give them because that would make the Front of House sound even worse.

It was very frustrating.

Next time I'll only take in a vocal system.

I remember the limit meters they used to have in some rooms which did horrible things like turn off the power if you breached a certain limit, set by who knows what authority, but at least they were consistent (unless someone had gaffered over the microphone!).

Can we at least have a set way of measuring these limits as they apply to the OH&S code instead of each venue applying their own solution?

Maybe CX Training could run a course for these would be "Sound Police". Explain what a meter actually measures, where measurements should be taken from and what kind of variations are allowable given that the set limits are an average over time and not an instantaneous absolute.

I'm no expert in the field of audiology so I don't want to approach the venue management because I may jeopardise the next few dates this band has at the same venue, nor my own chances of working there again.

I just want every-one to be clear on what is and isn't conducive to a good night out.

Rod Phillips



### So why doesn't the venue owner fix it?

I'm afraid it's the same reason vocalists don't all sing through Neuman mics: money.

Cash strapped muso's boil guitar strings to avoid buying a new set. DJ's cook sound systems because they can't afford one that's big enough.(praise the Lord!) and venue operators install SPL limiters or Heavies with Tandy Sound Level meters because the cost of building modifications is beyond their means.

There are a few small tricks that Sound System designers can resort to like beam steering the LF energy away from the wall that faces the shift worker who needs his sleep. Another trick is to place all the Disco's speakers just above head height so the punters have their heads in the sub woofers. ALL clever tricks have their limitations..... the laws of physics which, thankfully, are beyond the Parliament's jurisdiction.

So if you're in a venue that stiffs you with a silly SPL limit ... changing venues is your only weapon!

## HOW LOUD?

The [www.nonoise.org](http://www.nonoise.org) site carries these OSHA (USA) recommendations for exposure to noise without ear protection.

dBA	Hours	Min
90	8	
92	6	
95	4	
97	3	
100	2	
102	1	30
105	1	
110	0	30
115	0	15



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# How Loud is LOUD?

## Beauty is in the ear of the beholder, says Duncan Fry

(Fry returns to write for CX by VERY popular demand!)

I received some bad news last year, in the form of a letter from the EPA telling me that the dream machine, the purple 1969 Dodge Dart 340 4 barrel convertible was too loud. It had been reported by the police as I was driving to work along Nepean Highway one morning, and I was now being ordered to have it tested and produce a certificate of compliance within 2 weeks.

I remembered the occasion.

There was what looked to be a community minibus ferrying some old folks somewhere, idling along at 45k while hogging the fast lane of an 80k piece of road. Spotting an opening next to me, I flicked the land yacht into the next lane, kicked the trusty TorqueFlite down to second and fanged it past the bus. What's the point of having an obscene amount of power available at the jab of a pedal if you don't use it, I say.

It was only when I looked in the rear vision mirror that I noticed the POLICE sign emblazoned across the front of the minibus!

And, as every driver of a purple convertible knows, you pass a police vehicle at your own risk!

"96dB at half a metre for pre-1983 vehicles," said the EPA when I rang them, "90dB for later."

Well, surely I couldn't be much over that. I thought, so during lunchtime at work I pulled out the trusty Radio Shack decibel meter and got one of the guys to rev the engine for me. Hmm...just one side of the twin 2" system rated 108dB. Let me see, in 3dB steps from 96 that's 99, 102, 105, 108...whoops, five times the limit!

So it was off for a visit to the local Mighty Mr Muffler Man franchise.

"Ah, a bit loud is it mate?" said the agreeable mechanic behind the counter, after I had explained my predicament. "Let's have a look under there." He slid under the car and poked around.

"There's the problem," he announced, banging a muffler. Big chunks of brown metal fell out onto the ground. "See - the mufflers are rooted." He revved the engine. Even more chunks blew out of both mufflers, sounding like a constipated Godzilla. I left the vehicle with him and got a lift back to work.

A couple of hours and surprisingly only \$180 later, the car was ready, purring like a kitten on steroids and safely registering 95dB at half a metre, @ 3000 revs.

It started me thinking, though, how loud is loud? To me the car had a satisfying full-throated rumble that removed any need for a car stereo (after all, what else could sound as good?). I had to admit though that to others it probably sounded annoyingly loud, a physical manifestation of being either a petrolhead or an old fart with a midlife crisis. (Probably both, Dunk. - Ed)

It's the same with music. The stuff that you like, you can happily listen to at ear bleeding levels, whereas stuff you

don't like, ie. Rap, is painfully loud at well under the safe level.

I remember reading the results of a study done a few years ago that appeared to confirm this. After reading the article I cut it out and stored it away safely, but a thorough search of the legendary Fry archives has failed to find it. I expect it will turn up sandwiched between Hitler's diary and Howard Hughes' will.

Anyway, a team of doctors had done a study of 1,000 musicians, to compare their actual hearing loss to their predicted hearing loss, based on regular exposure to onstage levels well over 100dB for several hours at a time. Although they had all experienced some degree of hearing loss, the amount was far less than the doctors had expected. A similar test of jack hammer operators and other construction workers showed far more hearing loss, leading the doctors to suggest that if you like what you are hearing, it does far less damage than if you don't.

It's certainly food for thought, and shows that just as 'oils an't oils', perhaps 'dB's ain't dB's'.

Indeed, there are occasions when less volume can be worse than more, like when your neighbours have a party and don't invite you. The insidious 'thump thump thump' of faintly heard Sub Bass is far more aggravating than the substantially higher levels (of both music and alcohol) that you would be experiencing if you had been invited!

Last week I sold the convertible, anyway, and am currently driving a tiny 3 cylinder Suzuki Swift. It is a bit of a change, what with each cylinder of the Dodge being bigger than the complete Suzuki engine! However it makes up for it by using less petrol every week than the convertible used every day.

My daughter noticed the change, too. When I started it up to take her to school, she said "It sounds like a lawnmower!" Clearly something had to be done to restore my standing in the neighbourhood, so it was back to Mighty Mr Muffler Man to change the muffler to something a little more sporty.

He's just about got it right, since I can almost hear the car stereo when it's idling. Judging from the exhaust volume, I think he has just sawn off the old one and left it at that.

Finally, I should disclose that I reached a major birthday milestone (kilometre-stone?) last week. It's too depressing to say what the number was, but if you think of those endless 'Pensioner's Insurance' radio and TV ads, that should give you a pretty fair indication.

When I was young, it seemed as though every old person existed solely to give me the shits. I hope to continue this rich tradition!

**I remember reading the results of a study done a few years ago that appeared to confirm this. After reading the article I cut it out and stored it away safely, but a thorough search of the legendary Fry archives has failed to find it. I expect it will turn up sandwiched between Hitler's diary and Howard Hughes' will.**

# Michael Hassett : Technical Direction Co

Julius Grafton talks to a vision specialist about where he came from, and where he is going next!

As the truck slid on its side along the highway Michael Hassett knew his roadie days were numbered. It was around 5am on an empty highway somewhere near Tamworth. It was his second truck crash. The first was during a short career driving a garbage truck when miraculously he survived a brake failure and a tearaway run across Sydney's busy Victoria Road.

Several defining events for Michael Hassett contributed to what has made Technical Direction Company (TDC) into one of the regions biggest and best regarded specialist live vision outfits. March is a momentous month for them, as they took delivery of 108 Barco LED panels – several million dollars worth – and moved into impressive new premises in Sydney.

Michael rode the rock music wave of the early 1980s, and did live sound until the rolling truck and a couple of motorcycle accidents forced acknowledgement of mortality. Michael remembers getting a call to go mix FOH for a show at the Hordern Pavilion in Sydney and walking into an Amway convention. "It had elephants, lasers, dancing girls. I couldn't believe it!" The late Bobby Limb's company The Showman were producing corporate shows that had real budgets. Michael started to pick up work with Bobby.

Another defining moment came in the early 1980's when Michael had a call from a colleague at an FM Radio Station. It seemed that their sound requirements for some beach events in Sydney had been messed up – allegedly by the firm your writer then owned! While I don't recall the scenario I defer to Michael's superior memory. Naturally he acquired the beach sound gigs, so the focus went from road work to Bose 802's and radio mics.

Then another relationship led to a string of work for another event producer, who had an Australian based multinational client. Soon Michael was doing production co-ordination for events in far flung countries, and increasingly this involved video, then a fledgling artform with feeble CRT projectors.

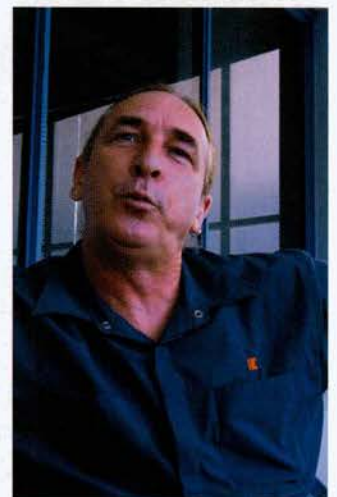
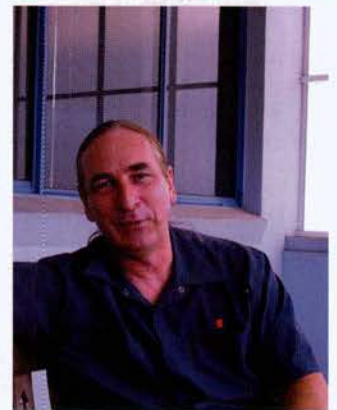
Which led to another defining moment, which we can describe in general terms with some names missing, because the perpetrators are still alive.

There was an event in a European country, a string of convention styled shows culminating in a gala finale. On arrival from Sydney Michael had the local production supplier, who he had used previously, complaining that the 25% downpayment had not been wired over. The event producer Michael was ultimately working for was located and

Vision is now essential at large events



Picture courtesy Gearhouse SA



cheques were drawn and presented that day, which was complicated.

The deal with the European supplier of sound, light and vision was that when the gala was set up, the entire balance was to be paid.

"I walked in on the final day to find the whole crew sitting on the dance floor. They said, 'Michael, we are not going to disrupt your show later on, instead we are pulling out right now!' I knew the Producer and his assistant were off sightseeing and could not be contacted – so here I am, in the worst possible spot".

What would you do?

Michael went reluctantly to the client, the multinational firm, and explained the predicament to a senior executive who fronted the crew, got details, and wired the money.

The reaction of the event producer wasn't pretty, but history proves that Michael was right and the slack producer was wrong, since Michael today works for many corporate clients including the one we allude to here.

Going back to the nucleus of what Technical Direction Company came from. Michael was a

freelance tech who also dabbled in a little theatre lighting. So when the time came to specialise in video vision, he knew enough about the associated departments of sound and light to figure out how everything should sit together.

Business grew well for Technical Direction Company until the recession we had to have in 1990 put Michael back almost to square one. "I'd given up smoking five years before" he remembers, "and then had to put off my personal assistant, eventually becoming a one man company again. That day, she handed me a cigarette." The habit has proven impossible to shake since.

"We'd been through the decadent '80's, with a lot of insurance companies driving the work. Some of the shows wasted vast amounts of money, a lot of them were offshore incentive schemes. I ended up working in almost every country in the world!"

Slowly the corporate shows came back, and the growth has been solid ever since.

In 1996 another defining moment was winning a tender from SAP, a very influential multinational software firm, for their ongoing event audiovisual requirements. SAP run a very substantial convention each year that

## Michael on Catalyst

Catalyst is the High End Systems device that allows a video projector to take signals generated by Catalyst on a Mac, fired by DMX on a lighting desk.

"They are great to create scenic elements. It's really a video effects generator controlled by a lighting desk. Lighting Designers are coming to understand the relationship between lighting design and the integration of video."

"The relationship between vision and lighting has to get closer".

## More about vision....

See our coverage of the Rolling Stones this issue.

The start of the LED panel boom. 'We Will Rock You' is the Queen musical, these LED screens absolutely make the show!



## Michael Hassett PROFILE

can occupy an entire convention centre. They also have plenty of functions and events through a given year. Winning their work was a leap forward for TDC.

Which brings us to Technical Direction Company today.

The firm has the leading edge in vision technologies in rental stock. As I visited the shipment of 108 Barco I-Lite LED panels was landing. LED panels are the big, bright, new way forward for major events. With new LED technology producing very bright red, green and blue LED light levels, Barco (and others) have melded these little LEDs into RGB pixels at 10mm centres on panels that measure about half a metre square.

LED panels are in use now around the world and are a fast growing market both indoors and outdoors.

TDC also have a large inventory of Clarity Video Wall Cubes, these rear project cubes are very popular.

Big projection inventory at TDC include Barco G5 and R8 projectors, with plenty of smaller options too.

The firm have several High End Catalyst systems, which are notable as they are DMX driven, and are the first of the next generation of lighting-meets-vision devices.

"The major reason we have grown is because we specialise. We are far more focused, and have a diverse range of clients. I don't want to be in a mass market. I want to keep an edge, and maintain quality."

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# Location Sound and a lithe, twenty-something Vodka and Cranberry

By Guntis Sics

For the purposes of this article dear reader, please imagine that we are all in a public bar where, as closing time approaches, the conversation tends to lean towards the deep and meaningful and many strange and wonderful facts are laid bare on the table.

Thus it was that I was minding my own business when a Scotch and Soda over by the window remarked that after all these years he still didn't quite understand what I did for a living.

'I'm a sound recordist' I ventured, not for the first time.

'He works on movies' said a Schooner of New over at the bar, 'with movie stars and famous people.'

The Scotch and Soda shook his head.

'I know that, but what does a sound recordist actually do?'

A Campari and Soda (know it all) joined in the conversation before I could continue.

'They do the music for the movies.'

'Actually that's not entirely correct' I interrupted, 'though sometimes we do record music, mostly it's done beforehand and played back on set. Our main job is to record the dialogue.'

A lithe, twenty-something Vodka and Cranberry sidled over to the bar.

'Do you work on movies? What movies have you done? Have you ever met Nicole?'

Dear reader, I must confess that at this point in the real world any conversation about sound is completely hijacked by the ubiquitous subject of Hollywood stars and, much to my shame, I have been known to leverage my brief association with certain movie stars into a full evening of anecdotes.

For the purposes of this article though, we shall return to sound.

'Never mind about Nicole' The Vodka and Cranberry rudely cut me off. 'What about the location sound issues, tell us about those.'

'Oh, OK' I said, somewhat stunned. 'but it's not that interesting.'

'We'll be the judge of that' shouted the Schooner of New, froth dripping from his chin. 'by the way, what sort of microphone did you use on Michael Caine in The Quiet American?'

'I'll bet it was one of those long thick ones' said the Vodka and Cranberry, slipping onto the stool next to me, 'he was so sexy in that movie.'

'Actually I used a Schoeps with an MK41 hypercardiod capsule on it,' I said, 'a mic I've always found to do wonders for the male voice. Unfortunately it's rather short and

stumpy, but it's very forgiving on fast head turns.'

'Not as directional as some?' offered the Campari and Soda.

Now the conversation was finally getting interesting.

'Actually, there seems to be a growing trend to use wider patterned microphones to record dialogue, coupled with the increased use of wireless technology.'

'Wow, is that so?' puffed the Scotch and Soda. 'but don't they generally redo all the dialogue later during post production?'

**I felt like pulling my knife out and stabbing him in the heart, but I didn't have a knife so I just spat on the floor.**

What would you know, you ignoramus!, 'I shouted. 'how dare you insult me and my profession? Don't you know that the majority of dialogue recorded on location gets used and ADR is only done when absolutely necessary!'

He wiped the fragments of beer nuts from his face. He could see I meant business.

'Sorry. Perhaps you could explain to us under what circumstances your recordings would have to be replaced then?'

I was calming down, my professional demeanour fast returning helped along by a strong belt of the tequila I'd been swilling all day. But I was in no mood to talk about post-production sound, I was, after all, a location sound recordist - and proud of it.

'Maybe we should chat about radio mics?,' offered the Schooner of New, 'you must use those a lot.'

'The hell I do!' I jumped to my feet shouting. 'What you people have to understand is that location recording is an art! An art I tell you! It's a combination of skills: technical, logical, psychological and something else that I can't recall right now, and it's bloody hard. Very bloody hard.'

Vodka and Cranberry crooned in my ear, 'we understand, we really do, it must be the hardest job in the world, but don't radio mics make it just that little bit easier?'

Common, you can tell us

She was making it difficult to be angry, and frankly, there was some truth to the radio mic thing, but it was never as simple as that. Location sound recording was riddled with lies, half truths and inconsistencies, not to mention cowboys who couldn't record the broad side of a barn with a shotgun mic. I felt like a lone voice in an anechoic chamber.

**Isn't it true that the end result you are able to achieve on a day to day basis, is directly related to and increasingly defined by such parameters as directing, cinematography, design, acting, editing, post production sound and (pregnant pause here) money?**

An Unwooded Chardonnay, frankly a drink I could never stomach, crossed over from the jukebox, grinning like an editing assistant who actually gets paid overtime.

'What do you want?' I said out of the corner of my mouth that wasn't numb.

'Isn't it true that the end result you are able to achieve on a day to day basis, is directly related to and increasingly defined by such parameters as directing, cinematography, design, acting, editing, post production sound and (pregnant pause here) money?'

Time slowed down, the room began to whirl around me, maybe it was the tequila, maybe not. I tried to open my mouth to spit out an answer, but nothing happened. Vodka and Cranberry stroked my leg, Scotch and Soda and Schooner of New stood there aghast. Campari and Soda was in tears, and all I could do was sit there unable to utter a single syllable.

It was true, unutterably, irrevocably, undeniably true. Successful location sound recording relied on all these factors and more. Don't even start me on nature and the weather. Whether I liked it or not, I was linked into the whole industry, like a fly caught in a web. Dammit! We all had to work together, I couldn't be the lone sound guy always striving for that perfect recording, sitting in a dark room late into the night pressing buttons like a madman. Gulp! I was a filmmaker first and a soundman second. Would anybody ever understand?

I could see one thing clearly now, apart from the worm swimming in the last dregs of my tequila bottle; I was going to have to start at the beginning, right at the beginning, 'Before Video'. Like a tribal chieftain, I was going to tell all the old stories from films long ago, pass them down from generation to generation and spread the good word about location sound recording, how it was and how it should be.

Naturally I would throw in a few anecdotes about famous movie stars like the time Ewen McGregor was standing on his car at Fox studios wearing a kilt and singing Danny Boy at 7.00 in the morning and swigging from a whiskey bottle, but I digress. This was serious business.

Regaining the power of speech I leaned across to the Unwooded Chardonnay.

'How much do they pay you?' I asked as he scurried away suitably chastened, 'bet you don't even fly business class.' I continued, conveniently forgetting that neither do I.

'Wow' lisped Campari and Soda, 'what you do sounds so amazing, I wish I could hear more about it, you must have a million stories to tell.'

'Yeah' nodded Schooner of New, 'we want to know everything there is to know about location sound recording, especially the technical stuff.'

'I want to know more about your microphones' whispered Vodka and Cranberry.

I slid off my stool.

'I'll think about it' I said as I picked myself up off the booze stained carpet, 'maybe I can start with something simple like recording dialogue at the beach in gusty conditions. That's always a conversation starter.'

It was time to go, and like all good sound recordists I managed to selectively hear only what I wanted to hear - the voice inside my own head, which was repeating over and over again: The world is waiting for your stories, it's your duty to explain to future generations the art of location sound - for the sake of mankind. Just do it, just do it, just do it.

Perhaps I'd seen too many movies, perhaps I'd worked on too many movies and was turning into a raving maniac. Perhaps it was time to start directing. It could also have been the Tequila. As I tumbled down that last, awkward step outside the pub a strong resolve grew within me, I knew what I had to do. Talk.

On and on and on about location sound, until people everywhere finally understood. Only then would I satisfy the voices within me.

It was going to be tough, but someone had to do it.

**Location sound recording was riddled with lies, half truths and inconsistencies, not to mention cowboys who couldn't record the broad side of a barn with a shotgun mic. I felt like a lone voice in an anechoic chamber.**

Next issue: For those of you heading off to the Gulf....

**The dynamics of loudness in relation to percussive sound - or 'How I recorded the war single-handed'**

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## Soundcraft MH4 console : TESTED LIVE

Julius Grafton tested the Soundcraft MH4 in Brisbane. It was used for general audio instruction at the CPAU Live Sound induction course, then for a gig at the end of the week with Brisbane band Daina - above.

I took out an MH4 for my five day audio charm school recently, and got very intimate with it.

With 48 mono plus four stereo inputs, the MH4 weighs in at about 320kg fully cased - a full 100kg under an XL4 or PM 5000. It competes somewhere under the above two, as Soundcraft have a Series 5 that goes against the heavyweights. MH4 also comes in a 56 channel version.

It's the sexiest new console in some time, I saw it at Hillsong (they have two) and heard it used by the legendary (and shy) Ernie Rose at the Gobles Shorrock Birtles concert. He pulled the BEST live sound I have heard in many years. See Forum at [www.juliusmedia.com](http://www.juliusmedia.com) for stacks of letters about the Little River Band name fiasco.

MH4 has a sexy chassis, uniquely profiled metre bridge, and bright red phantom LEDs at the input connectors that light up to remind you at a distance this IS an MH4. I mention this because they are supposed to light when Phantom power is present - either from the switch on each channel, or coming in the back door from the stage monitor console. On my test machine they lit up anyway, and it looked gorgeous! I may add this is not a problem.

Soundcraft did a few neat things with this console, it can be a main mix (FOH) console, or a stage monitor console. There are no group assignment buttons, the auxiliary sends - there are 20 - feed either 8 subgroups and 12 auxiliary sends (in FOH mode) OR 16 monitor busses in foldback mode.

There are 8 VCA masters and a 128 scene memory. Setting up a VCA assignment is easy, since the method is written on the console. Assigning a channel to a VCA takes the channel OUT of the main mix, a potential trap. There are 8 mute groups too.

EQ is tasty, knife sharp and very likeable. It has parametric low and high mids, with sweep tops and bottoms.

There is a centre output, for left-centre-right mixing, and another little trap for the unknowing presents itself when the Centre button is selected on a channel - because if the channel is panned at 12 o'clock, the centre, it is not in the left-right mix. It is, in effect, a stereo mix killer! Be alert.

Out back there are XLR male and female for each channel, so there is an inbuilt split if you are using the board for stage monitors. There is an insert send and return jack too, and a direct out - but no line input as a jack. Soundcraft reason (correctly) that in professional sound we use all XLR balanced inputs.

It has 20 aux XLR outputs, and 8 Matrix XLRs too. There is a mix left/centre/right trio of outputs and a mix left/right

I found the desk ergonomics quite good, the switches and LEDs were all logical, and the sound was very clean.

In the \$80,000 and under category, this is a mighty good console.





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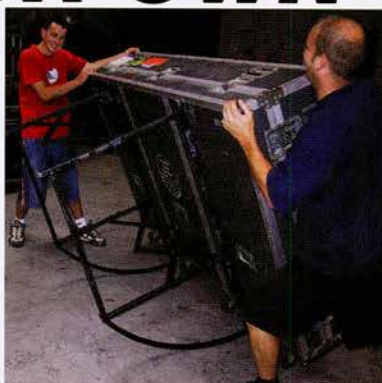
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# BUMPOUT

## Hate at first bite

It was heralded as another new blockbuster Broadway musical, but it closed after less performances than previews. The New York Post reports that Michael Crawford affected 'what he called a 'Continental accent' - a bizarre mix of Italian and Cockney - because, he said, it made singing Steinman's rock ballads easier'.

The New York Post went on to allege that Mr. Crawford was obsessed with his weight, asserting he insisted on ruffled collars to hide his weight.

"He looked like a seedy Rum Tug Tugger who'd eaten too many mice. Behind his back people were calling him a Fat Rooster"

It is reported Jim Steinman (rock composer

behind Meatloaf) didn't attend the opening.

Talkin Broadway had a few things to say about the sound:

"Special mention must be made of Richard Ryan, the show's sound designer, whose solution to the show's amplification needs is to the turn the volume up as high as it will go in every scene. This is painful throughout, but unfortunate only at first - when it becomes obvious Ryan's work is preventing you from correctly hearing lines like "Garlic, Garlic / The secret of staying young / Garlic, garlic / That's why we're so well hung," how can you not be grateful?"

<http://www.talkinbroadway.com/world/DanceVampires.html>

## Rebecca St James - LIVE

Nashville Christian star and former Sydney girl Rebecca St James wowed audiences on her Australian tour with a solid pop-rock worship concert. Featuring 2 guitars, bass, drums, keyboards and two backup singers, the show had added punch with Nashville engineer Ralph Rivera pulling a full sound.



Sound and lighting came from Brisbane Concert Sound, with a Turbosound Floodlight system easily catering to a sellout crowd at Sydney's Dayspring Church on Saturday February 22.

Wrestling a 32 channel Allen and Heath GL2200 console with every input full, Ralph ran a solid rock mix at respectable levels.

The lighting was sometimes overwhelming - four Cyberlights and 20 Par cans were augmented by 8 QIs. Budget was a big consideration, according to David Smallbone - Rebecca's manager. While the lightshow had plenty of effects, the emphasis on flash was tiring, and the lack of specials - bar 2 x floormounted Par 56's - meant it was difficult to see the performers. A single leko special would have made all the difference.

The performance was like an all ages rock gig, with 2 support acts. Rebecca St. James's set was broken in two, lasting about 2 hours in duration.

Rebecca is the 23 year old daughter of former Australian Christian concert promoter David Smallbone, who also manages his daughter's very successful career. David was manager of Avion, and tour manager of many Christian acts overseas. He moved the family, including 7 children, to Nashville some years ago.

Rebecca St James performs around 200 shows a year across the world.

<http://rsjames.com/transform.html>



## Top Ten Ways To Tell You've Been On The Road Too Long

10. You no longer own one single clothes hanger.
9. You never use the living room anymore because the acoustics suck.
8. Your welcome mat is gaffed down...so no one will trip.
7. You get Christmas cards from the C.E.O. of Qantas.
6. Dragging your knuckles on the ground is now second nature.
5. All your furniture has wheels.
4. You've re-wired your whole house to use Hubbell Twist-Lok plugs.
3. You are home for a week before you stop dialing "9" to get an outside line
2. You keep running into young bastard roadies you actually fathered during the 70's.
1. You completely lose interest in groupies.

### Honorable Mention

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### MAKES SENSE....

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## CLIFF RICHARDS FALTERS



Something was wrong with Sir Cliff Richards' show. What is missing from this picture?

Like Neil D, like John F and for sure, just like most committed legacy rockers, Sir Cliff delivers a strangely endearing collection of tunes that span the gauntlet of pop and rock. Band, arrangements and add ons like dancers and local strings make the show last the distance, given there is no opening act.

The sound was sensationally accurate, delivered through Oceania Audio's new X-Line Array with 12 cabinets for the left, and 12 for the right main at Sydney Superdome - plus six cabinets on each side for a total of 40. Sound engineer Bunny Warren produced a hi-fi mix that was somewhat quieter than previous Cliff tours, yet this may have been due to the X-Line delivering better clarity than the Turbosound system used on previous tours.

Oceania run their systems from proprietary amp racks that feature multiple amp modules in a single rack frame.

Cliff is great at timing, moves well for a guy aged 62, and obviously hires and retains great people.

But this was a show that suffered a paradox. While there were high production values implied with sound, two things happened that you won't see on the next Cliff tour. Thing one was to *cut* the lighting budget.

LD Derek Jones (*-ight!*) had three onstage trusses holding 108 Pars and 54 movers - with 8 audience blinders thrown on. His one FOH truss was sparse with just 8 movers. Some floor lights and an LED curtain

completed the rig, and it wasn't enough.

Two follow spots were welded to The Cliff, so when his four gorgeous dancers came along, there were in and out of the lighting states.

That glaring deficiency wasn't the fault of the LD, it was clearly a budget decision that could have been fixed with another four domes.

But the big deficiency was lack of video.

There is only so much a clever LD can do to hold interest, and Derek threw everything he had at the look of the show. There was no set, just risers, and the starlight curtain just got boring after a while.

These days you can't offer a premium show in an arena without video, and this one got away with it, but only just. I wouldn't have enjoyed being anywhere but within 40 metres of the stage, and a lot of those seats in the Gods would have seen ants on stage.

Not good enough, Cliff.



## STONES COSTED

Were you impressed with the size and impact of The Rolling Stones' Lick Tour of Australia? We were.

Our web news service, [www.juliusmedia.com](http://www.juliusmedia.com) had the tour costed by a production manager, who struggled to find valid job descriptions for 89 of the 200 people on the road.

That aside, the result is VERY INTERESTING. They willingly lost money on ticket sales.

Read about it in the SHOWS area at [www.juliusmedia.com](http://www.juliusmedia.com)

## TIVOLI GLITTERS

We saw the Sydney Dance Company's restaged production of Tivoli at presstime, and were very impressed with the



Katherine Arnold-Lindley & Xue-Jun Wang in TIVOLI  
Photo by Jeff Busby.

lighting by Damien Cooper and the sound by Adam Iuston. The show is running at Sydney's Capitol Theatre, and has it all - 10 piece band, singing, dancing and vaudeville.

National Audio Systems provided a d+b audiotechnik C4/C7 system to Coda, who are the usual suppliers to Sydney Dance Company. It sounded very natural, and Adam's design and mix were excellent.

Brian Thomson has gone overboard with set design, in what must be the most fun of his career. The Swan Silver segment was sensational.

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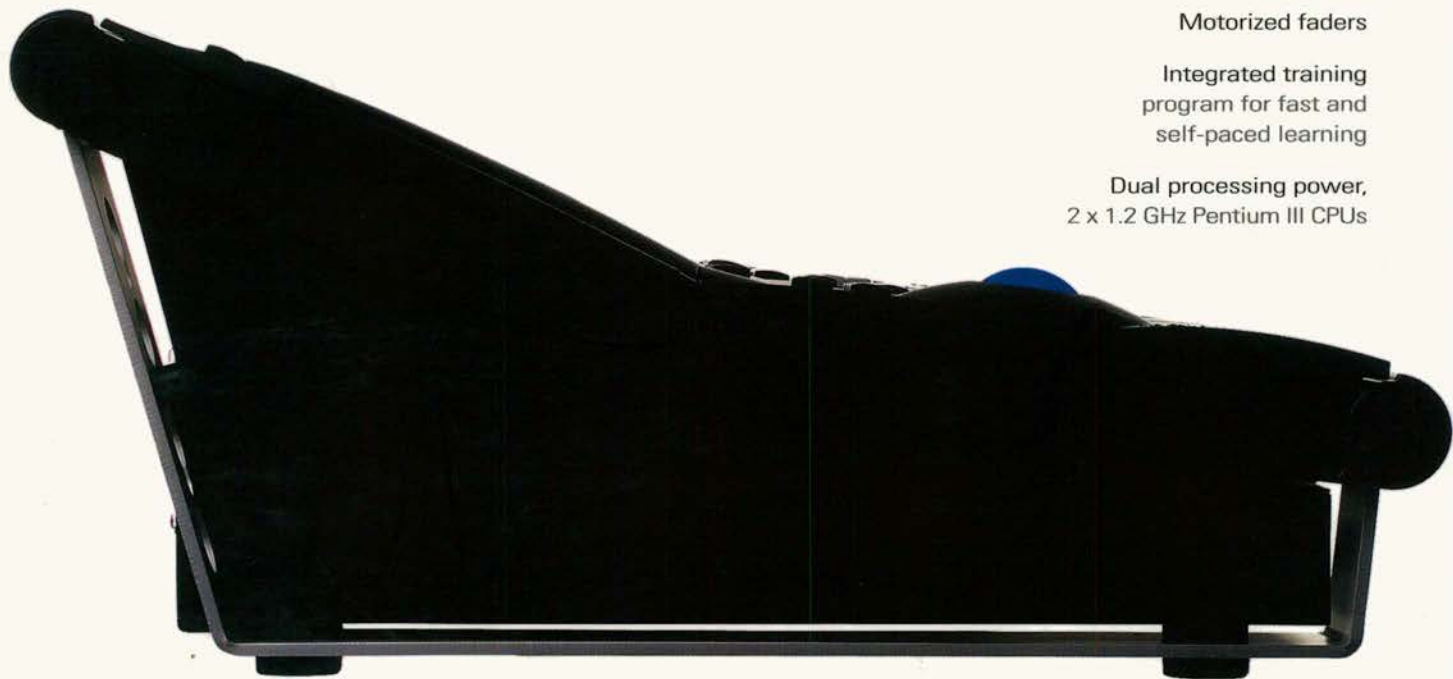
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