

a FRESH look at presentation & entertainment technology

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NEWS

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PULL OUT
YEAR PLANNER

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FEBRUARY (mailed on 29th Jan)

- **STUDIO MONITORS**
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- **Film & TV Lighting** ; Feature

MARCH: Buyer's Guides: Wireless microphones; Video Projectors, Moving Lights.

APRIL: Buyer's Guides: Signal Processors, Film Studio & TV Lighting.

Call +61 2 9876-3530 for listings and info.

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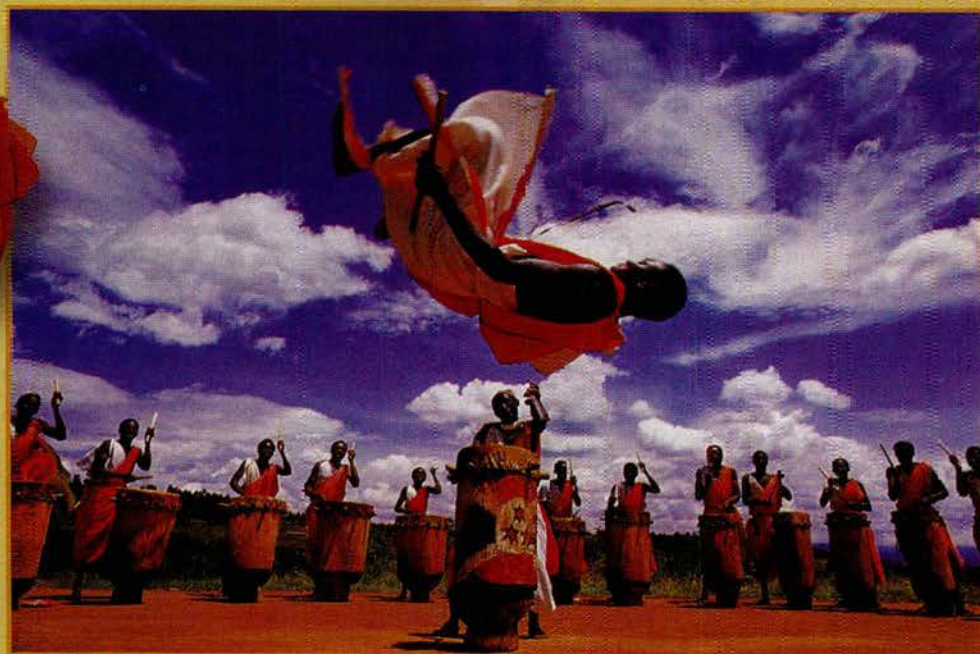
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Jeff Thomas ◦ FOH Engineer, The Dave Matthews Band

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Mark Frink ◦ MSL-4 Review ◦ Mix Magazine, August 1996

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Miguel Lourtie ◦ Systems Engineer - EXPO '98 ◦ Lisbon, Portugal

"The sound was amazing, incredible... the music almost came at you in 3-D! ...Simply, I have never experienced speakers like these before."

Mike Klasco ◦ UPA-IP Review ◦ DJ Times Magazine, May 1998

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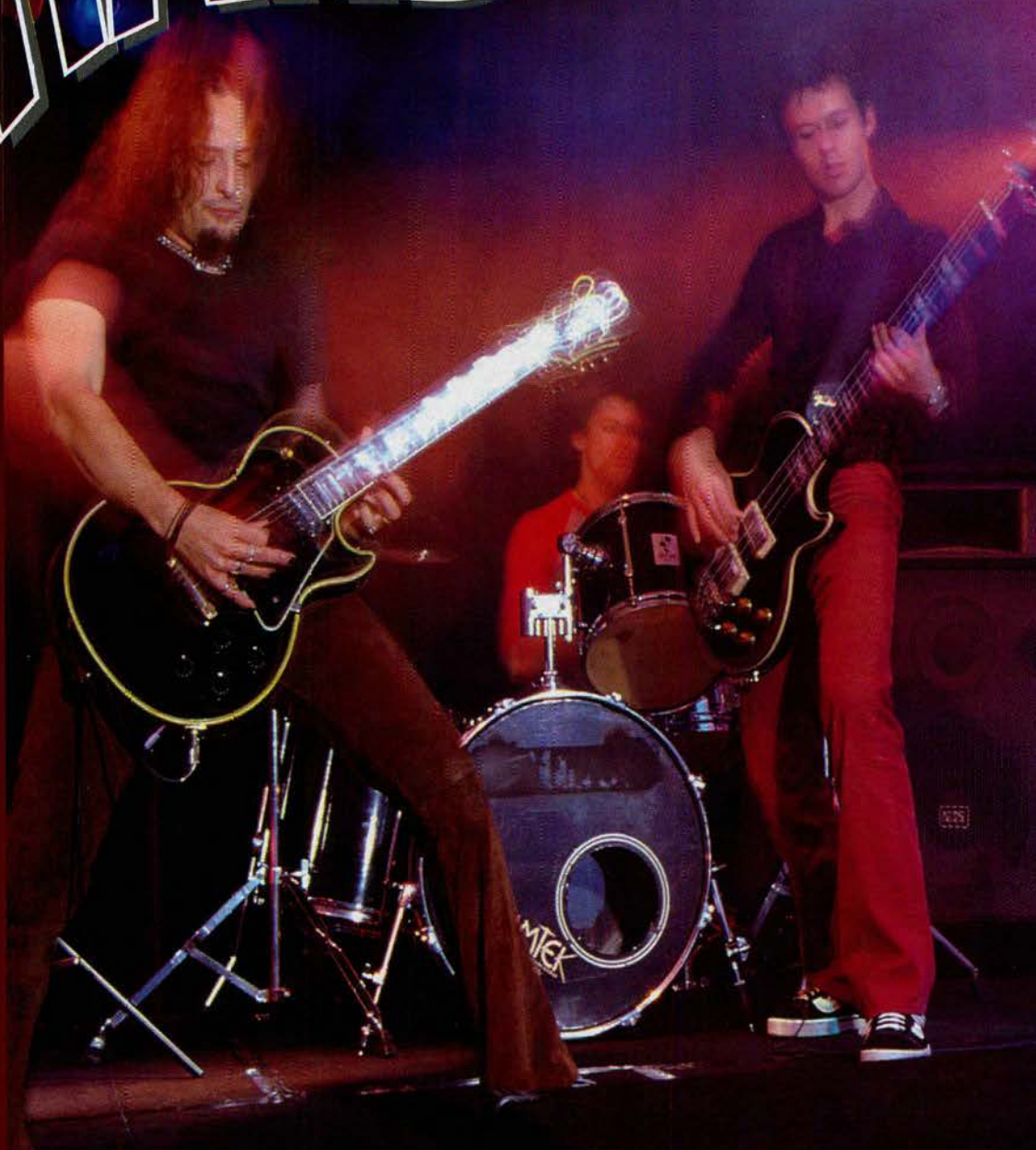
424 MkII



414



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Connections

THE PRESENTATION & ENTERTAINMENT TECHNOLOGY MAGAZINE - JANUARY 1999 #61



Australian theatre has been captured on CD ROM for a new interactive program called *StageStruck*. Created by a small multimedia team from the University of Wollongong in partnership with NIDA, the CD has scooped the pool winning two EMMAs awards for interactive media and a British Academy of Film and Television Arts award, beating the likes of Microsoft and Douglas Adams. *Stagestruck* was designed for students aged 12 - 18 as an introduction to Australian theatre. • Full details in *Backstage Theatre News*, page 24

C-Tick compulsory, Aus Govt says all new equipment needs sticker

VHF wireless microphone frequency squeeze, and now compulsory C-Tick compliance. What's next?

CANBERRA: Equipment users, importers and resellers are confused by new regulations.

First, continuing use of VHF wireless microphone systems was thrown into doubt when high definition digital TV was announced early in 1998. Tens of thousands of systems are affected as TV networks expand broadcasting into spectrum used for wireless microphones and in-ear monitor systems.

Approaches to the ACA (Australian Communications Authority) have produced the advice that VHF wireless microphone systems are secondary users, and should know this! The choice: throw out the VHF system and buy UHF when HDTV broadcasting (and testing) starts. The moment will be defined when your wireless system simply generates a lot of noise and splatter, as infinitely stronger TV broadcast signal suddenly invades your VHF airwaves one day.

Now C-Tick is with us. Electromagnetic compatibility

(EMC) regulations are now in effect which compel equipment suppliers to ensure ALL electrical items sold carry a C-Tick.

From January 1st, the ACA says virtually all equipment - audio, lighting, vision, DJ, musical, domestic, professional and commercial - must carry the sticker.

Some retailers are now refusing to take delivery of goods which do not carry the C-Tick.

Connections surveyed manufacturers and importers in November. Generally manufacturers were well progressed with ensuring their goods complied,

exporters say that E.U. CE certification is virtually the same thing, so they are not suffering a huge impost.

However importers were less prepared. Those in trouble included some medium sized operations who are scrambling to ensure their all lines comply. Some are in a panic over old stock, which the ACA says may still be sold without a C-Tick.

With much of the entertainment industry relying on specialised and low volume technology, some important devices may become unavailable.

• Call the ACA: +61 2 6256-5520, or www.aca.gov.au

AV spat follows TabCorp AGM incident

MELBOURNE: Things CAN go wrong at events. But is it a good idea for a competitor to draw attention to them when they do? Connections was drawn into a difficult situation in November when Gearhouse Group wrote to clients of Staging Connections - enclosing a reprint of a Connections article.

Problem was, Connections didn't consent to reproduction of the article, nor would we have, under the circumstances.

• Full story leads *AV News*, page 28

How NOT to run a concert

Mark Cunningham reports on audio hi-jinx at Nelson Mandela's birthday concert

Johannesburg: In every era there is a defining moment. For the new South Africa, this concert was it.

The concert sound was extremely impressive and a testimony to all those who contributed under great strain and fatigue.

However, there was one aspect of the sound which left a very nasty taste in far too many mouths, one which had absolutely nothing to do with the hard-working crew.

As part of his contract, Stevie Wonder arranged a full rehearsal before the show mainly to put his new band through their paces. Unfortunately, this led to some other artists - particularly the Americans Kenny Lattimore, Chaka Khan and D-u Hill - demanding similar treatment.

This placed unnecessary pressures on the crew, and it also meant that the audience was

>please turn the page

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WRITE FOR CONNECTIONS! We WELCOME well written articles and stories for consideration. Send hard copy, preferably WITH a PC or Mac word processing RTF file and NORMAL file together. RTF means Rich Text File, also known as 'Interchange format'. Most word processors will SAVE a file (in the 'Save To...' field) as an RTF file. Colour Photograph prints preferred. Have them printed at 5" x 7" or larger if possible. Digital images - you CAN email us a high resolution 300dpi JPEG image as an attached file, but not a TIFF image. It takes too long to download. Send stamped self addressed envelope if return desired. No responsibility for loss accepted. Call the editor if info required.

ETHICS: We operate under the journalist's code of ethics, as detailed by the Australian Media Entertainment and Arts Alliance. We also agree with the principles expressed in Brill's Content magazine. Respect for truth and the public's right to information are over-riding principles for all journalists.

In pursuance of this principle we have always committed ourselves to these ethical and professional standards:

1. We shall report and interpret the news with scrupulous honesty by striving to disclose all essential facts and by not suppressing relevant, available facts or by distorting by wrong or improper emphasis;
2. We shall not place unnecessary emphasis on gender, race, sexual preference, religious belief, marital status or physical or mental disability;
3. In all circumstances we shall respect all confidences received in the course of their calling;
4. We shall not allow personal interests to influence us in our professional duties;
5. We shall not allow our professional duties to be influenced by any consideration, gift or advantage offered and, where appropriate, shall disclose any such offer;
6. We shall not allow advertising or commercial considerations to influence us in our professional duties;
7. We shall use fair and honest means to obtain news and documents;
8. We shall identify ourselves before obtaining any interview for publication;
9. We shall respect private grief and personal privacy and shall resist the compulsion to intrude;
10. We shall do our utmost to correct any published information found to be harmfully inaccurate.



New cigs for **STAGE & SCREEN TRAVEL** in Sydney, who are now located in the Fox Studios complex at Moore Park. Pictured above from left are Allison Pratt, John Fowles, Linda Price and Jeremy Rosen (rear), with Casey Berryman, Ken O'Brien and Carol Hughes at front.

O'Brien is temporarily assisted by additional crutches, having injured an extremity doing something dubious on grass

New numbers: Phone +61 2 9383-4544, fax 9383-4577.

Kelly for ITF

Ron Kelly is to join forces with Kevin Nicholls of Imported Theatre Fabrics. Ron started Theatrical Supplies of Australia with Ray Rooney and introduced many new fabrics never before used in Australia including Nessel canvas up to 12metres wide.

Kevin Nicholls has a history of curtain making and installation. •Call Ron: 0412 194 727.

Concert audio

(from previous page)

forced to suffer up to 75 minutes between acts with no form of entertainment distraction.

Granted, the production management could have minimised the effect of these prolonged delays by making the most of the video screens (which they didn't) but the fault lay squarely with the artists' management who clearly had no respect for the South African punters, and in doing so made a mockery of the event.

John Mac was one of the disgusted crew members.

"In a festival scenario, a band should get a line check done as quickly as possible, and then get on stage and do their set with the minimum of fuss. I found that the general vibe of a festival was lost due to the fact that acts were insisting on doing rather long and drawn out EQ checks as opposed to simple line checks. To be spending up to two minutes on each channel seemed to me to be completely ridiculous.

"I don't have a problem with afternoon soundchecks before a show, but to do them in between acts while a festival is running was so unfair and showed a total disrespect towards the audience. To wait 30-45 minutes for the next act to come on is acceptable, but up to 75 minutes spent trying to achieve an unachievable perfection is not, particularly when the acts have all their lines up and running within 20 minutes. I would expect an engineer to get by on a couple of knocks on the kick drum and a few 'one-twos' on the vocal mics, get the faders in the ball park, then work out the mix as the first song progresses."

To avoid such problems in the future maybe promoters should make amendments to artists' contracts, stipulating that there will only be a 30 minute changeover to give stage managers, production managers and audio crews leverage.

Mark Cunningham is editor of Total Production, the international journal for the live community.

Industry conference sets scene

MELBOURNE: 200 top players attended the Entertainment Industry Employers Association (EIEA) conference recently.

Chief Executive of the EIEA, Jan Stoneham (pictured) informed delegates of recent EIEA initiatives, such as the Entertainment Ticketing Code of Practice; a code of practice for support performers touring with international acts; OH&S guidelines; and a Producer's Kit containing reference materials for newcomers and veterans alike.

Ms Stoneham called for the introduction of taxation incentives for the entertainment industry, and the necessity to approach the government with one voice. Jan also announced the establishment of the most prestigious awards in the industry - the Sir Robert Helpman Awards for performing arts, operational in 1999.



An impressive list of speakers featured, including Michael Lynch (*Sydney Opera House*), Michael Gudinski (*Mushroom Records*), and Wayne Harrison (*Sydney Theatre Company*), who spoke of the "cultural Darwinism" - survival of the fittest among theatre companies, and the new national catch-cry of the arts: "When in doubt, put on a festival!".

International and Australian entrepreneurs discussed the need to follow Broadway and West End models by fostering a stronger feeling of community in the theatre sector.

Kevin Jacobsen reinforced this saying the entertainment industry is not a part of everyday life of Australians. Kevin used the example of New York cab drivers who talk about the Broadway shows to their passengers, thereby promoting the industry.

AGENCY

Aerobic Microphones Australia have been appointed Nady Wireless Mic Distributor for Australia. John Fenhallow, MD of Aerobic Microphones Australia P/L, makers of the Aeromic range of headworn microphones, announced that they have been appointed as the new distributors for the Nady UHF Platinum Series of 2 channel UHF switchable systems. Call +61 2 9313-4995

BIRTH

A girl, Nadia Catherine to Michael and **Margaret Orland**. All doing well!

CELEBRATION

Twenty Five Years for **Australis Music Group** in Sydney. A party was to be held on December 12th. Salute!

MOVES

New location for **Soundfirm** in

Sydney, who are now at Fox Studios: FSA 30, driver ave, Moore Park, 1363. Call +61 2 9383-4888, Fax 9383-4868.

Sound Solution have moved into the old Troy Balance building, at 9 Union street South Melbourne 3205. Call them on +61 3 9686-4755, fax 9686-4766.

New location for **Quantum Efex** at 20 Regent street Melrose Park SA 5039. Call +61 8 8277-3444, fax 8374-2090.

NEW PEOPLE

Andy Jenkinson has been appointed Australasian Promotion Manager of SAE Technology College. Andy has spent the last five years in managing SAE in Auckland.

David Platt was recently promoted to Operations Manager for SAE Sydney replacing **Jason De Wilde** who has moved to Mirage Studios as Manager.

Under the expert guidance of **Michael Davison** Adelaide SAE has moved into new premises at 282 Gouger Street. The new facility hosts 24 track analog and 16 track digital studios.

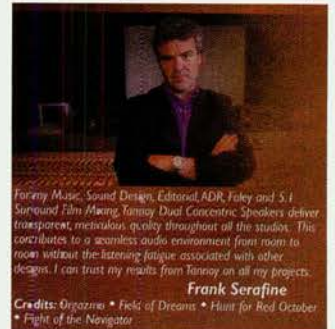
Gearhouse Themeing Pty Ltd introduces **Natalie Brien** to its sales team based on the Gold Coast. Nat was previously with Dreamworld.

Service Agent

Studio Connections Australia are please to announce the appointment of **Hux Electronics** as service agent in Queensland. Reach them on +61 7 3844-0089.

I just don't like it!

How can you endorse two different brands of the same thing, in the very same magazine? Frank Serafine turns up in a Tannoy ad on page 3 of the November edition of MIX, stating "I can trust my results from Tannoy on all my projects". (See extract from MIX ad below).



For any Music, Sound Design, Editorial, ADR, Foley and 5.1 Surround Film Mixing, Tannoy Dual Concentric Speakers deliver transparent, meticulous quality throughout all the studios. This contributes to a seamless audio environment from room to room without the listening fatigue associated with other brands. I can trust my results from Tannoy on all my projects.
Frank Serafine
Credits: Orgazmo • Field of Dreams • Hunt for Red October • Fight of the Navigator

But by page 23 he's evidently changed his mind, because in the Mackie HR824 ad (below), he says: "There's a truth to them, once you hear you can't go back".



"Very tight bass... clean mids... crystal pristine highs. There's a truth to them once you hear you can't go back."
Frank Serafine, Hollywood motion picture and television sound designer

So what DO you use Frank?

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Just thought I would say thank you after receiving my latest copy of Connections.

I thought that I was receiving a new edition early - and in anticipation read with great enjoyment.

After a good half hour of reading through the headlines etc, I found that I had in fact received my copy of the "JUNE 1998" issue.

Good thing was that it only came from Singapore or I might have been waiting longer.

-Phil Bowman, Dewan Filharmonik PETRONAS Malaysian Concert Hall.

• *Nicole did a witch hunt through our international mail house, and discovered Phil got every other issue within a week - they bulk drop all Asian issues into Singapore, and then consolidate the mail there. Why June took three months to arrive we do not know. Sorry! -Ed*

Cool website

I'm in the States and was pointed to your site thru a discussion board at 3dAudio (Nashville.)

It's very good! I have a studio in Atlanta

and in addition, write reviews periodically (most recent - an upcoming review of the MOTU 2408 for Mix Magazine.) I also publish them on my site: www.eliottjames.com/wateree.htm

This is a site that features my studio and perspectives on the recording process. My site may be of some interest to your readers, in that I try to share techniques and opinions with others who are in the project studio environment.

Please feel free to link to my site and I will mention yours as "recommended".

-Elliott James, Wateree Studio, Atlanta USA

Common story, old as time

I am a year 12 student at Pine Rivers State High School and I am very keen in the type of field that your magazine promotes, audio engineering. I hope to be an audio engineer for live applications, as I love the challenge and atmosphere of live events.

I am more comfortable in the studio because if you make a mistake it is easier to correct - press stop and start "from the top".

Recently, I have done some volunteer work experience with an audio company in Brisbane, Image Audio Productions.

The staff there have enabled me to gain more experience in this always advancing industry. Although, I do have one concern and that is there are very few university degree courses that offer live sound as a major topic.

As this is my last year at school have had to choose my university course in another field of interest. Before this, however, I spent many hours searching through the web, university pamphlets, and even a guide book for applications that details every university course that is available in Queensland and Northern New South Wales. And if there was a course I would either be ineligible or the course was situated too far away from home.

After some more searching, I found a course at the Southbank Institute of TAFE. This course is not a degree or diploma course it is only a Certificate in Performing Arts. With that in mind I set out to get more information on this course, first stop, the Internet (a very useful tool).

The course is exactly what I am looking for - a few days of theory tutorials and actual work in pubs and clubs around Brisbane (hands on, the tutor watches while the students do the work). Second stop, the institute itself, where my first question was, how old do you have to be?

The lady who assisted me told me absolutely everything, right down to the cost. This is something that I did not think much about. She said that the total cost would be a bit more than \$770, that's right \$770 and the course only goes for 12 months! You and other readers may think that is quite cheap, but for students it is rather expensive. But when it is compared to the university degree with no experience and paying about \$5000 a year for the course, it OK.

But happens when I finish the course? Will I get work? Where will I get work? I like to read Saturday's paper, mainly the Employment section(s) to see what jobs are out in the real world and if there are any in the Entertainment Industry, specifically audio engineering. But every week since the start of the year, not one job for the type of work that I am interested in has been advertised. Is this somewhat reflective of the university courses on offer or is there another publication for jobs in this industry?

If there are people reading this letter and know that they need someone to work for them they could contact me through e-mail (thillier@hotmail.com).

I wish any other young adults, looking for work in this industry and who want a degree or certificate, the best of luck.

-Timothy Hillier, Strathpine Qld
• *Heard this before. Good luck mate! -Ed*



MAJOR TRADE SHOWS



Contemplating a study trip, possibly tax deductible, to any of these overseas shows? Feel free to email the editor for further information. Email julius@conpub.com.au ★ Highly Recommended Shows!

- **NAMM**, 28-31 Jan 1999. LA. www.namm.com
- **SIEL**, 14-17 February, Paris. Fax +33 141 90 48 29. Email: siel@reed-oip.fr
- **REPLitech Europe**, 23-26 Feb, Vienna. Fax +1 914-328-2020
- **MusikMesse**, 3 - 7 March 1999. Frankfurt. www.messefrankfurt.com
- **NAB**, 19 - 22 April, 1999, Vegas, USA. www.nab.com
- **Music Convention**, 29 April - 2 May. Gold Coast QLD. web: www.australianmusic.asn.au
- **PLASA SHANGHAI**, 13 - 15 April 1999. Ph +44 171 370-8231. web: www.eco.co.uk
- **NSCA**, April 27 - May 1, 1999. Nashville. Ph +1 904 273-2760, web: www.nsca.org
- **AES 106th, *NEW DATES:** 8-11 MAY, Munich. Fax +1 212 682-0477. web: www.aes.org
- **InfoComm**, June 10-12, 1999. Orlando. Info fax +61 2 9531-6777, www.icia.org
- **PALA**, July 8-10, 1999. Suntec City, Singapore. Ph. +65 227-0688.
- **SMPTE**, July 13-16 th, 1999. Sydney, Ph. +61 2 9977-0888.

Here's a good overseas round world study trip opportunity with holiday included...PLASA & AES:

- **PLASA, *Oops! Prev. omitted!** Sept 5-8, 1999. London, Earls Court. www.plasa.org.uk ★
- **AES 107th**, September 24-27, 1999. New York. Fax +1 212 682-0477. web: www.aes.org ★
- **LDI** November 19 - 21st, 1999. Orlando. Ph +1 212 229-2965 web: www.etecync.net
- **NAMM**, 3 - 6 Feb 2000. LA. www.namm.com
- **ENTECH 2000**, March 5th - 7th, 2000. Venue: Sydney Exhibition Complex at the Olympic site, Homebush. Show on sale from March '99. Fax + 61 2 9876-5715. web: www.conpub.com.au ★
- **MusikMesse**, March 15- 19th 2000, Frankfurt. www.messefrankfurt.com
- **SIB**, March 26 - 29th, 2000. Rimini, Italy. Ph +39 541 711711. web: www.fierarimini.it
- **NAB**, April 8-13th, 2000, Vegas, USA. www.nab.com
- **NSCA**, April 27 - May 1, 2000. Las Vegas. Ph +1 904 273-2760, web: www.nsca.org

PRO AUDIO NEWS

JANUARY 1999 (with Dec 98)



This may be the best live mixing console ever made

Showconsole - Harrison and ShowCo collaborate to build an ultra high specification recall console. By Julius Graham and Cat Forcer

The biggest surprise at the LDI'98 trade show in Phoenix was the unveiling of a revolutionary new sound console - SHOWCONSOLE. Howard Page, VP of ShowCo (Dallas) has spent nearly five years working on the design of this live performance console which has instant total recall capability. Although ShowCo specified the console, it is manufactured by Harrison.

Showconsole is the most ambitious live mixing console yet built. The project has been veiled in extreme secrecy, with Howard dropping some very cryptic hints which these journalists have misread at least twice in the past year.

It is a fully automated memory management console with all inputs, outputs and connections occurring at processing racks near or on the stage. Control protocol is transferred out to the console via a fibre optic link.

"For the first time ever in a live sound situation we have complete save and recall of entire console set ups - without any manual resetting or without any parameters missing," Howard told us in Phoenix. "Every single switch, button, fader, knob, selection, assignment - everything is stored completely and instantly returns to where it was in that store. The console uses fully motorised rotary pots and slider pots so that the position of the knob actually represents where the actual

level/gain/volume is. So the engineer is sitting behind something that shows them, at all times, what their settings are".

40 FADERS, 80 CHANNELS, 320 INPUTS- AND MORE POSSIBLE!

The console has 80 active inputs at any one time, each channel has three separate microphone inputs, plus a line input memory selectable. Additionally the Showconsole will accept multiple 80 channel racks, and with each 80 channel rack housing three times eighty microphone inputs (and 80 line inputs) multiples of 320 inputs can be handled - one at a time.

"You can change an entire snake system in one cue. Obviously for a multi-act festival show, you can do hundreds of bands in a row instantly by just hitting the recall button to bring up all the settings for that band. It's takes us into an amazing world of technology for live sound" says Howard.

Showconsole is relatively small, with a footprint measuring just 74 x 36 inches. An averagely arm spanned engineer can reach each end of the console while seated in front of the centre section.

(please turn the page)

EUPHONIX R1 JOINS THE FRAY

PALO ALTO: EUPHONIX have shown a new 24 track digital recorder which is set to follow the success of their mixing consoles.

The firm seem able to pitch to a niche, with the new R1 sitting somewhere above ProTools and more aligned with Fairlight. Its a stand alone 24 bit recording system, tipped to sell at about A\$55,000.

R1 appears set to appeal to users who would prefer to buy a replacement 24 track machine, as the unit is a firmware solution, meaning processing and software are all embedded - unlike the Mac or now Windows NT based ProTools.

The keyboard remote is very solidly engineered and appears immediately familiar - with transport and locate keys in the 'right' place.

Hardware is modular, the recorder can be driven from a mixer with machine control if required. Euphonix say the R1 will store equal track material on one 9GB Exabyte tape to what is normally recorded on two-and-a-half reels of 24 track tape.

More information from Studio Connections, +61 3 9874-7222.



thismonth

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DAT! MARKET REPORT All the machines

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COLD CHISEL DEBUT NEW EAW PA

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DIGIDESIGN PUT MORE POWER INTO PRO TOOLS

San Francisco: Digidesign have introduced Pro Tools|24 MIX, a more powerful single-card digital audio workstation core system that provides 64 tracks and extensive mixing and processing capabilities.

Featuring six Motorola 56301-series DSP chips, Pro Tools|24 MIX offers two to three times more on-demand mixing and processing power from a basic system than Pro Tools|24, Digidesign's previous flagship system. Also available is the Pro Tools|24 MIXplus system, which provides an additional PCI card with six chips dedicated to effects processing. Costing only 25% more than a Pro Tools|24 MIX core, Pro Tools|24 MIXplus offers more than double the DSP processing power and supports up to 32 channels of I/O.

Addressing the 3-slot PCI limitation of Apple's current generation of G3 Power Macintosh computers, Pro Tools|24 MIX provides greatly expanded power, versatility and efficiency from a single PCI card for the same previous price as a Pro Tools|24 core system. In addition, the new Pro Tools|24 MIX and Pro Tools|24 MIXplus systems as well as the existing Pro Tools|24 system now support the Windows NT platform. (See report Nov. Connections)

The MIX Core and MIX Farm cards offer more DSP power than ever before - up to over four times more Plug-In instances per DSP than the previous DSP Farm card.

The newly added DSP Manager function optimizes DSP usage, and new MultiShell support offers even greater efficiency by allowing certain different types of Plug-Ins to share the same DSP chip on a MIX Core or MIX Farm

card. Providing high quality versions of the basic DSP tools required for mixing and audio production, Pro Tools|24 MIX and Pro Tools|24 MIXplus systems are bundled with TC|Works MegaReverb (for a limited time only) and several great-sounding DigiRack Plug-Ins, including the new EQ II and Dynamics II.

Each Pro Tools|24 MIX Core and MIX Farm card provides support for 16 channels of I/O using optional Digidesign audio interfaces, including the 888|24 I/O, 882|20 I/O and ADAT Bridge I/O. Up to six MIX Farm cards can be added to the system as needed to provide vast quantities of DSP power and connection of up to 72 channels of I/O.

For users requiring only more inputs and outputs but not more DSP, the affordable MIX I/O card provides support for an additional 16 channels of I/O.

Pro Tools|24 MIX functionality can be added to existing Pro Tools|24 systems simply by adding a MIX Farm card. Compatible with existing Pro Tools|24 systems (d24 Audio and DSP Farm cards) and all Digidesign Plug-Ins (new versions available concurrently with PT|24 MIX release required), the MIX Farm card increases track count capability to 64 tracks of 24- or 16-bit audio, and adds three times more DSP power and support for an additional 16 channels of I/O.

Pro Tools|24 MIX and Pro Tools|24 MIXplus with Macintosh-compatible software are shipping. Support for the Windows NT platform will be available during the life of this issue of Connections.

• Digi Aust: +61 2 9568-1711.



Showconsole's has one master share channel, with fully motorised controls that snap to whatever settings are recalled when you select a channel.

Space saving is a major design target. Theatre in particular requires that FOH mixing takes up as little revenue space as possible, one Showconsole will mix 80 channels at once, with another 160 microphones and 80 line inputs all accessible at any time. At the very least, Showconsole will replace two physically larger consoles at any large show with the budget. Our calculations, based on a Sydney performance of a major musical, provide eight additional seats at a possible revenue of A\$3,640 per week using one Showconsole vs. two other large analogue consoles, offering less inputs and features.

Another very large revenue saving comes from not needing audio multicores, used to full potential the Showconsole would save a lot of money in weight, shipping, labour, and time. Not to mention gaff tape for all those multicores!

There are forty 100mm motorised channel faders, in two groups of twenty, either side of

the main centre section. Each channel strip has an upper and lower selection, so the forty faders control 80 inputs. A single motorised rotary fader can be assigned to control the second upper (or lower) channel, or it can be used to control input gain.

Above the channel fader is a large illuminated 'select' button for each of upper and lower channels. An illuminated 'label' tells the operator what they have assigned to the channel.

The channel controls are located in the Central Control Section, at a master share channel where one channel at a time can be adjusted for gain, sends and dynamics processing. Touching a fader selects that channel to the centre section. All imaginable channel parameters are included.

There are 32 auxiliary sends (or mix busses) and 4 separately assignable stereo sends from every channel.

(please turn the page)

MFX3plus for DIGITAL PICTURES

Digital Pictures Sydney has purchased a Fairlight MFX3 Plus digital editing system.

According to head of Audio, **Mike Kent**, the system also features an OMF facility to enable digital file imports from alternative sources, such as AVID, turning an AVID to Fairlight project into one quick, smooth and easy operation.

Digital Pictures' MFX2 has been installed in Audio Two providing greater compatibility between the two audio suites.

FOSTEX LAUNCH NEW DEALER NETWORK...

SYDNEY: Fostex Corporation have identified the Australian market as a key growth territory for professional recording products.

The firm first launched their A8 8 track quarter inch recorder in the mid 1970's - when the alternative was 8 tracks on 1" tape - and somewhat expensive.

To say the product was a success is a wild understatement. The A8 redefined the recording studio from a cost perspective, which is when people started to consider multitrack recording as 'affordable'.

TODAY

Some of the BEST music, and many short film scores are produced outside the traditional studio environment. We all know this!

But where has FOSTEX gone?

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After the A8, and linear tape machine products, we identified the hard disk recorder market as the place to be. There are now in excess of 100 different combinations and formats of hard disk recording systems on offer to the market.

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FOSTEX have a unique solution to hard disk recording. We don't have a large catalogue FULL of options. We don't ask you or your dealer to reconfigure your PC or Mac, buy optional cards, or take a long course in user manual interpretation.

We don't ask you mix and match!

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Recorders are our primary market, and always have been. We also sell Monitoring headphone amps, patchfields, tone generators, and much more. But, FOSTEX is unique BECAUSE of our recorders.

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Productivity or techno hassles. Fostex hard disk recorders come ready to plug and play. Hard disk means immediate track access, no rewinding of tapes.

Hard disk recording can also mean a lot of work - configuring a PC, or formatting a digital multi-track tape. Our four products are unique - FOSTEX unique.

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WHY & HOW - A UNIQUE APPROACH

Syntec are appointing a small, specialised and highly qualified group of dealers to represent the Fostex Professional and Consumer products. They've divided the product into two dealer segments.

These are the FOSTEX:

- Musician Feature Centres;
- and-
- Professional Feature Centres.

DEALER'S SUPPORT

Syntec understand how a dealer must be supported—all Fostex products are sold through dealers. We are introducing a progressive package of in store displays and promotions, merchandising, dealer support training and broad based advertising.

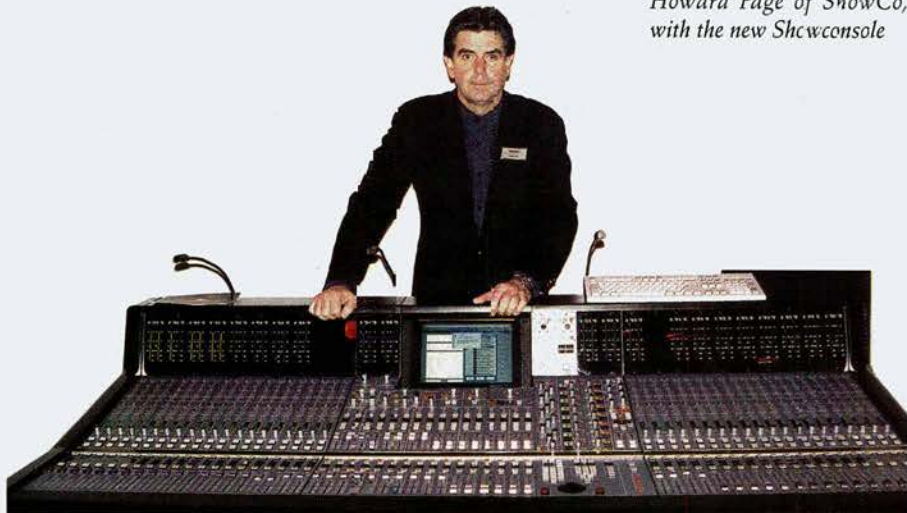
NEW PRODUCTS THIS MONTH

FD-8 8 track media independent digital multitrack recorder.

PS-M3 personal powered studio monitoring system with sub-bass.



Howard Page of ShowCo, with the new Showconsole



(Showconsole, continued)

"These are separately assignable mixes, you can have all the normal channels from the stage assigned to, let's say, the A stereo mix and then the B stereo mix. You have all those same channels and you can add half a dozen audience mics just to the B mix," Howard said.

This clearly opens the way for Showconsole to be used for stage monitor-

ing duties, where the 32 + 4 sends could be dealt with in a number of different ways, and re-routed at the touch of a button.

Sixteen 'VCA' style masters are centrally located, and these can operate any combination of input channels, mix masters, and group assignment.

WHERE AM I NOW?

Each channel strip has a set of LEDs which show you status for that individual channel. Dynamics gain reduction for the gate and limiter show up as two LED ramps. Every channel is tagged with an alpha numeric LED window, it appears that MOST engineers would be very happy very quickly with Showconsole, and most likely WITHOUT reading the users manual!

"You can have a different store for each song, multiple stores within each song - you might have a store which just sets the start of that song up or whatever. Every single parameter of the console - the labels for each channel, the auxiliary sends, the lot - is remembered in each store. So between each

store, you could change entire bands.

On the central status screen, songs are shown stored in any order. Next to the song store list is a Showlist. Look at set list for the night and click on songs to make a set list. The recalls are in order, with the next song shown.

"Let's say they handed me a set list and I did a show order but they suddenly decided to skip a song, it's simple to do," says Howard.

Notes about mixing cues, changing tapes and so on can also be written on the screen for quick reference. You can preview songs without calling them up.

"You cannot accidentally write over a store, you have to deliberately make an act to do so. Every channel has a full studio quality compressor/limiter and gate unit. Again all the settings are remembered for each channel." There are 10,000 scene memories at this stage.

The console relies on dual automation computers which monitor each other to provide fault tolerant operation. Harrison have had a lot of experience with high end film and studio consoles.

ENTER THE NEW GENERATION

Showco are aiming to have the console on a touring show by February for the start of the American touring season.

"We've got a little bit of fine tuning to do but all the functionality is there and it works the way we want it to," said Howard. "Obviously this is not for everybody, it's not going to rent for the price of a PM4000 because this can do the job of 70 PM4000's. There are multiple advantages to this desk for complex theatre situations with lots of quick changes of channels or inputs, festival shows with five bands in a row or even a big rock show with a support act where you want to keep the FOH area to a minimum". •

SONEX & DECOR SONEX

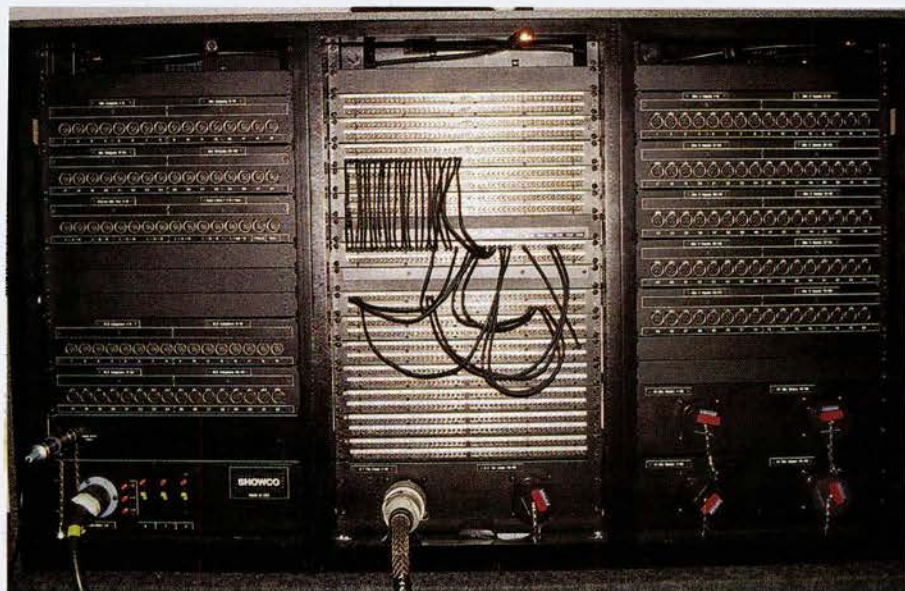
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DOD'S NEW SR-400D is a 2 in, 2 out room delay, offering full bandwidth delay for up to a long 2 seconds. A\$1,499, from CMI. +61 3 9315-2244.

REBIRTH FOR VS880

ROLAND'S 8 track all-in-one digital recorder / mixer firmware package has been revised as the VS-880EX. Now with 20 bit converters, you can record all 8 tracks at once. It offers a lot of new software too. A\$3995 retail, details Roland +61 2 9982-8266 or www.roland.com

MACH UPGRADES

MACH speakers have upgraded their Installation Series, and also have a new line, the Slingshot Concert PA arriving as this issue goes to press. Details: Audiology, +61 2 9584-0033.

MACH UPGRADES

MACH speakers have upgraded their Installation Series, and also have a new line, the Slingshot Concert PA arriving as this issue goes to press. Details: Audiology, +61 2 9584-0033.

DTRS to ADAT & return

Tascam into the IF-TAD, for conversion from TDIF to ADAT and the other way. Details from Teac, +61 3 9644 2442.



ROCK MUSIC

HORWOOD Australia have sold a large number of ROCKUSTIC outdoor speakers, installed in the grounds of the Top End Hotel in Darwin by Top End Sounds. Horwood (+61 2 9585-1011) also have a new web site, at www.horwood.com.au

ARX ZR AMPS

New technology from ARX, with non switchmode power amps featuring open architecture 'plug in' signal processing modules. The first model (ZR850) features 300w/ch at 8z, or 400w ch/4z. Details, +61 3 9555-7859 or www.arx.com.au



Akai update DD8

The AKAI DD8 modular digital dubber has new software, version V2.2 - which supports Fairlight MFX3Plus systems. Pitched at film sound, DD8 is a 24 bit magneto optical based system, designed for simple integration anywhere random access digital multitrack is needed. Info: Australis, +61 2 9698-4444, www.australismusic.com.au



Jim Edbon (FOH, Natali: Imbruglia) and Al Craig (Production Manager, L&W) with the new PA in Sydney

L&W choose X-Array PA

L & W Technical Services (formerly Sound on Stage Hire) has recently upgraded their hire inventory with the purchase of an EV X-Array system. The system made its debut with The Pacific Circle music convention, featuring Natalie Imbruglio.

Its first flying job was in the Capitol Theatre on the Tom Burlinson tribute to Frank Sinatra. The convenience and versatility of its flying system has drawn positive comments from various sources.

The system is powered by Electro Voice EP, series amplifiers and controlled by Klark Teknik DN 8000's.

Cerwin Vega at beach

SYDNEY: The Manly Jazz Festival ran over 4 days with 100 000 attending. 8 stages were used with all production being supplied by local company Lightfoot Sound. The main stage was located on the Oceanfront

and the PA consisted of 12 Cerwin Vega T250 Mid-High boxes and 6 T36 Subs as well as 2 T250s and 4 PS18Bs for front-fill. Drive gear included Crest amplifiers and a 40 channel Soundcraft K2 desk did the FOH honours.

Cerwin Vega Intense! series speakers have also recently been touring Australia and New Zealand with international act Galeforce Dance and Jon English.

• Lightfoot Sound can be contacted on +61 2 9144 5449 and Ashton Admor (distributors of Cerwin Vega): +61 8 9478 3800.

ARX for Paul Brown

Melbourne PA operator **Paul Brown** has taken delivery of a complete ARX Concert Series PA, comprising 925 sub woofers and 922 3 way loudspeakers, all driven with ARX SX1500 and SX3000 amps.

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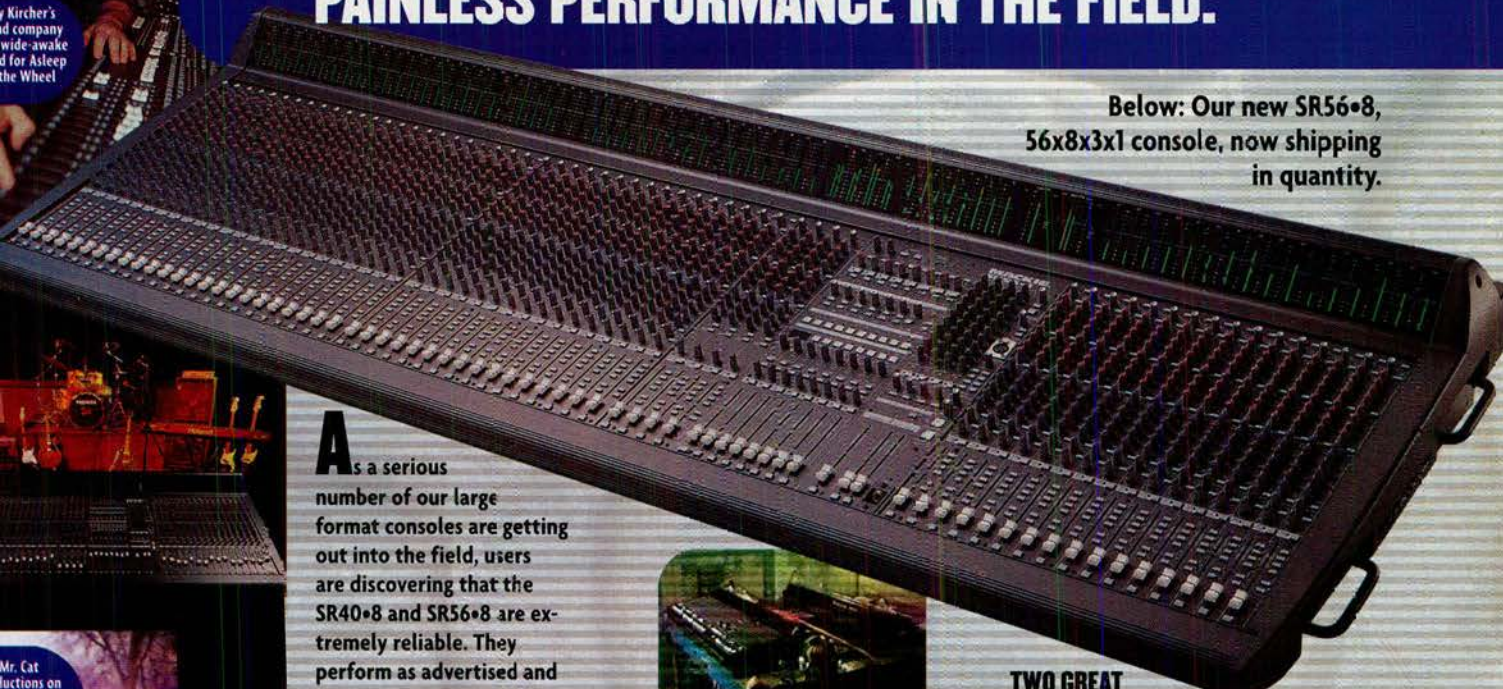
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Mr. Cat Productions on tour at the University of California, Irvine

tin Zebell, the Christian TRUTH. 301 e-nighters counting.

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During and after each new abuse, we performed exhaustive electronic tests on each console. They passed with flying colors.



40-8 and 56-8 undergo the infamous shock test at Wyle Laboratories, Norco, CA. Actual grainy footage from documentation video.



The vibration test. We don't have pix of the temperature and humidity tests because video cameras can't take the punishment. Below: our technicians perform electronic tests after one of the test sequences.



Nothing shorted out or worked loose. No channels failed. No extra noise crept in. Our new, extra-strict quality control procedures back at the factory have indeed paid off. These consoles are truly built like tanks.

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Capacity of a system can easily be increased or decreased. Indicative pricing would have an 8 IN module retailing at around \$275 ex-tax and an 8 OUT module retailing at around \$229 ex-tax. **Contact TRC on +61 3 9877-8233.**



SUPERTRAMP & CAD SPECIAL PERFORMANCE AT AES

There was a lot to celebrate for CAD at the recent AES, San Francisco.

The company has recorded their highest ever sales last year. Buzz Goodwin, who had previously worked with Audio Technica, was appointed the new CAD VP of Sales. There were new microphones and a healthy presence from CAD's Australian Distributors, Australian Audio Supplies.

Supertramp's lead vocalist Roger Hodgson put in a solo set at a special



function for CAD supporters and demonstrated why CAD microphones are gaining such an increased market share

The evening was such a success that almost all those who attended...took the long way

home'.

Pictured (L to R): Terry Memory (AAS National Sales Manager), Roger Hodgson (Super Guy, Supertramp), Buzz Goodwin (CAD VP of Sales), David Croxton (AAS Managing Director).

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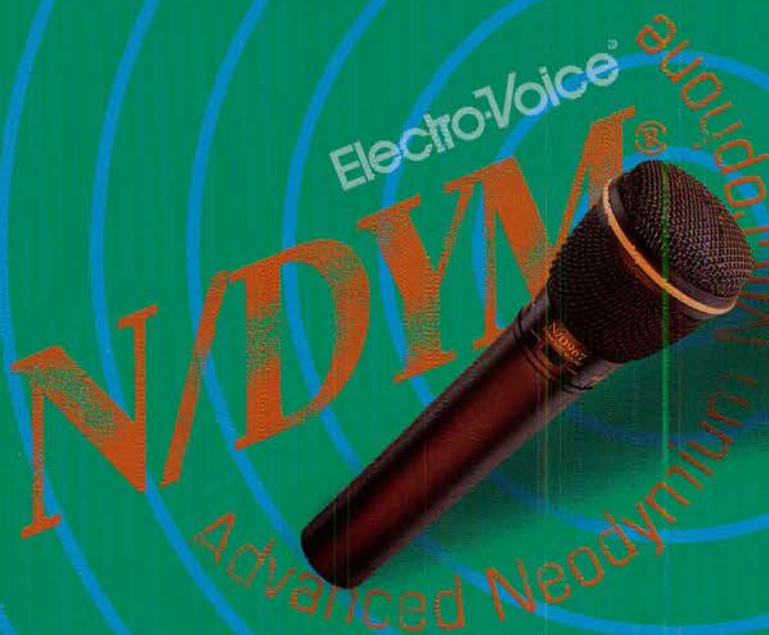
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Telstra 'Concert of the Century'

It was the biggest single live sound gig of the year, but Connections wasn't invited. Jands Production Services CEO Eric Robinson has a standing blanket ban on co-operation with Connections, for reasons long forgotten by us. Greg Weaver was there, and he filed this story

As part of the celebration of their 25 years in the Music Industry in Australia, Michael Gudinski of Mushroom Records wanted to stage a concert at the Melbourne Cricket Ground, which would include over 60 artists who had been involved with Mushroom over the years.

I was at the concert in my capacity of tour manager and live sound engineer for The Whitlams, who use the Mushroom offshoot, MDS, for distribution of their CD's, which are independently recorded and released.

This event ended up being named 'Concert of the Decade', bit of a big call really, I thought perhaps that title might have gone to Live Aid back in the 80's, but it sounded good. There was a good looking crowd, but given the line up and the ticket price of \$2.00, it was a 'sure thing'.

Day before:

Flew into Melbourne and went straight to ABC studios as The Whitlams were also appearing on Recovery and had to setup and do a camera rehearsal on the Friday afternoon. (On a side note, Chris Thompson, live music engineer at Recovery, had gotten rid of his entire mobile recording studio and had replaced it with a Yamaha digital mixer - which is much better suited to having 5 bands appear live on TV in 3 hours, as each mix can be stored in a memory and instantly recalled.)

The weather in Melbourne was pretty drab, with lots of rain, and this had put a lot of the soundchecks behind, and several, including The Whitlams, had been cancelled completely.

I went down to the site anyway to check things out, find out where the access was etc. Production event co-ordinators Eric Robinson and John 'Ossie' Vassey were working with the Jands personnel to make sure that everything was be completed as it should.

Just about all the bands used the common backline and stage techs, so the number of crew wandering around backstage was smaller that I had imagined it would be.

Gladly the weather cleared up for the show day itself, which kicked off at around 2:00pm.

For such a large show, that was put together in a relatively short time, I thought that things were put together quite well, at least from my point of view as a tour manager. My contact at Mushroom was Anne Gibson, and I liked the way that she always took my calls or returned my call with answers to my questions in a timely manner.

Staging

The stage was divide into three sections, the centre area remained the same throughout the day, and was used by the 'house band'. This was basically Paul Kelly's band, (Steve Hadley, Shane O'Marra, Peter Luscome, Bruce Hames, and Spencer Jones), who played with Paul and also played for several of the solo artists, such as Peter Andre and Denni Hines.

To the left and right of the house band position were two revolving stage areas, each with a partition in the middle. I kept thinking of the revolving bookcase that reveals a hidden room, so often used in children's cartoons like Scooby Doo, whenever I saw it spinning around. In 15 seconds, from an empty area of stage would appear a complete set of backline and musicians, ready to play. To the audience they looked like two huge mushrooms. While

one band was playing on the mushroom shaped stage on stage left, another band would be setting up on the rear section of the stage on stage right, ready to be spun around to face the audience on cue. This enabled the virtually zero change over time between bands, allowing all 60 acts to appear, and play their 1-3 songs.

Lots of common backline was used, provided by Stage Systems in Melbourne. I think that they must have just put all the backline that they had into a truck and driven it down to the MCG.

Stage management was by Peter 'Sneaky' McFee.

Sound FOH

Jands Productions Services were the contractors for sound and lighting and they provided at large PA system of various cabinets. The main speaker stacks were the Clair Bros. S4 cabinets, 30 per side, run by Carver amplifiers, and this were supplemented with sub-low cabinets on the ground. On the outside of the main stacks to cover the audience to the side grandstands, was a cluster of R4 cabinets, about 8 per side. There were also some R4 cabinets at the front for in-fill for people right down the very front.

Mounted high and behind the mix position was a delay stack of 16 or 20 Turbosound TMS3 cabinets.

Three Midas XL3 consoles handled the inputs from the three stages, FOH personal were Bruce Johnston Greg Rossman and Wyn Milson.

Monitors

Each side of stage had two monitor boards, which were getting signals from the stage inputs and also from the AV room which was providing backing track feeds where required. Metropolis Audio provided the AV facilities.

The Whitlams have recently obtained a Shure endorsement and are currently using the Shure in-ear monitoring system, which is becoming quite popular. Also present was Midnight Oil's rather comprehensive Garwood IDS radio in-ear monitor system, which has transmitter and receiver frequencies for any country in the world. This is an impressive system, but at a price, around AU\$18,000.00 per unit. The Garwood system was used by Kylie Minnogue, Denni Hines and others.

There was a large compliment of wedges for those not using in-ear monitors.

The concert itself

The majority of the audience was in the grandstands, most of the grass playing field area in the centre of the arena was blocked off, save for a few thousand seats for VIPs and guests of the artists performing. I imagine that letting the bulk of the crowd down on the grass would let to a rather large damage bill.

Everything ran very close to time, there were a few small technical hitches, but nothing major. The inclusion of TV cameras for the bands that were appearing after 8:00pm didn't seem to be a problem.

The list of acts appearing represents the past 25 years very well! •



More pro audio news from page 36

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Write in Reader Service Number: 130

Xmas Cheer

The holiday season is almost upon us, and since 'tis the season to be Charlie (fa la la la etc etc) perhaps a little humour might not go astray.

Do you ever stop and think that somehow through the years the original meaning of Christmas songs might have been lost?

Like 'The Little Drummer Boy' for example. Has anyone ever actually listened to this song, a staple of maudlin Christmas drivel? If anything can induce a "Bah, Humbug" out of me, then this song can. It's about a little boy playing the drum outside the manger where Jesus is being born. Can this be serious? The last stages of labour (a process described by many mothers as 'like trying to pass a watermelon') and you have to put up with some little brat tapping away on a drum all night outside the window? Surely that would try the patience of a saint! I'm sure that if I'd been Joseph I would have opened the window, grabbed the kid by the throat and graphically demonstrated just exactly where I would jam the drumsticks, and quite likely the drum as well, if he didn't shut up!

Silent Night? Must be the freelance PA operator's Christmas gig nightmare.

What about the twelve days of Christmas - "Twelve lord's a-leaping?" Must be a very different celebration than the one in our house. As Bazza McKenzie said, "the Poms don't like it plain and simple" And you can forget about a partridge in a pear tree. Given the usual temperature on Christmas Day, if on the first day of Christmas my true love gave to me - a car fridge full of VB, then that would be just right!

In the final year of school, for some reason I was the lucky soul in

my class who got the job of putting a little comment next to each person's name in the year book, some stirring, apposite phrase that would sum up their school career and send them striding forward on the path to the future.

One of the guys was called Leo Sheppet. I hardly knew him, but it was the end of the year and I was full of the Christmas spirit (or full of something), so next to his name I wrote "While Sheppets washed their socks by night!"

This didn't go down terribly well, especially since he was Jewish, and I went from hardly knowing him to becoming remarkably closely acquainted with the knuckles of his right hand!

We won't even discuss what I wrote about Gideon Rotton, except to say that it has weighed heavily on my conscience ever since!

It's common in TV news bulletins to wind up with a funny animal tale. Indeed, if it wasn't for surfing kangaroos or rap dancing wombats, Americans' knowledge of life downunder would be even less than it is now.

So here's a dog story.

People who have visited ARX world HQ in sunny downtown Highett know that we have dogs the way most places have rats. A couple of them have shuffled off this mortal coil and now drink from that big water bowl in the sky, but there are still enough of them roaming around the place to give the reps a hard time.

There's Jessie, the speaker departments sub-woofers, Eddie the expert, and Socks, guardian of the shipping dept, but as well as them we used to have Kirin, Col's reputed dingo/shepherd cross (and named after his favourite beer), and my black Afghan Imperial Tazi of Kabul Valley of the Moon known to his friends as Rudi Valley. (I was stuffed if I was going to stand around in the park yelling out "Valley of the Mo-o-on, Valley of the Mo-o-on - here boy")

We use a lot of cartons at work. Everything that goes out the door needs one, and so consequently we are the target of lots of visits by reps from cardboard box companies looking for a slice of our box business.

So one day, one of them comes to the door with some samples, sits in my office and goes through his pitch. While he does so, Rudi is sprawled out under my desk, one leg over his head, vigorously chewing and slurping in what can only be described as the toilet area.

When I first got the dog, I knew I wasn't going to breed from him, so when he was old enough I had him de-nutted by the vet. It didn't seem fair to have him wandering through life perpetually horny, especially in a factory full of female dogs. You could imagine him roaming around the place dressed up in baggy pants, baseball cap back to front, talking like Eddie Murphy and saying "Yo, where's mah bitches?"

So although he no longer had the family jewels, he still had the bag that they came in. And he was very partial to snuffling around down there when the mood took him.

The rep continued trying to do his pitch but was continually distracted by this big shaggy black fur ball under the desk, until the incessant slurping noises eventually drowned out what he was saying.

He stopped talking, looked at the dog, and then, as God is my witness, laughed and uttered the classic line

"Jeez, I wish I could do that!"

There was an awkward silence for a few moments, then I replied "Well, alright then - but you'd better pat him first!"

Have a happy and safe holiday season, and if you're bored at home after Christmas dinner, you can always surf over to <http://world.net/~dunkfry> and while away a few hours with some more stories.



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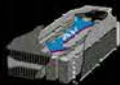
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Write in Reader Service Number: 187



Mandy Jones explores a backstage interactive sensation!

Venues

- A 300 seat theatre was recently opened at **Taronga Zoo** in Sydney. The \$3 million ANZ Conservation theatre was funded through a 'buy a brick' program where individuals and companies sponsored each brick.
- The **Sydney Opera House** saga goes on. NSW Premier Bob Carr has asked 'House designer Joern Utzon to return to the project as principal consultant of a \$66 million master plan.
- An independent report has recommended a major redevelopment of the **Subiaco Theatre Centre** complex as well as improvements to the Regal Theatre. The report proposes to increase the seating capacity at Subiaco's main theatre to 450 seats, and to reduce the seating capacity at the Regal Theatre from 1000 to 800 seats to allow for improved sightlines.
- Melbourne's **Capitol Theatre** is on the market for just \$1 million. The 2000 seat cinema, designed by Walter Burley Griffin and built in 1924, underwent major renovations in 1965 which reduced its seating capacity to just 700 and replaced the main stair case so that shops could be built on the site.

People

- **Phil A'Vard**, head of Monash University's Performing Arts will retire at the end of the year after almost 30 years of dedicated service. A true visionary in the industry, Phil established the 'Saturday Club' annual season of children's shows at the Alexander Theatre as well as developing a diverse and competitive season of professional theatre shows for local subscribers.
- After nine months of scouring the international theatre community Melbourne Theatre Company have named **Simon Phillips** as their new Artistic Director. He will take over from Rodger Hodgman's 11 year reign at MTC in June 1999.

Shows

- **RENT** has opened in Sydney

to rave reviews. It will run until February next year before moving to the Comedy Theatre in Melbourne, opening March 26.

- On the road for the smash hit Australian musical **The Boy From Oz**. After huge success at Sydney's Her Majesty's Theatre, it will open in Melbourne in May, after a short Brisbane season. Last month Connections praised the sound design by John Scandrett of System Sound. Jands then undercut System and have taken over the tour - so whose design is now to be used?

- **Cirque Du Soleil** arrives in Sydney in January 1999 for a 10 month tour. The Quebec based company combines dance, acrobatics, trapeze work, mime, hand-balancing, contortion and juggling under a 20,000 square metre Big Top. Cirque Du Soleil will employ over 150 local temporary staff in each city during the tour, so update that resumé now!

- **Showboat** will open in Melbourne in early 1999 despite a legal wrangle between theatre developer and entrepreneur David Marriner and Star City Casino. Marriner's company Stageright was said to be entitled to the first \$3 million in profits. Showboat finished its season with some lighting equipment removed due to a payment dispute.

- **Steel City** is on tour in the USA with an audio system on hire from Norwest Productions in Sydney. Norwest CEO Chris Kennedy told us that he met the market price for hire in the USA and didn't charge hire during the boat trip. He says it was worth a punt for an 18 month hire. The show will be loaded into Radio City on Kennedy's birthday in January - coals to Newcastle!

- Monash University's Theatre Season at the **Alexander Theatre** will not continue due to declining ticket sales. Season attendances are at 52 per cent of capacity which translates into a loss of \$170,000.

Send news to mail@conpub.com.au or fax to +61 2 9876-5715

Australian theatre has been captured on CD ROM for a new interactive program called StageStruck. Created by a small multimedia team from the University of Wollongong in partnership with NIDA, the CD has scooped the pool winning two EMMA awards for interactive media and a British Academy of Film and Television Arts award.

Stagestruck was designed for students as an introduction to Australian theatre. Users of the CD ROM not only find out about the history of the Australian industry, but also have the opportunity for a hands on look at various production elements.

The interactive nature of the CD gives users an 'access all areas' approach to backstage where they can wander through a typical backstage complex, meet cast and crew, and visit production offices to see how a performance is put together.

The project was developed in association with the Sydney Opera House, Opera Australia and the Australian Ballet under the Federal Government's Creative Nation initiative.

StageStruck features some incredible graphics and an atmospheric soundtrack which includes a soundscape of typical backstage noise: cougar lifts, roadcases shutting, and power tools.

The interactive tour begins in the foyer of the Sydney Opera House. A 360° pan around the room shows people milling around the foyer, sipping a glass of champagne, buying a program and looking at the view of Sydney Harbour.

Backstage, a stage manager acts as a tour guide pointing out key crew members and their role. Prompt corner and the Stage Manager are introduced through a close up of the SM's desk and prompt script and an audio sample of typical pre-show cues.

Then by clicking on the beam

of light coming from the lighting bridge, the followspot is featured including realistic cues from the stage manager and confirmation by the operator. The stage crew including fly crew and mechanists are shown performing their duties and there is a realistic representation of a pretty



Insanely great graphics on StageStruck CD

typical conversation between SM and fly crew on headsets where the SM reminds the crew to be careful bringing in a backdrop, the crew replying "Yeah, I know, don't squash the talent".

In the technical studio, the user gets to try different techniques in sound design. Through using sample files and experimenting with volume, shortening, looping, and layering for music and dialogue. Once created these files can be stored in the notebook to be used in the final performance.

A costume studio allows the user to trial different costumes styles, and the set design studio provides a tool box of set design elements that can be incorporated together in different styles and colours.

Finally, all the sample files are put together in a unique performance created by the user - the set, soundtrack, dialogue, cast, choreography all decided by the user.

There are lots of nice touches throughout StageStruck which make it as realistic an experience as possible - the guard at stage door, the sound effects throughout and the humour of it. It is also good to see a mixture of men and women featured in the production roles. One of the best features is the search engine which turns the program into a valuable research tool. •



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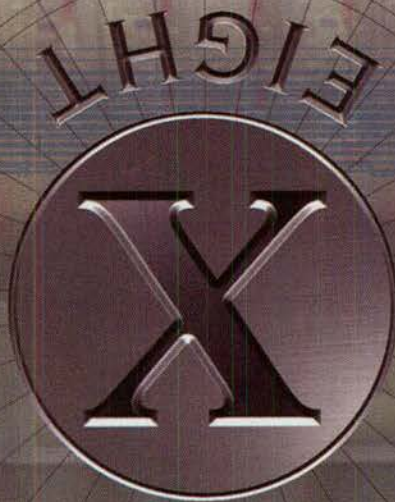
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Write n Reader Service Number: 167

Connections

AV PRESENTATION NEWS

January dateline for Sydney 5 day AV training courses

Institute for professional development returns to Australia

NORFOLK (VIRGINIA): Sales Skills is the subject of a new five day ICIA course to be held from January 18th. Three audio visual based courses will be held in Sydney, for the third year running.

"Sales of audio visual presentations, events and even equipment tend to be done by people without formal sales training" says Brett Bower from ICIA (International Communications Industry Association). "Account managers often graduate from a technical role, but sales requires a different skills set".

By way of example, Brett cites the case of "stressing benefits over features. "Often people don't want to know about technical features of a product, just how it will work for them. Yet sales people are bombarding customers with unwanted detail".

The sales course is pitched at both AV company and manufacturer reps who sell technical products. Aside from industry specific topics, it also deals with formal selling techniques, the psychology of sales, how to close a sale properly and overcome client concerns.

Crucially, selling in an honourable manner is a topic dealt with, along with understanding the different selling cycles and maintaining a client base.

The other two courses are the latest versions of ICIA's successful technical topics AV Hire and staging fundamentals for technicians as a broad brushstroke course aimed at new staff with

limited experience.

It deals with hands on technical knowledge, but also stresses customer service, because AV company customers are paying staff for behaviour.

"Imagine a client is doing a presentation. They are nervous about it and when they arrive something is not quite right - maybe the projector is not set up yet. The client will possibly give the AV tech some stick. It's important to understand what the big picture is, and how all the pieces fit together", says Brett.

This course is run by Chris Gillespie, the training manager for Extron Electronics. Prior, he was a project manager at AD-COM in Toronto.

The most popular course is Video and Computer interfacing for large screen display. It deals with all the issues associated with display, and CRT, ILA, LCD, and DLP projectors.

It looks at the pros and cons of each, interfacing, scan rates, resolution, intensity, light level, screen position and screen types. "It's a course about the advanced applications of display equipment" states Brett.

ICIA courses don't come cheap, starting at A\$1,100. There is a structured cost depending on membership status. Courses run for five days, at the Gazebo Hotel in Sydney's Kings Cross. They are however the only structured courses of their kind currently offered for the AV industry in Australia. The previous courses attracted over 100 people. • **Info: +61 2 9531-6777.**

EXPERIENCE PREFERRED

Immigration Inspires Immersive Installation

Melbourne: Richmond Sound Design Ltd of Vancouver, manufacturers of sound and show control equipment, report installation of an AudioBox moving matrix sound source in Gallery One of the Immigration and Hellenic Archaeological Museum in Melbourne.

Sound design and show programming (contracted by Australian Business Theatre) was accomplished by Activated Space Pty Ltd of Melbourne.

Activated Space is led by composer and computer musician Garth Paine, whose most recent commission Escape Velocity was featured at SIGGRAPH '98 and on tour through Europe. Garth's previous commissions include MAP, Moments of a Quiet Mind and Ghost in the Machine at locations throughout Australia.

Snarling arsenal of AV

The gallery uses an array of immersive AV technologies to

convey the immigration experience, including interactive CD's, a Philips digital video store, and the AudioBox, all coordinated by a dedicated Alcorn McBride show controller.

The Alcorn McBride V4 show controller has 4 RS232 ports and one MIDI port. The AudioBox is running MIDI Show Control (originally designed by Charlie Richmond, AudioBox maker).

The Philips MPEG Video player is controlled over RS232 using custom control strings written in HEX. There are also 2 Philips CD-i players controlled from other serial ports. Roland AR100's are also controlled via MIDI, but they require MIDI Note Numbers, which are programmed on the Flash RAM Card to play certain audio or MIDI tracks from the card.

The Gallery is divided into 3 zones. So that there is not a lot of noise all the time, and so the

(continued on page 34)

thismonth

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COMING: VIDEO PROJECTOR BUYER'S GUIDE - MARCH

CONTRIBUTIONS WELCOMED, email to mail@conpub.com.au or fax to +61 2 9876-5715 by the 15th of the month prior.

Things DO go wrong.....

TABCorp AGM incident

By Mandy Jones

Two incidents tarnished the annual TABCorp shareholders meeting in Melbourne recently. Over two hundred shareholders were in attendance at the function held at the Carlton Crest Hotel.

The first incident involved a computer graphics presentation being given by CEO and Managing Director of TABCorp, Ross Wilson. Mr Wilson made a comment about hoping the system wouldn't fail before launching into his presentation, at which point the slides began scrolling uncontrollably.

Tricia Wunsch, General Manager of Corporate Affairs said TABCorp had anticipated problems with the slide show presentation so a back-up system was on standby. Unfortunately it was not in fact the entire system that went down, only the remote control, so that when the back up system was activated the remote remained jammed causing the 25 minute presentation to scroll through in less than 25 seconds.

The second incident was of a much more serious nature.

A section of blue velvet curtain, used as a backdrop, swayed and then fell to the ground during the meeting. The section was one of three used to cover a span of around 50 metres supported by 5.5metre aluminium push-up poles and 700mm steel baseplates.

The curtain and its support structure fell behind the TABCorp Chairman and landed close to shareholders sitting in the front row.

Ms Wunsch described the incident as "very upsetting".

"Obviously we were quite disappointed. We still don't know exactly what happened."

Ms Wunsch believes the support structure was either knocked by a member of crew or that an open door created a draft which caused the section to

break away from the main bar. Fortunately no-one was injured.

Staging Connections are the AV company which handle all staging and technical support at the Carlton Crest Hotel.

The incidents highlight an issue which was raised in the letters section of *Connections* earlier this year - that of venue AV policies and the practice of charging an additional fee to hirers wanting to bring in their own choice of AV provider.

Ms Wunsch confirmed that this was the case with the Carlton Crest, and that fees would apply to bring in another AV provider however Ms Wunsch said that the arrangements were satisfactory.

"Staging Connections have a reputation as one of the best audio visual companies so we didn't consider using anyone else."

Ms Wunsch said that since the ill-fated meeting letters have been exchanged with the Carlton Crest but the issue has not been resolved as yet. Ms Wunsch added that she will be looking into other venues for next year's shareholders meeting.

General Manager of Staging Connections (Victoria) Bill Kneebone declined to comment on the incident, however the Marketing Director of Staging Connections Australia, Ian Whitworth provided *Connections* with further information.

Mr Whitworth said that the system had been installed two days prior to the incident with no indication of instability. He said that mechanical failure has been ruled out as the cause, and attempts to simulate the incident have failed to make the structure fall again.

Staging Connections will adopt new procedures such as supplementary support from rigging points for drapes, to ensure that similar incidents do not occur in the future.

The race that stops a nation...

but who is responsible when the power goes out?

It's the biggest corporate event in Australia. Over four days, around 11,000 corporate high-flyers sit under canvas watching the Spring Racing Carnival at Melbourne's Flemington Racecourse. While every race during the carnival is important, the single most important three and a half minutes of the whole carnival are for the running of the Melbourne Cup.

Three minutes prior to the running of this year's Melbourne Cup, the racecourse fell victim to a power blackout that left corporate marquees without power for 15 minutes.

Gearhouse were the audio visual providers for the corporate tents supplying Toshiba cubes to the marquees as well as running monitors to the carparks showing all TAB races.

The blackout left those in the corporate tents without vision or sound of the big race. Power was restored after fifteen minutes - just in time for the replay.

Rona Walker, Manager of Gearhouse (Melbourne) said that Gearhouse have provided the same facilities for the Spring Racing Carnival for several years and this was the first time a loss of power had occurred.

Electricity company AGL are the electricity providers for Flemington. AGL spokesperson Rob McGuinness, explained that a sub-station, usually only used for ancillary services to outer parts of the racecourse, overloaded when in excess of 500 amps were drawn from the 400 amp fuses.

"It was a case of sheer overload," said Mr McGuinness.

Mr McGuinness said once the sub-station overloaded it took the on-course electrician 15 minutes to get the back-up generators on-line. Once the generators were holding the supply, the electrician was able to replace the fuses, at which time power was restored and maintained.

Mr McGuinness said AGL assisted the Victorian Racing Club on Oaks Day by taking precautions and by monitoring power usage at the racecourse to reduce the load on the transformer. He said that AGL always perform thorough checks prior to all major events, and even had on-call electricians in the vicinity of Flemington on Melbourne Cup day as a back-up. He said despite all of this being in place the sub-station's capacity was still overloaded.

Mr McGuinness said he believed a larger than expected attendance in addition to the unusually warm weather led to a greater need for air-conditioning and refrigeration.

This incident serves as timely warning to anyone planning outdoor events where power distribution is shared between different groups. AGL recommends that organisers of major events are aware of load limits and that all groups using electricity prepare detailed load lists outlining anticipated load so that capacities can either be matched or shared.

- Mandy Jones

About the AV co spat...

Gearhouse wrote to clients of Staging Connections after the TabCorp incident - enclosing a reprint of a *Connections* article from earlier this year. *Connections* **didn't consent** to reproduction of the article, *nor would we have*, under the circumstances. Gearhouse apologised to *Connections* when we pointed out that our copyright requires that consent in writing from us is required before reproduction. *Take note!*

Video on demand: Perth Co ship 5 tonnes to Saudi Arabia

System designers struggle with access time for video replay on demand. A laser disc based system needs two to four seconds after a museum visitor has hit a play button before vision commences.

Perth based Audio Visual Consulting have designed a hard disc based system offering 0.4 of a second play start time.

The Video on Demand System is for the USD\$250 million King Abdul Aziz Historical Centre in Riyadh in Saudi Arabia. This A\$5 million Audio Visual and Multimedia contract was won by Audio Visual Consulting in a joint venture with RSTS, a Riyadh based contracting firm.

Phillip Jenkins, the Principal of AVC and system designer, says the purpose of the system is to provide quests to the museum with instant visual displays at the push of a button to illustrate the exhibit. There are also theatres that when the guest walks the movement is detected, lights are dimmed and the show runs. In the more complicated theatres there is also lighting, laser and smoke effects synchronised to the

sound and vision.

The system provides broadcast quality video and audio to 132 destinations through the museum, from a dual redundancy server, via a high speed fibre optic network to a vast array of computers with special multiple port video and audio cards, to monitors, sound systems and video projectors.

In July of 1997 AVC (Audio Visual Consulting) was asked to

consider getting involved in the project by the Museum Consultants, Lord Cultural Management and Planning out of Toronto Canada. AVC had worked with them on two other projects in Singapore, namely the Singapore Discovery Centre and the Battlebox.

AVC won the project against 23 of the major companies in the world. They researched and found a suitable partner who

was enthusiastically wanting to be involved in the project. RSTS (Riyadh Saudi Technical Systems) had the enthusiasm, technical expertise, financial capability and the correct pedigree though no direct expertise in the area. The system is being installed at presstime.

Connections hopes to detail the system in a coming issue.

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OPTISCREEN DEBUT WITH BOYZONE

Total Production editor Mark Cunningham checks out the new LED OptiScreen from Gearhouse, which made its touring debut with Boyzone at Wembley recently.

Irish boy band giants Boyzone reached a new peak in popularity this autumn—the double whammy of a sold-out European tour, and an appearance in U2's video for 'Sweetest Thing'.

The autumn Boyzone tour was the first to boast the new OptiScreen LED video screens from Gearhouse—and what a difference they made compared to the Barco 9200 projection/soft screen system used on their last outing. Viewed head-on, the images were sharp, true of colour and added a dynamic presence lacking on so many other video supported tours.

Admittedly, as one moved to the audience wings, the images became tinged with redness, but this viewing angle problem, I am told, is currently being dealt with by Gearhouse's R&D department. Also, as one would expect from the LED medium, the audience needs to be 15 or 20 feet back from the screen before the full impact of the picture quality can be experienced. The 'wow' effect takes hold from thereon.

BLACK AS BLACK

What Gearhouse has achieved with OptiScreen is the seemingly faultless and hitherto elusive full saturation of black. It's about as black as black can be. There was no sparkle or greyness at the Boyzone show, and this is possibly where OptiScreen will score big points with video directors.

Chris Hilson, the Video Director of this show, said: "The great thing about the LED format is that we're no longer competing with the LD. With the Barco projection system, as soon as a stray light hits the screen it



can wash out the video image. Lighting doesn't affect LED images, and if anything the LD is asking us to turn down the brightness, even though we're only running them at 24% intensity."

OptiScreen was developed over 13 months by ProQuip Special Projects after its parent group Gearhouse saw its provision of LED technology as a natural progression from ProQuip's supply of video walls. My backstage guide, Lee Spencer of Gearhouse, took me through the background of the screen: "We looked at every other manufacturer's product and recognised flaws with all of them, so we took it upon ourselves to develop a screen which would eliminate all these flaws," said Spencer.

"Two 4 x 4 screens, each measuring 20 square metres, are touring with Boyzone, but we feel that in the next two or three years, as video becomes a more dominant part of touring set designs, there will be a demand for bigger configurations - up to 100 square metres."

Asked which aspects of OptiScreen make it compete favourably with its rivals, Spencer singled out its use of Virtual Pixel Technology, which effectively doubles the perceived screen resolution.

"In real terms there is actually 20mm LED resolution but with Virtual Pixel Mixing we can get that down to 10mm, so the resolution is therefore higher," he said, explaining further. "The pixel cluster on this screen is made up of two greens, a red and a blue, and our LEDs were sources from Toyota, whereas Nichia supply to most of our competitors."

"The greens are diagonal to each other and the pixels below and next to them allow three clusters to mix to create one image. Your eye thinks it's seeing the same thing but it's not, so therefore it reduces the gap."

VERSATILE

Signal input to the OptiScreen panels is via a single fibre optic cable. "All the fibre optic cable that's needed on this show for video would go in a carrier bag," said Spencer. "A half a mile length of fibre optic cable could easily be carried on one arm."

An advantage illustrated by Spencer was the screen's versatility:

"The beauty of the panels is that they are all 4 x 3, so unlike a couple of our competitors who have odd-shaped panels, our screens can go up 2 x 2, 3 x 3, 4 x 4, and so on. If you take a 4 x 4 and chop one of the lines off you can create a 4 x 3 or a 16:9 ratio, so you have total flexibility."

In charge of the creative end of the video effort, Chris Hilson, along with colleague Richard Burford, sat behind a F3L supplied Portable Production Unit (or PPU) which included an FDM-V162 16-input digital desk, a Dataton switching system to control the pay-in sources (Betacam & PVR), a 16 x 16 matrix switcher, and 54Gb of PVR video cassette storage in a Flamingo Digital Systems hard disk.

There were a few video inserts for song intros, but Hilson's show was mainly live camera shots. •

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Concept to reality - the road travelled

Staging a high profile corporate event is a precision exercise that simply cannot go wrong. AAV Business Communications recently staged the Sponsorship of the Year Awards for the Australian Financial Review Magazine. The evening, hosted by high profile newsreader Angela Pearman, and with the Prime Minister present, was held at the Museum of Contemporary Art in Sydney.

The timeline for the event started in July, when AAV took a brief - which was to build on the success of the previous year's event.

The cultural component of the event was arranged through the Australia Foundation for Culture and Humanities.

A concept was created, called 'Every Partnership is Unique'.

Newsreader Pearman opens the evening with a stage set for an orchestra, without musicians present. She speaks of the beauty of each instrument on stage, whereupon each musician quietly enters and starts to play.

The talk is of partnerships - that partnerships are greater than the sum of their parts.

The scenario illustrated that like the orchestra, the corporate world also benefits from partnership. Then the Bangarra Dance Theatre continued the theme by performing a mixture of contemporary and aboriginal art - a blending (partnership) of two styles of dance.

Naturally the concept won, so in August AAV structured a proposal with details of venue, staging, treatment of theme, talent and the timeline.

The venue, talent and components were then all booked for the late October event.

Many meetings with the client were held, culminating with the 6am call to load in on the day.

Audio Visual requirements included a DLP video projector, which was fed the awards segment which was created on Director 6.0, and run on two Mac's running in tandem.

Attention to detail is the absolute mantra for corporate theatre events like this one - so much can go wrong, and if it does, there is no second chance!



Newsreader Angela Pearman launches the AFR sponsorship awards at the Museum of Contemporary Art in Sydney.

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Brett Bower's Column

Moments of Truth

Adapting to change is critical in the ever increasingly competitive market. Professionals sales people in the AV industry need to understand the significant impact market changes have on the selling process.

As we migrate toward digital technology, there is a growing dependence on computer interfacing and software. As clients require more detail during the bid process and demand more information, the sales cycle has become longer and more complicated.

The result is that AV sales professionals have become professional industry consultants building on strong relationships with clients to differentiate themselves from their competitors. Multi-level positioning for clients with complex buying patterns is a growing trend in Australia. Most rental companies now appoint individual clients with their own Account Managers to make sure they are receiving the best possible service, regardless of whether they require a single white board or they are producing a huge event.

To say the regional rental and staging market is competitive would be an understatement. There seem to be new players entering the market everyday. The players are all aggressive, have fast response rates and all boast a higher level of service to their clients. Companies today need to be smarter and more creative in order to beat operators that sell on price alone.

There is increasing pressure to deliver added value. A faster response is required each time a brief is given and some may even



have a need for in-depth knowledge of the industry and technology. Clients demand a lot because they know if their needs aren't met, there's another competitor they can go to who will be more responsive to their needs.

Central to all sales and marketing is the notion that there is no such thing as a neutral encounter with a client. Every time you have client contact - through whatever means - he or she will feel either a little more positive or more negative about dealing with you and your firm. In marketing terms this is often called the "Moment of Truth". Clients have far higher expectations of a company's ability to provide support and service.

No matter how predictable the change in sentiment may seem, clients experience a moment of truth every time he or she talks to you on the phone, receives a report, sends a letter or just hears the company name. All your "Moments of Truth" should be positive experiences that not only lead to repeat business and referrals, but also contribute to increasing the level of customer service provided by the industry as a whole.

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AV at museum

(continued from page 26)

visitor feels that they are causing some feedback within the gallery, Acoustisearch presence sensors are installed in three places.

The gallery features a main sound scape and video display. This main display uses the AudioBox and the Philips MPEG player. There are video clips projected up onto the walls on both sides of the gallery. There are 20 video clips representing motivations for people to leave their home lands and migrate to Australia. These video clips have synchronised music. The AudioBox then provides all the sound effects.

The sound effects are dispersed through 17 Tannoy CPA6 speakers which are placed along the length of the gallery on three levels - floor, head height and ceiling, and 2 Subs. AudioBox provides the flexibility to move the sound through the space in realtime, so trains travel the length of the space, birds fly over head, ships horns and other sound effects are placed to pro-

duce an effect that the events depicted on video are occurring within the gallery itself.

Just inside the entrance is a small central showcase.

When the visitor approaches the showcase, a whispered collage of multilingual voices emanates from the case, representing the thoughts that may have been in the minds of those embarking on a journey to Australia.

The central zone of the gallery then has 2 LCD screens set into the wall - as the visitor approaches their recesses, a sensor starts the CD-i player which plays video of stories about the journey out to Australia.

At the far end of the gallery is a large show case. Within this case is a clever piece of projection which results in the talking head of Roberto floating at head height within the case. He tells stories of arrival and how his Ital-



ian family settled into Melbourne and their influence on the local community. This display is also presence sensed.

The Alcorn McBride V4+ controls the pace of playback of the Philips MPEG Video and AudioBox display, and controls

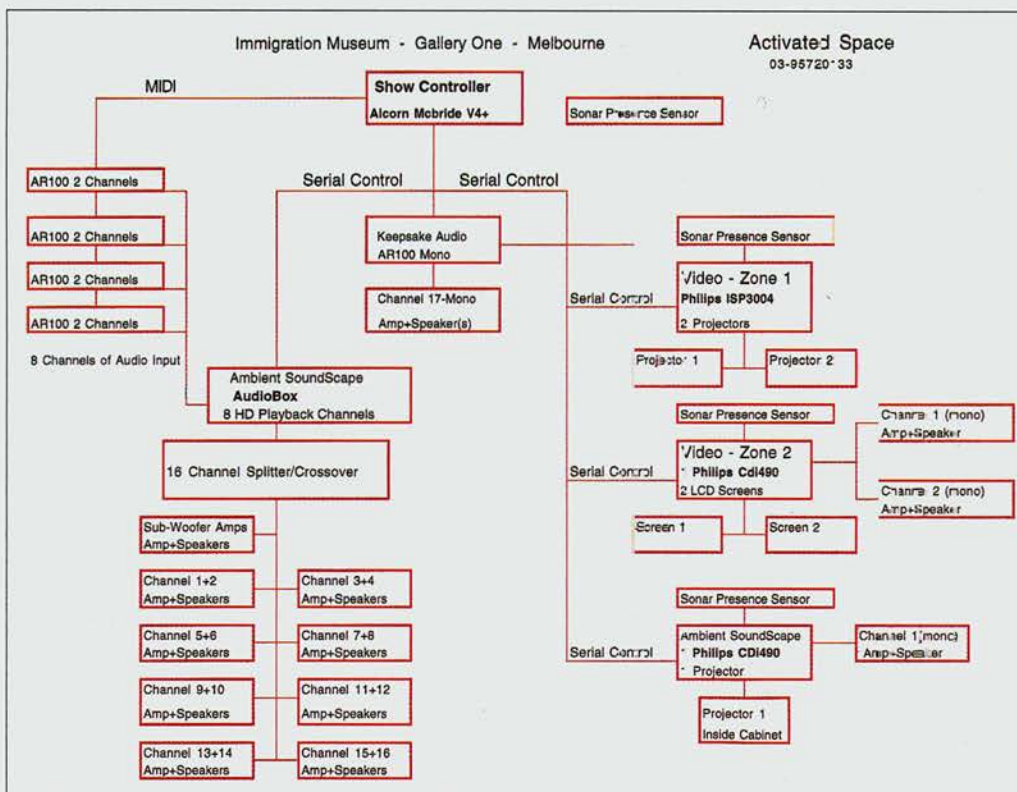
also runs MPEG2 and I prefer the design - it runs much cooler - and because the PCMCIA HD is easily removable, the video data can be edited and rearranged off site without removing the device".

Alternate content can also be inserted into the card slot without any hassle.

The AudioBox is a 16x16 matrix automatable mixer with 8 channels of hard disk playback. "The AudioBox" says Garth, "is a very cost effective way of using sound to bring an environment alive. The ability to change spatial positioning, equalisation and delay on each channel in real time is absolutely essential to creation of engaging multimedia environments. As the public and our clients raise their expectations of the quality and dynamics of AV displays, products like the AudioBox will become indispensable in realising design goals."

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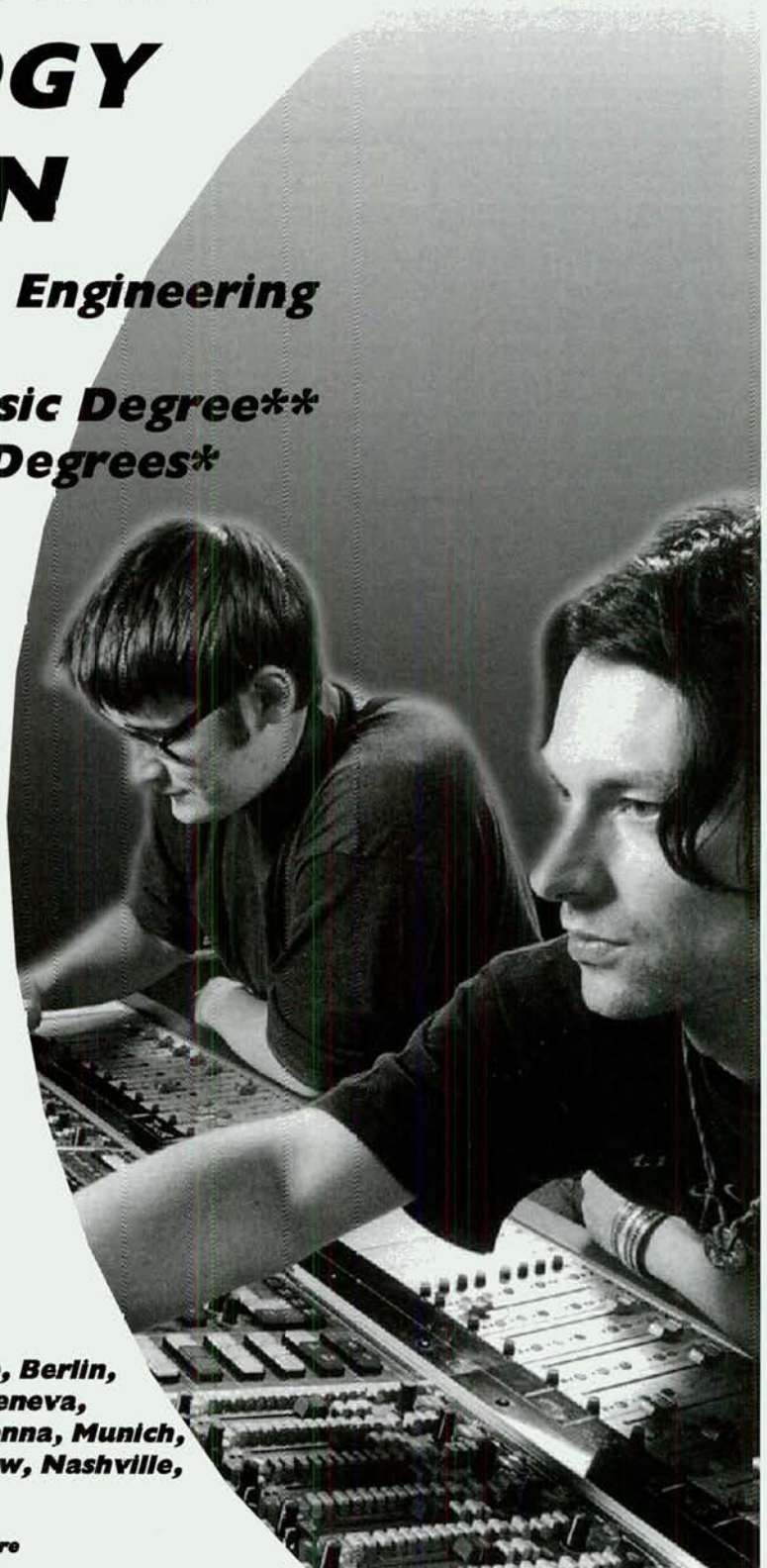
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Zefiro InBox

Until recently, I have often found myself looking for an easy way to make a high quality digital recording in a remote location without carrying a mixer to drive my recording mics up to line level. Sure, I could have purchased a simple mic to line converter of some description, but I held back because I wanted to try and find something that was of high quality (for recording) and also supplied phantom power.

Well, I was looking for something else entirely when a new alternative popped into view. I was looking for a gadget that would change the digital audio optical S/PDIF format either to coaxial S/PDIF or AES/EBU formats for me on the fly. When my research team (a euphemism for the kids I teach) found a company in the US that made this little black box, I browsed in their web site to see what else they made, and bingo...

The Zefiro InBox is one of those classic little black boxes - or in this case, blue - that does whiz bang things. It takes two mic inputs, and converts this to digital out. Simple, but so useful. In remote location recordings, all I have to take now is my DAT or Minidisc, the mics, associated leads and stands, and this box.

The box itself has but two controls - level attenuation for each mic. The plugs and sockets are two balanced XLR inputs and the digital out options are optical S/PDIF, and coaxial S/PDIF via 3.5mm socket. The whole thing can run off a DC supply, or 9V battery. The battery life is suggested in the documentation to be 8 hours, but I haven't tested this yet because I haven't found an 8 hour plus digital recording format. It is sufficient to say that if the battery drops out on you, it's your fault for not being careful - particularly seeing that the box has a low battery indicator.

On the digital specification side of things, the box uses a 20-bit A-to-D converter chip. This apparently has some interesting benefits to those of us recording in 44.1kHz, 16bit.

Some knowledgeable folks have asked why the InBox's doesn't dither its least significant bit, considering that it truncates its 20-

bit data down to 16-bits. (In some situations, truncation results in audibly unpleasant artifacts.)

Although the InBox uses a true 20-bit A-to-D converter chip (AKM5351, a slight improvement from the AKM5350 found on the ADA1000 converter), its actual dynamic range is just around 98dB. This means that although there may be more signal in the noise, the S/N ratio is only giving you about 16.5 bits of real information above the noise floor. Oddly enough this works to our advantage when used with 16-bit gear (like CDs and DAT decks)

because there is already a natural 'dither' in the 16th bit as it is being recorded from the InBox. There is no need to add additional dither noise to the signal because the signal is already hanging right off the edge of 16-bits.

If the InBox truly delivered 20-bits of real information (that would probably require a so-called 24-bit converter!) then a 20-bit to 16-bit truncation would result in the quantization noise that the human ear would find offensive. In this case, an A-to-D would require additional dither noise to be added just beyond the 16th

bit to randomize the signal such that the 16th (truncated) bit was not perfectly quantized.

Summarizing, the InBox will sound great with your 16-bit DAT or MD recorder due to the natural dither in the A-to-D converter. And if you go through the effort of capturing 20 or 24-bits (e.g., with a Zefiro ZA2 in a digital audio workstation) then you'll still gain a few extra dB and perhaps a bit more signal below the noise floor.

The device costs US\$299, and you can purchase direct using a credit card - but maybe some local importer might pick it up. I purchased it through Core Sound because I wanted their other little box as well, or contact Zefiro directly.

You can checkout the Core Sound web site at www.core-sound.com, or Zefiro at www.zefiro.com



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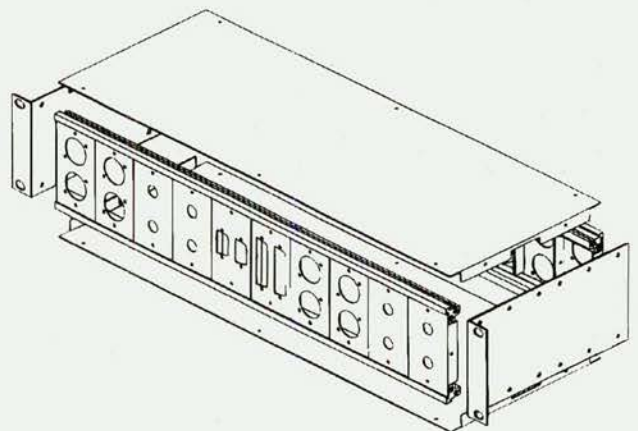
John Grimshaw is the Theatre Manager at Sydney Grammar School, and is (acting) Technical Manager at Ensemble Theatre. He can be contacted at jwg@sydgram.nsw.edu.au

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How to do it

DUNCAN FRY'S LIVE SOUND MIXING

- EQUALIZERS (Part 9)

BASIC ROOM EQ METHODS

1. Plug a microphone into the console of the same type as the lead vocals, flatten out the EQ on that channel, put the microphone on a stand somewhere around the middle of the room, facing the stacks, pull down all the other channel levels, set the master L/R outputs at about -10dB, and bring up the channel level slowly. As the howls and squeals start to appear, bring down the appropriate sliders on the main equalizer. Keep going until you have the level you need.

This 'ringing out' method is very popular, because it works, but is prone to over EQing, leaving you with a PA that won't feed back, sure, but it won't sound any good either.

Remember that your microphones won't be out in front of the speaker stacks, they'll be behind them, and thus not quite so susceptible to setting up feedback squeals. Only pull the EQ sliders down just enough to stop the squeals, or you'll take all the life out of the sound. Keep this one handy for monitor tuning, too.

2. Play a CD or tape or DAT that you are very familiar with, and adjust the house EQ until the music sounds the way you think it should. Be very critical, and use the same CD/tape/DAT and songs every night, until you know its sound inside out.

3. Grab our microphone off the stand from method #1, and go "CHECK ONE - TWO" into it. Repeat this as you adjust the EQ sliders, until you have a good crisp voice sound from the system, with plenty of 'punch', to it. I know these descriptions might be undefinable, but I'm confident that you'll know it when you hear it! Be alert for any honks or rings that hang on during or after your words, as these are the frequencies that are going to cause trouble.

4. For this method you'll need a pink noise generator. This is a gadget that gives you equal amounts of each frequency from 20 Hz to 20 KHz. They either come together with a spectrum analyzer or you can make or buy one.

Put the microphone back into the same position as method #1, and bring up its level to just under feedback. Plug the pink noise generator into a channel, check that it's running OK, then switch the channel Off. Bring up its fader, switch the channel On for a split second and then Off again. You will clearly hear the room overtones hanging on for quite a while after the original signal stops. Locate the appropriate sliders on the EQ and adjust them until the 'hang on' is reduced as much as possible. Keep going until you have the microphone level you need.

The advantage of this method is that it simulates the way the room will sound when it's full of loud music, and isn't that what you really want to know?

5. A spectrum analyzer with a pink noise generator is the basis of this next method. With our microphone still in position #1, run some pink noise into the system as in #4, and read the response on your analyzer. If it is full of peaks and dips, adjust the corresponding sliders on your EQ until you get close to a straight line of dots along the 0 or centre line. The straighter

the line, the flatter the response. And the flatter the response, the less chance of feedback squeals.

If you can't get close to a straight line, try adjusting the levels on the crossover first, then adjust the EQ. For example, if all of the low frequencies are way above the centre line, reduce the level of the low frequency crossover output until the line of LEDs hovers around the centre line - some above, some below. Then you can adjust the EQ to get a flatter response.

Although analyzers usually come with their own microphone, I like to use a microphone similar to one used on stage to run this sort of test, since this gives you the most accurate picture of how the room and the PA system will interact.

Two things here: One, if you've used the singer's microphone, don't forget to put it back!

And two, don't forget to unplug the microphone cable you've been using from the console and plug the multicore snake channel back in.

Whenever you are using a spectrum analyzer, keep this in mind; what is acoustically flat to a microphone may not sound particularly musical to the human ear. In fact, it will probably sound a bit light in the LOW end and heavy in the HIGH end.

It is a starting point only.

Always let your ears be the final judge of the best sound - that's what they are there for. A spectrum analyzer is only a useful tool to give you a visual indication of what's happening acoustically. There are literally thousands of very successful people mixing out there who've trusted their ears and never felt the need to use an analyzer.

It is a good slave but a poor master- and not many of them buy tickets to see concerts! Remember at showtime there will be lots of ears out there, not analyzers.

So where do you start?

I'd suggest using a combination of methods 1, 2 and 3, coupled with a LOT of practice in listening to sounds and picking the right frequency on the equalizer. There is no shortcut for this; it's just one of those things you have to learn.

EQ'ing the Monitors

See also Chapter 11 - Monitors

All of these methods work for monitors, but as a general rule I'd again suggest using methods 1, 2 and 3 for tuning monitors quickly. They will instantly show you where the problem areas are, so you can pull them down on the graphics.

You'll find that tuning monitors frequently requires a heavier hand on the sliders, so can remove as much chance of feedback as possible. With lead vocal, the microphone position rarely stays constant, so your EQ has to cope with the microphone often getting closer to the speakers than you'd prefer!

EQ'ing the monitors is the one area of mixing that people often have the most trouble with, so see also the troubleshooting section coming in Chapter 14 - called 'Problems'.

This is extracted from the top selling book: LIVE SOUND MIXING, by Duncan Fry. © D.R. Fry 1998. ISBN0 646 11235 X. Retail: \$39.00. Available from book stores and music shops everywhere, also through the Connections Shop, call 1-800-635-514.

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TIGHTER NOISE REGULATIONS IMPACT ON ALL VENUES



Legislation starts to bite as club fined

SHOWSAFE report that a Queensland club was fined \$3,000 in the Brisbane Magistrates Court for excessive noise recently. (See www.showsafe.com and log onto the webboard for more on this topic).

The Queensland DTIR has provided SHOWSAFE with a copy of the Workplace Health and Safety Regulations (1997).

Part 10 - Noise states that an 8 hour equivalent continuous A-weighted sound pressure level of 85dB(A) is deemed 'excessive' noise.

In this case, all exposed staff are required to wear 'appropriate' hearing protection.

Showsafe say they initially feel that the definition 'Excessive noise' is inadequate, and that while it neatly assists managers in heavy industry or on worksites, the issues of live music and amplified stage performances require better definition and some Latitude for common sense.

For example, a sound engineer could be required to wear hearing protection, while an audience are not.

This issue is currently before Showsafe, results and commentary will appear on the webboard, and be circulated to members.

Showsafe can be reached at +61 2 9617-0092, or fax +61 2 9876-5715. Their Web site is at www.showsafe.com

When music becomes noise

By John Matheson

We all think of noise as undesirable sound. However, occupational health and safety legislation in Australia does not discriminate music from any other form of sound when considering excessive noise in a work environment.

There is some evidence to suggest that music is not as destructive to hearing as industrial noise. This theory is based on measurements of temporary threshold shifts after exposure to loud sounds, not actual measured data of hearing loss. It is also known that stress is a factor in temporary threshold shift, where pleasant sound (ie music) has less effect than unpleasant sound (ie noise). Other factors which may have a bearing on noise induced hearing loss are peak to average energy ratios, which can be quite high for machine noise, and the shape of the noise spectra, which is usually more concentrated for industrial noise.

The fact is, as much as we would like to think that loud music is OK, the jury is still out on music induced hearing loss. What's more, a bar tender or technician working in a noisy music environment will be under stress and therefore respond physiologically to music as though it were noise. One other factor in club land is that nicotine in the blood steam to the ears (even from passive cigarette smoke) increases temporary threshold shift after exposure to loud sounds, and probably is a factor in increasing susceptibility to permanent hearing damage.

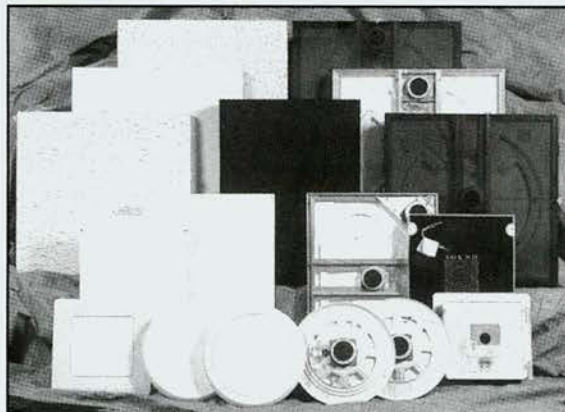
Ears are like hips, they wear out, but we can't do inner ear replacements yet. Your

ears gradually wear out naturally with age, plus a factor for your total cumulative exposure to sound. Just as some people's hips are weaker than others are, susceptibility to hearing damage can vary widely, probably due to genetic factors.

It is generally believed that limiting exposure to no more than 85 dBA SPL (decibels "A" weighted Sound Pressure Level) for 40 hours per week for a forty year working life will limit noise induced hearing loss to less than 3% of the population. Hence employers have a duty of care to limit employees' exposure to below these levels. Unfortunately, as any audio professional will know, if you limited the sound system in a club to 85 dBA SPL, you wouldn't hear the music above the sound of the crowd!

Herein lies the dilemma, music doesn't work at safe levels! OK, so what can you do? Managing occupational health and safety is about managing risks. We have already decided that eliminating the risk of hearing damage is not possible so the next steps are risk assessment and exposure control.

The model that is used to predict hearing loss, and which seems to stand up to scrutiny, is based on sound power sums. That is, for each doubling of sound power (+3 dB) the allowable exposure time is



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halved. For example the allowable exposure at 88 dBA is 4 hours per day, 91 dBA is 2 hours, etc. At first these levels seem absurdly low, but what is important here is that these are Equivalent Sound Pressure Levels (Leq's) at the ear of continuous exposure, something which is very rare in real life outside of factories.

The only way to assess hearing damage potential is to use a special sound level meter called a dose meter. This unit is worn by the user and reads in % of allowable dose. It is possible to calculate the Leq, or effective SPL in dB, for the period of exposure from the percentage reading. This is usually quite a bit lower than a dBA SPL reading in the venue because of the way it is computed. For example, the dose meter stops counting whilst you duck into the loo, during breaks between sets and whilst you're outside getting some fresh air.

I have documented the exposure of several bar staff at a one night per week nightclub using a dose meter. In our case the staff were well within OH&S requirements, typically recording 60 - 90% of daily allowable dose.

"Unfortunately, as any audio professional will know, if you limited the sound system in a club to 85 dBA SPL, you wouldn't hear the music above the sound of the crowd!"

The club ran typically 105 dBA SPL at the desk, where dose was measured at around 220 - 250 % for a four-hour g.g. In other words we would have to limit our operators to two gigs a week to stay under the 5 days at 100% limit for a working week.

For interest, a 250% dose over 4 hours computes to an Leq of 92 dBA, compared with a measured SPL at the operator's position of 105 dBA.

For club managers, exposure controls may include rostering staff so as not to exceed their weekly dose limit, making ear plugs available and having a quiet space available for breaks. Another option, for which many punters would be grateful, is to move bars into quiet zones. My experience shows it is possible to comply with legislative requirements.

Sound engineers and DJ's face a different dilemma; ordinary disposable earplugs alter the spectral balance of sound and provide too much attenuation. However low attenuation (10 - 15 dB) earplugs with a flat frequency response are available. I highly recommend using these whenever possible. I believe they actually improve communications in noisy environments - handy for bar staff. Sensible musicians and sound engineers have these plugs made by an audiologist (~\$200 including fitting).

Unfortunately hearing loss does not stop when you clock off, so keeping within the guidelines at work will not prevent noise induced hearing loss if you expose yourself outside of work. If you have ever had ringing or dulling of your hearing after any type of exposure, you have almost certainly suffered some permanent hearing loss. Audio Engineering Society sampling of professional audio workers has shown an above average incidence of noise induced hearing loss. Musicians are even worse effected.

It makes good sense to limit exposure to non-essential noise sources such as lawn mowers and saws. Remember, hearing loss is cumulative; whilst you may consciously concede a little future hearing acuity whilst listening to Dark Side Of The Moon (Oops! I'm showing my age!) at 110 dB, it's stupid to be throwing it away while you mow the lawn!!!

• John Matheson will write regularly on Pro Audio issues

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How to do it

TOM MISNER'S PRACTICAL STUDIO TECHNIQUES

- PRACTICAL EQUALISATION (Part 10)

INTRODUCTION

The tone controls found on a domestic amplifier or car radio are a basic form of equaliser. Typically, they have two tone controls - treble and bass - giving the device a limited amount of flexibility. In a professional studio more control over the sound's tonal balance is needed, hence the wider selection of equalisation available to the engineer.

To equalise or not to equalise? Many audio engineers believe that the least amount of equalisation is already too much, while others use it indiscriminately. The simplest and best advice is that equalisation should only be used when necessary, since all equalisation causes some type of phase shift or signal deterioration.

EQUALISERS: WHAT DO THEY DO?

The equaliser allows the engineer to cut or boost any frequency, or group of frequencies, within the audio spectrum. This gives the engineer a good deal of flexibility for correcting a sound's timbre and harmonic balance. Equalisers are not only used to correct a particular sound, they can also be used as creative tools. For example, you can use them during overdubs to match the texture of one instrument to another. They can be also be used to control the final balance of a mix, or to position an instrument in a threedimensional stereo image and increase the separation. The equaliser's tasks range from analyzing and improving the control room acoustic picture to changing the sound of instruments - al-

ways aiming for that elusive sound the producer can imagine but is never quite able to describe.

EQUALISERS: HOW DO THEY WORK?

The two main types of equaliser are known as active and passive. In the passive design no power supply is necessary for the unit to operate; however a certain amount of signal level is lost during processing. This loss of level, typically about 35 dB, can be corrected with the use of a more robust power amplifier. The active equaliser uses a power supply and induces no signal level losses.

To provide cut and boost of selected frequency bands, most equalisers use electronic components called capacitors. When capacitors are electrically connected in parallel, they provide great resistance to signals at a particular frequency and little resistance to all other frequencies, resulting in a 'cut' of the chosen frequency. When two capacitors are electrically connected in series they provide very little resistance to a particular frequency, and great resistance to all other frequencies, resulting in a 'boost' of the chosen frequency.

Capacitors are known as reactive components, since they have a certain reaction time which introduces a degree of phase lag into the signal path. This is especially noticeable when simultaneously boosting and cutting adjacent bands on a graphic equaliser. The greater the boost or cut, the greater the phase lag. To minimize phase lag, one should never boost and cut adjacent frequencies or groups of frequencies.

SOME USES OF EQUALISATION

Equalisers can be used for many different purposes. Here are just some of the many different applications for equalisation:

- 1) To reduce noise and hiss.
- 2) To compensate for bad microphone positioning.
- 3) To compensate for poor monitor characteristics.
- 4) To smooth out peaks and dips and to create new sounds.
- 5) To increase separation of instruments.
- 6) To emphasise psychoacoustic properties.
- 7) To compensate for transmission losses.
- 8) To highlight important instruments within a mix.
- 9) To improve vocal clarity.

RECORDING INFO:

Phase check

An experiment with your home stereo system can best demonstrate the phase relationships. Changing the + or - speaker connection cable on one of the speaker boxes will result in a phase difference between the speakers of 180°. You will find the centre image has disappeared and there is a lack of bass as well as general frequency colourations. This demonstration will show you how important it is to record signals in-phase at all times.

TYPES OF EQUALISATION

Equalisers and filters can be divided into the following categories:

- Graphic:** Selectable cut/boost; preset frequency and bandwidth.
- Parametric:** Selectable bandwidth, cut/boost and frequency.
- Sweep:** Selectable frequency and cut/boost; preset bandwidth.
- Shelved:** Preset frequency and bandwidth; selectable cut/boost.

Continued on page 45

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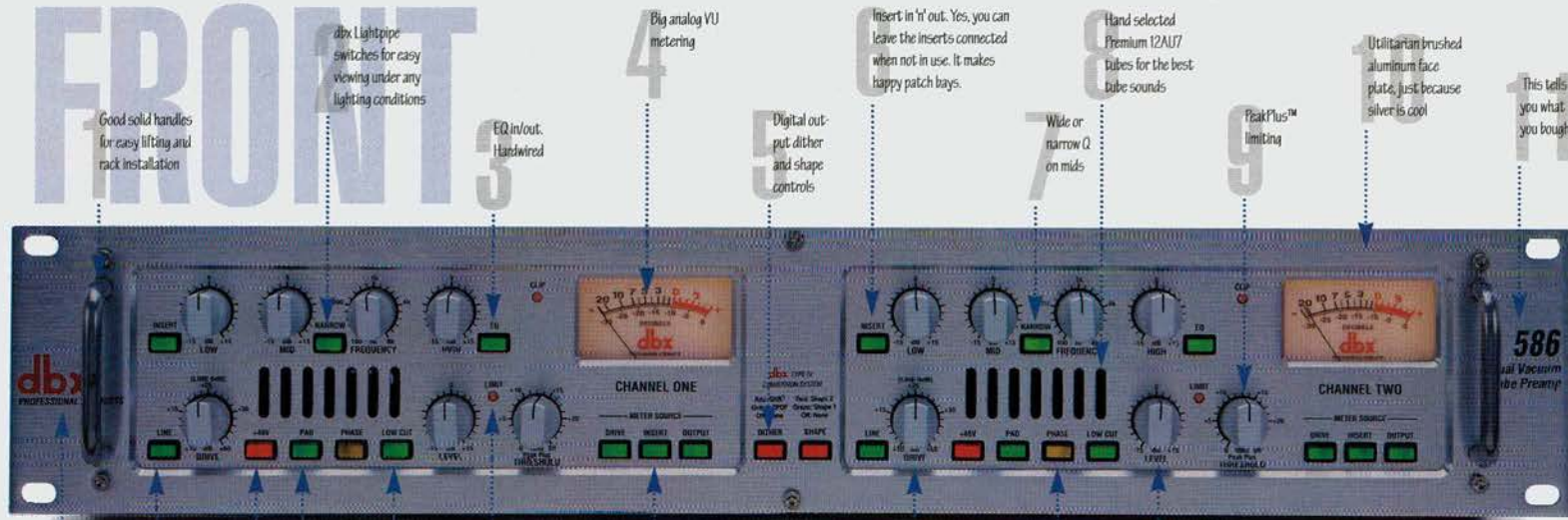
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This should put an end to that "beauty is only skin deep" nonsense!

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TOM MISNER'S PRACTICAL STUDIO TECHNIQUES

- PRACTICAL EQUALISATION (Part 10)

Switchable: Preset bandwidth; switchable frequency; selectable cut/boost.

Combination: A combination of the above equalisers.

Filters: High Pass, Low Pass, Notch, Band Pass Band Stop, Presence, Combination.

The following is a detailed look at some of the different types of equaliser.

SHELVING

There are two types of shelving equaliser. High frequency shelving boosts all frequencies above the 'shelving frequency', while low frequency shelving boost all frequencies below the shelving frequency. The bass and treble controls on home stereo equipment are low and high frequency shelving equalisers respectively.

GRAPHIC

The graphic equaliser divides the audio spectrum into a number of separate frequency bands, each with its own cut/boost slider control. Moving the slider up boosts the level of its frequency band, while moving it down cuts the level. The sliders are spaced across the front panel, with the lowest frequency to the left side and the highest frequency to the right side. By looking at the 'curve' made by the slider controls, one can easily see the frequency response of the equaliser - hence the name 'graphic equaliser'.

The graphic equaliser can smooth out the peaks and dips of a signal's frequency spectrum, rather than radically changing its character. For this reason, the graphic equaliser is often used to "tune" PA systems in concert halls, or studio monitors in control rooms. It is not usually found in the channel path of mixing consoles.

Graphic equalisers are specified by the number of bands they divide the audio frequency into. If a graphic equaliser divides the frequency spectrum into 10 different frequency bands, it is called a 10-band graphic equaliser. The following are the most common types of graphic equaliser:

Octave: The centre frequencies are one musical octave apart, e.g. 25 Hz, 50 Hz, 100 Hz, 200 Hz, 400 Hz, 800 Hz, 1.6 kHz, 3.2 kHz, 6.4 kHz, 12.8 kHz. This unit would be known as a 10-band graphic equaliser. The octave graphic equaliser offers very little control for studio or acoustic applications and is mostly used by musicians as a special effect to equalise a musical instrument. They are also commonly found as part of the home stereo system.

Half Octave: Where the entire frequencies are one half of an octave apart, e.g. 50 Hz, 75 Hz, 100 Hz, 150 Hz, 200 Hz, 300 Hz, 400 Hz, etc. This is similar to the octave equaliser but offers a little more control.

One-Third Octave: Where the centre frequencies are one third of an octave apart, e.g. 20 Hz, 25 Hz, 31.5 Hz, 40 Hz, 50 Hz, 63 Hz, 80 Hz, 100 Hz, 125 Hz, 160 Hz, 200 Hz, 315 Hz, 400 Hz, 500 Hz, 630 Hz, etc. up to 20 kHz. This equaliser provides control over 31 bands between 20 Hz and 20 kHz and is very commonly used for acoustic correction of live sound reinforcement systems.

This is extracted from the top selling book: PRACTICAL STUDIO TECHNIQUES, by Tom Misner. ©Tom Misner 1988. ISBN0 646 16704 9. Retail: \$40.00. Available from book stores and music shops everywhere, also through the Connections Shop, call 1800 635 514. Tom Misner is the owner of SAE International.

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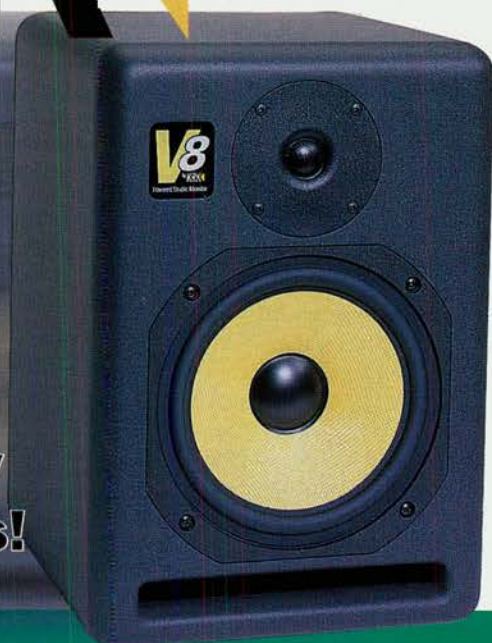
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FOUR DIGITAL EQUALISERS COMPARED

INSTANT RECALL is the main attraction, but these four digital EQ's offer a lot more. Sid Kidman took the YAMAHA DEQ5, the DigEQ DPF.3103 from LA Audio, Yamaha YDG2030, and the ULTRA - CURVE, by Behringer into his Brisbane test lab for this comparison.

Why digital EQ?

With the progress in the production of LSI and VLSI (large and very large scale integration) chips that has been made this decade, it has been possible to program digital filter banks with characteristics such as brick wall slopes, and large cuts or gains in dB terms, that have analog equivalents existing only in the realm of laboratory equipment.

Chain a number of these filters together in banks and combine with software (programs) that can change characteristics and banks in an instant, and again with memories for numerous such programs, and a digital graphic is really happening.

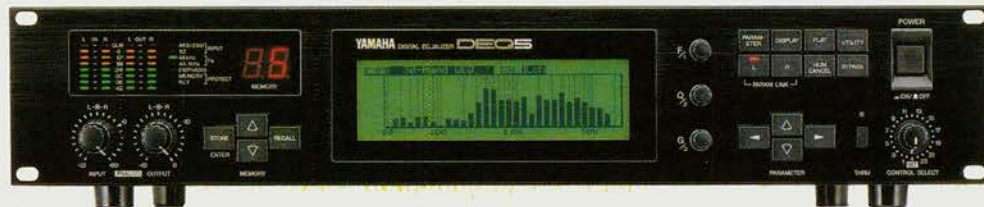
Further more, once a signal is in the digital realm, processing is distortion free. (providing truncation error is kept in hand during the millions and trillions of calculations that take place) It can even be free of phase distortion, which is not usually the case with analog equipment. Add to this A to D and D to A converters that have been drastically improved (such as twenty bit converters - a 20 bit converter means that changes smaller than one ten millionth of the signal are significant), and commercially realistic prices, and Hey Presto! The digital graphic is available to the masses, who will soon discover just how convenient and versatile such pieces of equipment can be.

A growing trend

Graphics are involved in most facets of audio, and digital now equates to:
 1 - quality, as established in the preceding discussion, and
 2 - good management, due to the convenience and exactness provided by the programming facilities. No doubt, digital graphics will phase out analog graphics, just as other digital equipment is replacing its analog predecessors.

So it is timely to look at a sample of what is on offer in the market place.

For this exercise, four very nice stereo digital EQs were offered by several suppliers, for examination.



These are (pictured above in this order) the YAMAHA DEQ5, the DigEQ DPF.3103 from LA Audio, YAMAHA YDG2030, and the ULTRA - CURVE, by Behringer.

First impressions

In order to carry out this evaluation, each EQ was in turn patched into the processor loop of the studio amp. The signal source was a selection of CDs. Careful listening to each unit in through mode with flat EQ, and then bypass mode, established that in each case, the unit's processing was quite transparent.

Whilst the standard sampling rate for CD is forty four point one kilohertz, the forty eight kilohertz offered on many professional machines has the advantage of allowing a little better high frequency performance. On the other hand, one cannot relate the number of bits used to sample, directly to improved performance, (continues over)

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By Stacy Zemon. For both the newcomer and the experienced DJ, the book contains helpful tips, advice and ideas on how to develop and expand your business, covering marketing, bookings, buying equipment and music, and running parties and dances. 170 pgs. 1997.

STUDIO BASICS \$34

By Richard Mansfield. This book covers what happens on the studio side of the glass, from the artist's point of view. Subjects covered include logistics, preparation, repertoire, instruments, and how to listen to tapes. 164 pgs. 1998.

MIDI SYSTEMS & CONTROL \$55

By Francis Rumsey. 2nd Edition. Covers MIDI control principles and how they can be implemented in practical systems. Deals with MIDI in studio, musical and lighting equipment, mixer automation plus information on the latest additions to the MIDI spec. 202 pgs. 1994.

PRACTICAL STUDIO TECHNIQUES \$40

By Tom Misner. Includes a bonus CD, a practical demonstration of a complete mixdown session including setting up effects, uses of the compressor, gating of sound, various types of equalisation, selecting reverb settings and more. 102 pgs. 1994.

EFFECTS FOR THE THEATRE \$49

Edited by Graham Walne. Divides effects into four sections: scenic, sound, lighting and special. An exciting range of techniques are explained, with consideration for budget. 150 pgs. 1995.

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By Robert Simpson. 3rd edition demonstrates how the computer is fast becoming an effective show delivery platform in its own right. Applications covered are business presentations, conferences, training sessions, museum exhibits, visitor centre displays and multimedia. 255 pgs. 1996.

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Edited by Michael Talbot-Smith. Compact source of essential data for every sound technician. Covers noise measurement, acoustics, microphones, loudspeakers, mixing equipment, CDs, DAT and MIDI, telephony, ISDN, digital interfacing, ultrasonics. 157 pgs. 1995.

PROFESSIONAL LX HANDBOOK \$105

By Verne & Sylvia E. Carlson. Details technical foundations, equipment and methods of lighting for film and video productions. Packed with practical insights, tips and troubleshooting techniques useful on the set. 224 pgs. 1991.

CONCERT LIGHTING \$70

By James Moody. 2nd Edition covers every aspect of rock & roll concert lighting equipment and techniques, including CAD, moving lights, hi-bred consoles, rigging safety and special effects. 279 pgs. 1998. WAS \$94

STAGE LX CONTROLS \$89

By Ulf Sandstrom. Explains the general principles of modern computerised lighting consoles and the relevant control standards such as DMX512, MIDI and Ethernet. Covers the basic aspects of controlling moving lights and scrollers. 215 pgs. 1997.

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MODERN RECORDING TECHNIQUES \$65

By Huber & Runstein. Addresses the area of project studio recording, the new base of home music production, using multitrack, Hard Disk and MIDI technologies. Descriptions of the toys, tools and practices of music recording and production. 4th ed. 500 pgs. 1995.

LIVE SOUND MIXING \$39

By Duncan Fry. 3rd Edition addresses the basics on how a PA system works, and details on troubleshooting when it doesn't. Covers EQ, processing, mixing, sound-checks, effects, monitors. 176 pgs. 1997.

OTHER BOOK TITLES:

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unless the quality of the components is high.

Semi-recent state of the art sixteen bit CD players perform to exacting specifications, when the quality of the components used in manufacture is high, but where the same quality is used in higher bit converters, as is the case in each of these units, one can expect better distortion figures, and higher dynamic range.

SIDE BY SIDE

The Yamaha YDG2030 is a 1 rack unit digital graphic equalizer in black.

It is a deep unit and could probably benefit from some rear support in a rack. It looks neat and simple, and indeed it was easy to get it happening without recourse to the manual. One small foible; there was a noticeable glitch engaging the by-pass mode. It has the smallest viewing screen, limited of course by its overall compactness. Familiarity with the SPX FX series leads to ready understanding of this unit.

The DigEQ DPE3103 from LA Audio, (a compact two rack units) is pretty irresistible to this old dog from the front house road. A gray white facade with a generous provision of self evident on/off switches and toggles, a large purple-blue-orange display window, and a fast accurate data wheel, transport the operator to instant EQ heaven. Indeed, a switched on DJ would probably get high on this machine. Throw away the manual and get creative.

The Yamaha DEQ5 is a large and weighty two rack unit with a black facade and a look of total class. The controls are simple but sophisticated, and it is easy to start drawing response curves on the generous screen, but wait - no sound! More twiddling, accessing the filters and parametrics, and various menus, but no sound. Give up and reach for the manual. Fifteen minutes with the manual, and no direct suggestions, but the clock is switched to internal, and bingo, there is sound.

The ULTRA - CURVE, by Behringer, is a two rack unit and plain looking, but with a generous screen, it is almost totally menu driven, and this made it difficult to use intuitively. More than simply changing the on screen graphic consistently, proved impossible, without recourse to the manual. The manual, whilst good as a tutorial, was poorly organized from the point of adequately explaining the operating system. According to the agents, there is a new model coming out next year, and this little problem will be sorted.

What you pay, and what you get

As the title of this review suggests, each unit is quite desirable for its intrinsic ability, however there is large price difference between the expensive models and the budget models. Also, in each case it is important to consider what is not included, in relation to what is included. The overall range of functions offered include; graphic EQ, parametric EQ, notch filtering, feedback suppression, high and

low pass shelving, high and low pass cutoff, band pass shaping, channel delay, analog I/O, digital I/O (AES/EBU), master/slave control, proprietary communication, word clock and time clock, midi in/out/thru, RTA, and upgrade options. The specific combination of facilities offered will determine the end use of the product.

The YAMAHA YDG2030 is the simplest unit of the four reviewed, and the manufacturer's specs should be consulted for a full run down on its capabilities. Essentially, it samples at 44.1 kHz, and uses 20bit A/D and D/A resolution. It has been around several years, and is available under A\$1500.00.

The front panel contains a neat dual ganged input rotary control on the left, with an adjacent generous led display of input level, and a large program indicator. Forty programs can be stored with instant access. Display screen, controls and operation are somewhat typical of the familiar SPX series FX machines. At the center, there are three rotary controls and five on/off switches. The rotary controls are dual function, and sweep ranges or change functions, while the switches operate high/low shelving and notch filters. The next group to the right are the memory keys (toggle) and include store, recall, up, and down.

A group of six toggles are to the right of this, and then the on/off switch.

This group of six are; upper - display, flat, utility, and lower - left, right, and bypass. The rear panel contains the stereo analog in/out XLRs (with -10, +4 dB switches), midi out/in/thru, and XLR Y-485 in/out. Y-485 is a Yamaha control protocol. There are no provisions for options.

The GEQ facility has 30 one third octave center frequencies that can be incremented or decremented in 0.5 dB steps to one of two ranges, depending whether the 5 dB or 12 dB mode is selected. Also there is a sweep mode that allows searching for sensitive frequencies. The notch facilities allow up to three notches and low and high pass. The three notches can be selected to any particular frequency, as can the high and low pass, however the depth is directly proportional to the narrowness of the Q, which ranges from 0.5 (the widest) down to 10.

Delay is offered in meters, feet, and seconds, and goes from off to 0.714 seconds, for each channel. Midi facilities offered include control and bulk dump, while the Y-485 network allows organizing with multiple units in master slave configuration. While immediate operation is quite intuitive, about half an hour was enough time to digest the manual. The opinion was formed that this would be an excellent unit for P.A. application, or use in a home studio.

The other Yamaha unit, the DEQ5, will cost around A\$7000.00, and is correspondingly more sophisticated. Once again, it has no facilities for further options, and does not offer dynamic processing, or RTA. However it is all good value from here. Operation with analog signals defaults to 48 kHz sampling rate, and the A/D

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ADVANCED MEDIA PRODUCTS

converter is nineteen bit, with twenty bit D/A conversion. Once again interested parties should consult the manufacturer's specs. The two rack unit facade is again similar in functional philosophy to the smaller unit, but contains extra facilities.

There is both input and output attenuation for analog, and excellent level indicators for both. The memory select toggles are on the left under the large select display which again is capable of forty presets. The center is given over to a large LCD, and three rotary controls are vertically aligned to the right of the LCD. An upper set of four by two toggles indicate parameter, display, flat, utility, and L, R, hum cancel, and bypass. A lower set of four toggles up, down, left, and right. Adjacent this is a thru switch, and the control select rotor, with the on/off switch above. The rear panel contains analog I/O, digital (AES/EBU) I/O, memory protect on/off, RS485 in/out, Y2 in/out, midi in/out/thru, and time code and word clock in.

Again, there are thirty bands of one third octave centers available for the GEQ, but this time the levels are extended to +/- 15 dB. In the GEQ section high and low pass and four notch filters are available. These filters have the same abilities as the less costly unit. In the factory supplied condition, settings 21 through to 40 have a six band PEQ display. The center frequencies can be independently swept across the spectrum, the depth varied +/- 15 dB, and the Q varied from 0.5 down to 10.

Both the 2030 and the 5 have an emphasis on/off switch. Emphasis is similar to analog companding units, and attempts to improve the overall processing quality when there is a less than desirable input signal.

With the DEQ5, it was quite easy to manipulate the equalizer settings and other features without recourse to the manual which took about an hour to read and understand. The real strength of this unit lies in its ability to operate in the digital realm, and its flexibility with control modes and timing modes.

Every thing about the LA Audio DigEQ is "in your face". Apparently it was designed after collecting ideas from a number of notable sound people, and that's obvious. It is the ultimate front house graph. The options of RTA and delay are available, but are quite expensive, in light of the price being a little less than A\$7000.00 .

The default mode sampling rate is 48 kHz for analog operation, but the other two standard sampling rates are available. This machine has 24bit analog to digital converters for input, and the same for digital to analog out. It has the ability to do simultaneous graphic and parametric processing, and high and low pass shelving. The graphic EQ is thirty one band third octave with +/- 15 dB adjustment, while the parametric EQ is six band with +15 and -40 dB adjustment available.

The facade has level indicators for right and left channels, switched between input and output. A large double digit display indicates which of the ninety nine memories is engaged, and a large LCD display shows the graphic or the parametric display. It also shows menus. On the right is a data wheel for rapid data entry which also push pulls for on/off/yes/no. There are numerous instant access buttons, best described by referring to the photo. The rear panel contains the analog in/out XLRs, the digital (AES/EBU) in/out XLRs. Midi in/out/thru is also there along with the access panels for optioning up the RTA and delay.

The dynamics section is worth mentioning. It has a very flexible compressor, and gate, (as in expander), and each of the units offer both threshold, attack, ratio, and release, in either soft or hard knee mode, and both sub sections can go from subtle to outrageous. The DigEQ has a comprehensive manual which revealed a few extra little tips that may have taken a while to discover. About an hour was necessary for a good understanding of the information in the manual. A hands on eyeballing encounter is recommended for parties who would like to know more.

The ULTRA - CURVE has a dominant LED display in the center of the facade, with four large toggle buttons, (the keys), arranged in a square on the left, and four large up, down, left, and right cursor buttons on the right. Between the four keys, and the LED

display are a column of four soft keys, A, B, C, and D. The keys select between EQ, RTA, Set Up, and Bypass. The soft keys then select menus and sub-menus.

On the rear panel are the analog I/O XLRs, and the midi thru, in and out. There is a panel for the optional installation of digital AES/EBU I/O. Also delay is optional on this unit.

The digital processing converters are twenty bit sigma-delta, and sampling rates are chosen from the options of 48, 44.1, and 32 kHz. The GEQ is thirty one band at one third octave center frequencies, with +/- 16 dB gain in 0.5 dB steps. The PEQ offers three independent bands per channel, with +16/-48 dB gain in 0.5 dB steps, and Q adjustable in single steps from 1/60th. to 120/60ths. of an octave. An independent three band stereo feedback exterminator is available. This can be turned off or converted to a three band per channel notch filter. Also accessible from the soft keys are a level meter, and gate and limiter.

The gate and limiter, which can be on or off, are basic, but useful.

There are one hundred user memories which can be stored, but the bonus is the RTA. This is thirty one band at one third octave ISO centers from twenty Hz to twenty kHz. It can read peak or RMS at 1 sec, 250, 65, or 15 msecs. It can analyze source, or generate sine wave or pink noise for its own calibrated mic or other preferred mic. The big trick with the RTA is the facility to capture a room RTA, swap it to the EQ section and invert it.

On the down side, it is a fairly slow process to manipulate most of the parameters, and changing presets also is often several menus away, depending on what previous operations were being performed. The logic behind the soft key driven menus is difficult to comprehend, being as complex as the unit itself, and more than four hours with the manual was necessary to adequately learn to use the machine. However a thorough understanding reveals an incredibly versatile piece of equipment, which sells for under \$1500.00 .

Give me the rub

As these machines are alike as apples and oranges, one can only make comparison by evaluating equivalent attributes. Attributes where differences were apparent included price, appearance, the manual, size and weight, intuitive use, speed of use, and versatility. These are all user dependent, and are mentioned as a guide.

For ability to perform regular equalizing with some notching, and with ease, the Yamaha YDG2030 is the outstanding candidate. Once such EQ was performed with a 2030, it is a safe bet that only a rare (probably less than one in one hundred) pair of ears could pick the difference sonically between that performance, and settings producing the equivalent result on either of the two machines which cost more than four times the price.

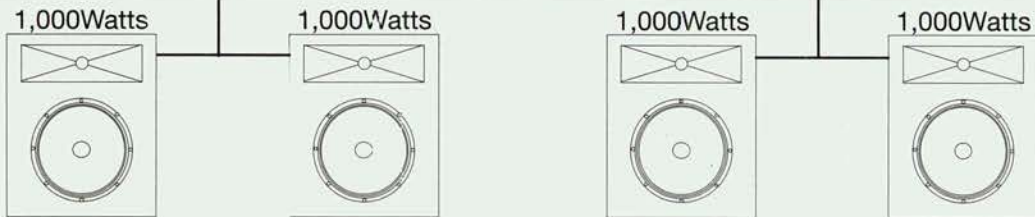
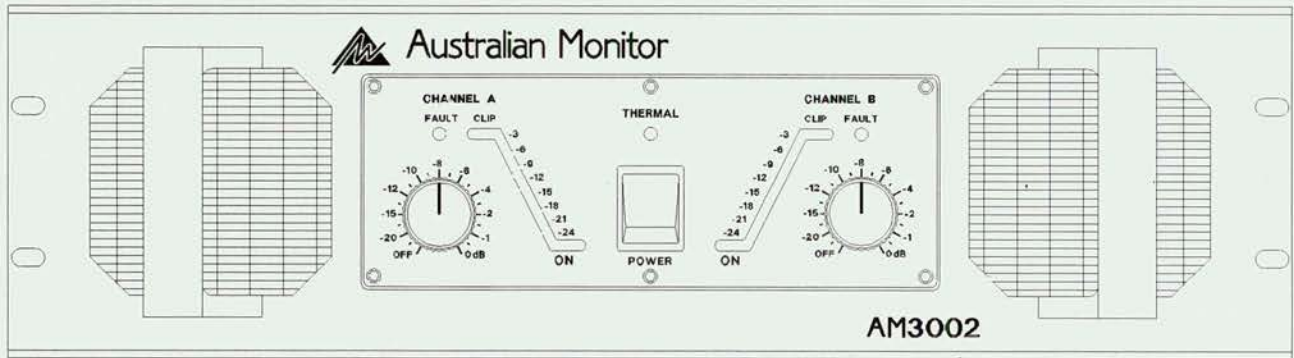
For sheer brilliance, versatility, and value for money, this author picks the ULTRA - CURVE, but if the machine was to be used in an outboard rack for a multimedia work station, the most successful, and probably cheapest option in the end, would be likely to be the Yamaha DEQ5. If the gig happened to be front house for the Concert of the Century, it would have to be the LA Audio DigEQ because of its speed and power.

In conclusion, there wasn't a sour note amongst this group of digital equalizers. Each is capable of changing the sound from totally subtle modifications, to gross contortions of the input signal. The expensive models (with some exceptions), generally offered more and deeper changes, and also more specialized use, and the ability to do processing without leaving the digital domain. For those into digital, no need to say more. For the analog-o-philes, you will be brought around pretty quickly after some experience with any one of these four highly desirable digital EQs.

• Sid is enrolled in his final year of the Design Science Audio degree at Sydney Uni. He hopes to go on and complete a Masters Degree. He has been a live sound engineer for more years than he cares to remember, and did undergraduate study in human and physical sciences at Queensland Uni. Playing keyboards in a band also features in his history.

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DIGITAL SOUND AND VISION EXPAND

VIC KASPAR heads up a success story in the film sound industry. Sid Kidman pays a visit.....

6pm Sunday evening and Vic Kaspar lets me into his premises, DSV (Digital Sound and Vision), at Movie World on the Gold Coast. This young man's warm attitude conceals the constant effort he puts in, with days up to fourteen hours long, at DSV.

Vic's time is spent working on his major contract to date, Flipper, delegating to his five staff, and looking for new contracts. There are already five Pro Tools systems busy at DSV, and yet Vic is looking to install another one with ProControl.

Vic is confident and happy that he is smack dab in the middle of a growth industry; good news for most Connections readers out there beavering away in a tough international market. There is also a positive spin-off for our balance of trade figures.

Brief introductions over, we launched into the grand tour of DSV.

DSV- the studio

The main studio or first mixing suite is suitably appointed to accomplish exacting work, as well as impress appropriate clients. It was set up using THX certified components in order to have a comparable sound with the major American mixing stages. At front centre are two O2R consoles, linked to 32 tracks of Pro Tools (soon to be upgraded to 64), and 24 tracks of DA88. As well as the on board FX available in the Yamaha's, there are Lexicon, Tubetech, Summit and Urei outboard processors and Waves and Digidesign plug ins for Protools.

There is a Miro card for the digital video. A ceiling mounted LCD projector throws a bright clear image on the screen ahead of the console, and a Miller and Kreisel 5.1 speaker system produces the sound. 5.1 equates to pretty impressive surround sound with potent subs. Vic researched the Internet to discover the Miller and Kreisel system, which is used by many top end facilities in the US such as Dolby Digital Laboratories and LucasFilm.

Suite two contains Pro Tools and Yamaha Pro 01. This studio is dedicated to providing sound effects. It is here that sounds from the large sound FX library are edited and treated to create the major sound FX and atmospheres. Processing used here are software plugins.

Vic pointed out that whilst the Pro Tools can process in 24 bit, the DAT tapes are shipped in and out in 16 bit format which is standard in the industry. Suite three is the dialogue room. Once again Pro Tools is used. All the location DATs are conformed via an EDL to form the basic dialogue track. Careful observation of sections in which the sound quality is doubtful because of muffled words, or inadequate level, or unfortunate background results in an ADR list. These lines are then re-recorded and fitted back into the dialogue track.

The fourth suite contains - of course- the fourth Pro Tools. This is the assistants room. None the less important of course. Here the video and guide tracks are digitised and backup tapes (Exabyte) are made. It is the assistants job to transport copies of the digitised pictures and sound to each of the work stations.



In the fifth suite there is another Pro Tools and Yamaha 03D digital desk set up. Through the glass doors is the ADR and FOLEY sound stage. It is quite anechoic, as ambience will be added afterwards in suite 1. Basically the act-person (politics again) is brought in to repeat lines on the ADR list. There is a video monitor for syncing.

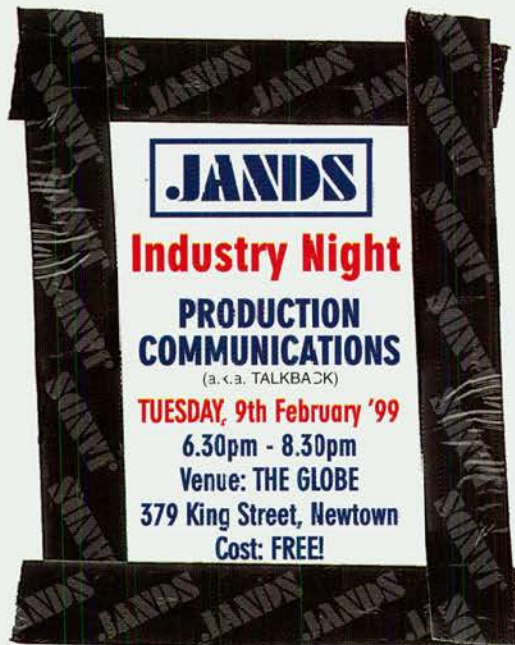
Pits containing sand, gravel, leaves and sticks, and various floor boards enable the foley artist to walk, run, jump etc. in time with the video. Exact timing is less important than a good take, because Pro Tools allows you to re-sync quickly. Many other pieces of bric-a-brac can be found on shelves for sounds to do with kitchens and other common situations, and are used to recreate every sound that you see (or hear) on picture

That's the studio

From here, the Digital Sound and Vision tour moves into another room, but there is no Pro Tools. Instead there is a computer for the normal demands of a business, and communication and Internet contact. It is here we catch up on the background to the success of DSV.

(continued on next page)





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An aspiring musician is at the root of this upwards journey. We quickly discovered that our respective bands were probably in the same Hoadleys Battle of the Bands final, around 1978, at which the rising stars AC-DC were the guest act. Vic's band was all synthesiser except for drums, which really had tongues a wagging; inspired right from the outset.

The emergence of DSV

In the 80's, a strong interest in studio recording saw the establishment of Gold Coast Recording, a two inch 24 track facility. It was a marginal business, and in Vic's words, "I had to work a few other jobs to support my habit" This is not a reference to substance abuse!

Although a tough direction, an interest in film developed, and along with the odd feature film at WRS (Vic did some music editing work with Brian May), there was some television work. The return of Skippy in 91 provided an important impetus. Eric Jupp had offered to compose the music, but there was no money for an orchestra, so he came to Vic, who orchestrated with sound modules. The work was carried out on using a Studio Vision Pro sequencing package at his studio.

After Skippy, Videolab decided to do post production here on the Coast, and Vic was part of the sound team for the Sci Fi series Timetrax.

At the finish of Timetrax, the first investment in Pro Tools 11 was made with the original 442 hardware. Vic, was appointed sound supervisor for Paradise Beach and used these systems for the sound and music editing.

Six months in Melbourne followed, working on the first series of Fire and then a bunch of feature films with Soundfirm, concluding with Dark City after which demand for Vic's services was growing to the point of being asked to set up a facility to post the sound on 'Tales of The South Seas', which led to the current project- 44 weekly episodes of Flipper, which will finish next September.

The secret formula

"HARD WORK" says Vic, in answer to THAT question, and it looks like hard work is still the order of the day. Contracts like Flipper require constant deadlines. (The picture guys usually use up any leeway.) Also, contracts run out, and must be replaced.

But wait; there's more. There is always the need to reinvest in the latest and best equipment, (another Pro Tools and ProControl coming soon) so one can't exactly sit back and bask in the profits.

Staff are now required, five at present, and are drawn from various walks within the industry. The rise of Movie World has had a positive spin for DSV, providing ADR (dialogue replacement) work, and post production in general. American producers are gaining confidence in Australian crew and facilities, which are up to their standards.

The field is open for opportunities, and Vic has advice to youngsters wanting to enter herein. Some come with course experience and some come raw, but the main prerequisite is desire and willingness. Vic has knocked on many doors loud and long, and acknowledges help from the confidence placed in him by people such as Roger Savage and Darryl Sheen.

Successfully competing against names such as Todd A.O. is no mean feat.

In order to compete internationally, it is necessary to understand the American formula, based around up front dialogue, and Vic does. Being fluent with this style, other factors such as the dollar value tip the balance in Australia's favour. Then again, historically, the film industry here has been at the forefront of development.

The wrap

The ADR for a Sci Fi flick, Pitch Black, is lined up for 99, and Vic is looking forward to future projects from VRP and other production companies.

Yep! The future looks bright for both the Aussie film sound industry, and Vic's company- DSV.

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DAT RECORDERS LIVE ON IN 1999

ASTOUNDING as it may seem, DAT recorders still hold an important role in pro audio. Julius Grafton profiles what is available in the market today.

When I was at AES in San Francisco recently, I realised the humble DAT machine wasn't going away any time soon. Since it was first put forward as a consumer format (which failed), it went on to become the virtual defacto standard wherever professional stereo digital recording is required.

These days people are increasingly burning audio to CD, but nothing beats the convenience of tape, albeit digital tape.

TASCAM are probably market leaders, at least in Australia. They have sold over 1200 units in the past 2 years, and while other manufacturers were loath to tell Connections how healthy (or otherwise) their sales were, one manufacturer who we thought may be the market leader conceded defeat.

TASCAM

"There is little doubt that the industry is looking for improved performance from Digital recording equipment and the use of better quality DAT recorders provides one direction. Format longevity has been a concern for many institutions/organisations for some time - however DAT seems to prevail in location work and studio, in spite of its tape based media. The format has asserted itself as an important interchange standard replacing other digital and analogue machines. It is TASCAM's view that, provided sensible improvements are continued to be made, DAT will remain a part of the industry for at least another decade", says Travers Falkiner from Tascam.

DA-20mkII (\$1,500 + sales tax)

The most popular machine in the range due in part to a reputation for reliability and value for money. The unit features rack mounting, SPDigital Interface and un-balanced analogue i/o's. The DA-20mkII comes with a full function remote as standard and an SCMS by-pass facility. There is also a Sampling Monitor mode, which prevents head and tape wear when listening to source. A table of content function and 60 character note pad feature allowing you to store detailed track information on tape. High and Low speed recording with High Speed Search- up to 300 times the speed of conventional music search are also features of this machine.

DA-30mkII (\$2,340 + sales tax)

This is the successor to the first volume seller TASCAM built (the DA-30), this model is the cheapest in their range offering AES/EBU digital I/O's as well as SPDIF, also Balanced analogue connections. The DA-30mkII also has a Parallel interface allowing control from external equipment. This has been useful in Broadcast and the Installation markets.

Tascam's DA-PI Location recorder (\$2,500 ex tax)

has continued to gain popularity over the last few years due to its reliability, value and features. It boasts inbuilt Phantom Power, Limiter's, XLR mic connectors, Backlit LCD and easy operation.

The introduction of the DA-45HR last month, (pictured above), sees the first 24-bit DAT recorder on the market. This represents an exciting advance from a point of view of improved sonic performance and extended dynamics (113dB). This must be the aim of all Digital recording equipment and is in TASCAM's view,



just a start of a whole new era in improving the state of the art at affordable prices.

The 45HR provide production facilities utilising 24-bit hard disc technology with an opportunity to archive and master in 24-bit, at double normal tape speed. The unit can convert 24-bit to 16-bit at the digital outs if necessary and will play back and record in 16-bit if required.

Other main features include: Shuttle control, comprehensive menu driven control including Auto ID programming, Copy ID selection, reference levels, record mute duration, display and timer options. There is a 2 Point memory locate and Repeat mode, an alphanumeric sub-code editing capability, digital I/O format selection (AES/EBU or SPDIF) and Word sync. In/thru.

• Try also the DA-302 dual DAT at \$2,529, and the primo DA-60mkII timecode DAT at \$7,200.

SONY

Sony are very serious players in the business of DAT.

The PCM-R300 (RRP \$1,790)

Pro-Studio Recorder is an affordable, semi-professional DAT recorder designed primarily for home studio use where unbalanced analog and digital I/O are an acceptable interface.

It offers a flexible setup menu, is remote controllable and has Sony's Super Bit Mapping in the A/D circuitry. The ID06 mode (SCMS copy code) is switchable.

Sony's PCM-R500 (RRP \$3,490)

is designed for professional-use DAT. The Shuttle and Jog Dial offer operational ease, while extensive interface options and multiple menu modes meet a wide range of application needs.

The PCM-R500 Professional DAT recorder offers a full array of balanced and unbalanced analog and digital I/Os, and has a high-reliability 4 DD transport. It also has Super Bit Mapping in the AD circuitry.

An R-Core Transformer for reduced leakage flux, and independent Channel 1/Channel 2 recording level volume controls to eliminate cross talk complete the argument.

(continued)

DAT RECORDERS



PCM-R700 (RRP \$5,490)

is a 4-head professional DAT recorder featuring a full array of balanced and unbalanced analog and digital I/Cs.

It has 4-head construction for RAW (Read-After-Write) confidence recording, and a high-reliability 4 DD transport.

Features include adjustable fade in and fade out function, Jog Shuttle Wheel, Flexible setup menu and the machine is remote controllable.

Finally, Sony's TCD-D10PROII (RRP \$6,990) is their Portable Professional DAT Recorder.

The 4-motor direct-drive tape transport is mounted on a rigid, non-magnetic aluminium alloy chassis. Absolute time, record time, battery indicator, sampling frequency and operating conditions are displayed together with the two 20-segment digital peak level meters via a large (back-lit) LCD panel.

The transport employs a 30mm pro-standard rotary head providing a gentle 90-degree wrap. Separate record controls adjust the level of the balanced XLR Mic/Line inputs feeding the quality preamps that utilise high voltage from the integral DC-DC converter and provide wide dynamic range.

AES/EBU digital I/O supports all common sampling frequencies and a (microphone mountable) wired remote is supplied as standard.

The unit measures only 253 x 55 x 191mm

Part of the reason portable DAT recorders are so damn expensive - Titanic Sound Designer Chris Boyes 'on deck' with his HHB PortaDat: PDR1000.



HHB

HHB PDR1000 TC TimeCode PortaDAT (\$12,290)

Location time code DAT recorders meet a specific niche of the sound recording market. Most studio users are horrified at the price of location machines but they are generally only used by high profile current

affairs television shows, TV series production, TV commercial production and feature film production. To these users reliability and functionality are the two most important issues, not price.

Accordingly, 50 Minutes, Witness (now completed) and Four Corners all purchased HHB DAT recorders from Audio Sound Centre because of their compact design and exceptional battery life. When teamed with a four channel mixer like the PSC M4A+, the PortaDAT offers the location sound recordist a fully featured portable DAT recorder built to take the rigours of life on the road. The mixer allows four channels to be mixed to the two DAT tracks and supplies features such as line up tone, slate mic and bass cuts. Importantly, the PortaDAT offers four head recording capability, allowing the operator to listen off the heads to know that the recording is being made successfully.

HHB supply the PortaDAT with its own internal Nickel Metal Hydride rechargeable battery which runs the machine for up to 2 hours. External 12v batteries such as NP1 style Lithium Ion rechargeables can also be used via the 4 pin XLR, allowing the combination of batteries to power the DAT for up to 8 hours continuously.

Timecode allows each frame to be identified at any given point on the tape. When shooting on film a time code display slate is filmed whereas when shooting on tape, the camera has its own timecode track and can be synchronised to the DAT without the need to cable together. Typical drift is less than 4 frames per day, so usually the camera and recorder are jammed together about every four hours.

HHB PDR1000 TC MS Master Sync PortaDAT (\$14,422)

is the most accurate portable time code DAT available. The 5 pin lemo port makes for direct connection with Aaton camera TC generators and can be retro fitted to standard PortaDAT models. One of the few HHB options available is retrofittable to both PortaDAT models. The HM1000 headphone matrix allows the operator to select mono or stereo monitoring, plus mono sum and Mid-Side. All other features of the PortaDAT are standard.

Utilising a temperature tolerant crystal the Master Sync machine will reduce timecode drift to half a frame per day. Usual practice with film is to use an Aaton time code generator and jam the film camera with the desired time code, then use the same generator to jam the DAT. The TC DAT can then slave to the Aaton generator minimising any chance of drift.

- Non time code versions of these HHB portable DAT machines are distributed by AWA Audio Products.

PANASONIC

Panasonic have been a long term manufacturer of DAT product since the first models available on the market in the early eighties. They manufacture the majority, if not all, of their own parts. The

(continued)

BUYER'S GUIDE

recorders & software

Prices INCLUDE sales tax and were correct on 15th November 1998. All care taken, no responsibility for errors. Four models only are shown in each category although these manufacturers have many more. Indicative only

SOFTWARE ALONE

RECORDING SOFTWARE ALONE, USE YOUR OWN SOUND CARD

EMAGIC

Electric factory (03) 9480 5988

Micrologic AV 16 audio tracks with 2 FX; 3 band EQ; sample editor score; matrix + list editor; 960 ppqn MIDI sequencing; MAC and Windows compatible. \$279.

Logic Audio Silver 24 audio tracks with 4 FX; VST/DIRECT X compatible; stereo sample editor; time compress/expand and more screen sets; key commands; sequencing and scoring; MAC and Windows compatible. \$499.

Logic Audio Gold 48 audio tracks with 8 FX; 8 inserts/track; proprietary FX and VST/DIRECT X compatible plug ins; full featured sample editing; sequencing and Pro Notation; MAC and Windows compatible. \$999.

Logic Audio Platinum 16 and 24 bit audio; unlimited hardware support; 96 audio tracks; supports TDM and Soundscape plus all the features of Logic Audio Gold. \$1499.

MARK OF THE UNICORN

Moore Music (03) 9419 0344

Performer/Digital Performer Performer 6 - award winning industry standard Mac sequencer software. Digital Performer 2.4 - with integrated digital audio recording. Real time audio plug-ins, real time editing and more. \$795/\$1295.

OPCODE

Musiclink (03) 9429 9299

VISION DSP industry standard Macintosh sequencing/hard disk recording audio package; supports VST and ASIO standards. Comes with multiple plug in effects. \$799.

Studio Vision Pro Number one multi track audio and music sequencing software for MAC. Full audio editing, plug in effects, pro tools TDM fully implemented. Version 4.1 gives VST and ASIO support. \$1299.

ROLAND

Roland Corporation Australia (02) 9982 8266

Cakewalk Professional Audio Version 8 Records up to 128 tracks of audio and MIDI. Up to 256 real-time effects. Supports 24-bit audio up to 96 kHz S/R. Automated Mixing. Synchronise Digital Video to audio and MIDI. SMPTE "Chase-lock". \$595.

Cakewalk Home Studio Version 7 Supports recording of up to four tracks of CD quality audio with MIDI. Automate volume and pan levels. 32-bit, real-time audio effects processing. \$149.

Power Trax Pro Audio Version 4 48 Track Digital Audio Recording Studio with awesome effects & audio plug-ins! Record up to 48 tracks of CD quality audio (vocals, guitar, etc.) or MIDI using your soundcard & microphone. \$159.

Guitar Studio Produce guitar-based music with full accompaniment Record, edit and mix up to 8 tracks of audio along with 256 tracks of MIDI and Apply real-time audio effects.

SEK'D

Moore Music (03) 9419 0344

Samplitude Range Pro tool for audio editing, range starts with Samplitude Basic. Version 4.5 - \$995. Also available - Samplitude Active x plug-ins for DSP processing. From \$129.

SONIC FOUNDRY

Moore Music (03) 9419 0344

Digital Audio Solutions Sound Forge sound editor; Sound Forge XP; CD Architect audio burning software; range of DirectX plug-ins; ACID - loop-based music production tool. \$99 - 599.

STUMPTL

A & K Australasia (02) 9555 7221

WINGS HDR system programming software with built in hard disk recording facility up to 16 tracks. Generates showmedia with encoded timecode and cue signal for DAT recorder or CD burning. Download feature to ATA-Flash card via SD EVENT. \$1500.

WINGS PRO as above but with

video conversion feature of digitised images to AVI/Video file. \$1700.

TURTLE BEACH

Moore Music (03) 9419 0344

Digital Orchestrator MIDI sequencer plus multitrack digital audio recorder plus digital effects processor. Features intuitive drag'n'drop editing and more. \$399.

SOFTWARE AND HARDWARE

SOFTWARE WITH PC/MAC HARDWARE OR HD SYSTEM

CREAMW@RE

Major Music Wholesale (02) 9545 3540

PULSAR The complete studio powered by 4 SHARCs. Features:- Digital Mixer, Effects, 5 Synths, Sample Player. Integrates with virtually any Audio/MIDI sequencer. \$2695.

SCOPE Professional studio processing board which includes 15 Analogue Devices SHARCs for processing. \$14,995.

tripleDAT Complete digital solution. Includes professional recording, editing, mastering software, pro quality card with analogue and digital I/O, integrated CD writing software. \$2095.

A8 / A16 8 or 16 I/O AD/DA converter racks. Compatible with any sound card with ADAT optical I/O. \$1695 / \$2295.

DIGIDESIGN

Sound Devices (02) 9283 2077

Protools 24 Mix Plus Mac & NT based 24 bit input to output hard disk recording system with 64 tracks & up to 6 times the DSP power of Protools 24. Bundled with protocols software & DigiRack Plug-ins. \$16,999.

Protools 24 Mix Mac & NT based 24 bit input to output hard disk recording system with 64 tracks & up to 3 times the DSP power of Protools 24 all on a single PCI card. Bundled with protocols software & DigiRack

Plug-ins. \$13,599.

Protools 24 Mac & NT based 24 bit input to output hard disk recording system with 32 tracks & the TDM plug-in DSP power giving a large range of effects. Bundled with protocols software & digidesign Plug-ins. \$10,199.

Toolbox The AudioMedia III pci card plus a stack of bundled software including protocols, D-fx, D-fi plug-ins, & the lite version of Bias Peak. This is the perfect entry level system with upgrades to Protools 24 available. \$1699.

ENSONIQ

Electric factory (03) 9480 5988

Paris seamlessly integrated digital audio; automated mixing; FX processing software with a dedicated control surface with expandable input/output modules and a cross platform DSP PCI card. From \$2799.

EVENT ELECTRONICS

Musiclink (03) 9429 9299

DARLA cross platform PCI hard disk recording system; 20 bit conversion; 24 bit internal processing; 2 in, 8 out; on board motorola 56301 processor; support from most major software. \$899.

GINA 20 bit cross platform PCI hard disk recording system; breakout box with 2 in, 8 outs; S/PDIF; on board motorola 56301 processor; support from most major software. \$1299.

LAYLA same as above GINA but with rack mountable breakout box with 8 balanced ins, 10 balanced outs; S/PDIF, MIDI, Word clock + super clock; built in transformer. Ships with CD architect and Sound Forge XP.

KORG

Musiclink (03) 9429 9299

1212 20 bit PCI hard disk system (Mac and Win 95/98) with stereo analog I/O S/PDIF, ADAT I/O inc ADAT Synchronisation control. Compatible with all major software audio/music programs. \$1499.

DAT RECORDERS

current range consists of the SV3800 and the SV4100.

The SV4100 has an additional RAM buffer for instant start applications, but the SV3800 is by far the most popular. There are claims of over 50,000 Panasonic DAT Recorders in use throughout the world.

Panasonic SV3800 (Street price \$2,100 ex tax)

is a 2 head DAT recorder supplied with a rack mounting kit and infrared remote control. The analogue I/O's are balanced/unbalanced (wiring dependent) with adjustable output levels of between -10dBu and +4dBu.

Selectable sample rates of 44.1 & 48 kHz are provided when recording from the analogue inputs. Panasonic say their Converters have gained a reputation as being sonically superior to most on the market. The SV3800's converters can be accessed by pressing Record with no tape loaded. This eliminates transport and tape wear whilst in Pause/Record.

AES/EBU, IEC 958 (Coax and Optical) are provided for the Digital I/O's.

The Panasonic DAT transport has a solid die cast base and has been in use since the release of the SV3700 in 1989. This same mechanism, which has been used in the SV3700, SV3900, SV4100 and now SV3800, uses common parts and has a proven long term track record (no pun) with no model redundancy. A big bonus for maintenance and resale value.

The transport controls have a Shuttle wheel with dual speed for scrub searches. The SV3800's transport logic is quicker and more functional to use than most, hit PLAY, STOP, PLAY, REWIND and compare the difference between brands. Additionally if there is a mechanical tape problem the Panasonic transport goes into Stop mode and will not attempt to do further damage to the tape or transport.

An Error rate reader is provided which allows verification of DAT's and can provide information on the current state of the mechanism. Higher than normal errors would indicate dirty transport, glitches indicate tape drop outs etc.

Experience suggests the Panasonic range will playback tapes recorded on machines out of tracking alignment enabling a rescue of the recording.

A little added bonus is that if you need to provide a Time Code striped tape to a client but you do not need to have transport control in your facility the Panasonic's will, when Absolute Time is recorded on the tape, record 30 frame Time Code. This can then be resolved by the Post production facility to whatever frame rate they require. Saves buying a Time Code DAT recorder.

• Distributed by Studio Supplies.

OTARI

DTR-8S DAT Recorder (\$2,190 ex-tax incl infra-red remote control & rack-mounting kit)

With over 30,000 tape machines sold world-wide, Otari is a benchmark name in the field of professional recording equipment.

Their DTR-8S DAT Recorder is part of a rapidly expanding new generation of high-performance Otari Digital products.

The primary design brief of the DTR-8S was to provide professional users with a true "work horse" machine meeting three major criteria: outstanding audio quality, long-term reliability and realistic pricing.

The DTR-8S utilises the latest in analog to digital conversion with 1-bit wide range linear AID converters and pulse flow 1-bit D/A's. These converters minimise clock jitter.

Connection to the analog world is via transformerless, active balanced XLR's (switchable +41-1 OdBu) and both AES/EBU & S/PDIF digital formats are supported. For professional applications, SCMS has been defeated and 32, 44.1 & 48kHz sample rates are accommodated.

TOC information is used to locate recorded material and a High Speed Search function operates at speeds in excess of 300 times normal play speed. This is an important feature in saving valuable time locating required program material.

Another useful feature is the Character Pack which allows up to 60 alphanumeric characters to be added to the Start ID of each program. This further enhances operational speed by simplifying location and identification of various pieces of material.

The DTR-8S allows both analog & digital input signals to be monitored without a tape being inserted. This is very useful for setting record levels etc, and since the machine does not need to be in Record mode, extraneous wear on the tape transport mechanism is avoided.



FOSTEX

FOSTEX have been in the fore front of personal studio recording systems for the past eighteen years. They pretty much revolution-



recorders & software

ised home recording with the affordable A8 1/4" eight track recorder back in the early 1980's. FOSTEX have always made a priority of manufacturing products that are both user friendly and offer all the facilities that the customer wants.

This has reached a point of differentiation, as Fostex now provide equipment with standard terminology and ergonomic designs that appear immediately familiar. This is a design priority, and a clever achievement for those of us who dislike reading owner manuals.

Fostex D5 (\$1,995) is equipped with Digital I/O and AES/ EBU connectors as standard, Fostex say this makes the D5 the only true entry level DAT Recorder that can be used in a professional environment

The D5 is also rack mountable and equipped with basic pro features such as ID editing, 300 times max speed locate and search function, ABS/EBU digital interface and GPI and XLR connectors. Includes remote control of front panel functions. CD-Q code sync ID recording function enables precise music start up. Audio signals recorded by the D5 are copy free if required plus high quality professional A/D & D/A converters. Fader start is also available for broadcast applications.

Fostex D15 (\$4,643) is a professional timecode DAT recorder at an affordable price for use in video post production, audio recording or a multitude of professional applications which call for a SMPTE ready machine. Features include Full S-ID implementation with write and erase of S-ID, SKIP ID and END - plus locate to S-ID programme number and 100 user defined software locations. Front panel lock out via software, 18 bit 64 x over sampling A/D converter and 20 bit 128 x oversampling D/A converter.

Fostex D30 (if you need to know the price, you don't need one!) The D30 Mastering recorder has time code and scrub facilities that allow you to audibly hear the scrub function. The D30 uses RAM thus allowing you to accurately and instantly hear what is being scrubbed. It comes with 44.1 kHz and 48kHz sampling, 799 programme numbers and 2 RS-422 ports. Offsets can be captured or adjusted on the fly whilst the large back lit display shows you external TC tape TC current offset chase mode and lock window all updated in real time.

• As well as studio based DAT time code, products FOSTEX also offer the **PD4, portable DAT recorder** for location recording. With its rugged design, moisture proof casing, three channel on board mixer, P48v, built in monitor speaker, test tone generator, pre or post stripping of SMPTE/EBU the PD4 is a truly professional location recorder and competitively priced at \$8,900.

DAT DISTRIBUTORS IN AUSTRALIA

TASCAM TEAC Australia +61 3 79644 2442

SONY Sony Australia +61 2 9887-6666

HHB AWA Audio Products 1800 642 922

HHB PORTADAT Audio Sound Centre +61 29901 4455

PANASONIC Studio Supplies +61 2 9957 5389

OTARI Amber Technology +61 2 9975 1211

FOSTEX Syntec International +61 2 9417-4700

MARK OF THE UNICORN

Moore Music (03) 9419 0344

2408 Hard Disk Recording System PCI card plus 19" rack solution; 3 ADAT interfaces; 3 TASCAM, DA38/88 interfaces and 8 high quality AD I/O; PC and Mac cross platform compatible. \$2695.

SEK'D

Moore Music (03) 9419 0344

2496 Samplitude System includes A/D-D/A 24 bit rack mountable stereo converter; the Samplitude 2496 software and the highest resolution digital I/O PCI card available - Prodif 96. \$5795.

TERRATEC

Moore Music (03) 9419 0344

EWS64 XL 64 note polyphonic sampler; HDR and editing; digital interface; DSP-based digital effects processing; compatible with all major multimedia standards. \$1495.

MDM'S

STAND ALONE RECORDER, MDM OR FIRMWARE BASED SYSTEM

ALESIS

Electric factory (03) 9480 5988

LX20 ADAT Type II modular 20 bit to tape digital 8 track recorder; unbalanced inputs with 98db signal to noise. \$4299.

XT20 ADAT Type II modular 20 bit to tape digital 8 track recorder; balanced and unbalanced inputs with 102db signal to noise. \$5799.

M20 ADAT Type II modular 20 bit to tape digital 8 track recorder with all new direct drive transport; joy shuttle wheel and aux sync track; complete synchronisation onboard. \$12,449.

FOSTEX

Syntec International (02) 9417-4700

FD-4 4/6 Digital Multitrack recorder utilising media independent SCSI drive for recording. \$999.00

FD-8 Digital Multitrack recorder utilising media independent SCSI drive for recording 8 tracks with 16 virtual tracks. \$1,699.00

D90 8 Track hard disk rack mount recorder with 3.2GB drive (larger drive options available) \$3,499.00

D160 16 Track hard disk rack mount recorder with 3.2GB drive (large drive options available) \$5,499.00

HHB

AWA Audio Products 1800 642 922

GX 8000 Genex GX8000 MO disk recorder sets new standards in digital 8-track recording. It records at up to 24 bit resolution and 96 kHz sampling rate. \$26,000.

KORG

Musiclink (03) 9429 9299

D8 8 track digital multitrack with built in digital mixer, effects, S/PDIF, 1.4 gig HD, SCSI with 7 drive support, scenes, marks, total cut/copy/paste, built in rhythms. \$2499.

OTARI

Amber Technology (02) 9975 1211

DX-5050 3 1/2" Magneto Optical portable recorder; analogue I/O with attenuation; AES/EBU I/O; SPDIF Optical I/O; standard PC (.WAV) file format; Name, label edit tracks from front panel. \$6229.

Radar II 24 track hard disc recorder features 24 bit variable sample rates; dedicated keyboard; removable 9 gig hard drive; complete self contained, no computer required. \$52,911.

PD-80 8 track, 3 1/2" Magneto Optical recorder features dedicated keyboard; removable media; easy to use edit function; reverse playback and time dilation and expansion. \$14,000.

ROLAND

Roland Corporation Australia (02) 9982 8266

VS1680 24 Bit 16 Tracks. 256 Virtual tracks. 26 Channel Digital Mixer. 2 Optional 24 bit Stereo Effects processors. Optional CD-R writing & Data Backup. SCSI. Huge Backlit Screen. \$4,995.

VS880EX 24 Bit 8 Track. 64 Virtual tracks. 16 Channel Digital Mixer. 2 built-in 24 bit Stereo Effects processors. Optional CD-R writing & Data Backup. Optical & Coaxial I/O. SCSI. Balanced TRS Inputs. \$3995.

VS840 24 Bit 8 Track. 64 Virtual tracks. 12 Channel Digital Mixer. Built-in 24 bit Stereo Effects proc-

BUYER'S GUIDE

recorders & software

essor. Optical & Coaxial Outputs. SCSI. Internal ZIP Drive. \$2,495.

SP808 "Groove Sampler" Remix-oriented phrase sampler/digital audio recorder. 24 Bit. 4 Stereo Tracks. 16 assignable sample pads. Internal ZIP Drive. D-Beam Controller. Optional I/O board. \$2,995.

STUMPTL

A & K Australasia (02) 9555 7221

SD EVENT master recorder for sound and data storage. HPEG 3 compression at sound files to ATA cord. 120 min at sound in CD - quality. DLC/MATETRAC/TIC storage to device control. \$3000.

TASCAM

TEAC Australia 03 9644-2442

DA-98 high 8 (DTRS)* 8 ch. digital recorder; synchronise to time code, MIDI and 9-pin; digital track - copy internal; confidence monitoring; switchable ref. level; control menu display (dedicated).

* all DTRS recorders have a *rec-playtime of 1 hour + 53 minutes.* \$9999.

DA-88 Mk4 older version of DA-98 - synchroniser optional or without the other features mentioned. However, a good workhorse and proven performer in studio and live recording. \$7999.

DA-38 budget version of 88 - synchroniser optional via MIDI/T/C only. Still offers digital and analogue I/O's, rack mounting and multi machine lock-up capability (16 units). \$5999.

MMR-8 hard disc 24-bit 8 track - Pro tools, OMF file playback capable. Synchronise to anything, lock up to 100 units together, 16ch player also available. \$23,000.

YAMAHA

Yamaha Australia 03 9693 5164

D24 16/20/24-bit, 8-track simultaneous record and play at 44.1 and 48 kHz. Each track includes 8 virtual tracks for a total of 64 tracks. External SCSI-II connector for alternate audio storage and direct to HD recording. Erase, Delete, Copy, Insert, Copy Replace, Move Insert, Move Replace, Loop and Merge for tracks and parts plus compression/expansion from 50 to 200 percent. MTC, SMPTE, video sync and word clock sync. ADAT, T/DIF, AES/EBU and analog I/O options. Up to 8 D24s can be cascaded. Under \$8000.

MINIDISC

MINIDISC RECORDER INCL. 4 TRACK

DENON

AWA Audio Products

1800 642 922

DNM 1050R is a studio mini disk recorder that has jog/shuttle, keyboard control, digital in/out, analogue bal and unbal in/out and editing features. \$3315.

DN 990R is a broadcast mini disk recorder player with instant start, cue to music, end monitor, end mark, EOM warning, editing and titling. \$4825.

DNM 2000R is a single mini disk player/recorder with jog/shuttle, 5 hot starts, pitch control, pitch bend, 25 track programming and digital input. \$2499.

DNM 2300R is a dual mini disk player/recorder with jog/shuttle, 5 hot starts per side, pitch control, pitch bend, 25 track programming and digital input. \$4299.

MARANTZ PROFESSIONAL

Technical Audio Group

(02) 9810 5300

PMD650 portable minidisc field recorder; built-in mic and speaker; XLR stereo balanced mic ins; digital in and out; +48v phantom; speaker and headphone out; auto or manual recording level. \$2995.

TASCAM

TEAC Australia 03 9644-2442

564 4 track recorder editor; 12 input mixer w/- 4 XLR mic ins; 3 band EQ; 5 levels of DO-UNDO; 37 min rec time; 110 recallable edit points per disc. \$2470.

MD-301 2 track designed for radio broadcast; live theatre and other pro-applications; fader/event start port; S/PDIF-TO8 digital outs; auto ready and program play modes. \$1747.

MD-501 as above but with XLR outs and extensive editing functions via a standard PC keyboard. \$2430.

MD-801 R Mk II highest speed unit (5 times faster than 301/501) random access inc. move-insert, combine, divide and others; optional RAM - all other features like 501. \$3780.

YAMAHA

*Yamaha Music Australia
03 9693 5164*

MD4S MiniDisc 4-track recorder, 8 channel mixer (plus 2TR in), 3 band EQ, 2 aux sends, Ch 1/2 feature XLR in and TRS insert, stereo sub in, stereo aux return, MTC in/out & MMC out, auto punch I/O, auto-locator. Jog/Shuttle wheel for Cue/Review, Non linear recording! \$1595 (TBC).

MD8 MiniDisc 8 track recorder, mixer includes: 3 band EQ with mid sweep, 2 Aux with twin stereo Aux returns, Ch 1/2 feature XLR ins with phantom power and inserts, separate cue mixer with independent pan & level. MIDI IN /OUT/THRU with MMC & MTC implementation, Jog & shuttle wheel, auto punch I/O, auto-locator, non-linear recording with cue list, and fluorescent display. \$3295.

MD8 STUDIO MiniDisc 8 track recorder (as above) plus REV500 digital reverb, Audio Technica AT3525 studio vocal microphone and ATH-M40 headphones to provide a complete studio package. \$4195.

CD

PROFESSIONAL CD BURNER/RECORDER

HHB

AWA Audio Products

1800 642 922

CDR800 is a fully professional recorder with balanced analogue inputs and AES/EBU digital that home recording musicians and broadcasters alike can produce professional results. \$3995.

MARANTZ PROFESSIONAL

Technical Audio Group

(02) 9810 5300

CDR630 new generation CD recorder featuring CDR and CD-RW on audio or data discs; XLR analogue in and out; AES/EBU; SPDIF; sample rate converter; digital audio delay and auto indexing from CD, DAT, DCC, MD, IR remote. \$2995.

OTARI

Amber Technology

(02) 9975 1211

Otari CDR-18 professional compact disc recorder/player. Features 19" rack mount; sample rate conversion; analogue and digital I/O; multi session recording; digital fader. \$3998.40.

CDP-50 compact disc duplicator consecutively writes 50 CD's at 4 times speed. Supports most format - CDR, CD-ROM, CD-I, Video CD, Photo CD. Windows based. \$12,993.

ROLAND

*Roland Corporation Australia
(02) 9982 8266*

VSCDR Compact Disc Writing System for Virtual Studio (VS) series. Allows recording of Audio CD's and archiving/retrieval of song data. Includes software for use with IBM compatible and Macintosh computers. \$1,495.

TASCAM

TEAC Australia 03 9644-2442

CD-RW5000 ETA Jan 98; stand alone CD recorder player - no info available as yet. \$2699.

CD-D4000 ETA JAN 98; CD duplicator - no info as yet. \$2999.

COMING IN CONNECTIONS:

FEBRUARY (mailed on 29th Jan)

• **STUDIO MONITORS**

Audio Buyer's Guide.

• **TRUSSES AND RIGGING**

LX Buyer's Guide.

• **Hire, AV & Production CO's:**
DIRECTORY

• **CLUB GEAR** ; The AUDIO Guide

• **Film & TV Lighting** ; Feature

MARCH: Buyer's Guides: Wireless microphones; Video Projectors, Moving Lights.

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BASF National Tracking Guide

ARTIST	PRODUCER	ENGINEER	PROJECT	ARTIST	PRODUCER	ENGINEER	PROJECT
New South Wales							
A # Sharp Jeff Cripps (02) 9153 9988	24 Track 1"			R & R Recordings Studio Robert Zimola (02) 9672 4491	16 Track 1" Analog		
Ian Blakeney	Jeff Cripps	Jeff Cripps	CD	Kristy Lee	Kristy/Andy	Rob Zimola	Album
Fowlhouse Jack	Jeff Cripps	Jeff Cripps	Double CD	Raine & Horne	Rob Zimola	Rob Zimola	Corporate
Merilyn McMahon	Jeff Cripps	Jeff Cripps	Demo	Blacktown Tafe	Students	Rob Zimola	Demos
Hank Koopman	Jeff Cripps	Jeff Cripps	CD	Rockinghorse Zubin Henner (02) 6688 4005	Professional Music Recording and Mixing		
Dunna Marie	Jeff Cripps	Jeff Cripps	CD	Soul Grip	Band	Zubin Henner	Album
Alberts Studios Leesa (02) 9953 2544				Plastic Smash	Jo-Soledad/Zubin	Zubin Henner	EP
The Whitlams	Tim Freedman/Rob Taylor	Rob Taylor	Demos for Forthcoming Album	ENRGY	Jo-Soledad/Zubin	Zubin Henner	Julian Lennon Special
Tender Australis	Bruce Brown/W. Findlay	Bruce Brown	New Signing for EMI	Spin	Christian Pyle	Anthony Lycenko	Mixing
I believe in Aliens	Barry Andrews	Sam Horsburgh	Forthcoming Album	James Brown	r/a	Michael Worthington	Remastering
Loki	Paul DeComo	Scott Rasleigh	New Release	Tina Turner	r/a	Michael Worthington	Remastering
Magic Lunchbox	Band	Tom Kazas		Sony Studio Sarah (02) 9383 6461	Recording Studio		
Artec Digital Stuart Sheldon (02) 9906 3151	Music Production and Post			Drown	Simon Tonx	Simon Tonx	Recording CD
Gary Davis	Stuart Sheldon	Helix Onion/Stuart Sheldon	Album	Funnelweb	Band	Simon Tonx	Recording EP
Charing Cross Recording Studios David & Lyn Sykes (02) 9387 8362	24 Track Vintage Neve - Automated			Damien Steinmark	Band	Louise Taylor	Recording CD
Hoolahan	Wayne Connelly	Wayne Connelly	Album Track & Mix	Tim Draxl	Les Solomon	Tod Deeley	Recording Demo
Daniel Rata	Jeremy Allom	Jeremy Allom	Album Mixing	Felicity	Paul Begaud	Paul Begaud	Recording CD
RB Films	Steve Foster/Matt Maddock	S. Foster/M. Maddock	Soundtrack - Fresh Air	Brad Cole	Artist	Simon Tonx	Mixing
Nic Dalton	Peter Jones/Wayne Connelly	David Coulthard-Clark	Album Mixing	Soundwarp Meredith Brooks (02) 9905 7144	Mastering		
Nic Dalton	David Coulthard-Clark	David Coulthard-Clark	Album Mixing	Welter	Elliott Weston	Meredith Brooks	Album
Amr Abdullah	David Trump	David Trump	Album Mixing	Paul Barrett	Artist	Meredith Brooks	Album
Damien Gerard Studios Marshall Cullen (02) 9660 3776	2" 24 Track/ 1/2" 16 Track Recording/Mixing			Peter Bishop	Artist	Meredith Brooks	Album
Mr Blonde	Yen	Jordan Bach	Demo's	Wrapped in Plastic	David Gale	Meredith Brooks	Album
Plummett	Band	Russell Pilling	EP	Johnny Rebb	Canetoad	Meredith Brooks	Album
Pete Wells	Pete	Russell Pilling	Album	Clint Beattie	John McConnell	Meredith Brooks	Single
Bile Abductor	Band/Russell	Russell Pilling	Album	Sound Shaft Studios Tom Higginson (02) 9826 7255	1 1/2" Track 1" Analogue, 24 Track Digital		
Powerplant	Band/Russell	Russell Pilling	Album	Tomie and The Boys	Tomie	Tomie	Album (EP)
Norma Murphy	Artist	Russell Pilling	Live Album	Undermind	Tomie	Tomie	EP
David Hinds Recording Studio David & Lyn Hinds (02) 6581	1235 16 Track Digital			Inequity	Tomie	Tomie	EP
Balance	D & L Hinds	D & L Hinds	Album Tracks	Catfreak	Tomie	Tomie	EP
Feral Studio Jon Robertson (02) 6299 3224	16 Track Analogue			The Downside	Tomie	Tomie	EP
Monypeni	Jon Robertson	Jon Robertson	Demos	Mother Little Helpers	Tomie	Tomie	Acoustic EP
Exhibit A	Jon Robertson	Jon Robertson	Album	Studios 301 Mastering Jacqui Espie (02) 9211 7301	CD Mastering Facility		
The Rug	Jon Robertson	Jon Robertson	Album Tracks	The Mavis's	Kalju Tonuma	Don Bartley	Ruberty Song Single
The Lads	Band	Jon Robertson	Demos	Kylie Minogue	Steve Smart	Steve Smart	Double Live Album
Gayle M	Jon Robertson	Jon Robertson	EP	The Fauves	Barry Palmer	Don Bartley	Kickin on Single
Festival Mastering Bianca Vukelic (02) 9395 8000	Mastering			Various	Chris Thompson/Philip McKellar	Don Bartley	JJJ Live at the Wireless
Drop City	Tim Whitten	William Bowden	EP	Eskimo Joe	Mick Levis	David Macquarie	Video New Single
Fendahlene	Russell Pilling	William Bowden	Album	Top Cat Recording Studio Brad Wann (02) 6628 0843	Automated 24 Track Analogue 1" - 16 Track Digital, Mastering and CD Burning		
Harley Smith	Artist	William Bowden	EP	Star Anise	Band	Brad Wann	EP/CD
Marty Irwin	Artist	William Bowden	Tracks	Mal & the Long Boarders	Band/Brad Wann	Brad Wann	Album CD
Chris Campbell	Artist	William Bowden	EP	Blues Vein	Band/Brad Wann	Brad Wann	EP/CD
Tulipan	Band	William Bowden	EP	Rainbow	Artist	Brad Wann	Album/Demo
Festival Studio Bianca Vukelic (02) 9395 8000	Recording			Souljure	Brad Wann	Brad Wann	Album Mix and Mastering
Lavish	Geoff Lovejoy/Clint Mansell	Mark Thomas/Matt Lovell	Album	Two Bucks	Mahe & Brown	Brad Wann	Album Mastering
Mark Stockley	Mark Ovedan	Matt Lovell	Quartet O/Ds	Troy Horse Mickey Levis (02) 9319 1799	24 Track		
Jimmy Little	Brendan Gallagher	Matt Lovell	Piano O/Ds	Eskimo Joe	Worrall/Joe	Mark Worrall	Album
Frank Bennett		Mike Stavroe	Eig Band Beds	Shihad	Band	Mark Worrall	E.P.
Good News Week	Paul Mac	Keith Walker	Single	The Modernist	Patrick Flynn	Tom Kazas	E.P.
Silverchair	Nick Launay	Nick Launay	Album	Fields	Rod Cuckle	Jeremy Allom	Album
Groovetown James Novak/Stefan Novak (02) 9672 3513	Creative Audio featuring ProTools m/x			Front End Loader	Chi Chi Laverda	Mickey Levis	E.P.
Dreamworks	Lorry Dercole	James Novak	"Prince of Egypt" Promo	Bondi Wave Co-op	Lindy Morrison	Mark Worrall	Album
LDC Productions	Lorry Dercole	S. Novak/J. Nova	"Tcons on Vacation"	Velvet Sound Recording Studios Dave McCunn (02) 9283 5968	Automated 32Ch 24 Trk 2 inch		
Millenium Entertainment	Stefan Novak	James Novak	"Broadway Tribute" Scoring	60 Watt Silver	Craig Portells	Tony Wall	EP Track and Mix
Millenium Entertainment	Stefan Novak	Stefan Novak	"Medie/i/Armas" Scoring	Jupiter Ray	Band	Anthony Brown	EP Track and Mix
Amanda Webb	Stefan Novak	James Novak	Album Pre-Production	Montana	Paul Scott	Adrian Grigorieff	Album Tracking
JMF Recording Studio Fran Esther (02) 9790 4097	X850, 24 ADAT, 24 Track Analogue			Sandy Klose	Artist	Tony Wall	Album Tracking
Steve Lee	Artist	Ralph Esther	Demo	Graeme Connors	Artist	Tony Wall	Demos
Gwynn Ragel	David McMillan	Ralph Esther	CD Album	Belle's Pocket	Craig Portells	Craig Portells	Album Tracking
Simon Prat	Artist	Ralph Esther	Demo	Queersland			
Darko	Band	Guy Saminadan	Tracking	Burbank Productions John Ryan (07) 3245 4314	16 Trk Analog, 32 Channel Automated		
Jeff Galea	Artist	Mike Ward/Ralph Esther	Film Score	Michael King	John Ryan	John Ryan	Country CD
Leonie Butler	Erin Heliard	Mike Ward	Demo	Domenic Sound Shane Hughes (07) 3216 5187	32 Trk Recording		
Megaphon Guy Dickerson (02) 9550 6576	24 Track Analog & Digital Recording			Crighton Communications	Les Crighton	Shane Hughes	Advertising Jingle
Nitocris	Band/Lachlan Mitchell	Lachlan Mitchell	Album	Rhonda Tant	Shane Hughes	Shane Hughes	Debut EP
Cradle Snatch	Guy Dickerson	Guy Dickerson	Album Tracks	The Age	Shane Hughes	Shane Hughes	Debut Album
Wendy Matthews	Stuart Chrichton	Brent Clark		The John Patterson Band	Shane Hughes	Shane Hughes	EP
RENT The Musical	Rob Bayley	Guy Dickerson		Looking for Cool Studios Mark Harrison (07) 3844 2139	24 Ch Neve desk, Atari, 2", 24 Ch ADAT		
Dark Seed	Guy Dickerson	Guy Dickerson	Album Tracks	Powderfinger	Band/Magoo	Magoo	Tracking
Silverchair	Jim Mogine/Band	Brent Clark	Album Tracks/B Sides	Tooth Faeries	Band		Album
Nu-Town Studio Greg Hopping (02) 9516 3306	16 Track Anna/32 Track Digital			Chaise	Michael Flanders	Doug Brady/Magoo	Album
Lonnie Gordon	Hopping/Neven	Hopping/Worrall	Single	Nick Philips	Michael Flanders	D.C.	Tracking/Mixing
Erina	Loizou/Hopping	Greg Hopping	Album Tracking	Suite 16 Audio Productions Murray Lyons (07) 3369 3733	24 Trk Analogue, ProTools, Live Room		
Elie	Greg Hopping	Sofie Loizou	Album Tracking	Rochelle	Rose Pearse	David Champion	EP
Terry Burgan	Loizou/Bergan	Sofie Loizou	Demos	Ross Lovell	Artist	David Champion	Album
Kanoe	Greg Hopping	Sofie Loizou	Single	Somarasa	Cameron McKenzie	David Champion	T.V.C. for Hippies
Power Play	Leon Berger	Sofie Loizou	Album Tracking	Sunshine Studios Leon Prescott (07) 3844 6844	Classic Neve Desk		
Q Recording Richard Muecke (02) 9212 4851	2" Analogue/SSL G+			Powderfinger	Mark McGilligott	Mark McGilligott	Movie Tracking
Mach 1	Band/Roy Mollace	Mick Seage/Roy Mollace	Single	Lucy Beegle	Leon Prescott	Leon Prescott	Demos
Living End	Band/Richard Muecke	Richard Muecke	Single				
Etched in Stone	Band/W. Buzacott/M. Seage	M. Seage/W. Buzacott	EP				
Cold Chisel	Band/S. James	S. James/R. Muecke	Mixing/Overdubs				
Mamma Jamma	Gary Kee	Gary Kee	Mixing				
Mike McLennan	Artist	Ted Howard/Glen Phimiste	Single				



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ARTIST	PRODUCER	ENGINEER	PROJECT	ARTIST	PRODUCER	ENGINEER	PROJECT
Vandersound Studios	Eric Vandersande (07) 5546 8100.	CDR, HDR, O2R, Mastering		Revolver Recordings	Michael Walsh (03) 9529 1123 16/24	Trk Digital: Valve outboard and Mics	
Zengari	Eric Vandersande	Eric Vandersande	Edit and Remaster	Something for Kate	Brian Paulson ('Beck')	B. Paulson/M. Walsh	PreProduction/Demo
David Daniel	Eric Vandersande	Eric Vandersande	Mastering	Elephant Gun	Michael Pollard	M. Pollard/M. Walsh	Demo
Nadir	Andrew Hines/Band	Andrew Hines	Edit, Mix & Master	Studio 52	Paul Higgins (03) 9417 7707 24	Studio A: 32 Track Studio, 24 Trk ADAT	
Fetish	Andrew Hines/Band	Andrew Hines	Rec, Edit, Mix & Master	Tunari	Trevor Carter	Trevor Carter	New Album Tracks
Ian Francis	Eric Vandersande	Andrew Hines	Edit, Premaster, Remix	Bad Boys Batcuda	David & Ortiz	Trevor Carter	New Album
Ruth Sutcliffe	Eric Vandersande	Eric Vandersande	Demo	Bill Power	Trevor Carter	Trevor Carter	Country Albums
South Australia				Supremacy	Band	Trevor Carter	Album Tracks
Adelaide Tape Duplicators	Al Sankauskas (09) 8212 7111.	Mastering Facility		Last Band Standing	Band	Andrew Meakes	Demos in Studio B
Mark Matthews			CD Manufacture	WASH	Trevor Carter	Trevor Carter	EP for Release thru Empire
T.J. Brown			CD Manufacture	The Ranch	Norman James (03) 9712 0136 24	Track Digital Residential Country Studio	
Don Bradman CD Rom			CD Manufacture	Various	Klaus Muellen	Various	German Label Album Lock out
Mercedes Garcia			CD Manufacture	A.M.M.A.	Norman James	Various	Promo CD Various Oz Artists
Borderers			CD Manufacture	Wombat Rd. Recording Studio	Barrie Clissold (03) 5145 4204.	32 Tk. Digital, 16 Tk. Analogue. Full CD Mastering	
Zdenek Bruderhans			CD Manufacture	Jim Ayres	L.Hammond	Barrie Clissold	Album Tracking
Disk-Edits	Belinda Kent (08) 8340 1377.	Master/CD Manufacturing		Robert Watkins	C.Dedic/Barrie Clissold	Barrie Clissold	CD Mastering
Tendahook	Band/Brett Sody	Neville Clark	CD Manufacturing	Stuart Thorpe	Artist	Barrie Clissold	Demo Tape
Seraph's Coal	Band/Sureshot Records	Neville Clark	CD Manufacturing	Crossroads	V.Garth/C.Twite	Barrie Clissold	CD Mastering
Gutfolk	Tony Neske/Band	Tony Neske	CD Manufacturing	Pat Higgs	Higgs/Barrie Clissold	Barrie Clissold	Demo Album
Whiplash	James Sweeney/Band	Neville Clark	CD Manufacturing	Sweet Chick	Barrie Clissold	Barrie Clissold	Album
Push Button Sun	Band		CD Manufacturing	Woodstock Loft	Doug Kelly (03) 6391 2277 24	Track ADAT Pro Tools	
Pornland	Band/David Couzens	Neville Clark	CD Manufacturing	Ben Thorn	Doug Kelly	Doug Kelly	CD
JR Recording	Darren Conway 0418 800 904			Dead Fred's Left Head	Doug Kelly	Doug Kelly/Andrew Carpenter	CD
Offensive	Eddie Sikorski	Eddie Sikorski	Demo	Western Australia			
Temporal Lobe	Eddie Sikorski	Eddie Sikorski	Album	Bonsai Recording Studio	Tom Thorpe (08) 9246 4408.	Pro Tools Digital/24 Analogue	
Nine Miles High	Eddie Sikorski	Eddie Sikorski	Demo	Brett Greenfield	Tom Thorpe	Tom Thorpe	Demos
Sunday Roast	Eddie Sikorski	Eddie Sikorski	Demo	Kay/Redman	Tom Thorpe	Tom Thorpe	Jingles
Navada Breakers	Alen Morant	Alen Morant	Album	Ian Kenny	Ian/Tom	Tom Thorpe	Re-mastering
"the fridge"	Nigel Sweeting (08) 8231 3588	Digital Non Linear full automation		John Meyer	John/Tom	Tom Thorpe	Album
Jelelah	Nigel/Band	Nigel Sweeting	Tracking Album	Tooz Party	Tom Thorpe	Tom Thorpe	Demo
Goatlips	Sean/Band	Sean Donaldson	Demo	Next of Kin	Tom Thorpe	Tom Thorpe	Pre-production
Akhter	Nigel/Artist	Nigel Sweeting	Mixing	Poons Head	Rob/Sam/Bush (08) 9339 4791.	60 Track - 16 For Sale	
Snap to Zero	Band	Nigel Sweeting	Tracking	Senor Lopez	Rob Grant	Rob Grant	Album
Missing Trees	Band/Nigel	Nigel Sweeting	CD	Berbermerkin	Rob Grant	Rob Grant	Album
Indulgence	Band/Nigel	Nigel Sweeting	CD	John Barnard	Rob Grant	Rob Grant	Mastering
Victoria				Andre	Rob Grant	Rob Grant	Mastering
Ambivert Studios	Adrian Akkerman (03) 9480 1211 24	Channel Mackie & 8 Track ADAT		Breathe	Rob Grant	Rob Grant	Album
Westgarth	Band	Adrian Akkerman	Demo	Satellite Recording Studio	Darren Halifax (08) 9470 4003	ProTools	
Four Sisters	Jolian B			Boyd Stokes	Delson Stokes Snr	Darren Halifax	Album
Ramantra	Band	Sam Counihan	Demo	Reynolds Indich	Artist	Darren Halifax	Single
X	Sam Counihan	Sam Counihan	Film Soundtrack	Homungus	Band	Darren Halifax	Surfing Video
Crystal Mastering	Joe Carra (03) 9326 2318.	CD Mastering/Sonic Solutions		Gallow Glass	Tom Haran/James Hewgill	James Hewgill	5 Track EP
Snout	Ross/Band	John Roberto	Mastering Single	Cosima Oelito	Gary Parentich	James Hewgill	Single
Claymen	Band	John Ruberto	Mastering EP	Yabu	Delson Stokes Jnr	Darren Halifax	Album
BOB	Bnad	Joe Carra	Mastering Album	Northern Territory			
Penelope Swails	R.Dillon/P.Swails	John Ruberto	Mastering Album	Caama Music	Steven Tranter (08) 8952 9205.		
The Jellybeans	Band	Joe Carra	Mastering EP	Letter Stick	Alan Murphy/Stan Satour	Stan Satour/Alan Murphy	Letter
Damzel Fly	Band	John Ruberto	Mastering EP	Nangu	Alan Murphy/Stan Satour	Stan Satour/Alan Murphy	Nangu
Dex Mastering	Adam Dempsey (03) 9372 2266.	Pro Mastering & Restoration, 2 Suites		North Tammi Band	Steven/Stan	Steven Tranter/Stan Satour	This Land
CoCo's Lunch	Band	Adam Dempsey	Album	Black Storm	Steven/Stan	S. Tranter/S. Satour	Highway to Nowhere
Sonic Persuasion	Anthony McGinty	Adam Dempsey	EP	Teenage Band	Alan Murphy/Stan/Steven	Steven Tranter/Alan Murphy	Vision
Ceilidh Rogues	Peter Anderson	Adam Dempsey	Album	Wadey Compilation	Caama music		Compilation
Prude	Steph O'Hara	Adam Dempsey	EP	Masters Studio & Production	Lindsay Masters (08) 8932 1754.	8 Track Digital & Midi	
P. Tex	Band	Adam Dempsey	Mini Album	Marc Smith	Artist	Lindsay Masters	Album
Jets Studio	Bek	Adam Dempsey	Compilation	K. O'Shea	Lindsay Masters	Lindsay Masters	Demo's
Lo Ricco Sound Studios	Marcello (03) 9701 6220 16	Track ADAT		A.Wilson	R.Wilson	Lindsay Masters/R.Wilson	Album Mix
From the Inside	Andre Dumas	Marcello Lo Ricco	Demo	YOUR BASF TRADE SALES OUTLETS:			
RE Sound	Thomas Reiner	Marcello Lo Ricco	Album	NSW:	Audio Visual Designs (02) 9281-2444,		
Sam S.	Marcello Lo Ricco	Marcello Lo Ricco	Album	Silver & Ballard (02) 9439-5355,			
Pocket Money Theatre	Racheal Forgaz	Marcello Lo Ricco	Voice Over	Independent Tape Services (02) 9436-0666			
Gino Vinella	Band/Marcello Lo Ricco	Marcello Lo Ricco	Single	VIC:	CATS (03) 9529-3177,		
Music Lab Elwood	Dean Horler (03) 9531 6627.	32 Track Music Production		Chapple Tape (03) 9580-6620,			
G.Siedle	Artist	Dean Horler	Demo	DEX Audio (03) 9372-2266,			
R.Zartoski	Artist	Dean Horler	Album	MTA & Assoc. (03) 9819-6455			
G. Warner	Artist	Dean Horler	Album	SA:	Adelaide Tape Duplicators (08) 8212-7111,		
Newmarket Studios	Ben Hurt (03) 9329 2877 24	Track 2' Analogue		Pro Media (08) 8276-6793			
Julie O'Hara	Ben/Band	Ben Hurt	Album Tracks	WA:	Ausmag (09)314-1953,		
Crystal Set	Spinshooters	RBD Productions	Primus AD	Pro Copy (09)375-3902			
Gary Young	Artist/Paul Keegan	Ben Hurt	Musical Cast Rec	QLD:	Musiclub (07) 3862-1633,		
Alex Burns		Ben Hurt	Hawaiian Demos	Tek (07) 3239-4000			
Vindaloo		Ben Hurt	Pre-Production				
Dog-Box	Ben Hurt	Ben Hurt	Mixing				
Petrophonic Productions	Petros Georgiades (02) 9553 0176	Recording Studio/Midi Suite					
Client Direct	Jeff Richardson	Petros	Sales Tapes				
Aztec	Petros	Petros	Phone Messages				
Nick Charles	Petros	Petros	Blues CD				
Mark Joseph	Petros	Petros	2nd CD				
Gary Hobbey	Petros	Petros	Solo CD				
Dr Jan Hall	Jan Hall	Petros	Sex Tapes				
Rattle N Hum	Eddie (03) 6234 6687.	16 Tk., DA88, ProTools Studio, Post Production Studio					
Morning Glory	Eddie Malovnek	Eddie Malovnek	Demo				
D-Elvis	Nick Warren/Band	Nick Warren	Demo				
Nux-Vomica	James McLachlan	James McLachlan	Demo				
Lamentum	James McLachlan	James McLachlan	Album				
Billy Whitton	Artist	Andrew Jackson	Album				
Sir Veto	Artist	Michael Shelley	Album				



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- Electrovoice XEQ-3 x/over (4)
- Klark DN360 Dual 31 Eq
- Peavey Q431FM 2RU mono 31 band eq with FLS (8)
- QSC Powerlight 1.8 Amps (5)
- Yamaha SPX9011 multi fx (4)
- 3 Phase Distro 18 GPO and circuit breakers
- Art CU 1812 Processor
- Behringer MDX2400 multicom 4 channel comps
- Behringer XR2400 outquad 4 channel gates
- Bss Omnicurve Crossovers
- Crown Geodyne II Amps
- EV Dmc1152B 15" Deltamax Controller
- Korg SDD 2000 Digital Delay
- Peavey XRD680PLUS 8 channel powered head
- Lexicon MPX-1 (3)
- Rane GE30 Mono 31 band EQ
- Sony MDS 303 Mini disc player
- EV Deltamax 1122 boxes (latest model)
- Yamaha PC2002M Amps



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COLD CHISEL INTRODUCE NEW EAW LINE ARRAY PA TO REGION

Norwest productions expand capability with extra EAW and new Soundcraft 5 series console, used on national concert tour. It rocks!

Make it loud! That'd be the design brief for the Cold Chisel Last Wave of Summer Tour. Live Sound Engineer Peter (Wardie) Ward factored in 100 Jands S4 cabinets occupying three semi's to do the shows the way the band needed.

They ended up with more PA- but in just one truck!

The PA chosen by Chisel uses EAW speaker cabinets. So much time has passed since the Clair Brothers S4 was designed that the newer EAW designs deliver considerably more output in considerably less space.

EAW have expanded their product representation in Australia recently, most notably in the inventory of Sydney sound company Norwest Productions Pty Ltd, who won the Chisel tour contract.

The contract was hotly contested, as there are few concert tours of this magnitude running around Australia this summer.

Headed by Chris Kennedy, Norwest have for some time owned a fleet of KF 650 and KF 850 composite cabinets, and EAW subwoofers - all driven by Crest amplifiers.

Now they also have a new EAW KF860 Virtual Line Array system. More on the technical elements of this in a tic.

For the Australian performance industry it means another world class arena capable audio company on the market - more competition at the end of a decade which, when it started, had just a handful of arena capable audio firms (dominated by Jands at the time) who then all had old equipment. Now there are upwards of ten arena capable sound companies, many with new equipment.

Cold Chisel is one of the most successful Australian rock bands of the 'golden era', a ten year time span ending around 1984, when the nation underwent a boom in live rock music. Chisel wrapped up their union about then and went on to enjoy the royalties.

Now they're back, with a new record which has shipped multi platinum and a sell out tour. Analyst Neil Shoebridge wrote in Business Review Weekly that the band had a \$6 million guarantee from tour promoter's SEL ~ not hard to believe, given the merchandising take alone on night one was over \$140,000!

Anyway, anyone who can turn a profit in the entertainment industry is a friend of the production community, who need to wrestle budget out of business minded tour accountants. Chisel at least have resisted doing it cheap, they put on an arena show with



Peter Ward

international production values. At least it was all that, when I saw it in Sydney.

I spoke to Wardie to establish how he came to get the gig- hotly contested by many.

TO THE BRINK

Peter Ward has been on the Australian live sound scene since 1982 when he emigrated from the UK. He's recently done live sound for silverchair, a young hard rock band which has already had considerable American success.

So when did he get the Chisel gig?

"Three weeks before the tour" he told me!

Why so late?

"Well, I thought I had it because I'd put in a spec list some time before, but then heard nothing from Rod (Willis, Chisel manager)."

"I think he was trying to build some tension!"

The choice of an EAW PA wasn't: too hard.

"The KF 850 is such an awesome rock box, the best there is" he says, having had ample experience with the type in recent years.

But Norwest didn't own enough KF 850's to handle a full tilt rock arena tour, so would they buy more of them?

Chris Kennedy who owns Norwest takes up the story:

"Last year we looked after the V-DOSC PA which Metallica and Van Halen used in Australia. I was mightily impressed with it, how it sounded, and how it packed into trucks".

"I visited (VDOSC creator) Dr Christian Heil in Paris and looked at buying it. But then I had a reality break when I looked at the exchange rate".

"Meanwhile EAW had responded to everyone raving about the line array concept by reworking the rigging on their line array - which they had out for a while. It was originally intended for big sporting arenas".

"Each Line Array KF 860 (VLA) is basically loaded with twice the components of one KF850. The whole Line Array concept measures each cabinet as having as a 3dB advantage. So, with just 16 line array boxes, you get a theoretical equivalent to 64 KF850's!"

"Back in July I got 8 line arrays to try them out. They were busy straight away - they are so good for awards, because you can get precisely fantastic lectern (sound) levels, and fly them high out of camera angle".

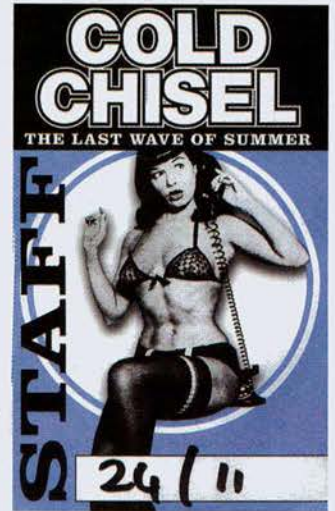
If Norwest added another 8 boxes, they would have the capacity to handle a tour such as Chisel with ease. So the scene was set.

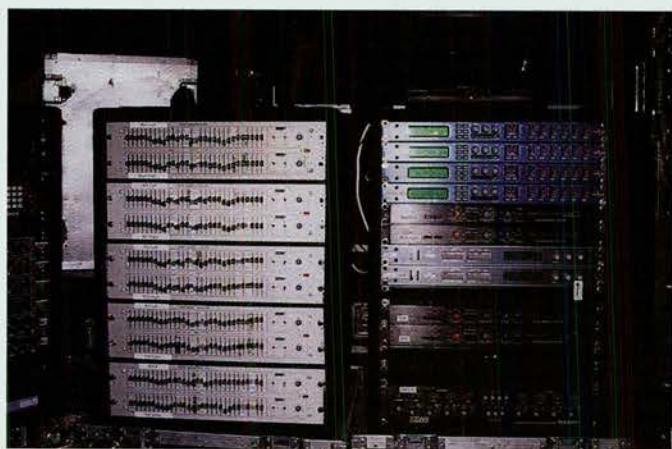
CONVINCE THE CLIENT

Chris Kennedy and associate Bill Richardson invited Rod Willis and Wardie to come to the Sydney Entertainment Centre (which he hired for the day) and listen to the then eight line array boxes, flown on one side to represent what the system would sound like.

Cold Chisel then decided to use the line array.

Chris Kennedy promptly ordered another eight boxes, to bring his line array inventory up to 16 boxes. The current configuration has six KF 860's and two short throw KF 861 boxes flown under two one tonne chain motors on each side of stage.



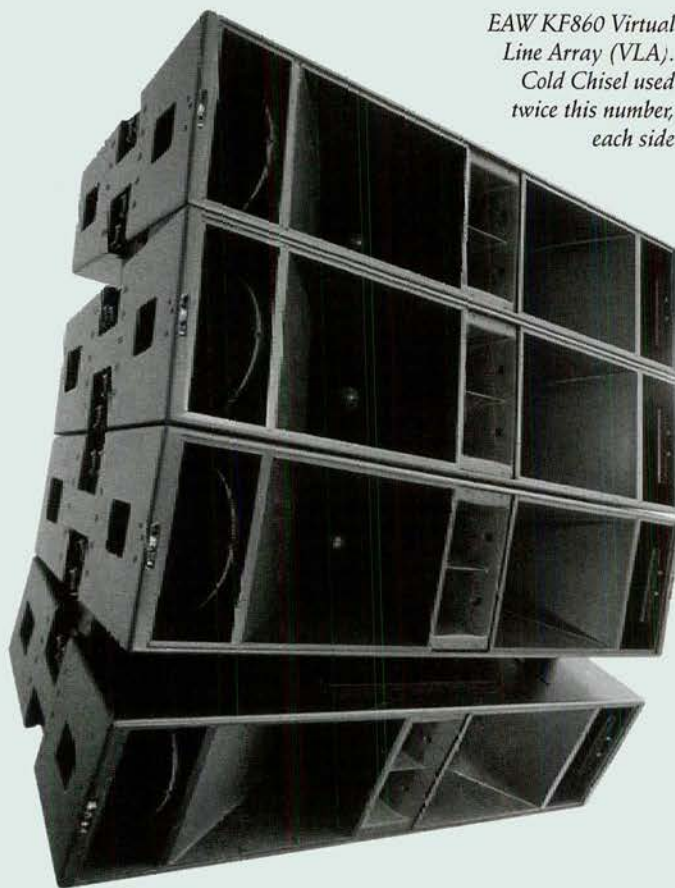


System drive racks - Clark DN360 equalisers, with XTA 226 digital system processors and XTA DP200 processors for the subwoofers.

These cater to the main left/right front of house requirement, with system dispersion of 120° horizontally. Vertical dispersion is variable, using a new rigging design from EAW.

Basically you aim the top box at the top row, then drop the front angle of each VLA as you rig them underneath.

The resulting line array works better than any other bunch of single cabinets because the component sections all line up together. The low frequency area is at the extreme ends of each VLA, with dual midrange sections then a single pair of high frequency horns in the dead centre of the box. When all the VLA boxes are stacked into the Virtual Line Array, the PA resembles a single point source rather than several dozen sources. The cabinets produce an acoustic gain by being arrayed together. It's good science.



EAW KF860 Virtual Line Array (VLA). Cold Chisel used twice this number, each side

THE WHOLE PA

Clearly a line array system, be it VDOSC or EAW VLA will not cover a whole semi circular arena alone. To do the side bits, EAW KF850's were flown - 8 per side with 4 SB453 flown subwoofers.

System engineer Ian Wilson told me that in a perfect world four VLA's would be used each side, rather than the KF850's. But the KF850's seemed to integrate reasonably well when I took my long walk to hear the system while the band Chiselled.

Way, way up top, the VLA certainly delivered the high frequency information, in the same manner as the VDOSC. The only other system I've heard do that in the Sydney Entertainment Centre was the Turbosound Flashlight.

Crest amplifiers drive the Norwest PA, two VLA boxes are powered by one rack of three amps, 2 x CA9 and 1 x CA 12. The CA 12 drives 2 x 15" on each channel, the CA9's drive 2 x 10" and 2 x horns on each channel. There are eight racks driving the 16 VLA boxes.

Crossover and system protection functions are handled by four XTA 226 digital processors. These are controllable from a laptop and/or the front panel, and are a one rack unit tall stereo in, six output device.

Ian Wilson had set them up to feed the low frequency section of each VLA signal from 40Hz to 198Hz. Then the mid sections were fed 250Hz - 1,041Hz. You read right, there is a gap between 198 and 250 Hz, but remember, there is a 24dB per octave curve, with roll out starting at 198Hz there is still plenty of program source between 198 and 250.

The high frequency section was crossed in at 1,075Hz, and then allowed to roll out somewhere above normal hearing limits.

It's interesting that Norwest have chosen to go without EAW's dedicated system controller, the MX 8600. That the system sounds excellent with the XTA processors says a lot about the design of the VLA - it doesn't appear to need extensive equalisation 'tweaking', which happens in a lot of dedicated system electronics.

Each VLA contains 2 x 15" drivers in an angled baffle, 2 x 10" midrange drivers, horn loaded and 2 x 2 inch throat compression drivers on a constant directivity horn. The design concepts provide for directionality of low frequency program from a VLA array - and given the whole systems tight and controllable dispersion, the ability to limit spill is a *major* plus.

Meanwhile the subwoofers (16 EAW SB1000 2 x 18" and 4 x EAW SB850 2 x 15") were crossed out at 121Hz. The sub's were simply sat on the floor under each flown VLA.

One design flourish: a row of eight KF650's was flown stage centre, as near in-fill for the front centre audience. Many system designers forget or care little that their main PA system doesn't propagate right up front centre.

Another nice little touch was a pair of KF850's flown directly above the mix position, as a time delay to punch some program into the far top rear. I could hear them come in as I walked into the area, and they integrated well with the VLA.

ABOUT THE SHOW

Chisel are a four square rock band, the basic traditional drum kit was mic'ed with EV N/D408's on the toms, SM 57 on snare, and a Shure SM91 boundary mic sat in the kick. SM81's were used on hats and ride, and AKG 414's for overhead. Wardie did a 'Y' split of each drum channel at the desk, so he had 'two' kits of drums. The first set of drum channels were gated using Drawmer noise gates, the second set not.

This was to give him separate 'sounds' - used at different times! Vocalist Jimmy Barnes used an SM 58, on a cable, wireless mic's don't last for him. Backup vocals were through Audix OM5's, the guitars mic'ed with SM 57's - and that's about it!

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LIGHTING

January 1999 (with December)

MONTHLY

Edited by Catriona Forcer



LSD's Nick Jackson and Tom Lobei with a prototype of the Icon M Series

DMD LX: no longer a myth?

At LDI 98 in Phoenix Light and Sound Design had a teasing photograph of their soon to be released DLP luminaire - the Icon M Series.

You read about it first in the December 1997 issue of Connections!

The first luminaire is currently scheduled to be trialed on a tour as early as March next year. Nick Jackson wasn't keen for too many details to be released yet but you can expect millions of colour and about 1000 gobos built into the unit with a DMD engine.

Selected top lighting designers such as Roy Bennett and Peter Morse were given private showings of the unit in LSC's hotel room.

We'll keep you in touch with forthcoming developments

LSC suffers temporary money trouble

Is it worth saving? You bet....!

Difficult circumstances, including R&D delays with the Axiom 48, have resulted in the appointment of an administrator at Melbourne lighting control equipment manufacturer LSC Electronics

The private company was established in 1979, and has since established a reputation for fine engineering and quality construction of stage lighting control equipment. It produced the first cost effective small memory board, the Precept, in 1984. Recently DMX products have done well.

LSC currently exports 60% of its output, and current sales are healthy - notwithstanding lack of Axiom 48 and 60 consoles - now renamed Axiom Pro. "We have had the Axiom design changed several times as the market moved" says LSC Director Alan Graham. "It's our fault Axiom Pro isn't released yet, but we don't release beta products. The temptation didn't even arise - we don't ship incomplete product."

The design of the new ePAK dimmer is now complete and we are ready to commence manufacture.

"Our problem is working capital", Alan

told Connections. "We are a small private company with a few working director shareholders who have pledged everything we own as security against our borrowing's. There are no aggrieved investors, there has been no expensive product recall, the directors fly economy class and our main problem has been funding growth".

LSC does not receive any grants from the Australian Government for R&D or export, although this is a future option.

Under the terms of an Administration, a company is placed under the management of an external accountant who has the power to recommend receivership and eventual liquidation if he or she considers the firm unsavable. In LSC's case this may not happen, as assets cover liabilities - and the order book is healthy.

Alan Graham and Gary Pritchard (founder) are both saddened - but are determined, and certain that the company is worth saving.

We at Connections join with the many happy LSC customers we know in wishing the firm good luck.

SELECON SUCCESS



With an aim to breaking into the American market, Selecon exhibited at LDI for the first time. Their stand was constantly packed by people wanting to see the Pacific range. Expect details of an American distributor soon.

LDI 98

by Cat Forcer

Phoenix - city of no taxis, bugger all transport but hey, you can see 2000 different species of cacti. Once again the lighting fraternity descended on a city for LDI and managed to book out every hotel room. My hotel was supposed to be minutes from the Convention Centre—quite correct, if you're Astro Boy.

There were the usual debauched parties hosted by the big name companies, all of

which I avoided due to our tight deadline. My nights were spent writing this report, sleep not coming until 4am due to jet lag.

Take note: an old Hispanic chambermaid joke is to set your alarm for 6am. Nice one Conchita!

Whilst there wasn't any one major product attracting attention, there were some interesting improvements/versions/prototypes. Read on.

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INSIDE LIGHTING

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Planet Nightclub page 78



Lighting Cold Chisel page 74



Build your own DMX tester page 86

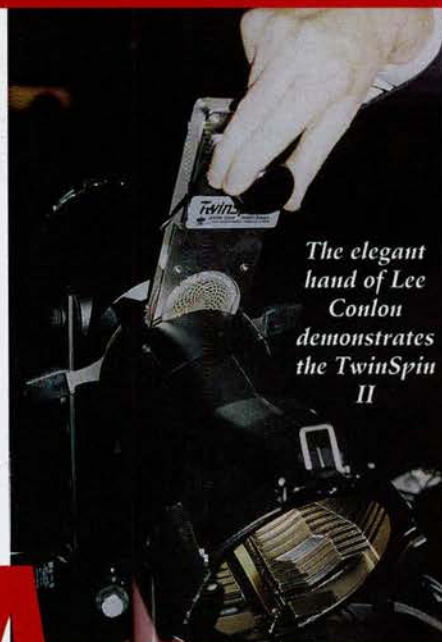
LDI 98

LE MAITRE



Le Maitre displayed their new water based haze machine - the H175 which utilises remote flow and timing controls. This was combined with their Zephyr fan, an atmospheric distribution fan to disperse the haze. The Zephyr is lightweight and the slim ergonomic tapered design houses any fog or haze machine on top. There is adjustable velocity and directional air flow controls for optimal desired dispersement.

Australian distributor: ULA +61 7 5532 9922.



The elegant hand of Lee Conlon demonstrates the TwinSpin II

Altman

As usual Altman had several products of interest including the Outdoor Par CDM designed for portable or permanent installations. Using a 9000 hour 150w CDM metal halide lamp, the Par CDM has an electronic, flicker-free power supply integral within the cast aluminium housing. The front lens casting can be externally rotated to allow for beam orientation. There's an optional snoot/colour frame holder and 2 position yoke adjustment.

Altman Outdoor Par CDM



Altman promise the following from their new Master Ellipse "while only 70 watts, the Master Ellipse gives ten times the light-output, and can project a gobo image 65 feet". Designed for architectural and display applications, the Master Ellipse has an exclusive electronic ballast, produces no heat or UV rays and is available in a range of decorator colours.

A lightweight alternative to the conventional Par 64, the Altman Star Par has a highly polished specular reflector designed to operate most efficiently with 575w tungsten halogen lamps. The fully rotational lens holder accepts a variety of lenses which are interchangeable without the use of tools. The removable, two slot accessory holder has a self-closing, self-locking retaining latch for safety.

Australian distributor: Chameleon +61 2 9310 5222.

GAM

GAM had the new quiet Spin/FX and TwinSpin II at show, both of which are actually created by Lee Conlon of Showcraft, Sydney.

The GAM TwinSpin II is designed to rotate two patterns in opposite directions in the gate of an ellipsoidal spotlight, specifically an ETC Source 4 Jr. The variable speed motor drive can be controlled by a most any dimmer and the TwinSpin II may be programmed from your lighting console and operated as part of a light cue.

The new and improved belt-driven GAM Spin/FX is quiet and can help you create the illusion of flickers, wobbles, gyrations etc. Again two effects discs rotate in opposite directions and there are currently eight discs available. It mounts on ellipsoidal spotlights, fresnels and Pars.

GAM were also launching GAMFloor a self-adhesive vinyl flooring which is easy to install, clean and remove.

Australian distributors: Miller Professional +61 2 9439 6377 and CLS +61 3 9646 8444.

Vari*lite Virtuoso

Vari-lite officially launched their successor to the Artisan - the Virtuoso with its eye-catching 3D graphics display. Features include: multiple users on-line simultaneously; designers remote functions; preview and off-line programming; an effects package including Dynamic States for instantaneous "canned" effects; timing and delay values on a parameter basis, allowing unlimited multipart cues; expanded filtering capabilities and extensive soft control setups; 30 powerful submasters with a variety of playback modes; and back lit buttons and displays that can be read in any lighting condition and at any viewing angle.

The VL7 was a joint winner of the Entertainment Lighting Product of the Year Award.



CITY THEATRICALS

City Theatricals showed the Auto Yoke - a remote controlled DMX yoke for Source Fours which is quiet, lightweight and able to pan 360° and tilt 180°. Another handy accessory for the Source Four is their EFX Plus² a moving effects projector with two planes of linear motion. Features include variable speed and direction control, silent operation and lightweight. The EFX Plus² won the Scenic Effect of the Year Award.

City Theatricals also won the Lighting Tools and Software of the Year Award for their Lightwrite3 software designed by professional designer John McKernon. Lightwrite3 enables you to track all aspects of selecting and arranging, numbering and comparing, assigning and footnoting lighting paperwork.

Contact: City Theatricals +1 718 292 7932.

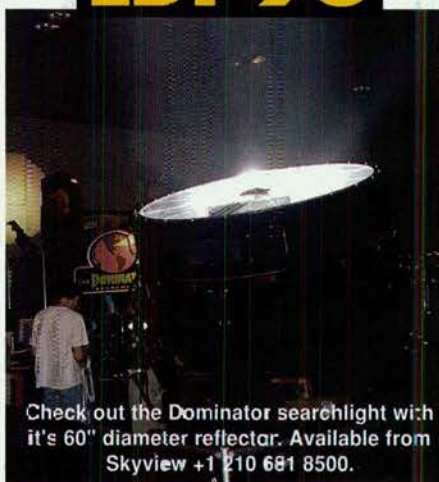
LDI 98



MARTIN

As well as heavily promoting the MAC 250 and RoboScan Pro 918, Martin were showing the Trackpod a single operator multiple-followspot controller - one person can control up to 128 followspots. The patented instrument is designed to track performers in three dimensions, automatically directing intelligent lights to follow them.

To operate, point the Trackpod at the performer and follow him or her wherever they move. The Trackpod calculates where, in 3D, the operator is pointing and, helped by a laser



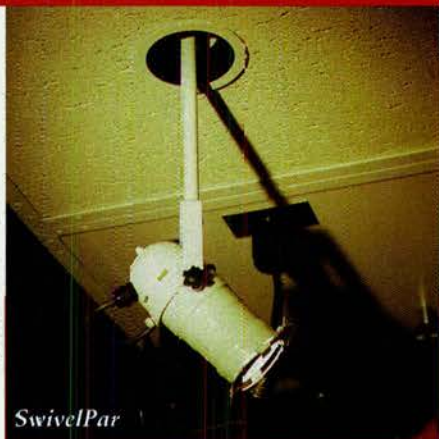
Check out the Dominator searchlight with its 60" diameter reflector. Available from Skyview +1 210 681 8500.

calibration system, directs lighting fixtures to that exact spot. On board faders and buttons allow the operator to optionally control the fixtures' dimmer, iris, colour, zoom or any other DMX channel. The Trackpod is compatible with fixtures from various manufacturers as well as any DMX lighting console.

The Trackpod can be used to update positioning cues for instant focusing in touring shows and is best placed 5 to 20 metres from the stage at an elevation of 2 to 20 metres above floor level.

Minimum PC requirements like Windows 95 or 98 are needed.

Australian distributor: Show Technology +61 2 9896 1111.



SwivelPar

Future Light

The SwivelPar is a stem-mounted Par20 fixture which mounts to a medium screw socket. Typically used in recessed downlight fixtures, the unit pans, tilts and has a colour frame. Simple to install and has no electrical connector.

Also on show was the TileMount which provides a secure method of mounting a lighting fixture or other device from a suspended ceiling. It is a structural panel which replaces the standard ceiling tile used in a drop ceiling. TileMount supports a hanging fixture using either a 1/2" bolt or 5/8" stud. An optional electrical box with receptacle can be mounted directly into the panel to eliminate unsightly wiring.

Contact: Future Light +1 216 475 5511.

IRIDEON

Irideon Inc, recently purchased by ETC from Vari-lite, presented its new family of automated interior luminaires: the AR6™ recessed Luminaires and the AR7™ automated Luminaires, as well as the latest release of their Composer Control System.

Both the AR6 and AR7 support a number of arc or incandescent lamp options, automated beam positioning, two wheel positions for colour or pattern assemblies, lens focus, douser and a choice of spot or wash lenses. Contact: ETC +1 608 831 4116.

Philips Lighting

Winner of the best Architectural Lighting Product was Philip's MasterColor family of metal halide lamps. The MasterColor range has a stable colour temperature lamp to lamp and over life (+/-200K); greater than 80 CRI; high efficiency up to 95 lpw and better lumen maintenance over standard metal halide. FadeBlock technology for reduced UV emission; and is available in 3000K and 4200K in most sizes and shapes.

Australian distributor: Philips Lighting +61 9805 4494.

Proscenia Projector



WYBRON

Wybron launched The Eclipse a DMX controlled douser which does mechanically what cannot be done electronically: dimming HMI and other "non-dimmable" lamps. The Eclipse dousers come in three sizes to fit the most common discharge fixtures: 1K, 2K and 5K. Users also get three options for controlling Eclipse: via DMX from a lighting console, "remotely" with a small, hand-held switch, or locally using buttons right on the douser.

Also on show was the Proscenia Projection System, an entry-level alternative to high end, and high cost, scene and effects projectors. It offers four colour scene projection, a scene changer, rotating pattern effects and various lens packages. Proscenia is compact enough to work in retail settings and smaller theatres. The basic system comes with a slide holder for photographic transparencies, 575w incandescent lamp and the lens package of your choice - for wide, medium and tight angles. Australian distributor: Bytecraft +61 3 9567 2555.

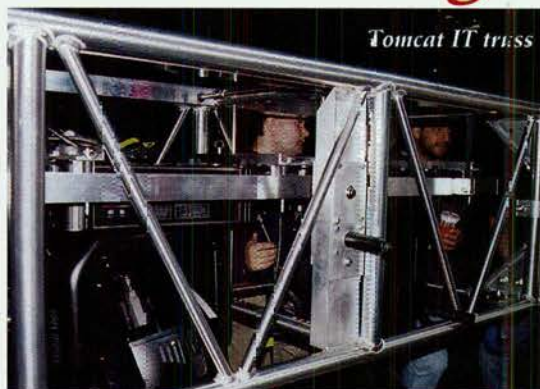
Tomcat Trussing

Tomcat launched their IT truss. The lady on the stand said IT stood for Tomcat Intelligent Truss. Now, I'm sorry, but that said "IT" to me.

The IT truss deploys universal fixture mounting brackets designed to capture High End, Martin and Vari-lite instruments. It also 'mates' with all industry standard pre-rigged trussing. Optional spigots can be inserted to provide additional load bearing capabilities.

A removable hand crank allows one-man to deploy lighting fixtures safely and securely - automated and two-man deployment models are also available.

Intelligent fixtures can be loaded or unloaded without flying the truss. Another feature is that a dead-off system designed into the headframe allows you to safely secure the fixtures in place during transport. Bungied restraints wrap around the fixture and connect to the headframe. Contact: Tomcat +1 915 694 7070.



Tomcat IT truss

LDI 98

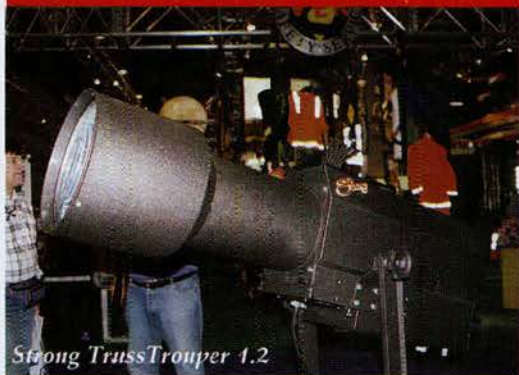
ETC

ETC introduced the Source Four 750 rated for use with a new super-efficient HPL compact filament 750 watt lamp giving it up to 27% more light output than a traditional Source Four. It also has the new Source Four thermally insulated rear handle for easier and safer use.

The Source Four Jr was a joint winner of the Lighting Product of the Year Award.

Also on show was the Sensor GFI designed for dimming near water in themed entertainment venues, fountain areas and outdoor environments. With long cable runs, the Sensor GFI provides two dimmer circuits per module, twice the density of other dimmers.

Australian distributor: Jands Electronics +61 2 9582 0909.



Strong TrussTrouper 1.2

STRONG

Strong International introduced the TrussTrouper 1.2 which is currently on the road with Billy Joe. Capable of accepting gobos, the TrussTrouper 1.2 uses an Osram 1200w double ended metal halide lamp, a new lightweight switching power supply, and features exterior mounted lamp focus control, 6 colour self-cancelling colour magazine, rear mounted douser control and a Ni-Chrome steel iris.

A fixed focus unit, the TrussTrouper 1.2 may be provided with any of 3 interchangeable lenses accepting the spotlight for long, medium and short throw applications. Australian distributor: Chameleon +61 2 9310 5222.

WHITE LIGHT

The highlight of White Light's stand was the Callisto outdoor spotlight which is totally weatherproof and can mount in any orientation. The Callisto can be used for corporate logo projection, retail advertising, texture floodlighting and feature highlighting as well as for the creation of theatrical effects from cusk onwards.

The Callisto will accept any standard metal or glass B size gobo and there is a position for a dichroic colour glass filter. A universal mounting bracket allows the unit to be wall, ceiling, floor or pole mounted. It utilises a 9000hr 150w metal halide lamp and there is a choice of beam angle. Australian distributor: Chameleon +61 2 9310 5222.



Studio Spot 250 and Studio Color 250



High End

With the Studio Spot now in full production and the Technobeam family in demand, High End Systems were showing the prototypes of the Studio Color 250 and Studio Spot 250 hot on the heels of the MAC 250. Both models are fitted with both 3-pin and 5-pin XLR connectors so they will fit easily in any rig without adaptor cables.

Australian distributor: GUET +61 1800 773 187.



U-View

From the "Why didn't I think of that" category comes the U-View a patented design from Etil Design from Oregon. The U-View gives a visual representation of what a console is doing - colour bands represent the colours controlled by the corresponding faders. The long tube shaped U-View is attached magnetically to the lighting console. Say you want Lee Filter #106 and the faders that control that effect are numbers 1, 6, 11, 18 - simply slip a 1/2" piece of L106 gel filter into the U-View right above those faders.

The U-View comes with templates created for virtually any console.

Contact: Etil Design +1 503 238 6330.

DISCO LIGHTING

LDI 93 has several stands crammed with new disco effects lighting - American DJ (who won Best Light Show, Large Booth, Award), Lytequest Pro, Programmi & Sistemi Luce and Martin.

American DJ had seven new intelligent lights, ten special fx products, six new lighting controllers, four new strobes.....and so on. With the usual snazzy names like Space Balls, best get in touch with the Australian distributor - American DJ 1800 643 111 - for more information.

Lytequest also had a host of similar effects products - Australian distributor: Disco World +61 3 9735 0588 - as did FSI who also had the Omniscan HQI 150 DMX scanner - Black Express +61 2 9559 4363.

Martin showed some new disco effects such as the Acrobat consisting of over 50 ever changing arc continuously moving colour and gobo beams. Beams are distributed onto a revolving mirror drum and then, via the pan and tilt feature, they cast out in all directions. Australian distributor: Show Technology +61 2 9898 1111.

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COLD CHISEL

Theatre LD Gavan Swift becomes a Rock Pig

Initially the set and lighting for Cold Chisel looks simple and very rock orientated. It isn't until nearly an hour into the show that a stunning, original stage set and lights is revealed.

The first half of the show has a large white cyc across the back of the stage. Peeping out at the top are five truss spots, a hint of what is to come. When the cyc is dropped five large wave forms are revealed, a reference to the bands recent album release entitled *The Last Wave of Summer*.

Each Wave weighs close to 2 ton, breaks down to four sections, and is 9.6 metres tall. Built by Stageweld in Melbourne, each Wave is topped with a truss chair and has built in lighting bars. The set of Waves takes between 3 and 4 hours to construct. Each followspot operator on the Wave has his own harness which he clips onto an inertia reel for safety.

The set and lighting was designed by Gavan Swift who is more known for his theatre work and admits that he has no experience in rock'n'roll. This appears to work in his favour as he certainly has approached the work with a fresh outlook.

"It's definitely been a steep learning curve," laughed Gavan. "It's a very different way to doing things. I'm used to doing a lighting plot, tech, a couple of dress rehearsals and a



few previews before we open. With this, we did everything in one day."

Production rehearsals at Fox Studios were followed by an outdoors concert at Bathurst without the set, a couple of full production shows at Townsville and then Tamworth and then the official start of the tour in Sydney.

Gavan has successfully married a traditional pub rock'n'roll look with a more theatrical element.

"With the design concept we didn't want it to look like the band had sold out," he explained. "We wanted it to look like a great rock show but not a slick, unbelievably-rehearsed American style rock tour."

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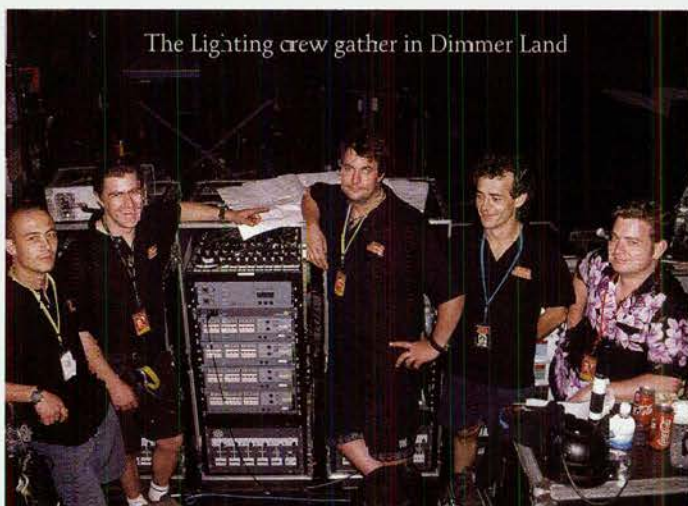
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Back lighting of the cyc, an important factor during the first half of the show, and lighting of the Wave structures is done by Studio Due CityColors, an architectural fixture.

"The kabuki's are actually attached to the bottom of the truss chairs," said Gavan. "Staging Rentals adapted a whole lot of their electro-magnetic kabuki poles to half a metre long and then Chameleon made adaptations to the truss seats so the kabuki poles sit below them. The power runs back to a box in 'dimmer land' where at a press of a button they all fall. The side masking is also on kabuki so when we drop it all (six white kabuki silks and two runs of black masking), the whole thing becomes exposed. The followspot operators learnt very quickly not to put their feet on the kabuki pole otherwise they won't release. You learn those things once."

When the lighting contract was put out to tender, Gavan was happy with either Vari*lites or MAC's. The only thing Gavan insisted on were Clay Faky Stage Scans which he used without mirror heads as rear spots after a suggestion by his board operator Steve Saunders.

"That way we control everything through the desk except for their position," he said. "There are five truss spots for five band mem-



The Lighting crew gather in Dimmer Land

bers. It works a treat especially being able to do things like rear followspots in gobos and then actually have them colour fade."

Chameleon won the tender supplying Gavan with the required gear including 16 MAC 600 NSP narrows, MAC 500's, Stage Scans and Shakespeares. A Whole Hog II was required but unfortunately there wasn't enough time to acquire one and so Gavan opted for two Jands Echelons, one as a back up desk. The first half of the show was WYSIWYG'd before the gear left the factory and the WYSIWYG system is taken on tour.

"The Echelon still has a few bugs which I think will be ironed out," said Gavan. "It's all about feedback. It's a good size desk. Jands have already been out once to put more memory in the desk. They've been reliable so far. The main desk runs through the WYSIWYG computer which is built into a road case."

continued on next page



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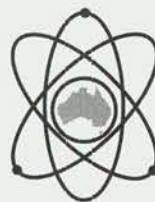
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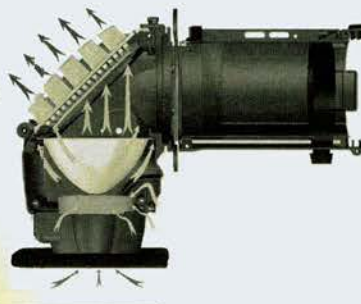
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COLD CHISEL

continued from previous page

Gavan used very little front light relying on top and rear light as well as three-quarter backlight to paint the general picture on stage. The band are highlighted by the four FOH followspots.

Occasionally Gavan's theatrical background is evident like using fresnels without lenses to get sharp shadows and using the Waves as items to be lit in themselves.

A B-stage, a 12ft x 12ft by 3ft high rostra, is set up near the FOH mix position bringing the band closer to their fans. It's lit from above by five Martin PAL's, chosen for their punch and colour changing abilities.

"We also do some gobo effects like a gael for *Four Walls* and ripples for *Water Into Wine*," said Gavan. "On the stage itself are ten MR16 footlights and that's it, no followspots and it really works."

Dimmers were LSC Tour Series, all Weiland straight in and patched on top. On a new show, all the patching can be done in under an hour.

Gavan was insistent that thanks went to Peter Ward, FOH Sound Engineer, for carry-

ing his bags and doing his washing.

As well as the Cold Chisel tour, Gavan has been busy designing the ABC Kids Concert. Whether any elements from the Cold Chisel design will turn up lighting Thomas The Tank Engine remains to be seen.

• *Cat Forcer*

CREW PERSONNEL

Peter McCrindle *Production Manager* Peter Ward *FOH Engineer* Harry Parsons *Monitor Engineer* Stewart Verrells *Guitar Technician/Stage Manager* Yianni Manno *Drum and Keyboard Technician* Emilio Ferraloro *Set and Bass Technician* Ian Wilson *FOH Systems Engineer* Ian Shapcott *Monitor Systems Engineer* Paul Curl *Assistant Systems Engineer* Steve Saunders *Lighting Operator* Martin Rutter *Lighting Crew Chief* Cliff Bothwell *Lighting Technician* Michael Simpson *Lighting Technician* Danny North *Lighting Technician* Dave Hartley *Rigger* Paul Sproge *Rigger*

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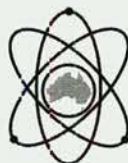


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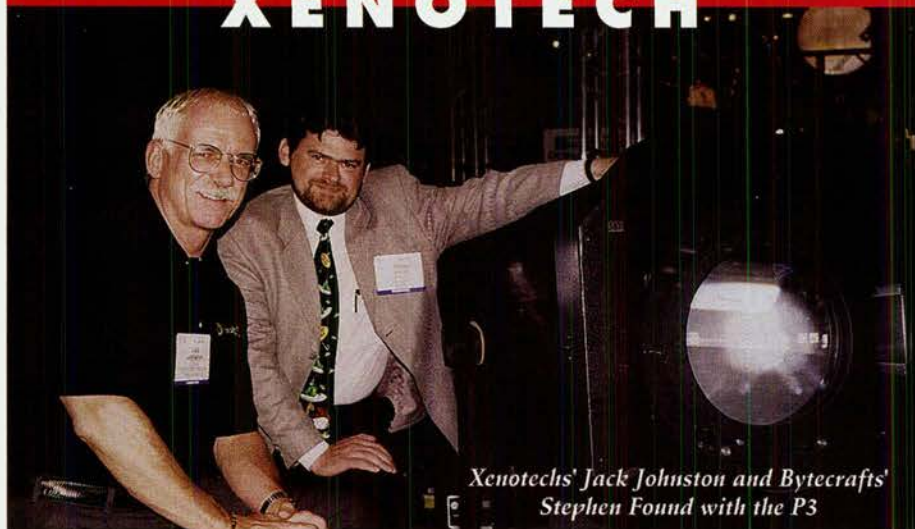
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LDI 98 XENOTECH



Xenotech's Jack Johnston and Bytecrafs' Stephen Found with the P3

For many years Xenotech have had people ask them if they can create an effect just like the projected Batman logo.

"We now have a customer who is willing to pay for tenure for us to bring the product out on the market," said Jack Johnston of Xenotech. That client is Stephen Found of Bytecrafs who is developing the projector with Xenotech for a special, top-secret Australian project.

Named the Pattern Profile Projector - or P3 for short - it joins the Britelite, Strong and Sky-Tracker family.

"It's basically a lens projection system using an elliptical reflector which can project images up to 1 mile, putting out 2ft candles at 1/2 mile," said Jack. "At night 2ft candles is a lot of light. This unit is customer specific with a single gobo and fixed focus on it. The next step will be to incorporate things that will make it a little more universal in appeal - adjustable focus with a zoom on it, upwards of five gobos with motion and DMX controlled dowser and colour changer."

The light source is a 7000 watt Xenon lamp.

Contact: Xenotech +1 818 255 0620.

Planet Adelaide

Not only is The Planet one of Adelaide's biggest nightspots, holding up to 5000 people, but the venue also boasts a huge daytime trade.

Manager Jeff Owens was looking for a dramatic change to the club - constraints on altering the physical building together with maintaining the on-going day-to-day business lead to a decision for a major upgrade in lighting facilities to provide a new look which is classy and modern.

The brief also called for the installation to be installed and supported locally, and Jeff Owens was emphatic in his requirement to support local business, and to have a local point for service and maintenance of the installed systems. John Bakjac of Pulse Effects was selected.



lighting system over the main dance floor, which is anything other than a standard nightclub installation.

Provision has also been made for the suspension of PARCan's or the like on the truss. Planet regularly have bands performing in the venue.

Glass Dome

Over the atrium, the large glass dome demanded attention in it's own right. Con specified JB VaryColor2000 to specifically light the dome and consequently make it a real feature. With 36 colours

the VaryColors also provide plenty of variation, from solid washes of colour through more subtle hues and color effects.

Laser

To complete the main dance floor area a 3.5W Septor full colour laser system was specified. Supply and installed by respected laser company Oracle Laser. Paul Mazlin of Oracle Laser, oversaw the installation of the laser unit and numerous bounce mirrors around the dance floor area. While many people will be familiar with green argon lasers, by installing a full colour system, the effect is considerably more impressive.

Control

The new Avolites Azure2000 console was selected. ULA's Luke Hall provided on site training on the Azure to Planet's, very much "hand's on" lighting operator Elia.

Having used a Masterpiece, Elia was pleased with the extensive features of the Azure, particularly the Avolites shape generator software in the console which automates many the creation of looks which would otherwise be virtually impossible to create manually.

Level Two

The installation didn't finish with the main dance floor. The level two bar area, while combined with the main dance floor, was also required to have it's own dance floor, and the space also needed some "life" injected into it.

Abstract DuoColors were selected to up-light structures suspended over the three bars and shades over window portals in the walls are likewise highlighted. The dance floor requirement is met by using further

Major features of the Planet include high ceilings with large exposed beams, and an atrium under a large glass dome. Lighting equipment would have to be unobtrusive during the day, when Planet is open for breakfast and lunches, yet visually apparent for a very intense night time club atmosphere.

With Pulse Effects engaged for this installation, Cuono Biviano, Managing Director of Universal Lighting & Audio was given the challenge to produce a design which would enhance the existing building features, and give the club the best lighting show in South Australia.

The lighting environment for Planet is not only important, but essential to the success of the venue.

Truss

Early on it was decided to centre the main dance floor lighting around the major feature - the domed glass roof, by suspending circular truss. Ultimately two concentric rings of CLS concert truss, moving independently on motorised chain hoists were selected and installed under the direction of Leigh Greig from Melbourne based company Concert Lighting Systems.

This allows not only for a wide variety of visual effects with the truss itself, but also provides for the truss to be hoisted out to provide minimal visual impact for the dining functions of the venue.

From the truss are suspended the new JB Lighting VaryScan 4 EV 1200's and VaryScan4 575 Compact moving lights, in addition to utilising the club's existing MiniScan's. Given UV Guns and Litecraft/Geni DMX Giga Strobes are also installed on the truss.

The result is a quite spectacular, dynamic



this **FREE CD-ROM** from ROSCO will turn your Pentium™, Windows 95® equipped PC into a powerful lighting control console with incredible performance specs. The **HORIZON CD-ROM** software offers 3,072 channels of control and is designed to control any DMX512 compatible device. This includes dimmers and traditional fixed lighting but also includes automated lighting, colour scrollers, fog machines and show control systems.

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HIGHEND AND VARI*LITE SETTLE

...as High End founder walks

existing MiniScan's.

The end result is the Level Two area can be used stand-a-lone from the rest of the areas or combined seamlessly. Aesthetically the room is spacious and offers a warm feeling which can be "turned up" to a full on dance space as and when required.

Level Three

In contrast to the other level's, the "Club Bar" is a laid back "chill out room" with it's own sound system. The lighting system contrasts too, while the other areas feature predominately HMI lamps, the smaller Club Bar features a subtle installation of the sublimely attractive Abstract VR8 150's over the dance floor area, controlled by an Abstract 64 channel controller. Abstract Twister3's are located in the corners of the room allowing for enlargement of the dance floor atmosphere when required.

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By Julius Grafton

Readers will remember various reports dating back over the entire life of Connections of a blow for blow legal case mounted by Vari*Lite against fellow Texan firm High End Systems Inc.

It's over.

High End Systems have announced a preliminary settlement agreement between the two parties, regarding the ongoing litigation relating to certain Vari*Lite patents.

The settlement is believed to involve the payment of money to Vari*Lite by High End Systems, but is confidential.

In a very coincidental move, High End Systems founder Richard Belliveau has resigned from the company.

Belliveau was a genius who was unconventional and sometimes difficult. Your writer recalls that before the days of Connections, Belliveau decided that the firm should publish its own magazine. Having seen Channels, the former magazine which Jands produced, he offered me the job of publisher of a new magazine based out of the company's HQ at Austin Texas.

Negotiations were held at Austin, and were in part bizarre.

Flying in the day before, I met with various company officials as my appointment

with Belliveau was moved backwards each hour.

Finally I was ushered into his office, notably featuring a microwave oven with one meal inside and another waiting. Belliveau wasn't fat or anything, quite the contrary. This was an extremely fit individual, who worked out twice a day.

He had a very young girlfriend at home, he pointed out, and a big dog.

We went on a factory tour, and somehow everyone in every dept knew we were coming. It was my first introduction to internal email, which was used to alert the hapless staff the The Belliveau was on the way.

At dinner that night, considerable time was spent de-cyphering the menu - but in the end a portion of fish was ordered with no fewer than eight different types of potato! In the coupe headed back to my Hotel, some confusion reigned over the temperature, which after becoming extremely hot was cured by switching the auto-air read-out from Celsius to Fahrenheit!

We had a deal, but I wasn't convinced.

More schenanigans over the next few days at the LDI trade show convinced me that a bloke who turns up wearing a purple dress is not, perhaps, on my wavelength.

But he is a genius, this is certain!

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RENT

Broadway hit opens in Sydney

The lighting designer for *Rent* is Blake Burba who looks about twelve years old. He's actually 28 with a degree in theatre, with an emphasis on lighting design, and he has several shows to his credit.

"Sometimes it's good in social situations," said Blake referring to how old he looks. "But it's not necessarily good when you're dealing with crew members who might be twice your age! It doesn't really get in the way, apart from first impressions - when people meet me after talking to me on the phone they're usually quite surprised."

Blake is based in New York where his forte is lighting musicals and operas. As he is also a musician, he feels he has a particular sensitivity to what the music is doing and to how he can help accentuate it.

Rent started out as a workshop production in 1994 which was not open to the public. After two weeks of rehearsing and teching, there were 14 performances given to an invited audience. It got such a good response, New York Theatre Workshop made it part of their season and then that production was picked up and moved to Broadway. That production spawned productions all over the world - there are now two US tours, one tour in Canada and a production in London as well as the original Broadway show. The Broadway production won several Tony Awards, Blake was nominated for Best Lighting Design but didn't win. It also won the Pulitzer Prize for Drama and various other awards.

"Lighting wise, it's not what you'd generally expect from a Broadway musical," said Blake. "The show is much more cold, dark and gloomy than bright, happy and sunny. There are bright moments but it's more atmospheric and it has more substance to it than most musicals. It's based on Puccini's *La Boheme* which is no light piece of theatre. The stakes are very high for all of the characters.



Blake Burba



The lighting rig used for the Australian tour is almost identical to the original US touring version but about half the size of the Broadway production.

"It's mostly Par 62's and Shakespeares with about 55 Wybron Coloram colour scrollers," Blake told me. "We're using Shakespeares because they were more readily available here than ETC Source 4s which is the standard equipment on the other tours. They're close enough in terms of what they do and they seem to be fine.

"Colour wise, there's a lot of blue - about ten different blues in the colour scroll mostly Roscolux 68 and colour correction like 201 and 203. All of the units without colour scrollers have either a very light blue, clear or slightly warm colour correction which we use in a couple of places to simulate old, incandescent lighting. We actually have some old lighting units in view but they're more functional, everywhere we go we ask the rental company to dig up their oldest units to use as set dressing. The production is fairly monochromatic, the first act has a tango so we use a bright red to emphasize the fact it's a relief number outside of the reality of the play. It's not the type of show for huge, saturated colour washes.

"For control I'm using an ETC Obsession 1500. It's fairly simple as there aren't a lot of moving lights or special effects. There's a MAC500 which is used for one number where the Followspot can't reach - the balcony up high where Mimi does her big dance number in Act 1. Ideally it would have been picked up by a followspot but the followspot position here is in a bad spot. We had to program the MAC500 to follow the actress around and hopefully she'll do the same thing every night! It usually works OK although Mimi's choreography differs a bit from pro-

duction to production. The MAC500 is controlled by the Obsession, rather than a dedicated controller, so it's a little bit less of a sophisticated control signal - you can't quite do as much but it saves having another person controlling."

Blake is trying to preserve the aesthetic of what the show original looked like in downtown New York in 1994 and 1996 and most downtown theatres in New York don't have moving lights and scrollers. The design ideas are basically the same and Blake has tried to keep the lighting simple.

"No, just because we thought it would be a neat idea to have no moving lights but because it actually fits in with the whole idea of the show," he said. "There is no masking of the lights, they're all exposed and you can see the cabling running across the stage. It's very much like a rock concert rather than a slick musical theatre piece. The scenery is tables and chairs and there are three moving pieces in the set - two drops and a wall. It's very simple and exposed.

"It takes me a long time to get the stage hands not to make everything neat and dressec in black! I'm always stopping people from spraying out things like factory markings. The play is set in New York's East Village which is not always a clean and neat place. Lighting equipment in downtown theatres is usually old and falling apart making each unit unique. Trying to recreate that atmosphere in some of the new, plush theatres we go into is often difficult. A big pile of junk on stage is a stark contrast."

Blake is pleased with the way the show has fitted into Sydney's Theatre Royal which he describes as an intimate venue.

"This has been one of the better - if not the best - experiences in terms of smoothness and the crew is fantastic," he said. "Everyone is friendly, competent and efficient. R2, Richard Pacholski, has been extraordinarily helpful and I feel very comfortable leaving the show in his hands."

• Cat Forcer

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Streb Box Truss Tour

Lighting Designer Heather Carson discusses her work with the dance company STREB, a highlight of this years Melbourne Festival

For the last 15 years collaborating with Streb I have sought to create light that has its own structure. Rather than light the bodies in space, I light the space and discover the bodies within that, creating definitional cubic space within which the action takes place. Using light as a visceral, active presence that has its own logic and structure, it co-exists with the action - often in conflict - not there simply to better "see" what is happening onstage. Where the lights are in space becomes more important than what they do. Creating one singular, perfect structure of light for each piece that implodes when the actionists enter to begin their movement and doesn't change until they stop. For some time I have been borrowing from the lighting vocabulary of sports arenas, parking lots and construction sites - places where movement really does take place (and risk), rather than theatre (literature) which uses text as its starting point. The aesthetic



is determined by the specificity of the choice of materials. The name of these lights - H.I.D. (High Intensity Discharge) is apropos.

Each dance has a unique lighting structure. There is a color circuit that responds to the actual structures used, and a no color circuit which responds to the structure of


the action. So, for instance, "Fly" which consists of a 12' long lever arm with a dancer at the end who is able to complete a 360 degree swing through space, there was a circuit of red and yellow fluorescents vertically stacked on top of each other running up and down-stage, one stage left and one stage right. They were at the same height that the lever arm was when balanced in a perfect horizontal. The red circuit on the bottom related to the red floor, and the yellow circuit on top related to the "other floor" (the yellow ceiling) which the dancer walked on upside down. The no color circuit consisted of 12 - 175W mercury vapor lights (purchased at Home Depot for US\$25 each) hung in a circle on the overhead grid. These articulated the path that the lever circumscribed when completing a circle. The 12 lights echoed the 12 points on a clock face, to underscore another circadian rhythm.

"Bounce", a dance about split second tim-



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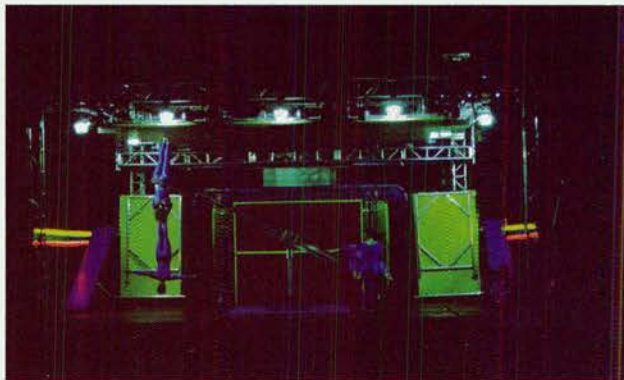
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DANCE LIGHTING

ing, had a blue zone created with 8' mini strips as shin ground rows stage right and stage left in a deep blue which were the exact length of the inflated blue floor they "bounced" off of. A 1200W HMI was hung directly over the center of that floor, so that as they circled the floor prior to diving they were in a blue zone, and the instant they dove into the air above the blue mat they imploded into an intense white light.



I get asked alot why the lights blast on in your eyes at the end of each dance. Normally in dance when a piece finishes, the curtain comes down, the houselights come up to half, and you are reminded that you are sitting in a room observing. Instead I substituted a "whiteout", where lights facing the audience bump to full shoving all the light out of the proscenium. So rather than see pieces punctuated by negative space, there is an attempt to link up the whole evening visually, so that the pieces are also informed by their layering on to each other. It's additive not subtractive, an exclamation point not a period - what I call "visual ginger". Then the light is sucked back in to the

structure until the stagehands come in to carry it off and carry in the new piece, which signals the change into the new lighting structure.

Heather Carson's investigations into the space defining properties of light have brought her The '98/'99 Rome Prize in Design Arts, and a '98 New York Foundation for the Arts Artists Fellowship in Architecture. She recently completed an installation entitled "Light Action: light/House" in upstate New York, and will spend 6 months in Rome starting in February creating her "light/night/garden". She recently lit "Norma" for the Canadian Opera Company and will light "Measure for Measure" for the RSC in London this January and "Arabella" for Opera North this spring. She taught at NYU (New York University) last fall, and is currently on the faculty of SCI-Arc (The Southern California Institute of Architecture), and is guest teaching this fall at UCSD (The University of California at San Diego).

LDI 98



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SELECON PACIFIC RANGE

By Cat Forcer

I can't think of anyone more qualified than Tony Youlden (Stage Lighting Designer, Theatre Consultant as well as Technical Director at NIDA) to review the Selecon Pacific range! Tony has been a Lighting Designer for thirty-five years, with over 400 productions ranging from Grand Opera through Ballet and Dance to *Son et Lumiere* with a major emphasis on Drama. Recent Projects in Theatre Consultancy include the NSW Conservatorium of Music, and Refurbishment of Civic Theatre Newcastle for Newcastle City Council. Tony is currently writing Technician Training Courses for Singapore Arts Centre.



Pacific 12-28° Zoom

INITIAL THOUGHTS

"After thirty-nine years of designing lighting, one becomes a little wary about the claims of a new spotlight," said Tony. "When I started in 1959 the first major advance in stage lighting equipment since the Second World War was well established, the Strand Pattern 23 and its companion the Pattern 123.

"In retrospect, one wonders how people coped before this with inefficient focus lanterns that projected an out-of-focus image of a bunch filament lamp, that took about half an hour to re-lamp and re-align the reflector before you could get any useable light out of them.

"Floodlights and compartment batten were all the rage; miles upon miles of multi-coloured battens with a few spotlights at the end of the bars was the standard set-up until the Pattern 23 arrived.

"The Pattern 53 and Pattern 93 were available for the very wealthy and to be found in front of house positions of the bigger theatres.

"The two Strand 'Baby Spotlights' did revolutionize lighting in the English and Australian theatre.

"The Americans were always much more advanced, primarily due to lamp manufacturers who were willing to develop lamps specifi-

cally for the theatre market, so that Century and Kliegl had developed high output spotlights prior to the war."

Tony pointed out that some theatres in Australia even installed the American equipment, for instance the Palais in Melbourne had an original installation of Kliegl lights with special 120 volt circuits.

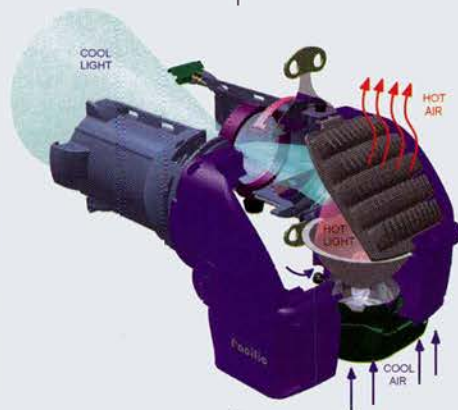
In 1963 Strand produced the Pattern 263, a 1000 watt profile spot which operated with its lampbase up in the air so that the spotlight had a bend in the middle. They were quickly dubbed "banana lights".

Since then, there have been a progression of new profile spotlights capitalizing upon the introduction of Tungsten Halogen technology resulting in more compact light sources.

"At the end of the 1970s the Americans started playing with the idea of using lamps mounted axially in reflectors which gave a huge increase in lamp life," added Tony. "However the 240 volt versions were always a bit fragile. Anyone who has gone through the FEP lamp saga will remember this.

"An axial lamp is always more prone to mechanical damage, and this is made worse by the 240 volt filament. If only we could get the stability of a base down fitting with axial optics.

"Well, dear reader, someone has done it. It's called Pacific!"



THE RANGE

"About four hours to the east of Bondi, Jeremy Collins and the eager beavers at Selecon have come up with a new range of spotlights which really is amazing," Tony

enthused. "And they do it with mirrors!

"Actually with a dichroic mirror to be precise; one that reflects the light but allows the heat to pass through, this means that the front of the luminaire and the gel are very cool. (My God, we may even get through a week without replacing the Congo Blue gels!)"

The Pacific Range includes two Zooms, 12 to 28 degrees (Stand-



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ard) and 25 to 50 degrees (Wide), and four fixed angle spotlights - 20, 30, 40, 50 degrees.

The Pacific can use a variety of lamps, principally the 600 watt GKV lamp and the 1000 watt BP. These lamps require separate lamp modules that are colour coded - blue for 600 watt and red for 1000 watts.

"The spotlight has a large heat sink at the back of the dichroic mirror, which looks a bit like a cross between a waffle and a toast rack, which allows the heat to dissipate," said Tony. "Warning - it gets quite hot."*

"Because of the way the heat is controlled (Active Heat Management - according to the brochure) Parts of the luminaire are fabricated using high-temperature plastics resulting in a lighter spotlight.

"For example the Lens holders are in colour coded plastic so that you can quickly tell which version and beam angle you have."

The Lens tube and shutters can be rotated through 360 degrees, and with a good colour frame locking clip so that you don't lose everything while you are rotating it. Two runners are provided and the colour frame size is 158 x 158 for the Wide Zoom and fixed beam angles and 185 x 185 for the Standard Zoom."

As with most Selecon equipment there is an isolated electrical assembly which automatically disconnects the power when removing the lampholder assembly.

BUT DO THEY WORK?

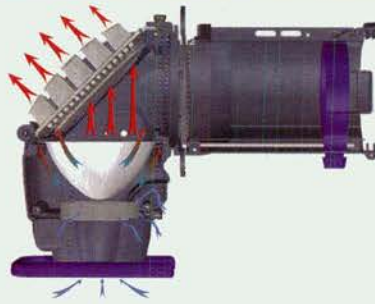
Tony was able to get his hands on two Pacifics for two weeks and use them in a production.

"The two units I used were the 12 to 28 degree Zoom, which had the 600 watt lamp which to the eye gave significantly more light than a Cantata and of a higher colour temperature (That is bluer)," he said. "I tried the 1000-watt lamp, which provided a much flatter field, but not enough additional light to consider using them.** (Selecon provide a unique lamp adjustment system but in the pressure of a bump in I did not have the time to fully experiment with both lamps).

"I happen to like my profiles "peaky" so that I can get very smooth overlaps, and the 600w version worked well for me.

"I was impressed by the fact that the light output of both luminaires was equal.

"I also found them remarkably easy to focus, lenses sliding smoothly, and easy to lock off - apart from the fact that Selecon refuses to thread the yoke for the bolt to suspend the lantern, requiring two spanners to lock off the Pan adjustment (one day when someone from Selecon is standing on the top rung of a ladder trying to focus one they'll realise how stupid it is!).***



ANYTHING ELSE WRONG?

There were three points that Tony raised:

- 1) You need different size Gobos for the two Zoom units.
- 2) The size of the unit with the vertical height being 430 mm, reducible by lowering the yoke to 400 mm, means that you cannot stack them as tightly together as some of the opposition.
- 3) The vertical height and the need to remove the lamp module in a downward direction may make some bridge mounting positions difficult.

ON BALANCE

"Selecon should be congratulated for their innovative approach which has produced a very usable spotlight," said Tony. "The quality of the light is clean and pure, with good focusing ability from mirror sharp to soft and fuzzy.

"For those who have large performance facilities the light output for the power used is fantastic and should save you a lot in air conditioning costs.

"But don't take my word, get down to your Selecon representative and badger him until he lets you try it for yourself."

Price: 12 - 28 Zoom and 23 - 50 Zoom - A\$ 720.00. Fixed angle - A\$650.00

Manufacturer: Selecon **P** +64 9 360 1718 **F** +64 9 360 1719 **W** selecon.co.nz/~selecon

Selecon Comments

*While it is true the heat sink of the Pacific does get quite hot, the actual surface temperature when using the 1000w Blue Pinch lamp is no hotter than the surface temperature of the lamp house on most 1200w luminaires, including our Zoomspot 1200!

**Tony notes there is little additional light output in centre peak measurements when using the 1000w BP lamp. However the overall light level across the beam is significantly greater. This is best seen in the wider angle Zoom and fixed beams. The reason for this is the different size of the filament structures.

***In adding a new feature to the Pacific, the 'two spanner lock off' Tony raises an ongoing dilemma. For many years Selecon was the only manufacturer to continue to thread the centre hole in the yoke for the suspension bolt. We ceased this because of a barrage of complaints from the other side of the world! As I do still spend a little time focussing lights and as Tony has not been the only Australian to criticise the lack of thread we are very aware of the problem. Our difficult is we are damned if we do and damned if we don't! It appears in many countries the humble C clamp is being replaced with more effective suspension clamps which includes a simple form of spigot. Selecon is happy to supply threaded yokes against special order at no extra cost, let your dealer know at time of order.



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Build Your Very Own DMX 512 Tester for Under \$10

By Andy Ciddor

A while ago I reviewed the rather marvellous L'ilDMXter DMX test box which prompted the thought that many lighting folk would welcome the opportunity to knock up their own tester for substantially less than the grand and a half price tag of the DMXter, albeit with a few less features.

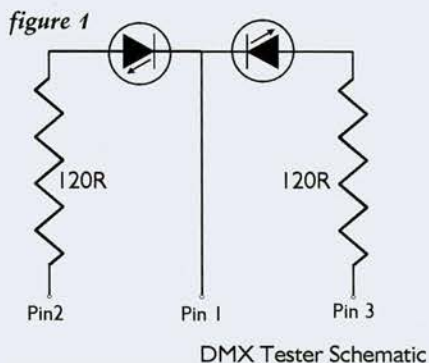
WHAT IT DOES

The DMX tester we're going to build doesn't offer individual channel level read-outs, start-code byte values or even make-after-break length at the start of a packet like the MicroScope, the GAM Commander or the DMXter, but it does give a good solid indication of desk output, cable continuity and signal presence anywhere in a DMX system.

A DMX 512 cable has a signal ground wire (connected to pin 1) and two wires carrying data (pins 2 and 3), one signal being the mirror image of the other to minimise data corruption. The Light Emitting Diodes (LED's) in our tester light up to indicate the presence of each data stream. The simple circuit diagram in figure 1 shows that each data signal is passed to ground via an LED and a current limiting resistor providing a signal load similar to a terminated DMX line.

WHAT BITS YOU NEED

I purchased everything I needed from



Altronics in Perth who supply all over Australia by mail order, usually overnight to capital cities and large regional centres, but the parts should be available from such places as Jaycar, Dick Smith, Tandy, RS Components, Farnell etc. The only part that won't be off-the-shelf from some of these suppliers will be the XLR-5 plug.

Component List		
Quantity	Item	Price
1 x	Neutrik XLR 5pin Male Line connector	\$7.60
2 x	100-160 Ohm ^{1/2} Watt Resistors (10 pack)	.40
2 x	3mm or 5mm Light Emitting Diodes	.60
150mm	Ribbon Cable OR	
500mm	Hook-up Wire	.30
Small Qty	Electrical Tape, Solder, Hot Glue stick	.50

NOTES

• I'm suggesting a Neutrik connector which

is half the price of the Alcatel Canon equivalent and generally a better quality plug.

• A DMX line should be terminated by a 120 - 150 Ohm resistance but if you already have resistors in the 100 to 160 Ohm range you may as well use them.

• 3mm LED's are easier to mount but a bit harder to see.

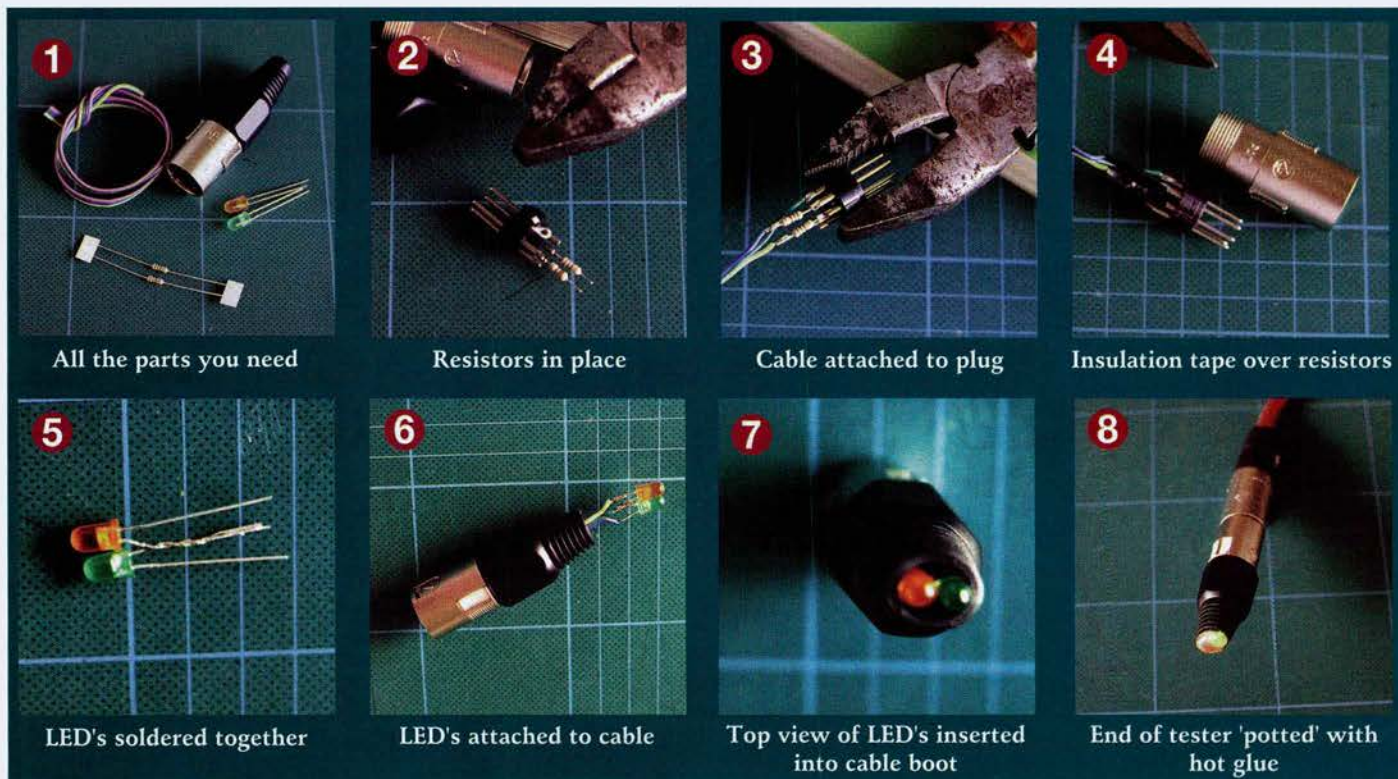
• Ribbon cable makes it easier to do a neat job.

HOW TO ASSEMBLE IT

I haven't the space to turn this into a soldering tutorial, so I'm making the assumption that like most lighting techs, you can solder already or you are about to get some lessons from a local tech guru, who incidentally, may even turn out to be an *audio* person (many of them can solder as well as being able to count to two-two-check-two, but probably not at the same time).

Trim the tails on the resistors until they will barely protrude from the solder cups of pins 2 and 3 when in place, allowing just enough tail on the other end to make a solder joint to the wire ②. Bring a wire out of pin 1, the electrical common, and connect wires to the ends

of the resistors ③. Wrap a minute amount of electrical tape (not bloody gaffer!!) or heat-



shrink sleeve over the resistors so that there's no chance of anything shorting together **4**. Trim the very top section off the cable boot then assemble the entire plug so that the cable is protruding about 15-20mm through the end of the boot **6**.

Join the Cathodes (shorter wires) on the LED's by twisting then soldering them **5**, then trim the tails until they're just long enough to solder to. Join the protruding wire to the LED's (pin 1 must connect to the twisted cathodes) and insulate with electrical tape or heat-shrink. Before we go any further with the assembly we must test our tester, either by plugging it in to a source of DMX where both LED's should light (you've finally found a use for that WholeHog II that you keep under the kitchen table) or by applying nine volts from a battery (negative to pin 1 then connect the positive to pin 2 then 3 to test each LED). If both LED's don't light up on test then check all of your solder joints for continuity and try the battery test: with the connections reversed (positive to pin 1) to check that the LED's are around the right way.

Once tested, gently poke the LED's back into the cable boot until they're just visible **7**, then fix them in place with your favourite fixing method: hot glue from the props or wardrobe department, Silastic from the scenery or props workshop or maybe

five-minute Araldite from props **8**. I chose hot glue because that's what was handy.

HOW TO USE IT

Check that the controller (usually a desk) is sending data by plugging your tester directly into it, then the absence of either LED somewhere downstream will indicate a system problem, most commonly a break in a cable. Generally one LED will be brighter than the other and if this changes you have probably found a cable with the data lines reversed.

Once you have finished testing, your tester should not be left connected to an operational control system as it acts as an additional load on the line and may produce faults similar to a double-termination.

I've had one of these little testers rattling around in my tool bag for at least five years now and it has saved me a lot of grief over that time. One last time and sanity saving hint: grab all of the DMX cable that's about to go into the rig while it's still rolled-up. Connect all the cables end to end. Plug one end into a desk and put your tester on the other end. It's much easier to find that break that your tester is showing while the cable is sitting on the floor than when it's threaded through rig now, isn't it.

Finally, always check that your tester is working correctly before assuming that the fault lies elsewhere.

IMPORTANT!!

FILM & TV SPECIAL

The February edition of **LIGHTING** will concentrate on Film and Television Lighting. This is the start of regular Lighting specialisation, in coming months we will target Lasers, Architectural Lighting, Nightclubs and more!

We need your contributions - editorial, new products, hot gossip.

NOTE: new Television and Film Lighting products from LDI 98 will hold over until the February issue - Strands new Quartzcolor range, Kino Flo's Diva-Lite, Lowel's latest etc.

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The final pyrotechnic course for this year will be on 14th December 1998. If you would like to find out more about the pyrotechnics range and the courses.

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BUYER'S GUIDE

scrollers, colour changers

Prices EXCLUDE sales tax and were correct on 15th November 1998. All care taken, no responsibility for errors. Four models only are shown in each category although these manufacturers have many more. Indicative only.

SCROLLERS

COLOURSET

Showcraft Australia (02) 9698 3009

Colourset Series 2 S4 high speed gel scroller with up to 33 colours. Suits Shakespeares and TC Source 4 + other 6" profiles. Unit is very small to minimise intrusion into sets etc. Versatile control options allow for both DMX512 fader tracking for split colour effects or locked frame operation for accurate colour control. \$1225.

Colourset Series 2 1K high speed gel scroller with up to 33 colours. Direct drive dual motor system provides electronic gel tension and easy set up of gel. Versatile control options allow for both DMX512 fader tracking for split colour effects or locked frame operation for accurate colour control. With adaptors fits Par 64/56, all profiles and PC spots. \$1275.

Colourset 5K for high powered lanterns. Suits 5K fresnels with 10"/12" lens and 6 watt DWE/ACL molefays. Up to 12 colours can be fitted. Control via DMX512 or dedicated Colourset controller. Max speed one third of a second per frame. Unit fits into the rotating ban door holder of most 5K lanterns or fitted with slide rails for 6 way units. \$2765, barn doors \$295.

Colourset 8W suits 8 way DWE/ACL molefay fittings and up to 12 colours can be fitted. Control via DMX512 or dedicated Colourset controller. Max speed one third

of a second per frame. Gel cooling with low noise, high velocity tangential fan. \$3250.

COMPULITE

Coemar De Sisti Australia (03) 9467 8666

Whisper Colour Changer High speed scroller, with super-quiet operation, twin DC motor drive for scrolls, 16 bit microprocessor, adapt to a wide variety of fixtures from 1K to 5K, including 8lite Molefays, DMX or Analogue control, remote and local fan control. End to end speed on 1K is 1.7 seconds, with 0.72 second frame to frame. Variable gel string length. From \$2,163.93.

Whisper E High speed scroller, with super-quiet operation, budget conscious features for 1K and PAR 64, 16 frame gelstring, autoloading function for quickgel string replacement, Daisy chain up to 18 units. From \$2,163.93.

WYBRON

Bytecraft (03) 9587 2555

The Forerunner professional range of scrollers - two models, 4" and 7", with a range of optional mounting plates to suit most lanterns. From \$1050.

The Coloram II top of the line fully digital scroller available in 4", 7.5", 10", 15" and large format models. From 2 to 32 frames, remote PSU and fan control, intelligent diagnostic system. From \$2382.

Aquaram 7.5" all the features of the Coloram but built to withstand the elements



Studio Due Citycolor

including water resistant coatings and rubber sealed panels. Also available in large format. From \$2928.

COLOUR CHANGING LUMINAIRES

ABSTRACT

Universal Lighting & Audio 1800-648-111

Abstract DuoColor Two separate colour changing heads on one T-bar, each individually DMX addressable, or will operate sound-to-light. Eight dichroic colours. Each head takes a 12V 100W lamp - new long life 1500 hour lamp available. Ideal for bands and small nightclubs. The Duo Color is part of the popular CE range of effects from Abstract. \$1067.37.

Abstract ColourChanger CED Features a HQ1150 6000 hour lamp, 12 colours including multicolor and white, plus beam reducers, five gobos, frost and colour correction. Control is via industry standard DMX512 or Abstract's well respected sound to light internal software. \$1417.30.

AMERICAN DJ

American DJ 1800 643 111

Colourchanger 250 DMX features 7 colours plus white with quality stepper motor. The beam can be focussed for any projection distance, and this unit can be used as a stand alone using built-in programs; or linked up to 8 other Colourchangers which are controlled via DMX (2 channels). Fan cooled and uses an ELC3 24V 250W lamp. \$368.03.

Colourwash has a built in 4 channel sound activated chaser. Features four separate dichroic coloured special design reflectors to create a dramatic colour wash. Ideal for beginners - just plug it in and off it goes. Fan cooled and includes hanging brackets. Uses 4 x 64516, 240V 300W lamps. \$249.17.

APOLLO SPECTRUM

Coemar De Sisti Australia (03) 9467 8666

Tourlight Utilises 8 dichroic colours plus white, wide angle dispersion, designed for club use, controllable via dmx and midi signal. Uses a powerful M33 250w lamp with in-built reflector. From \$1,057.38.

Astrocolour Utilises 9 dichroic colours plus white, wide angle dispersion, variable strobing, controllable via DMX and midi signal. Uses a powerful 200MSD/HSD or 250MSD lamp. From \$1,234.43.

CLAY PAKY

Show Lighting Australia (07) 3369 3399

Combicolor HTI300 Compact and powerful, packed with colours and effects. Takes a HTI300W lamp. \$3,072.95.

Stagecolor 1200 powerful washlight with features not readily found in conventional three colour mixing systems. Always meeting the demands of any sophisticated pro-

fessional application. Taking a HMI 1200. \$14,753.28.

Stagecolor 1000 Specifically designed for use in television studios and theatres equipped with a 1000W halogen lamp. With 3 colour mixing system and advanced optical glass frost filter giving a very wide beam angle. Always maintains a perfectly uniform wash over the illuminated surface. \$9835.24.

Stagecolor 300 Provided with 3 filters making a limitless colour palette. This unit has also all the features of the larger units only in a compact size, featuring channel control for mechanical dimmer and stopper/strobe effect. Needs a HTI300 discharge lamp. \$7376.23.

COEMAR

Coemar De Sisti Australia (03) 9467 8666

CF1200 series Range of yoke mounted full 360 degree movement, fan cooled halogen (equiv. 1200w) lamp or 1200w discharge colour wash luminaires with carbonfibre housings, CMY colour mixing, motorised zoom lens for variable spot size, C-100% electronic or mechanical dimmer, super fast strobing, electronic or magnetic ballasts, flicker free operation (electronic). Control via DMX512. From \$10,765.

NAT Pro Colour Motorised projector with built-in CMY colour mixing for unlimited colours, iris diaphragm, electronic on-board dimmer, zoom lens (14-28 degrees and 28-45 options), remote focus, frost facility, gobo holder, 4 - 40m working distance in 1K, 1.2K tungsten, 1200HMI, and 2500HTI versions. Control via DMX512. From \$9,795.

FAL

ELSTA (02) 9568 2100

DMX Colour Changer is fitted with a HTI300 lamp. Features include 9 dichroic colour filters, one colour temperature correction filter, frost, dimming to clear or frost, strobe plus rainbow effects; and 2 stepper motors, axial fan cooling, standard DMX512 control plus it contains a new user friendly alpha numeric display for digital address and option setting. \$2048.

Spectra is fitted with a 500W halogen lamp and has a palette of 9 dichroic filters plus white, variable speed bi-directional rainbow effect plus split/twin colour effects. Other features include a single stepper motor controlled via internal microprocessor, parabolic mirror, extruded aluminium housing and analogue control. \$1064.

FUTURELIGHT

Coemar De Sisti Australia (03) 9467 8666

CC200 has a total of 72 single and bi-colour combinations. Focusable and zoom from 11 to 20 degrees, mechanical dimmer, frost filter, strobing shutter. DMX 512 signal or in-built controller allows for independent operation. Uses either 200MSD/HSD or 250MSD lamp. From \$1,475.

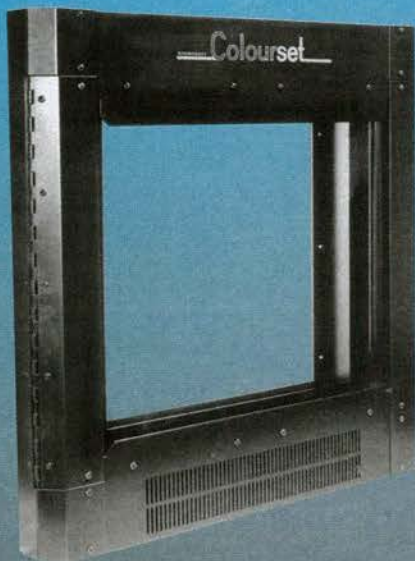
GENI

Show Technology (02) 9898 1111

Colour Blaster 100 Compact yet powerful colour changer with DMX-512 control. Efficient optics fully utilise an inexpensive 24V250W lamp to produce a sharply focussed and richly coloured beam. Offers 8 colours plus white, 1-5fps strobe and 100% dimming as well as on board audio activated programs. \$548.36.

HIGH END SYSTEMS/LIGHTWAVE RE-

Colourset POWER



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SEARCH

GUET 1800 773 187

Studio Colour (M) Version automated DMX colour changing wash luminaire; convection cooled (no fan noise); 2-1/2 times the output of 1000w halogen fixture; 100 million colour permutations and beam shaping. Uses MSR or MSD 575-2 lamp. \$11,486.90.
Studio Colour (S) Version more features than M version, uses a fully electronic switching power supply for flicker free operation; 5kg lighter; auto voltage sensing and more. Uses MSR or MSD 575-2 lamp. \$12,761.17.
Technopro uses MSD 250-2 lamp for extended lamp life; colour modifying wheels; 11 to 17 degree beam angle; full dimming/strobing; full DMX control; 8 scene programmable memory on board for stand alone applications. \$5709.04.

INFINITY

Universal Lighting & Audio 1800-648-111
Infinity Scen setter is a economical colour changer unit taking a M33 250W 24V lamp, has eight colours, control via DMX512 or sound-to-light. \$374.59.

LIGHT VISION

A & H Australasia (02) 9555 7221
Visionlight I IFB promotion projector with 5 colours and gobo wheel. Accommodates 4 x 35mm slides; 12,000 lumen 150w HTI lamp; good hi lite 1R programmable; tilt +/- 450, pan +/- 900. Made in Germany. \$4800.
Visionlight I DMX as above but instead of 1R has DMX control. \$4800.
Visionlight I IFB/DMX as above but with both control options. \$5200.

LYTEQUEST

Disco World (03) 9735 0588
Lytequest Motor Colour 12 colours plus white - bi colour and rainbow effects - internal sound activation or DMX512 control. 250w lamp. \$450.

MAD LIGHTING

GUET 1800 773 187
Mad Colour 211AP 10 colours plus open and 2 colour sifters (up to 33 colours); 6 gobos; 4 beam widths and frost filter; DMX 2 channel or stand alone; discharge version employing an Arcstream 150w lamp with 6000 hour average lamp life. \$1150.84.
Mad Colour 211MP same features as 211AP except employs a MSD200 lamp with 200 hour avg lamp life. \$1488.92.

MARTIN

Show Technology (02) 9898 1111
Robocolor III 11 rich dichroic colours plus white and blackout. The unit can be addressed by any programmable DMX-512 controller or Martin RS-485 Protocol. Also has been built-in programs which can be set up to trigger automatically or from a music source. The unit is fan cooled and provided

with over-heating protection. \$679.50.
Robocolor PRO400 Consists of 2 colour wheels which produces 32 colours. The unit also has 4 iris gobo's 7-21°, and a mechanical dimming system also strobing. The unit can be programmable by DMX-512 or Martin protocol RS-485. \$1433.60.

MAC600 Is an intelligent moving head Fresnel colour changer offering 440° pan and 306° of tilt. It is designed with a light weight, compact dimensions and multi attachment points for rigging and handling. The unit incorporates the well proven CMY full colour mixing system. It may also be controlled by any industry standard DMX-512 lighting desk or Martin PC controller. \$9007.38.

RYGER

Disco World (03) 9735 0588
Defender 10 gobos; 10 colours; 2 split colors; strobe; lamp dimmer; DMX512; stand alone; 250w lamp. \$730.

S.G.M.

Ashton Admor (08) 9478 3800, (02) 9690 0991
Colourlab Pro 150 HTI 750/HTI 152 2000hr lamp; 150 watts; 2000 lumens @ 10 metres; 39 colours; 2 colour beams; rainbow effect; 0.08 sec colour change; strobe; 8 position gobo wheel; frost filter; linear dimmer 0-100% DMX control. \$2461.
Colourlab 250 low voltage 250 watt halogen lamp; 1200 lumens @ 10 metres; all the features of Colourlab Pro 150. \$2128.
Colourbasic low voltage 250 watt halogen lamp; 1200 lumens @ 10 metres; 8 colours; 2 colour beams; rainbow effect; 0.08 sec colour change; strobe; 8 position gobo wheel; frost filter; linear dimmer 0-100% DMX control. \$1678.

Giotto moving head colour changer with CYM colour generating system; dimmer; strobe; electronic focussing; additional 5 position replaceable colour wheel; MSR 1200 lamp; universal power source; electronic ballast DMX control. \$12,307.

STUDIO DUE

Show Technology (02) 9898 1111
Citycolor lets you paint building and walls with lights. A totally weather proof flood light, that takes a 1800W lamp. One fixture (at a distance of about 10 metres) can cover a surface of 15 x 10 metres. Unlimited colours and shades. \$7376.23.

Stratos Color offers gobo projection and colour wheels. It's a virtually limitless colour washlight offering remotely programmable hard edged beam or soft wash. Needs a 200W lamp. \$12,294.26.

TAS

Coemar De Sisti Australia (03) 9467 8666
CF6 Yoke mounted convection cooled MSR575/2 lamped colour wash luminaire.

Aluminium housing, CMY colour mixing, additional colour/conversion filter wheel, 3 manual frost filters, 0-100% mechanical dimmer, super fast strobing, Large 300mm lens. Control via DMX512. From \$8,250.

Colore a.t.20 mechanical dimmer, black-out, strobe, gobo wheel, 9 dichroic colours, bi-colour ability, rotocolour effect, UV filter, colour correction available, 20 - 33° beam angle, focusable, 3 - 15m working distance in 200MSD/HSD or 250 MSD lamp. Control via DMX512. From \$2,063.

VersiColore 162 total colour combinations, 2 colour wheels with gobo or colour facility, motorised frost filter mechanical dimmer, black-out, strobe, bi-colour & proportional colour ability, rotocolour effect, UV filter, 5600/3200 colour correction filter, 20 - 33° beam angle, focusable, 3 - 15m working distance in 200MSD/HSD or 250 MSD lamp. Control via DMX512. From \$2,978.

Colore Fresnel 9 dichroic colour wheel, bi-colour & proportional colour ability, mechanical dimmer, black-out, strobe, rotocolour effect, UV filter, 12, 20, & 30° beam angles (motorised selection), 3 - 25m working distance in 200MSD/HSD or 250 MSD lamp. Control via DMX512. From \$2,347.54.

TEATRO

Lightmoves Technologies (02) 9560 0000
Versa-Disc Ideal for schools and Amateur Theatres. Option: DMX Kit \$350. Template kit \$35, plate for Teatro, Command Punto's - \$150. Plate for Source 4 - \$30. \$550.

Colourbox 2 To fit 150mm profile, uses 6 sheets of gels, two per motor, provides 20 different combinations. DMX 512, 240 volts with 3 modes on board, silent operation, no fans. \$1610.

Colourbox 2 To fit 200mm. Also available in Colourbox is gel cutter jig - \$260 and 1 inch tape at \$27.50 per roll. Opto - isolated DMX. No additional power supply or signal distribution needed. \$1680.

Diluvio 1000 fits Teatro Diluvial 1000 cyclight, no lengthy gel. Cutting required, no hassles in rolling gel onto scrollers. \$1680.

CONTROLLER FOR EITHER

COLOURSET

Showcraft Australia (02) 9698 3009
Colourset Controller 16 channel micro touch keypad provides programmable control of colour and speed for any number of Colourset scrollers. 64 scene battery backed memory, programmable 99 step sequence can be cued from single button or via auto timing. Visual status indicators. Signal output via a 5 pin XLR. \$1530.

Colourset Series 2 Power Supply 2U rack mount unit supplies up to 24 Colourset scrollers over four separate feeds. Power and signal is provided on 5 pin cannon connectors. Signal splits are integral to the

power supply. International capability with 110v/240v mains input. \$1390.

HIGH END SYSTEMS/LIGHTWAVE RESEARCH

GUET 1800 773 187

Studio Colour LCD Controller controls up to 8 individual addresses via DMX output (equating to 128 channels of DMX); 891 scenes; 9 memories; up to 1024 front panel programmable presets. \$6185.26.

Status Cue Link Card and Software Status Cue P100 Link card with Status Cue for Windows software, controls up to 1024 DMX channels via 2 outputs; 6000 scenes; fixture library; powerful cue list features. Requires Pentium PC. Console priced separately. \$5943.43.

LITE PUTER

ELSTA (02) 9568 2100

CX5 Intelligent Controller can program up to 300 nameable scenes, 50 chasers, 50 shows and 50 environments plus has the added advantage of hot keys for speedy data access and audio trigger facility. Other features include built in flash memory (avoids need for batteries), midi in/ midi out, DMX 512 signal output, 168 channels. \$1064.75.

EC25019C featuring built-in programs, Master dim, individual colour change, 3 pin cannon XLR connection, 6.35mm jack input plus it comes complete with its own 12V DC adaptor. \$286.10.

MAD LIGHTING

GUET 1800 773 187

Mad 1 Controller 60 channel DMX controller with 60 scenes and 12 chases pre-programmed and same number available for user programming. MIDI record/playback and in-built SMPTE decoder. \$1065.47.

Mad 4 - 1 Controller DJ friendly compact controller; non programmable but with audio activator and easy program manipulation. \$388.08.

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THE PA PAGE

With Michael Orland

ON FREQUENCY SELECTABLE GATING; and stress

SCENE 1: "What seems to be the problem, Mr. Orland?"

"Doctor, I feel like shit. I can't stop shaking. My wife says I look awful and insisted I came to see you. I like totally lose it all the time. I'm just falling apart. I think I have a serious stress problem."

"Well, stress should be taken very seriously. It can have severe health repercussions. Tell me, what do you do for a living?"

"I set up gear for bands."

"What? You mean you're a roadie?..."

(Close up on the Doctor's mouth as it slowly breaks into an enormous grin)

Scene 2: "Michael, that fax you were waiting for from the Septic Hasbeens is coming through."

"Finally! Their production spec! We're only doing Selina's with them this Friday! Still, with the 16 Turbo TMS3s I bought last week I feel we're ready for anything!"

(Close up on the fax machine as the words scroll up: "Preferred systems: Meyer, Martin, ABSOLUTELY NO TURBOSOUND..." Cut to close up of Michael's eyes. Left one begins to twitch.)

Scene 3: A few days later at Selina's. 1 pm. Michael is on the stage frantically rewiring his system when the American crew arrive.

"What the hell is this?"

"It's a Martin system. I purchased it the other day after I got your fax, and I've been rewiring my system to suit it ever since. Nearly finished..."

"Hell man, I was told to expect a Turbosound rig. I suppose they sent you the previous soundguy's spec. Never mind, I'll make do. Now, I've looked at your effects rack. Where are my gates?"

"Umm, there..."

"What the hell is this? The one thing my predecessor and I have in common on our spec list is two channels of frequency selectable noisegates! Where's my gates?" (To get the correct tone and accent, think "Where's my Waldorf salad?")

"Umm, well these are ARX gates. Locally made and I'm sure you'll find them..."

"You have no idea what frequency selectable gates even are, do you?"

"Umm, well I..."

"DO YOU?"

"Umm, not really"

"What sort of crummy backwater is this country we're passing through where the guy who owns the sound company hasn't heard of frequency selectable gating! Now look, buddy, I'll try and explain it in terms that even you can understand! We have the simplest of drum kits. One rack tom. One floor tom. The crash cymbal sits over the rack. The ride sits over the floor. I don't want the tom mics opening up every time a cymbal is hit too hard. So I need the gates to be insensitive to high frequencies. They need to open with accuracy only when the toms are hit. This is a loud guitar band and I need to minimise spill and get the cleanest possible drum sound. Now, I suggest you get on your phone and do whatever you have to

get me my gates."

(Cut to Michael pacing the floor, hands shaking, with phone stuck to his head. Michael's narrative overrides)

The worst part of the dressing down I got in front of all present was that despite the way in which it was put, it all made perfect, even obvious sense. I had seen Drawmer gates before and noticed the frequency selector on them, but never really bothered to think through or ask what they were for. If I had noticed the request for these gates on the band's spec, it had probably seemed trivial compared to the daunting task of acquiring yet another concert speaker system on a few days notice. I finally tracked down an equipment hirer who was able to get a pair of Drawmers to the venue in a taxi late in the afternoon, long after soundchecks were to have been completed. I took delivery and triumphantly sat it on my effects rack. "Finally!" says the soundguy, "Let's finish this check and get out of here!" I pick up the jacks to patch it in and of course, the equipment supplier had replaced the in and out jacks with XLR connectors. "Umm," I says, "I'll need about ten minutes to replace my insert jacks with XLRs to match". "Forget it!", says the soundguy, "We're outta here!" Band and crew depart in disgust.

(Cut to a few years later) Michael downloads a manual for his ARX Sixgate off the ARX CD Rom. And there on page 3 are simple instructions on how to make almost any noisegate frequency insensitive. Narrative: "If only I'd known back then! Every noisegate I've ever seen has an input and output connector as well as a key jack. The term "key" is apt in the mental picture of a gate opening and shutting to let sound through. Instead of the sound itself pushing the gate open, an external source can be plugged in to trigger it open. Often used in studio applications, but I can't recall ever seeing it used for live work. But by using a stereo or Tip Ring Sleeve jack in the key input, most gates give you the ability to actually insert a controlling factor. Fig. 1 describes a simple filter, reprinted with ARX's kind permission, which will



emulate the tuning option of gates such as Drawmers for the drum applications described above, costing many times the price. A few of them, clearly labeled, become a handy addition for any serious soundguy's briefcase/toolbox.

Hope you won't mind if I take this opportunity to pass my condolences to a colleague who collapsed and was carted off to hospital from a gig last week, after a particularly stressful setup. Believe me, I understand. (Hope the doctor who treated him wasn't grinning.)

Michael Orland runs T-PAC Sound and Light

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Email: T.PAC@bigpond.com.au

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Stage COLOR 1200

Stage ZOOM 1200

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Stage COLOR 1000

Stage COLOR 575

The show light.

Stage COLOR 300

Stage LIGHT 300

Ultra-compact.



JUST A FEW MINUTES TURNS A WASHLIGHT INTO AN EFFECTS LUMINAIRE OR VICE VERSA.

STAGE COLOR 1200 - Washlight

- HMI 1200 hot restrike lamp.
- 4-colour mixing (CMY + Amber).
- Gradual colour temperature correct'n (GTC).
- 3 levels of diffusion (max. aperture 50°).
- Special colour effects.

STAGE ZOOM 1200 - Effects Projector

- HMI 1200 W/S hot restrike lamp.
- 12°-24° electronic zoom lens.
- Colour mixing: CMY + 2 CTC filters.
- Continuously variable frost (up to 50°).
- Gobo and rotating prism combinations.



WASHLIGHTS ALLOWING TOTAL MASTERY OF COLOUR.

STAGE COLOR 1000 - Washlight:

- 1000 W halogen lamp.
- CMY colour mixing.
- New generation 50° frost.
- Electronic dimmer.
- Stopper and strobe.

STAGE COLOR 575 - Washlight

- HMI 575 W/SE hot restrike lamp.
- 4-colour mixing (CMY + Amber).
- Gradual colour temperature correction (GTC).
- 3 levels of diffusion (max. aperture 50°).
- Special colour effects.



PINT-SIZE FIXTURES WITH BIG PERSONALITIES.

STAGE COLOR 300 - Washlight

- HTI 300 or HMD 300 lamp (3000 h).
- CMY colour mixing.
- Continuously variable frost (up to 50°)
- Single-channel dimmer.
- Single-channel stopper.

STAGE LIGHT 300 - Effects Projector

- HTI 300 or HMD 300 lamp (3000 h).
- Manual zoom with electronic focusing.
- 36 colour combinations.
- 6 rotating gobos + three-side prism.
- Mechanical dimmer + high-speed strobe.

Trust Clay Paky to come up with an entire family of high technology moving-body luminaires. Advanced features include a revolutionary system which lets you transform the great Stage Color 1200 washlight into a Stage Zoom 1200 effects projector in just a few minutes, or vice versa. All Stage fixtures feature 8 or 16 bit control of their 450° pan and 252° tilt angles, automatic repositioning following accidental movements and a convenient moving-body lock system for easy transport. This family of luminaires gives you a unique 50 degree aperture, letting you create fantastic washes of perfectly uniform light even when working close up. Other exclusive new features in the 1200 and 575 washlights include 4-colour mixing (CMY + Amber) – giving a vast range of special pastel tones, and a GTC system for gradual variation of colour temperature.

Clay Paky Stage Line: innovation and traditional reliability to suit your every need.

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