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STUDIO DIRECTORY INSIDE



Roland surprise with 24 bit mixer/recorder family

HUNDREDS OF AMPLIFIERS—THE BUYER'S GUIDE

Icon M— the first DLP moving light arrives
Vari-Lite deny cancellation
Yamaha debut PM1d live console

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Your MONTHLY Trade News



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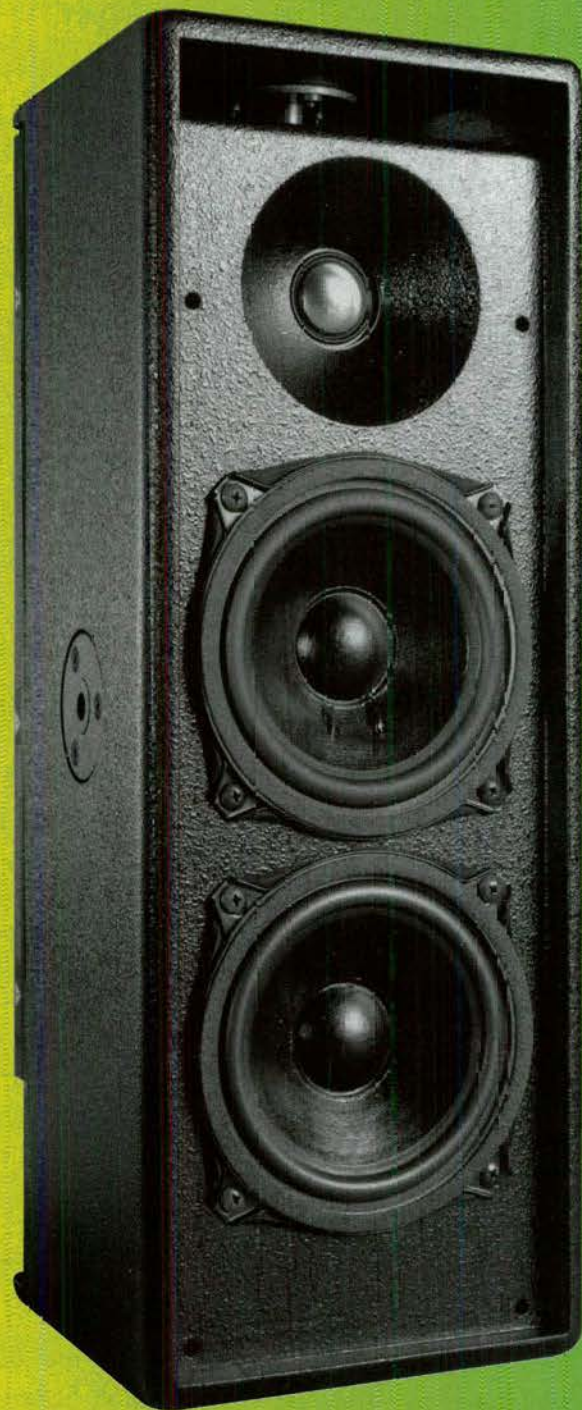
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CONTENTS

#70. October 1999

The Entertainment & Presentation Technology monthly



REM: NEW TOUR, NEW PRODUCTION IDEAS!

page 63



REVERSING TURNTABLE!

page 16



BABY YAMAHA MSP5

page 34



ROLAND'S NEW 24 BIT FAMILY

page 28

THE NEWS THIS MONTH:

New Years Eve may not be a windfall.	8
Hard Disk Recording: The software disappers	8
Glantre collapse: Interview with CEO	10
Yamaha introduce PM1D	11
AV Manager's Conference announced	11
Regency invest A\$5m in CD Plant	14
The reversing turntable arrives	16
Club Troppo gets a makeover	22
ULA host dealer's conference	24
New corporate powered speaker box for Turbo	26
Roland birth new 24 bit audio family	28
Letters, abuse, suggestions	31
Sid tests Earthworks SR 71 mic	33
Test: Yamaha MSP5 mini powered speakers	34
Yamaha GF Series FOH desk: Test	35

The facts on Equalisation,

Controversy! By John Matheson 36

BASF National Studio Tracking Guide	44
Audio Post in Perth: A snapshot	45
Burn, Baby. Burn! Fry on toasting	46
Buyer's Guide: Hundreds of power amplifiers	57
How to do it: LIVE sound with Duncan FRY	60
How to do it: STUDIO sound with Tom MISNER	61

LIVE SECTION

R.E.M. UP The World Tour a show with a difference	p63
Clair Brothers i4 System exclusive preview	p64
Burnt Piano lighting the MTC production	p66
Punters Perspective: David Copperfield	p67
Chris Isaak wondering where he is	p68

LIGHTING

Gearhouse and Bytecraft join forces	p73
Vari-Lite to sell fixtures	p73
Vari-Lite Australia allegation	p74
Martin settle rumours	p75
Jands and High End deal	p75
Tech Talk: checking luminaires	p76
Icon M first DMD moving light revealed	p78
Color Kinetics cool company expands range	p79
PLASA Highlights all that's new and exciting	p80
Buyer's Guide: Followspots	p85
Fame VL7 makes an Australian debut	p88

New: EASYFINDER SUPER CONTACT LIST 90



COPPERFIELD - HOW DOES HE DO IT? MANDY JONES HAS THEORIES...

page 67



VARI-LITE CEO TALKS, AS GTV 9 ALLEGE LATE HIRE CANCELLATION

page 73



FINALLY - THE ICON M DMD MOVING LIGHT

page 78



COLOR KINETICS

page 79



FAME - VL7 DEBUT

page 88

COMING UP IN CONNECTIONS!

NOV: Film & Broadcast Pro Audio Feature

Buyer's Guides: Loudspeakers. Fog machines.

Deadline 15th October. Onsale Nov. 10th.

DEC: Retailer Directory, GIANT 2000 Wall Planner!

Buyer's Guides: Recording systems. Scrollers, colour changers.

Deadline 15th November. Onsale December 15th.

FEB: ENTECH Visitor's Guide

Buyer's Guides: Studio Monitors. Truss, Flying, Rigging.

Deadline 15th December. Onsale February 2nd.

Call +61 2 9876-3530 for listings. Deadline for Directories and Buyer's Guide is two weeks EARLIER!

S&R

Studios & Replication Directory

STARTS PAGE 49

AFTER BECOMING A LEGEND IN THE STUDIO, WE'VE HIT THE ROAD.



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The Entertainment Technology Trade Monthly ~ October 1999

Recording 'software' disappears

Designers hide the operating system as Roland and Mackie debut new recording systems

Digital recording equipment is headed down the firmware track - moving away from the desktop computer. Roland and Mackie have just shown brand new hardware to confirm this trend. At presstime, the primary release event of the year for professional audio, the AES (Audio Engineering Society) convention in New York saw hot new firmware releases for both these firms.

Roland and Mackie have integrated the mixer into the recording equipment chain. The new Roland V-Mixing system (desk pictured below) is detailed in this issue, and matches mixer, recorder and other hardware. Mackie have just announced a hard disk recorder companion for their Digital 8 bus mixer, the D8B. D8B has also just won a coveted TEC

award in New York, from Mix magazine.

With Fairlight, dsp and DigiDesign all battling for the high end of the market, there is a growing market realisation that recording hardware, software and mixing console firmware all need to be integrated. Aside from specialised waveform editing and mastering, people do not like to mix using a mouse and a screen.

DigiDesign addressed this with the ProControl mixer / interface for ProTools.

The move away from desktop Windows or Mac platforms to integrated hardware and software (we call it firmware) is now a stampede. Apple haven't helped their cause by not ensuring onward compatibility of some existing software with their G3.

Mackie had encountered some resistance with potential D8B mixer customers who would prefer to buy an integrated recording solution. Now Mackie offer the HDR 24/96 hard disk recorder editor, a rack mount processor which is rumoured to be based on a Soundscape licensed product.

The D8B desk is very viable as a front end controller for a hard disk recording system as it incorporates plug in technology for external effects and processing software.

-Julius Grafton



New Years Eve - not a windfall for all

By Julius Grafton

One truth from far too many years of working on the road, was that I could rarely consider New Year's Eve gigs a financial success. The forthcoming turn of the calendar to 2000 promises to produce limited returns to some promoters

Reason? Far too much on offer.

In the UK recently, the Lizard Festival was badly attended. It had all the right ingredients. It was one of a number of holiday events in the English West Country designed to celebrate the summer eclipse there. It should have made money!

"One of the things that screwed the whole thing is that local accommodation prices went through the roof" says our European corre-

spondent, Mark Cunningham.

"People were put off. I guess the disposable income was stretched too far".

Does this sound ominous to you?

Studio businesses report static revenue, slight growth

Ahead of our Studio Directory this month, Connections surveyed facilities on our 300 strong active studio list - - asking about business revenue and utilisation.

While the majority of facilities who responded report that hourly utilisation has increased this year, the effective return hadn't.

65% of establishments reported zero revenue growth rather than an increase. Less than half those facilities who increased utilisation reported an increase in revenue as a result.

Overall, Studios expect to raise revenue by around 8% next year.

• Studio Directory: page 49

If it's September, it must be show month!

Given available time, one could spend the whole of September visiting trade shows and learning about new technology. We did, and it's exhausting!

PLASA is the leading Entertainment Technology show in the world today, held each September at Earls Court in London. We had a booth there, and met a lot of new people as a result.

IBC in Amsterdam followed, this is the largest broadcast show in Europe. And what a city!

InfoComm Asia was held mid September in Singapore, this bi-annual tradeshow is one of the few in Singapore to actually grow in recent years. Contrast this to FALA (Pro Audio Light Asia) which we visited in July. FALA was smaller and quieter than ever before.

At the end of September was AES, the pro audio show in New York. Always a good show!

Next month we go to LDI in Orlando. It's a good show too!

Vari-Lite deny cancellation

Head lighting designer at GTV Nine in Melbourne, Rohan Thornton, has complained to Vari-Lite International CEO Rusty Brusche, over what he claims is a dishonoured booking.

"We booked VL7's and VL2c's back in July from Vari-Lite Australia for an arena special soon (The Footy Show Finale). Just before I left (for London) I had a message that they were now unavailable. I have to redesign the show. This is not the first time this has happened", says Rohan. **-LIGHTING, page 74**

Sad Tale as Glantre bows out

by Madeleine Murray

It took 25 years to flourish, and four weeks to collapse.

Like many tragedies, the fall of Glantre was caused by a weird combination of circumstances. Change one thing, and Glantre might still be going today.

The engineering company specialised in theatre and entertainment work. They outfitted the Capitol theatre here, and built the stage lifts at Star City, using the scintillating Spiralift. But Australia was just a small part of their business, which turned over \$160m a year.

Glantre was a company that most people liked.

It was full of colourful people, working in exotic places. The CEO, Derek Gilbert, was charming, gracious and seemed a thoroughly decent gentleman, who lived up every trade show.

A company's demise is devastating for so many reasons:

losing loyal employees, the sprawling legal mess, damaged pride and reputation, the loss of something as personal as a family.

In mid-September, I spoke to Derek Gilbert by phone on Sunday night, UK time. If Gilbert, a Englishman in his 50s, with an elegant voice, is bitter, it didn't show. "It happened about four weeks ago," he said, evenly. "It was a really big shock. We'd been around for 25 years, and we seemed to have built a reasonably strong position, and it fell apart very quickly."

In '99, Glantre had several big contracts, as opposed to many small ones.

They were outfitting an elaborate theatre in a lavish Brunei hotel, for Amedeo, a company headed by Prince Jefri Bolkiah, the flash brother of the Sultan. The notorious Prince allegedly

bought a house in London's swanky Park Lane, it is claimed simply for assignments with high class hookers.

He had a huge yacht called Tits, with two tenders, Nipple One and Nipple Two.

Glantre was doing mechanical work for the Brunei theatre—rigging, lifts, and a complex turntable system. "We hadn't quite finished commissioning, but because of the delay in payment, we had actually left site, and refused to do the last bit until we got paid. It didn't do us a lot of good!" Gilbert laughed. They

were paid for the first half of the job, but left owing \$AUS 2.25m.

The bank

In an Italian shipyard, Glantre did the complete entertainment package for a Disney ship, and the stage rigging machinery for a Carnival ship.

"We've been working there for about 7 or 8 ships," Gilbert said. "We've always taken huge contracts, and the Italians are always dreadful at paying. The shipyard had lost \$US170m last year, because they had taken jobs too cheaply. We suddenly delivered two ships at their two yards in the same month, and the moment we delivered them, they stopped paying, owing about \$AUS 4.5m."

The shipyard debt could have been recovered eventually, but the double blow left Glantre reeling. Amedeo went down owing \$US6bn around the world. Even then, Glantre felt safe, because they were insured against bad debts.

"We've always had export credit insurance on Amedeo, and other approved customers," Gilbert said. "So even when

(continued on page 20)

Amedeo was a company headed by Prince Jefri Bolkiah, the flash brother of the Sultan. The notorious Prince allegedly bought a house in London's swanky Park Lane, it is claimed simply for assignments with high class hookers.



An instant stadium built by Global Events Systems is assembled on the Gold Coast before a sale to Turkey. It's 130 metres long, 64 metres wide and some 40 metres high! 20 GTS chain hoists were supplied by T.C. Hasemer via SCA Distributors in Qld, 16 EM 500 hoists with 25m of lift are mounted inverted at an angle of 45°, & 3 hoists are mounted in each of the 3 spires to haul up the 10 tonnes of membrane tarpaulins. Huge!

Australian Screen Sound Awards dinner on October 16th

SYDNEY: In a close field, "Two Hands", "Soft Fruit", "Passion", "Praise", "Paperback Hero", "Siam Sunset" and "In A Savage Land" are nominated in one or more of the five categories for a Screen Sound award this year.

The ASSG awards are: Best Achievement in Location Recording; Best Achievement in Dialogue and ADR; Best Achievement in Sound FX Creation and Editing; Best Achievement in Foley; and Best Achievement in Mixing.

Television nominations cover

a wide variety of styles with productions from cable TV, ABC and commercial networks all vying for awards through six categories. The nominations were recently judged by members of the Australian Screen Sound Guild.

Screen star Steve Bisley will be MC at the awards, when winners in all categories will be announced. It's on Saturday October 16 from 7pm at the Sebel Ballroom in Sydney, cost is \$95, and we think it's a fun night!

To book: phone +61 2 9958-8753 or fax +61 2 9958-2631.

Jands Free Industry Night comes to Melbourne

Jands Electronics brings its popular 'Industry Nights' to Melbourne next month with a seminar on wireless microphone techniques.

The presentation on Wednesday 10 November, will cover the latest wireless technology, the differences between VHF and UHF systems, and the effects of the pending introduction of digital television transmissions.

"It's recommended for everyone in the industry involved in the set-up or operation of wireless microphone systems," says Jands' Jeff MacKenzie, who will present the seminar.

The seminar is the first to be held in Melbourne and results from high demand following the excellent response to the monthly training nights Jands has hosted for the audio and lighting industry in Sydney since early last year.

To register Barracuda Bar, 64 Smith street Collingwood. 6.30 for 7pm, please contact Jands on +61 2 9582 0909.

FAIRLIGHT EXPANDS WITH ON AIR DIVISION

AMSTERDAM: Signalling a major expansion of its worldwide product focus, Fairlight ESP has expanded into the radio broadcast market with the IBC '99 announcement of two company acquisitions - and the simultaneous introduction of a state of the art automated radio software system at IBC '99.

Fairlight earlier this year acquired Ogenic On Air Systems, based in Perth, Australia, a leading manufacturer of radio broadcasting equipment for our region.

The company has just acquired The Netherlands based Vamos Media Solutions BV, a company that has developed a new solution for automated radio called "CoSTAR". It is a total software solution for automated radio that handles the digital recording, distribution, editing, planning and broadcasting of audio in a networked environment (LAN/WAN).

The result of both acquisitions is the formation of a new division called Fairlight On Air Systems, which will be headquartered in The Netherlands under the direction of Vamos executive Hendrik Noorderhaven, who will work closely with Quentin Gribble, General Manager of Fairlight On Air Systems in Perth, Australia.

www.fairlightogenic.com.au

Fans of the great philosopher Jacques Derrida, whose fabulous theory on light and visibility we published last month, have reacted with characteristic fury at our implied slur on their hero.

It appears we do not understand de-constructionism.

Meanwhile, this is the quote for this month, dealing with another important topic:

"Gaffer tape is like the Force - it has a light side and a dark side - and it holds the universe together."

LATE NEWS: Yamaha show PM1D

By Buck Freeman

NEW YORK: Yamaha finally confirmed the rumors by unveiling the PM1D, a large-format digital mixing console designed specifically for live and installed sound applications. Yamaha made the historic announcement of its new flagship desk at a private presentation in the Weill Recital Hall of New York's Carnegie Hall on September 23 to an exclusive international audience of industry media, consultants, commercial dealers and Yamaha engineers who had flown in from Japan especially for this epic event.

The PM1D mixing console is a totally digital system which performs all mixing and audio processing functions completely in the digital domain with 32-bit internal processing for superior audio quality. The CS1D Control Surface operates the DSP1D digital audio engine, which can be located with the control surface or "remoted" to the stage or other convenient location. Configurable in both 48- and 96-channel versions with 48 mix busses, 24 matrixes and 12 DCA's (Digitally Controlled Amplifiers), the system utilizes top-quality 28-bit A/D and 27-bit D/A conversion. Dual inputs on each channel provide 96 inputs for the 48-channel system and 192 inputs on the 96-channel version. • *More on this next month!*

Bryan Adams is one of an increasing number of international touring artists who specify the Cadac J-Type live production console. The 39 input J-Type is shown with Jody Perpick, FOH Sound Engineer and Tour Manager.



Audio Visual Manager's Conference at ENTECH

Alongside a growing program of events and attractions, ENTECH 2000 in Sydney next March also boasts a new and large Presentations industry involvement. Sony and Barco have both signed for major stands, displaying the latest large screen technology. More than 140 exhibitors will push the tradeshow floor out to a record 12,000m².

Recognising a new sector needs new attractions, ENTECH will host the first Audio Visual Facility Manager's Conference, held on Monday March 6th. The one day conference will be chaired by Neil Langford, CEO of SpaceAge Communications. It will deal with issues facing managers of facilities in medium to large establishments, such as higher education, military and large corporations.

The conference venue is within ENTECH 2000, at Homebush Bay. Anyone interested in presenting a paper should contact the organisers, c/o Julius Grafton, Connections Publishing, Ph +61 2 9876-3530.



Merrick and Rosso sign for ENTECH

The ENTECH Awards 2000 will be delivered at a huge (and usually pathetically drunken) industry dinner on night two of the trade show, Monday March 6th. This, the largest Awards dinner yet, will be held in the Badgery Pavilion at the Sydney Showground, at Homebush Bay.

Entertainment is still under negotiation, but radio comedians Merrick and Rosso have agreed to interfere in the smooth running of the event.

Awards criteria for 2000 has been changed. PRODUCTS will be considered for nomination if they were released AFTER the previous ENTECH (April 25th, 1998) and were available in the market AT THE TIME of the nomination. Simple, eh?

Nominations for PEOPLE and PRODUCTS are now open, and close this December 31st, 5pm.

Voting will be open to all readers, using a voting form included in the February issue of Connections, which is also the ENTECH 2000 preview issue, containing the full Visitor's Guide.

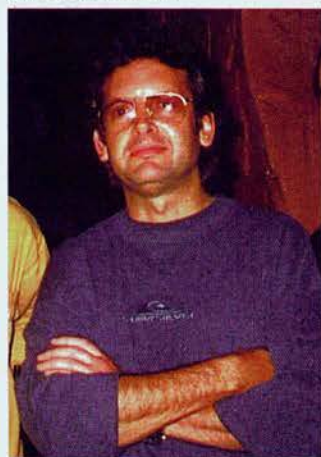
Anyone may nominate anything or anyone, but include concise arguments WHY, and send by mail now to:

ENTECH Awards, PO Box 439, EPPING, NSW 2121, Australia.

APPOINTED

• After 16 years at the Sydney Entertainment Centre, **Arthur Carruthers** has been appointed as Events and Venues Manager at Fox Studios (Sydney). He now looks after the Horden, Royal Hall of Industries, the Byron Kennedy Hall (Dome) and events in the Show Ring.

• **Chris Ridgeway** is now engineer in residence at Meyer Sound Australia.



Ridgeway has nearly 20 years experience overseas in the design and operation of concert sound systems for world class performers in stadiums, arenas, theatres and clubs. Meyer say he will be available to assist local production companies with international touring artists too.

TRADE NIGHTS & PRODUCT TOURS

• **NIGHT-SHIFT ENTERTAINMENT SERVICES** is holding a trade night on October 28 in Sydney. go to Burwood RSL, 96 Shaftesbury rd, from 7pm to 10pm. More details from Tina at +61 2 9744-7777.

• **Digidesign** announce Pro Tools 5 / digi 001 tour dates

- Perth, Oct 12 & 1, Host: Kospro Int'l
- Melbourne, Oct 18 & 19 Host: ISMT / Manny's
- Sydney, Oct 20 & 21, Host: Sound Devices & Hutchings Keyboards
- Brisbane, Oct 25 & 26, Host: Australian Academy of Music / Musiclub
- Adelaide, Nov 10 & 11 Host: Promedia Distributors
- Wellington, Nov 1,
- Christchurch Nov 2
- Dunedin, Nov 3
- Auckland, Nov 5. NZ Hosted by Protel.

Pro Tools 5 and digi 001 provide major new MIDI & audio features and will be showcased to a limited number of people.

The seminar is free (*we love that word!*) - we urge you to book early to avoid disappointment.

To register your place, you can call the Digidesign office on +61 3 5428 7780 or +61 3 9499 3535, or your local Digidesign dealer, or go www.digidesign.com/pt5/ and supply your details.



BITES

• Shure have signed **Marie Milson** as an endorser. Seen above with the Beta 87, she also uses the new PSM in-ear monitoring system. So do **The Whitlams**, also signed to Shure.

• **Sontec** have rebirthed their Noise Monitor. Now venues can cut the power when the music gets too loud (again). Call them on +61 2 9748-2288.

• Finally, after more false starts than at a junior sports day, **Showsafe** have produced a draft SAFETY CODE. It is online at www.showsafe.com and the organisation also have a well established webboard there, cram full of industry safety chit-chat.

Bassett Acoustics Awarded

The South Australian Division of The Institution of Engineers, Australia, has awarded Bassett Acoustics with an Engineering Excellence Award, in the category of Innovation, for its involvement in the improvement of acoustics in the Adelaide Festival Theatre.

The auditorium's new acoustic was unveiled during the stage of The Ring Cycle in November last year to a flood of ciltical acclaim.

Bassett's approach combined traditional architectural acoustical engineering with a novel electroacoustical system comprising microphones, digital signal processing and loudspeakers - to optimise the acoustical performance of the auditorium for a range of performance styles. The electro-acoustical system allows the acoustics to be altered at the push of a button.

The project involved a substantial component of Australian research and development input. • *Info: +61 8 8363-1000.*

Gadgets & Gizmos With Dr G

Gadgets, tools, tips and tricks. There will always be a plethora of these in the entertainment industry. Spare **John Grimshaw** a thought as he winds his way through the many items out there - - and be sure to let him know if there is an item the rest of us should know about!

Infra Red Speakers and headphones

Here it is. The solution to a problem I faced at Ensemble Theatre some months ago. The show is long gone - far too late for me to make use of the idea, but the idea has been filed away for later use. Infra-red speakers are a common enough thing on the domestic market. There are



various types of things available on the market. "So what" I hear you say? Well the next time you have to put a spot effects speaker in moving set piece or furniture like a television (or as in my case a toy train set nailed to a table on castors) you may yet thank me for the idea. Although this technology relies on "line of sight" from emitter to receiver and the effective distance is quite limited, I think this option is a great alternative

(continues on next page)



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Regency Recordings - doing it all under one roof

By Mandy Jones

Regency Recordings invited *Connections* along to the grand opening of their new \$5 million state-of-the-art CD manufacturing plant in Braeside, Melbourne.

The optical disk facility was officially opened by the Honourable Robert Clark MLA, Parliamentary Secretary, Treasury and Multimedia in front of about 60 members of the music and manufacturing industry in early September.

Regency Recordings is an Australian owned company with a 'family business' approach to it. The new CD plant strengthens the role of Regency Recordings in the multimedia manufacturing industry. The company had its beginnings as an audio cassette manufacturer in the 1950's and company founder Brian Horman recorded the sound for the film of the 1956 Melbourne Olympics. Brian was also responsible for the concept of recording court cases onto audio cassette in the 1960s. Fiona Horman, Brian's daughter, purchased the cassette plant in 1986 and is the now the Managing Director.

Fiona (pictured, right) described the opening as "a very special day at Regency, and a long time in the making.

"We are always trying to better ourselves. We had a vision from the start that we wanted to get into CDs, but for a long time it's been out of our grasp because it's a very expensive business to get into. We've always had a very good relationship with our bank and told them what our plans were and they've been very supportive. In 1986 we were offered a second hand CD plant and when the bank said yes we decided to dive in."

Last year the company recognised the need to expand the plant capacity and the standard of technical expertise.

"We went about investing in people who had the expertise in this type of technology. We formulated a plan of five year growth, in that was to invest \$5 million in a new plant and equipment. We chose the best equipment available. It has DVD capabilities and it's going to see us well into the future."

Allowing for Audio cassettes, CD-Audio and CD-ROM formats, as well as being compatible with DVD technology, Regency Recordings has the added advantage of the entire processes taking place on the one site, including mastering, printing and packaging, so that stringent quality control can be maintained, and for the convenience of Regency's customers.

At peak, the CD facility will produce more than 50,000 units daily.

Before declaring the plant open, Robert Clark said "Regency Recording typifies the get up and go of small businesses that have transformed Victoria over recent years. At this late stage of the 20th century it's not just a matter of catering to the domestic market, it's also a matter of looking for international opportunities."



DR G's Gizmo's

(continued from previous page)

to radio transmission. The infra-red option is cheap, ready to use "off the shelf" and there will be no outside interference possible - AT ALL. Whereas, the radio transmission option, you would have to worry about getting the balance between cheapish/unreliable and expensive/reliable equipment, as well as avoiding frequency harmonics between this and other radio equipment. It is hard to fault at this price. If you feel you must use your own speakers and battery amp, there are headphone versions you could adapt.

- WES Components, Sydney +61 (0)2 5797 9866
- Stereo Infrared Cordless Speakers (Cat IS200) \$89.95

Victorian Manager

AUDIO TELEX
COMMUNICATIONS PTY LTD

Audio Telex Communications Pty Ltd is a leader in the professional audio and sound reinforcement markets in Australasia, with sales offices and warehouses in all mainland states of Australia and Auckland, New Zealand.

We are seeking a successful "hands on" manager with a strong background in the audio industry to run our Box Hill branch office. The person will have excellent contacts in both the distribution and consulting segments of our markets and be capable of directing and motivating sales and administration staff under their control. Preferably the applicant will have already achieved success in sales in the audio field in Victoria and is looking to join a dynamic and very successful organisation expanding into new markets in Australia and Overseas.

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Please write in complete confidence to: **The Managing Director, Audio Telex Communications Pty Ltd**
Private Bag 149, Silverwater NSW 1811

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R-1000 Reference series



D.A.S. introduces the New Reference Series. Installation loudspeaker systems with exceptional efficiency, enhanced pattern control and intelligibility, easily adaptable to aesthetically complement the decor of any venue. Engineered from "real world" experience, the Reference Series provides acoustical engineers with the primary tools needed to solve the problems of permanent sound reinforcement installations.

SPECIFICATIONS

Model	R-15	R-18	R-212	R-215	Sub-18	Sub-218
Frequency Response	50 Hz - 20 kHz	35 Hz - 300 Hz	50 Hz - 20 kHz	35 Hz - 20 kHz	35 Hz - 1 kHz	35 Hz - 1 kHz
RMS Power Handling	LF 400 W HF 200 W	500 W	LF 800 W HF 200 W	LF 1000 W HF 200 W	500 W	1000 W
Program Power Handling	LF 800 W HF 400 W	1000W	LF 1600 W HF 400 W	LF 2000 W HF 400 W	1000 W	2000 W
Nominal Impedance	LF 8 Ohms HF 8 Ohms	8 Ohms	LF 4 Ohms HF 8 Ohms	LF 4 Ohms HF 8 Ohms	8 Ohms	4 Ohms
Sensitivity (1W/1m)	100 dB SPL	100 dB SPL	102 dB SPL	102 dB SPL	98 dB SPL	101 dB SPL
SPL at Full Power/Peak	126 dB/129 dB	127 dB/130 dB	131 dB/134 dB	132 dB/135 dB	125 dB/128 dB	131 dB/134 dB
-6 dB Coverage Angles	90° H x 45° V		90° H x 45° V	90° H x 45° V		
Crossover Frequency	1250 Hz	160 Hz	1250 Hz	1250 Hz	160 Hz	160 Hz
Components	LF 15" B-30 HF 1.5" Driver ND-10	18" G-45	12" B-20 1.5" Driver ND-10	2 x 15" 3-35 1.5" Driver ND-10	18" G-45	2 x 18" G-45
Dimensions (HxWxD)	71 x 51 x 38 cm	71 x 51 x 72 cm	98.5 x 51 x 41 cm	112 x 56 x 49 cm	74 x 51 x 41 cm	112 x 55 x 48 cm
Weight	33 kg / 72.6 lbs	50 kg / 110 lbs	52 kg / 114.5 lbs	53 kg / 119.8 lbs	36 kg / 79 lbs	59 kg / 130 lbs

D.A.S. OUTLETS:

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Byron Music 93 Johnson St, Byron Bay NSW 2481
Ph: (02) 6685 7333 Fax: (02) 6685 7552

Custom Audio Installation 150 Maitland Rd, Mayfield NSW 2304
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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.



Reversing turntable from Omnitronic

Omnitronic introduce a new high torque turntable with instant push button reverse - aiming to make the DJ's life easier and a little more versatile. At Connections we are keenly awaiting the thing so we can listen to our album collections backwards to discern those satanic verses..... just kidding.

It is a direct drive unit with an extremely high torque motor, high-quality reverse-function, adjustable anti-skating, height adjustable tone-arm with CARDAN's suspension - and all this usual stuff. Like; quartz-control for highest precision, quartz lock-button for adjusting the pre-set standard speed; three pre-set speeds (33 1/3, 45 and 78 rpm) and it is speed-control switchable from +/- 10% to +/-20%

It has a protected power switch, a large start/stop-button and remote start is possible via 1/4" connection on the rear panel.

Omnitronic claim their turntables are 'the closest thing' to a Technics SL 1200. • Omnitronic Distribution, Aust. 04C7 005 653

SHURE reissue the battle needles

"Shure M44-7s are the best - they just can't skip!" is the verdict for Shure's newly reissued battle needle by Australia's top DJ.

DJ champion DJ Dex swears by the M44-7 while several other finalists including third place winner (at the DMC comp) DJ Kuya chose the model to compete in the event.

The M44-7 has already become the needle of choice for most champion DJs around the world since its revival late last year as part of a new line of Shure DJ phono cartridges. • Lands +61 2 9582-0909

MAJOR TRADE EVENTS

- REPLITECH ASIA, Nov 10-12, 1999. Hong Kong. www.kipinet.com
- LDI Nov 19 - 21st, 1999. Orlando. Ph +1 212 229-2965 web: www.etcync.net
- NAMM, 3 - 6 Feb 2000. LA. www.namm.com
- AES 108th. Feb 19-22 2000. Paris. Fax +1 212 382-0477. web: www.aes.org
- ENTECH 2000, March 5th - 7th, 2000. Sydney Exhibition Complex at the Olympics, Homebush Bay. Fax + 61 2 9876-5715. web: www.conpub.com.au
- MusikMesse, March 15- 19th 2000, Frankfurt. www.messetrakfurt.com
- SIB, Mar 26 - 29th, 2000. Rimini, Italy. Ph +39 541 711711. www.fierarimini.it
- NAB, April 8-13th, 2000, Vegas, USA. www.nab.com
- NSCA, April 27 - May 1, 2000. Las Vegas. Ph +1 304 273-2760 www.nasca.org
- PLASA Shanghai. June 7-9. +44 171 370-8231 www.lightandsound-shanghai.com
- WORLD LIGHTING FAIR, June 22-24. Tokyo. www.wlf.co.jp
- SMPTE 2001, July 10-13. Sydney. Ph + 61 2 9533-4445. www.smpete.org

Wide Dispersion. Extreme Output. Mackie's New Professional SRM450 Active Speaker System

The stiffest, strongest, most elegant composite enclosure on the market. Unique asymmetrical trapezoidal design eliminates internal standing waves—and lets the SRM450 recline comfortably when used as a stage monitor. Handles on both sides AND top.

Mackie started out to make the best active composite speaker on the market. Through their acquisition of RCF, one of the world's foremost producers of high quality transducers, Mackie has been able to combine their state-of-the-art electronics with proven speaker design to build a *truly superior Active Speaker*.

High Accuracy. The SRM450's high end is crisp and airy. Midrange is detailed and natural without a trace of harshness. And the SRM450's tight, steel fisted bass simply blows away anything remotely close to its size or price range.

Extreme Output. The SRM450 combines Mackie's high-headroom/low-noise input circuitry with 400 watts of FR Series high current amplification - the most powerful of any active composite speaker of this size and weight. The low frequency amp is servo coupled to the bass transducer for maximum control and extended output in the lowest octaves.

Wide Dispersion. Using a proprietary wide dispersion horn design the SRM450 achieves better coverage than any other speaker in its class. Other features include Variable Gain Control, 75 Hz Roll Off, contoured EQ Switch and Timed Turnoff. All of this housed in a strong, elegant composite cabinet with built-in fly points on all sides. The unique asymmetrical design allows the SRM450 to double perfectly as a floor monitor.

To hear is to believe. Audition the remarkable SRM450 Active Speakers at your Mackie dealer today.



SRM450s couple their damped titanium compression drivers with the room via the same kind of multi-cell aperture used in the finest big-studio horns. This achieves more even horizontal and vertical dispersion than any other comparably sized SR speaker.

SPECIFICATIONS

SRM450 Active Speaker Physical Specifications
Height 66cm; Width 39.6cm; Depth 37.5cm; Weight 23.2kg; Mounting Methods Integrated Mounting Points (10mm x 1.25mm) Two each located on sides, top, bottom and rear. **Transducer Specifications** • LF Transducer: Diameter, 300mm; Voice Coil Diameter, 63.5mm; Sensitivity, 98dB; Nominal Impedance, 8 ohms; Power Handling, 300 watts; Frequency Response, 50Hz - 3000 Hz • HF Driver and Horn: Diaphragm Diameter, 44.5mm; Exit Throat Diameter, 24.5mm; Diaphragm Material, Titanium; Sensitivity, 106dB; Nominal Impedance, 8 ohms; Power Handling, 150 watts; Frequency Response, 1000Hz - 20,000Hz; Horn Type, Composite; Exponential and Conical Mouth Size, 304.8mm W x 171.8mm H; Horizontal Coverage, 90° +/- 10° 1KHz to 20KHz; Vertical Coverage, 45° +/- 10° 28KHz to 20 KHz **Power Amp Specifications** LF Power Amplifier: Rated Power, 300 watts; Rated Load Impedance, 4 ohms; Rated THD, <0.1%; Cooling, Convection Extrusion; Design, Class G, Parametric Servo feedback • HF Power Amplifier: Rated Power, 150 watts; Rated Load

Impedance, 4 ohms; Rated THD, <0.1%; Cooling, Convection Extrusion; Design, Conventional Class AB • **System Specifications** • Input Type, Balanced Differential; Input Impedance Line, 20 kohms; Input Protection, RFI and Level Protected; Sensitivity, Line +4 dBu (center detent), Mic -36dBu; Max Input Level, Line +22dBu; Low Cut Frequency, 180 Hz Second Order; Music Equalization, Peaking +3dB @100Hz, +3dB @10KHz; Enclosure Alignment, 6th Order; Over Excursion Protection, 2nd order High Pass Filter; Thermal Protection, Amplifier Shut Down Auto Reset; Muting, 5 seconds at turn on; Low Line Voltage Shut Down, Nominal Line; Acoustic Frequency Response, 45 Hz - 20,000 Hz; Low Frequency -3dB Point, 55Hz; Maximum SPL at 1 Meter, 123dB; Low Frequency Crossover Type, 24dB/Octave, Time Offset corrected; High Frequency Crossover Type, 24 dB/Octave; Crossover Frequency, 1800 Hz; Driver protection, Independent LF and HF Compressors; Low Frequency Roll Off, Dynamic-Signal Level Dependent; Wireless Power Interface, +15 volts DC and Normalized Signal I/O; Operating Temperature Range, -10° C to 45° C (14° F to 113° F)

- 2-way optimized active system with 400 watts of FR Series high-current amplification built in
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Discussion System

The new CCS 800 discussion system from Philips Communication & Security Systems is an easy and effective way of bringing order to small-to medium-sized meetings and conferences. It includes a double headphone socket and flexible microphone stem which allows two people to use the same delegate unit. Each unit is fitted with a 2m cable and simply plug into one another using a "daisy chain" configuration, allowing the connection of up to 50 chairman/delegate units.



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PIONEER EFX-500

THIS IS THE FIRST DJ EFFECTOR, SAYS PIONEER!



Also known as the 'effects box', this Effector provides a DJ-perspective with instrument-feel. With a user-friendly top panel operation, the system is ideal both for live performance or home studio use.

Further evolved Beat Effects actualise real-time effect performance with a Jog Dial, allowing no less than 5 x 5 different effects. DJs can expand the digital sound world by connecting this machine to almost any existing mixer.



DIGITAL BEAT COUNTING !!

Citronic have introduced a digital beat counter on their new PD-1 turntables. Cost is A\$549, c/w a Stanton Cart and a slipmat. When connected to an MSX2 mixer (A\$849) you count beats!
• ULA, +61 7 5532 9922

Gadgets & Gizmos

Gel Sorting

Here is an issue that is close to the heart of many a work experience person, and new crew members! Sorting cut gel for later use can be quite annoying, but it is more likely to help you down the track if you have a half descent system for storing it. This concept was born out of a question of "What should I do my old Lee Gel swatch book?" As you can see by the picture, it makes for a colourful filing cabinet - as well as being hours of "fun" for your work experience lacky. A big advantage to sorting like this is that all of your various sizes of gel are in the same place, so if you need 16 Patt23 gels and they are not pre-cut, the option of cutting down a Par64 sheet is available without more digging!



ARE YOU OUT-STANDING IN YOUR FIELD?

Blacksheep Productions is a unique organisation offering a full production service, covering event management, video production, and audio visual staging. Based in Sydney, Blacksheep's Staging Department provides support for our Event Management activities, as well as operating independently to satisfy our clients' day-to-day audio visual needs. Whilst our Event Management Department provides the creative impetus, the Staging department provides both the technical and the human resources to get the job done. We supply the latest technology to ensure computer images are clearly and accurately transported to screen. Our sound systems & technicians are of the highest standard guaranteed to make the presentation sound its best. Blacksheep also offers a comprehensive range of corporate, theatrical and concert lighting services. We have the resources to design, install and operate the most advanced intelligent lighting equipment available. Over the last year we have been focussing on a strategic move towards the new millennium. We are seeking to capitalise on our unprecedented growth and, as a result, the following positions have become available:

GENERAL MANAGER

• Salary Package - \$80k negotiable plus incentives • Marketing, business or commerce degree essential • Broad experience in audio visual/video/event industry preferred

We are looking for an energetic and enthusiastic GM with an aggressive growth strategy to lead Blacksheep into the 21st century. We are seeking an experienced and successful leader who has vision, imagination, and the skills to think 'outside the square' and provide strong and careful leadership.

TECHNICAL OPERATIONS MANAGER

• Have you got extensive experience in 'hands-on' audio visual production? • Managed and motivated young, enthusiastic staff? • Salary Package - \$45k neg.

We are searching paddocks everywhere for an exceptional individual - a dynamic technical manager who has extensive 'hands-on' expertise in sound, lighting & audio visual systems. As well as being a technical 'guru' capable of designing complex AV shows, you will also be responsible for our technical crew and ensuring the smooth and successful operation of each and every project. You must have proven Management skills and experience in leading a production team. Your customer service and communication skills must be of the highest standard and, whilst you will need excellent organisational skills, your technical ability & knowledge is paramount. With at least 5 years' experience in the industry, this is a great opportunity if you are looking for the next step in your career.

If you are committed to customer service, have endless energy, and dedication, and just generally 'stand out from the flock' mail your resume to Maria Abelas, Blacksheep Productions, 22-36 Mountain Street, Ultimo NSW, 2007 or fax it on (02) 9212 7018.

Blacksheep Productions is a SMOKE FREE WORKPLACE

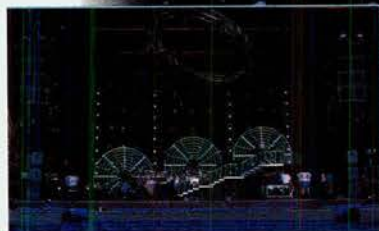
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River Stages 1999, Nashville (Special Event Services)

Never before has the audio industry so rapidly or so unanimously accepted a new product as they have the KF700 Series. In the 6 months since its introduction an astounding 1,600 units have been sold, putting it on track to become one of the best-selling loudspeakers of all time.

Designers, installers, consultants and engineers from all facets of the industry have enthusiastically embraced the unique features of the KF700 Series. These compact, lightweight cabinets provide exceptional sound quality, phenomenal arrayability and unbelievable SPL for their size, while fast, efficient rigging and truck-pack save time and money. Every application, from tours to installations to special events, will benefit from the cutting-edge technology and problem-solving capabilities engineered into the KF700 Series.

If you haven't experienced the KF700 Series, then you haven't heard the future of audio.

Call us or visit our website to find out more.

Additionally, KF700 Series loudspeakers have been used on the Placebo, The J. Geils Band Reunion and Hootie & the Blowfish tours, and at the 1999 Women's World Cup Soccer Championship Game. They have also been used in installs including the Sands Casino (Michigan), The Gorge (Seattle), The Hampton Beach Casino (New Hampshire), the Calvary Church (Michigan), and the Breslin Student Events Center at Michigan State University.

The Laws of Physics The Art of Listening

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EAW is the worldwide technological and market leader in the design and manufacture of high-performance, professional loudspeaker systems.

Write in Reader Service Number: 108



DS800 by XTA Electronics

The DS800 is an 8 input, 32 output self contained audio distribution system. In standard format, each input is split into two transformer-isolated outputs (-10dB level) and two actively balanced outputs.

The unit can be internally reconfigured to give more than the standard four outputs from each input, up to a total number of 32 outputs. Each input features remote activated pad, adjustable gain, mic/line switch, 48V phantom power, 5 segment LED metering, "listen" facility. A headphone output and associated gain control are also provided.

RRP A\$5895.00

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Delta 1010: 10x10 PCI Based Digital Audio System

The Delta 1010 stands at the forefront of digital audio's evolution, they say, making available a level of performance previously unattainable.

The DELTA 1010 shores up what used to be the Achilles' heel of any computer-based system: the transfer and conversion of audio between the outside world and the computer.

With 24-bit 96kHz bandwidth and expansive flexibility, the DELTA 1010 boasts 8 balanced or unbalanced analog I/Os, S/PDIF I/O, Word Clock I/O, and MIDI I/O to guarantee connectivity in any installation. To ensure that your audio is not compromised by your computer's internal noise, the Delta 1010's converters reside in a rock-solid, external, rack-mountable chassis.

They've even located the power transformer outside of the chassis to further secure the absolute transparency of your audio.

**A\$2299 RRP. Electric Factory, +61 3 9480 5988.
www.elfa.com.au.**



Gadgets & Gizmos

Step Lights

I am currently looking for options for replacing step lights in two venues. Although I am still looking, one good option I have found is available from Jaycar. The light fitting pictured is 100mm in diameter, and can be used in any low voltage situation you can't put it in. The unit comes fitted with a standard two pin halogen type ceramic base (JC pin), so you can have endless fun choosing the bulbs you want to use. The body is die cast metal, and access to the inside of the unit is via the three machined screws on the front face. It is actually designed as an outdoor garden light, so you can even make it water tight if you wanted. But I would prefer it 20% smaller, and at \$20 each, 120 of them becomes a bit expensive. Still, I haven't even begun to haggle for a better price. If I do well, I will let you all know.

• From Jaycar Electronics, Wall Mount Step Light (cat SL-2778) A \$19.95



Glantre falls victim to very bad luck

(continued from page 10)

Amedeo went down, we weren't too worried, because as far as we were concerned, the debt was insured. But the insurance company chucked out the claim on a whole bunch of technicalities—mistakes in declaration forms, and the fact that we were five days late in reporting Amedeo's defaulted payment."

Glantre still had their bank to fall back on. They had been dealing with the same bank for years, but when they went to ask for an extension of facilities to get them over this crisis, their manager had moved to another bank. The new manager turned them down.

The fallout

"It's a big hit in the industry here," Gilbert said, "and I've had so many kind letters and phone calls, even from companies who are going to be losing money. When a receiver gets appointed, he's just a hatchet man. We have managed to get someone to finish off most of the contracts. I don't think there are actually any customers suffering too much. We had lined up companies to take over every one of

the 12 or 13 jobs we were doing."

"And what does this mean for you personally?" I asked Gilbert.

"Well, when you've spent 25 years building something up, and it falls apart quickly, it's a very uncomfortable, unpleasant process. All the directors have personal guarantees, which the bank seems to have already started calling in, because the receivers have recovered so little. I won't be out on the street, but it's a big hit."

But all is not lost. On Monday morning, Gilbert was about to start a new job with Northern Light. "They've been respected competitors and good friends for a lot of years. I've got work, and just about everyone who has left has been snapped up by other companies very quickly." A big Greek company took 15 people, and an American company has taken half a dozen, and anyone else has gone to the Millennium Dome.

Although Glantre didn't have a stand, Gilbert went to PLASA last month. "There are so many people who are suffering as creditors of Glantre. It's quite important to go and say sorry to people. You can't pretend these things don't happen."

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Club Troppo gets a makeover

3000 punters on one night makes viable club! The NSW Central Coast's biggest venue - Central Coast Leagues Club - plays host to a Saturday night event called *Club Troppo*. When the Central Coast Leagues Club recently underwent major renovations, the organisers of the event *Rock Circuit Promotions*, decided this was a great opportunity for a fresh look and Total Concept Productions were given the task.

Jonathon Rutledge at TCP Sydney acted as Project Manager, with Bill Coghill acting as On-Site project technical manager.

The old DJ box, previously located halfway down the hall, has been moved on to the stage. The equipment is now in large wheeled flight cases - one for Audio and one for Lighting with the video system split between the two boxes - allowing for a quick and easy setup.

AUDIO

In a departure from the usual Disco System arrangement in rooms this size Rock Circuit Promotions chose to go for two flown arrays above the stage area. An all Meyer Powered box

system was chosen.

4 MSL 4 long throw High Q boxes are supplemented with 4 PSW4 15" + 18" Sub Boxes. The arrays are flown on both sides of the stage. The subs are part of this flown array, an option which at first seemed risky.

"We were concerned that the main dance area may be lacking bottom end, and that the bass might not cut it in such a large room" said Harry Della, Director of RCP. "But with advice from Steve Devine from Meyer Australia, we went with it".

The system was tuned by consultant Adam Townsend from PKA in Sydney. Tuning with JBL Smart-Pro and pink noise took 3 hours. The PA was metered at 112dB during the first night.

FLYING

Iain Messner was contracted to provide all the flying points in the room as well as the specially designed frames for the PA. These were built with the flying angles set in the metal work, so that on site it was simply a question of hanging it all up.

Iain and his rigger Gary looked after hanging points for the Truss

rings and the Motorised Arm sections, which are controlled by a hoist control system developed in-house at TCP by Eill Coghill.

LIGHTING

Club Troppo is one of the first major outings for the FutureLight MH-660 Moving yoke fixture, with 4 in each of the four truss "arms". These, as well as the other room fixtures, are controlled by a Martin Light Jockey system running on a standard PC, with the Fixture Profiles created in house by Bill Coghill and Andrew Brajbisz.

Other fixtures include 28 Gladiator SceneSetter colour changers, 8 Studio Due Predators, around 80m of neon, and 8 Coemar Miri Ultra Scan 2 moving mirror fixtures

VIDEO SYSTEM

The club chose to keep their existing Sony Video Projectors, although they relocated them to each side of the stage. A Nightlife system uses custom pressed Music Video CDs to allow clubs to choose from various categories of discs to suit the clientele.

Gadgets & Gizmos

Technical Tap

(or How to make a subscription to Connections pay for itself)

Ever fiddled with the peak adjustment on a theatrical lamp, only to make the bulb jump in brightness? Oops, you have just made the filaments cross each other inside the bubble. Do you know what happens next? After a short period of time running the unit at 10 to 20% over its capacity, it will blow.

As a result, at least \$40+ walks out the door.

If you want to try to save your boss that \$40+, unplug immediately the lamp that has "gone bright". Seeing as you are right next to it and presumably trying to focus it, get your electrician's hammer (your shifter) and give the unit a light "technical tap" near the lamp housing. What this does is (hopefully) jiggle the filament inside the lamp enough so that it stops touching itself, thereby stopping the small short circuit that was going to cause the lamp to blow.

I have successfully repaired lamps in this way that have gone on to work an eight week season of a show and beyond.

My thanks to Gavin Swift for that piece of advice.

Cable Reels

Storing cables is one of the hardest jobs facing any venue or hire company. Stacking them in crates and road cases is fine but either you have lots of little crates for the various types of cables, or you have to dig in the big crate to find what you want. Also, this might not be the best way to handle your expensive investments in camera multicores etc. Hose reels require some modification so that they do not damage the first cable wound onto a drum, and they tend to collapse after a time of carrying, rolling and unrolling 100m of microphone or power cable.

> continued on page 26

SONY



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- 74min Storage
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SONY MDS-E11

The MDS-E11 is a 1U (19-inch) rack mountable pro MiniDisc player/recorder, providing all the storage and processing power you could need in a super slim unit. Inputs and outputs include balanced XLR and unbalanced analogue I/O and RCA. Multiple MDS-E11's can be coupled for endless relay-play and relay-record. An assignable 9-pin parallel interface provides everything from simple user remote play - back to easy industrial equipment interface. Computer control is supported by an external RS232C port. As well as MiniDisc editing functions, recording options include Auto Pause, CD Sync, Music Sync. Playback options include Search, Auto Pause, Repeat and Shuffle.



SONY MDS-E52

The MDS-E52 is a 2U (19-inch) rack mountable pro MiniDisc player/recorder which features a variety of I/O connection options. An RS-232C serial port makes the MDS-E52 controllable from a personal computer or radio automation system. Features include IR Remote control (wired remote also available) and auto pause, CD sync, music sync and time-machine recording. As well as MiniDisc editing functions, playback options include Search, Auto Pause, Repeat, Shuffle and Program. Inputs and outputs include balanced XLR and unbalanced analogue I/O, as well as RCA coax and optical digital I/O.



SONY MDS-E58

The MDS-E58 is a 2U (19-inch) rack mountable pro MiniDisc player/recorder with an array of useful features and functions. It was introduced as an evolutionary step along Sony's MD development path and fitted with a rugged disc transport system and overall design at a realistic cost. The unit has unbalanced analogue I/O and RCA as well as optical digital I/O. As well as MiniDisc editing functions, recording options include Auto Pause, CD Sync, Music Sync. Playback options include Search, Auto Pause, Repeat, Shuffle and Program. Specs: Frequency Response 5Hz-20kHz +/-0.5dB, Signal to noise ratio: >92dB.



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Write in Reader Service Number: 184

ULA host Dealers Conference

What is the secret of success for this Gold Coast based importer and distributor?

by Mandy Jones

Universal Lighting and Audio staff and dealers from around the country gathered recently at the firms Gold Coast HQ for two days to launch ULA's new-look product catalogue, called SoundiVision.

The launch also served as a networking opportunity for the dealers to get to know more about ULA's operation and to play with the new range of products.

Launched at ULA's showroom, Managing Director Con Biviano explained the effects lighting and DJ equipment catalogue had been 12 months in the making and was a true team effort. Aimed at the consumer market, products were chosen for their quality and price with nothing over the \$2,500 mark.

The result is a glossy magazine-style catalogue featuring around 100 different products from brands such as Technics, Panasonic, Abstract, Infinity, Le Maitre, Citronic, Vinyl Touch and Force G.

The launch itself included a brief Powerpoint presentation which outlined the background to the catalogue, before Con invited everyone to reach under their seats and pull out their 'survival kit'. The survival kit turned out to be an envelope containing the new catalogue stuck under every seat like a life jacket, a simple gimmick which added to the anticipation.

Following the formalities, Con, with the help of Sales and Projects Manager Justin Knox (pictured), went through the catalogue in detail over-viewing each of the products. Lighting effects were demonstrated by utilising the impressive rig of effects units on permanent display in the showroom.

Luke Hall, ULA's Sales and Product Support specialist programmed the rig using the new Visualizer II software from Avolite, and then operated the 'show' on an Avolite Azure. The ten minute demonstration programmed to music featured the basic audio-activated effects units, DMX programmable units, as well as the 'big guys' - the Abstract VR8 and the new VaryScan6 for 575HMI.

Paul Mazlin from Oracle Laser Productions demonstrated the amazing new T2 Bazooka available in green or red laser, with a blue model being released shortly. The compact unit has already been well received in the overseas market, particularly in China where a leading cigarette company has placed the lasers, featuring an animated sequence of the company's logo, in many major discotheques in China.



Also on show was the range of Le Maitre and Infinity smoke and haze machines including the enormous Le Maitre Low Smoke Generator which managed to make the showroom disappear for about five minutes.

Upstairs in the Concept Shop, the ULA range of DJ consoles and turntables was on display. Covering both ends of the consumer market, the range features the funky 'Phat' and 'Slim' DJ consoles from Force G, through to all the standards like Technics and Citronic including the new Citronic dual CD player. Brendan Murphy, Product Manager of Panasonic Australia spoke briefly about the inclusion of the Panasonic portable CD player into the SoundiVision range. And Con Nomikos from Central Station introduced the features of the Technics SL1200 MK II featuring the Vinyl Touch Reverse Tuning with blue LEDs.

Following the product demonstrations was

a tour of the offices and warehouse. ULA's snazzy 15000sq foot premises was designed by Con Biviano for the exacting demands of a lighting and audio distribution company. Apart from the warehouse and the architecturally impressive foyer and reception area, the showpieces of the ULA complex are the 'concept shop' and the showroom.

After dark, everyone headed out to the carpark for a look at the high-powered Given outdoor units in action - the 4000w xenon Imperial searchlight, and the Kolorado 1800w architectural colour-changer. After a quick pyrotechnics display it was off to a networking dinner where the dealers were given an opportunity to get to know the rest of the ULA team - Blair Terrace (Sales), Dennis DeChicco (Service), Vicky Burrell (Accounts) and Claudia Biviano (Marketing).

A range of activities were organised for the 'out of towners', from nightclub visits (to check out the equipment, of course!) to a special team building exercise of ten pin bowling where Mick James (Mick James Engineering) narrowly beat Dave Jackson from Phaseshift Productions to win the coveted Avolite denim jacket.

Attendees over the two days included representatives from Nova Top Stage (Canberra), DMC Sound & Lighting (Sydney), Central Station Records (Sydney & Brisbane), Phaseshift Productions (Melbourne), AV Design (Townsville), Derringers (Adelaide), Supervision (Rockhampton), Mick James Electronics (Gold Coast), Access Audio & Lighting (Gold Coast), Kosmic Sound & Lighting (Perth), Luminous Energy (Brisbane), and A Bit Creative (Brisbane).

Adding strength to the ULA dealer network is the opening of a Melbourne office on October 4 to be headed up by Justin Knox. Product support specialist Luke Hall will also be making the move, focussing on Avolites training.

• SoundiVision is available through all ULA dealers or call 1800 648 111.

Mandy Jones travelled to the Gold Coast courtesy of Universal Lighting and Audio.

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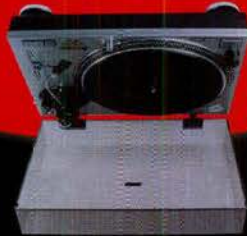
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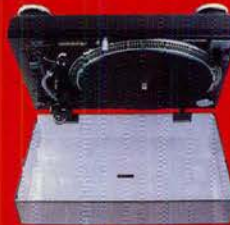
CM-740 PRO 'Ozone' Mixer



BX-524 'Beat' Mixer



DJ-50 'Space' Mixer



DD-2220 Direct-drive Turntable



DJ-2250 Direct-drive Turntable



OHP-400 Stereo Headphones



FX-280 'Fire' Mixer



CDT-550 Top-loading CD Player



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FX-524 'Bat' Mixer



CDP-450 Dual CD Player



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Pulse Effects: Ph (08) 8221 5222

Hi-Z Sound & Productions: Ph (08) 8369 3621

W.A: RMX Music: Ph (08) 9228 2727

OLD: Hothouse Productions: Ph (07) 4051 3811

NEUTRIK LOW-COST STAGE BOXES

Already renowned for their high quality connector systems, Neutrik's innovative design approach is obvious in their latest NSB Series stage box systems - combining excellent quality & flexibility with extremely modest pricing in a range of 12 models to suit a wide variety of live sound and studio applications.

The series features 3 different styles ranging in size from 8-In/4-out to 32-In/4-Out. All models feature high quality, Neutrik XLR connectors with a solderless IDC design to ensure rapid, simple termination. The fully modu-

lar construction also includes a robust strain relief suitable for multicore cables up to 20mm diameter. Also available is a range of optional self adhesive, luminescent labels numbered in groups of 4 to suit both inputs & outputs.

Neutrik's NSB Series stage boxes are very competitively priced, ranging from only \$96 to \$169 recommended retail.

• In AU, call Amber on Tel: +61 2 9975 1211



Turbo Intro Cute Powered Box

TurboSound introduce their new self powered three way full range loudspeaker, the TQ 440 SP (below). This is loaded with a 12" low frequency driver which has a coaxial 1" high frequency driver inbuilt. A TurboMid device with a 6.5" mid driver on a 60° x 40° horn brings those crucial intelligibility bits into close focus. Smooth and powerful vocal projection to 8kHz is claimed, and we believe it!

The active power amp technology brings all electro acoustic functions into the box, something that Meyer have enjoyed considerable success with in recent years.

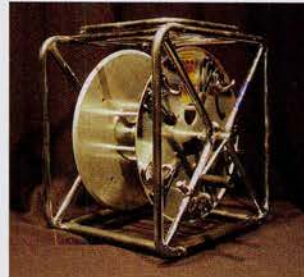
• www.turbosound.com or call ElFa in Au on +61 3 9480 5988.



Gadgets & Gizmos

(continued from page 22)

This cable reeler option landed on my desk from Gentner Specialities. Neale Gentner, the owner of the company, has obviously spent some time designing and testing this unit. What he has come up with is



truly a very useful product that he has dubbed, "The Brute".

This reeler has all the features I wish my hose reels had: stackable, access to the inside end of the cable which can have up to a 3m tail, heavy duty axle, no sharp 90 degree angles for the inside turns of the cable, optional drag brake and removable/storable crank handle (so it doesn't whack you in unfortunate places as you carry it about!).

I happily rolled and unrolled 200m of 7mm microphone cable onto the reeler, then even more happily rolled a 50m JVC multicore camera cable onto it. As I spooled the second cable off the reeler I lamented the fact that I soon had to send it back to Neale. Oh well, I'll budget for one or two next year. That brings me to the only reel drawback (pardon the pun) - the price. To get this hand crafted, exquisite device, you will have to part with \$540 (plus tax).

However, if this device can save you one hour in the set-up and pack-up every time it's used, just use it twenty times and it has pretty much paid for itself.

- Gentner Specialities
+61 7 5441 7933
- "The Brute" \$540 (plus tax)

Elmo Slide Projectors

Slide projectors are still used in many shows around the place, and it is sometimes surprising how much antiquated equipment is out there being used for this type of work. There must be hundreds of old Kodak S-AV's chugging away.

So, what do you do if you need to replace it?

The current range of projectors from Kodak have so many features and electronics, that the prices have skyrocketed.

However, there is an alternative. C.R. Kennedy is the Australian importer and distributor of "Elmo" brand slide projectors. Although not related to the fuzzy toy namesake, they have certainly created that fuzzy feeling in me that you get when you use reliable equipment. They are compatible with most of the control equipment out there for Kodak projectors.

The basic model, the 253E, uses the same remote DIN plug and 80 slide carousel tray as the Kodak. It also has a built in cut-out that blocks the lights from the projector if there is no slide in the gate. The two better units have the following additional options, 253AF for auto focus, and 253ALC for auto lamp change. Each of these two better models also have the large 14pin connection that is used by most control equipment.

- CR Kennedy +61 2 9518 9500
- 253E \$1045, 253AF \$1450, 253ALC \$1450, 70-120 lens \$280



If you know of any devices that are worth mentioning here (or better options to the ones I have listed), please let me know.

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Write or Read Service Number: 172

ROLAND BIRTH NEW 24 BIT AUDIO FAMILY

More than just V-Mixers, Roland break out a complete suite of V products - and catch everyone by surprise!

By Julius Grafton.



Roland have yet again launched themselves into brand new pro audio turf with a suite of products including a 24 bit digital motorised console and professional multitrack hard disk recorders. This range, dubbed V, includes a range of break-out and break-in boxes, and a new protocol called R-Bus.

The VM-7000 series of V-Mixers remove the audio in/out from the console, and place it in a remote rack mount processor that can be up to 200 metres away. This changes the rules, because every other digital mixer we have seen with a price tag under six digits has all the in/out conversion done at the console.

A remote processor means all the patching of audio is done where you want it, removing the need to run expensive balanced analog audio cables to and from the actual mix position. Put another way, you could also use a V Mixer live without a multicore cable, or in the studio without "tie lines" through to the recording rooms!

The VMC-7200 V-Mixer is also the first truly 'live ready' inexpensive digital mixer, with 20 balanced XLR inputs supplied on the VM-7200 remote processor box - but they do have a stripped down processor, VM-7100 with less XLR's for those who do not need them. It is most likely a studio product that will also be sold for live use - equally suited to either environment.

I saw the V-Mixers in London, where an impressed stream of punters were demo'ed each hour on the PLASA stand. Knowing that Roland Australia have R & D input direct with Japan, I called Dave Dwyer in Sydney and visited his studio for a hands on with the V-Mix. He then briefed me in his own unique style on the new V-Recorder products, embargoed until this issue was released.

V-MIXER

Imagine a work surface similar to what you have already seen from Yamaha and Ramsa. There is a VMC-7200 model with 24 full length

channel faders, plus the master section and a reasonably good backlit LCD screen. A more compact model, the VMC-7100 comes with 12 channel faders, still with all features of the larger model available via fader "flipping".

You plug the Processor rack in using 2 AES-EBU cables, up to 200m away. The VM-7200 processor is a 3 rack-unit tall box with 20 analogue XLR inputs for microphones, 20 jacks for lines, 6 balanced XLR outs which can be assigned as you see fit, another 20 or so jack outputs likewise flexibly assigned, and several digital I/O connectors. The VM-7100 processor is identical, minus 10 of the inputs.

Either console can drive either processor, one console can drive two processors cascaded, or two consoles can drive the one processor for maximum flexibility!

This alone makes the V-Mixers strong contenders, once users get to know and enjoy using the Roland interface - meaning the knobs and dials on the desk. But the thing that really cuts the V apart from the rest is the FlexBus. This is "hard to define, as it can route almost any signal", explained Dave Dwyer. He showed me how the first twelve faders on the desk can be switched to control the FlexBus, which is programmable to be whatever you want it to be.

Generally, the FlexBus would be used for auxiliary sends if the desk is used live, or recording returns, or whatever you like. Software user assignability is the key to this!

Audio input and output is expandable by cascading a second processor to the first, and controlling it all from the one console via a multitude of "flip" buttons.

Switching the bank of 24 faders allows up to 94 channels of input/output to be controlled independently across the two processors, along with 16 stereo/32 mono 24bit internal effects and 2 master FX units when fully expanded. With two processors connected, 24 channels at a time can be dealt with at the faders, from any of the 40

balanced inputs. 24 flexbus outputs, digital in/outs and 48 R-BUS inputs and outputs.

One master effects bus and two stereo effects systems come standard, and optionally you can add six more stereo effects to each processor. These are full box and dice effectors, doing all those mind expanding, algorithm shifting things you expect from Roland, - including COSM based microphone and speaker emulations.

Both consoles feature full "flying fader" style mix automation including EQ and all available FX parameters. The EQ section is 4 band, with each band switchable between peak, shelf, HPF, LFP, BPF, notch and so on. On the VM series consoles, the faders drive practically everything via a bank of "flip" switches. They can be input levels, output levels, FX, pans, preamp gains, EQ, fader groups, tape returns, whatever! The faders can also be "locked on the fly" to any function during operation, and unlocked just as quickly.

Finally, because the V-Mixer is a digital device based on a "flash rom" chipset, it is upgradeable via MIDI or a SmartMedia card. Future processing revisions are only limited by whatever software enhancements Roland and people like Dave dream up. And, your mix settings and parameters are all stored on a project by project basis to a removable 4 megabyte SmartMedia card too!

RECORDING AND R-BUS

R-Bus is a new 24bit digital, 8 channel bi-directional, input/output protocol developed by Roland to allow connection of the V Mixer system to virtually any recording device in the world today!

Expanding outwards from the mixer and processor, you may like to connect up to ADAT or Tascam recorders. To do so, an optional box (DIF-AT) is connected to the optional R-BUS expansion card on the processor. A maximum of three boxes connect to three R-Bus ports on each processor.

Via R-BUS and the DIF-AT, a 24 track, 24bit recording rig could be set up using any combination of ADAT and Tascam digital 8 track recorders, without sacrificing any of the processor's balanced ins/outs.

A second interface option is the ADA7000 which gives the user 8 channels of input/output



Panasonic

A ray of bright light

Panasonic's PT-L797PE/P Multimedia LCD Projector outputs a brilliant 2200 ANSI Lumens of bright light - an increase in brightness that greatly improves colour reproduction and means more impact for your presentations. But the PT-L797PE/P is more than just bright. In true Panasonic tradition, it also offers a host of versatile, convenient functions:

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Focus on a Panasonic Multimedia LCD Projector

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Roland's 24 bit family

via balanced XLR, TRS, or unbalanced RCA connections, along with trim, pad, and phantom power on every input. Three ADA7000's could be connected to one VM-7200 processor, allowing a total of 44 balanced inputs, or 24 channel balanced bi-directional connection to 2 inch tape machines.

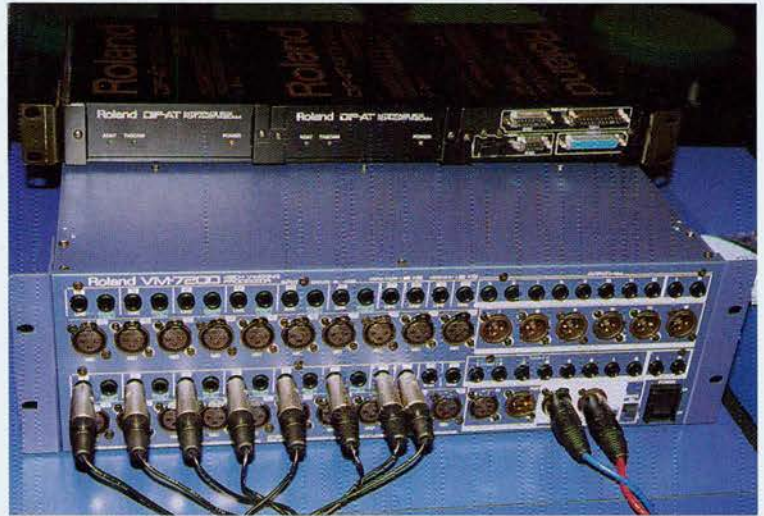
A third interface, the AE7000, allows 8 channels of break in/break out via AES-EBU digital connectors. This box is a 24bit digital gateway to and from computer based DAW's like ProTools, and allows the V-Mixing system to be your "physical front-end" for any computer based recording system.

Speaking of recording systems, it is also via R-Bus that the new Roland 24bit 8 track hard disk recorder connects. This is called the VSR880, and is essentially a VS880Ex - without the 'all in one' console. Designed to rack mount, the VSR880 is a 24 bit recorder with an internal drive and two stereo 24bit FX units via an optional

board. It will also connect to whatever external hard drive selection you would care to make via SCSI - and to Roland's proprietary CDR unit for audio CD burning and data backup.

Featuring balanced, unbalanced and R-BUS inputs and outputs, the VSR880 allows simultaneous record and playback of all 8 tracks, and three VSR880s may be connected to one VM processor via F-BUS. If a pair of processor racks are used, six VSR 880's can be used for a total of 48 tracks - all controlled from one V-Mixer!

The VSR880 also threatens to change the perception point of Roland's latest family of all-in-one hard disk recording products - which often wrongly have been considered non professional, simply



because they incorporated a mixer.

Using any combination of the above options allows the user to configure a custom recording system utilizing whatever recording medium they choose or combinations of recorders for maximum flexibility.

LITTLE V-MIX

Roland also offer "baby brother" little V-Mixers, the VM-3100 and 3100Pro, that can also interface via a single R-BUS port. More on these soon.



Dave Dwyer is one of six beta testers for Roland in the world. He was a member of 1927, a very successful band in the early 1990's - and almost enjoyed a successful reformation of the band early this year. Dave was seriously injured when his car was hit while stationary at the Sydney Harbour Bridge tollgates. He walked away, but was hospitalised the next day with major damage to his back - and a pinched nerve has since denied him use of several fingers, which is a disaster for a guitarist. But Dave is confident he will recover.

He gave Connections a unique insight into how Roland utilise their knowledge bank. An email to Dave from head of R & D, Gaku Terachi simply said "We think you have received the VM-7200 set. The owners manual is still under construction...."

Two months later, Dwyer and the other testers have emailed countless software revisions to and from Roland. It's an effective concept - ship a device without instructions, and get the testers to find every function!

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All Gripe and No Responsibility

I read with fascination Chris Kennedy's response to your editorial which appeared to me to be suggesting that Connections had not published a listing in the Hire & Production Directory for his company Norwest Productions because Norwest is not an advertiser. He then says that because the listing did not include details about his company, the directory was not credible, comprehensive or complete.

I have had more than 20 years of experience compiling Directories similar to those published in Connections and it is obvious to me from his statements that Mr Kennedy has never compiled one in his life, because what he is asking is completely impossible. No compilation of data of this nature can ever be accurate, nor can it ever be complete.

A listed company could go out of business the day after it completed a form for inclusion in a list. A new product can be released between the time a list is compiled and the time that list is published.

For example, I have personally confirmed data over the telephone with a company then

phoned back a day later to check a minor point, only to find the product suddenly unavailable. All telephone directories are out-of-date before they even get to the printer, much less the consumer. The on-line versions of telephone listings are also out-of-date. Neither of these sources carries any disclaimer.

But what really gets my goat is that Mr Kennedy does not want to assume any responsibility whatsoever for the (free) listings he is so quick to condemn. If Connections posts him a suitable blank form, and he doesn't "have time to fill in a form", (or, presumably, just doesn't feel like doing it) then it's the magazine's fault the published listing is incorrect or incomplete—it's nothing to do with him!

I'd like to take this opportunity to thank all those wonderful people who take the time to complete and return my own forms and listings (which are also free). I really appreciate it, and so do the thousands of people who rely on the data in these listings.

**Greg Borrowman, Editor
Australian HI-FI Magazine**

Another editor responds to Chris Kennedy.....

I'm taking the time to write to you having been a fan of Connections for the longest time and as someone who admires your honesty in dealing with readers and advertisers.

As the publisher of the AustralAsian Music Industry Directory and producer of a weekly online music industry news site (IN MUSIC & MEDIA at http://www.immedia.com.au/im_m), I understand both sides of news and data dissemination.

I read with amusement the whingeing letters that you had the balls to print in your latest issue.

What a pack of losers we see from time to time in the Letters.

The howler was the 'Media Ethics' screed from Chris Kennedy of Norwest who whined about not being listed in your Hire & Production Direc-

tory. I know Chris, having dealt with him before and I can assure you he is not listed in our comprehensive directory either. The reason is that he must think your and my publications operate with ouija boards to receive company and address details, or hire psychics to get the names and titles of personnel - or perhaps witchcraft to determine their product lines or business.

Our policy, like yours, is not to put in listings unless they have been directly sourced, with permission, from the listed company.

Chris assumes you have to be an advertiser to be listed in your publication or to pay. I hope he adjusts his medication to see clearly that unless we get the right information in, we can't assume anything.

Phil Tripp, Immedia! Sydney

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TECHNICAL AUDIO GROUP

Letters

DMX cable costs

I agree with Andy Ciddor's comments on the total lack of adhering to the DMX standards by some manufacturers. (Some fit 3 pin XLR's and others fit the proper DMX 5 pin XLR to their products).

In the Altronics catalog, the price for 3 pin XLR Female/Male (Chassis mount) is \$5.00 and \$4.75 respectively. The price for the same, but five pin (Female/Male, Chassis Mount) is \$8.90 and \$7.00 respectively.

Assuming that a fixture has a DMX in and a DMX out the cost increase from 3 to 5 pin is \$6.15. Not much really.

But say you have a rig with a desk, (5 pin XLR), an Intelligent light (3 pin XLR) and a few dimmer racks (5 Pin XLR).

To go from the desk to the light in the rig and then the dimmers you will need a 5 pin to 3 pin converter, and another 3 pin to 5 pin converter.

Using my handy Altronics catalog I will need: 5 Pin Female (inline) (\$8.90), 5 Pin Male (inline) (\$7.60), 3 Pin Female (inline) (\$5.00), 3 Pin Male (inline) (\$4.70) and two short pieces of shielded 2 core cable (about \$1).

These two cables will cost you \$27.20 plus labour.

It is always the little things that bug me.

-Michael Marriott, Eliz, SA.

Farnham Sound

I was looking forward to reading the reply from the John Farnham sound people, re: the letter in August. I hope it's not that my eyesight is failing me!

Tony Romeo
tony@emu.usyd.edu.au

• No reply yet received. -Ed

C-Ducer - who sells it?

In the August 1999 Issue of Connections, the article "How to do it" - Duncan Fry's Live Sound Mixing Series discusses microphone techniques for pianos.

In this he refers to C-Ducer microphone strips. Can anyone supply me with information of an Australian distributor or retailer who carries them.

Most retailers in Melbourne don't have a clue.

- Simon Winter.
simon.winter@celts.monash.edu.au
• Indeed the editor used and loved his C-Ducer once upon a time too. But we at Connections have struck out and can't find an importer. Can anyone assist?

Cheap cable ties!

There is another alternative to purchasing velcro ties (Refer to Dr. G) - make your own!

The ones I had made were designed by me and manufactured by my girlfriend.

All you need to make "end to end" style is: a length of velcro (both sides) - around \$2-3 per metre, a sewing machine, and a girlfriend/or fiance. (What about a boyfriend? -Ed)

Separate the two strips of velcro. Cut into 10-15cm lengths. Overlap about 6cm of the velcro strips. Sew the sides of each strip.

Feed the male end of the lead through the loop, squash the velcro down so it does not come off and voila!

Making around 10-15 ties off one metre gives a unit price around 13 to 30 cents each!

Andrew Gissing
andrew@darowa.com.au

Letters to: PO Box 439, Epping NSW
2121 Australia, fax +61 2 9876-5715
or email mail@conpub.com.au

Please inform me if DVD AUDIO can be played on DVD VIDEO or we will need to buy other machine? I read your article "DVD audio spec" on the website.

- moti komfort, motik@netvision.net.il
• Depends if the machine is brand new. Only a few new machines will play DVD audio disks, whereas older machines will not. DVD audio is a new spec, DVD video hasn't changed.

Sid's Test

A Microphone for all seasons - Earthworks SR71

For A\$995 Earthworks offer the SR71 with wind sock and cradle. The SR71 is 22 mm slim, and 235 mm long, with a matt black finish and white printing. The diaphragm end is tapered, reminiscent of some Brüel and Kjaer test probes. Being of the condenser type, it requires 48 V (dc) power to operate. It has a cardioid response, which is pretty useful if this is going to be a workhorse mic.

SPECIFICATIONS

The spec sheet, though sparse, quotes figures that are good.

An amplitude frequency response graph shows a flat response at 150 mm from source. At 1 m from source, there is a bass roll-off of 3 dB per octave from 400 Hz. In case the reader is now thinking that the bottom end is weak — don't! It works just fine.

Earthworks, in their manual, make some claims and suggestions that are worth discussing.

It certainly is a hot microphone when used in close proximity. Earthworks strongly recommend padding the input when close miking an instrument like a kick drum. The SR71 would do the job, but a more conventional mic may be an easier choice.

PATTERN

The SR71 has a typical cardioid rejection pattern to the rear, but the frontal direction has a fairly wide angle with even pick up over the high frequencies, as stated.

Earthworks point out that whilst the SR71 is flat at 150 mm, the gentle bass cut at greater distances is useful, because unwanted bass is rejected when close miking instruments such as sax or overheads. This is good design, but not unique.

With due respect to Earthworks' suggestions, no close up miking of vocals should be attempted without the windsack (or suffer the Earthworksquake).

The windsack allows quite a good vocal, but the lows are very suppressed. (The room response must be good if miking from further away, as was revealed in testing.)

The "fast clean impulse response", claimed for the SR71, is a reasonable claim, according to studio testing. On one particular test, the results were compared to a previously recorded similar test with a vastly more expensive mic — and yes, there was a difference, but a respectable result with this mic.

Testing in the studio showed that this mic is quite useful, and good value. Far superior to choosing one of the old band mics.

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SR-866 Dual Ch. Stereo gated compressor/limiter
SR-RTA 31 Band Real Time Analyser



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Notice of Annual General Meeting

All positions are declared vacant. Nominations for all positions may be made at the AGM, and voted for there and then. The current Secretary would prefer to hand on the job to someone connected with the industry who has regular spare time and an internet connection.

**Monday 1st November
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*Members and all interested
parties welcomed.
No RSVP necessary.*

-Julius Grafton, Secretary

Sid's Test

Yamaha's MSP5 - a pair of little rippers!

The Yamaha MSP5 is a bi-amped 2-way Bass Reflex Powered Speaker. It stands just 276 mm high, 169 mm wide and 222 mm deep, but weighs a hefty 7.5 kg, and is dressed in mat black. The woofer and tweeter are well protected, whilst the appearance is functional and aesthetically pleasing.

The heat sink at the back is comparatively massive, and didn't even get warm. (This was, however, in a Queensland winter.)

Controls (at rear) are minimal, but there is a small amount of bass and treble cut/boost. Inputs are a 6.5 mm jack (balanced, -10 dB) and an XLR (+4 dB). There is a convenient and accurate notched volume pot on the front.

What could be said about these little speakers may depend on who's "spin doctors" (Connections, Publisher's Note, Aug. '99) may influence the reviewer. Just insert either *bright* or *harsh* before top end, to describe the sound.

The graphed amplitude frequency response published in the manual shows that either description applies.

From 500 Hz to 1 kHz, there is a rise of 5 dB which is maintained through to the limit of hearing. There is also a kick up of a few dB, peaking at 80 Hz, from the venting. This was readily verified using a test CD of 1/3 octave interval sine wave signals. The vents threw quite a flow of air between 40 Hz and 100 Hz, peaking at 80 Hz, but this did not seem to translate into musical low frequency sound. There was also some vent noise.



The Music Test

Human ears are *very adaptable*, and passages of orchestral music sounded detailed in both sonic and spatial content. Other styles sounded quite acceptable as well. A little more bass would have been a bonus. Levels can be quite intense, without any brake up, in small rooms.

But, these things are so portable, and an MSP5 proved to be an excellent keyboard monitor. The real test though, was, would a pair be subtle enough as computer monitors to check out Allan Sides' Microphone Cabinet CD Rom? (available Connections' Shop)

Answer - Yes.

For \$795 each — I loved 'em to bits!

- Yamaha Music Australia, call +61 3 9693 5111



Sid's Test

Yamaha GF Series FOH Desks

Recently, Yamaha supplied a GF24/12 for review purposes. I have used a Yamaha MC1604, since the late 80s, for budget type gigs with local bands. It is still serving satisfactorily.

This GF24/12 had done the rounds of dealers and shows, and consequently arrived poorly packed and without manual — hence no quoted specs — but, it needed no explanations to use it.

It is indeed a modern compact desk (footprint smaller than the 1604) with a concept aimed squarely at the local PA operator, or self contained bands who wish to run a viable business.

There are three models in the range; the GF12/12 at \$1895, the GF16/12 at \$2295, and the GF24/12 at \$2995 (prices AS\$, RRP).

It can be said that for their designated size, the desks are bristling with input/output features, and thus represent very good value.

In the studio, the desk revealed many nice features. The combination of pad and gain pot, at top of input channel, should accommodate just about any signal level from mics, instruments, and hot modules or CD players. The E.Q. section is very typical of previous Yamaha models, with high, low, and sweepable mid, and proves very useable.

The next feature is highly commendable. It is the six long fader auxiliary section, the latter four being switchable pre/post fader. They add versatility, the desk could be used for foldback.

On the back panel, each input channel has an XLR labeled "A", and a balanced 6.5 mm jack, labeled "B". The insert is also a 6.5 mm jack.

Channels 21 through to 24 are provided with 6.5 mm jack ("A") and RCA plugs ("B"). There are also L and R master inserts, L and R auxiliary returns 1 and 2, as well as stereo tape in/out RCAs.

All input channels are equipped with PFL, whilst all outputs have AFL. The output section has L, R, and Mono XLRs. The mono out is a useful addition to the desk, for subs, or mono operation.



The phantom power is global, but also is not so thumpy when switched on — somewhat a problem in many budget desks. The desk is adequately quiet, and could be used for studio work.

But the faders feel stiff and gritty.

There is a lack of leds to indicate signal/channel state; the only leds being the overload led at the top of each input channel, the red phantom power-on led, and the four-strip LED ramp panel.

The plastic corners may not be robust enough — one being broken already. The six plastic feet (a pair in the middle) on the base make it difficult to sit on surfaces not as wide as the outer pairs of feet.

The six aux. sends on each input channel are slightly displaced to the left, giving a "wonky" appearance from some angles.

The white screen printing is almost luminous, and is easy to read in semi-dark conditions, especially on the silver-gray back.

The GF24/12 (apart from the feel of the faders) was a delight to use live.

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The Facts On EQUALISATION

BY JOHN MATHESON

This is a controversial article. John Matheson makes some personal declarations, supported by some arguments, as to good and bad equalisation devices. The publisher doesn't necessarily agree with them.

I guess that by its name, equalisation is the process of making things equal. Equalisers are frequency domain devices – they control gain at different frequencies to allow us to make it equal for all frequencies, if that is what we want to do.

Equalisers are not time domain devices (although they do have some undesirable time domain effects – notably ringing) and are therefore limited in their ability to provide useful correction to time domain problems, but more on this later.

There are many types of equaliser, some of which are easier to use than others, and some of which are best suited to particular tasks. Unfortunately in sound and acoustics, as in Animal Farm, the tendency is for some equalisers to be more equal than others!

Let's quickly review some of the reasons why we need to resort to equalisation. The first, and most obvious, is the correction of *transfer functions*. A transfer function is the effect a piece of equipment or a process has on the signal passing through it. In a simplified sense, it is the frequency response of the process, for example of a microphone.

To put it another way, if we take a sound, eg a voice or an instrument, and pass it through a non-perfect process such as a microphone, the amount the sound differs from the original is the transfer function of the process. Equalisers can only truly correct anomalies in the frequency response of the process.

The best means of equalising microphones is with the tools provided on the mixing console's input channels, which are optimised for the task. I refer the reader to my article "Unnaturally Good Vocals" in April's Connections.

I'm not going to miss this opportunity, however, to remind everyone that if you are using a directional microphone in its near-field, you must always insert a high pass filter to control subsonics and implosives, unless they are needed for an effect!!! That's why every channel on a decent mixer has a high pass filter – use it!

A second reason for equalisation is to control feedback in public address systems. Hopefully, if you read my article on feedback and equalisation in last month's Connections, you will realise by now that in most circumstances the use of equalisation to control feedback should be a last resort. It's the sledge-hammer approach – sure it works, but it's a hell of a messy way to crack a nut!

A third reason for equalisation is the creation of a signature sound. Getting vocals or snare drums to sound "just right" for a particular genre of music is an example of this. I won't spend too much time discussing this here. Again, the best tools are often those provided on the mixing console. Tom Misner's "How To Do It" series of articles in Connections are a good primer for this application of equalisation.

A fourth reason for equalisation is to correct the acoustic power response of a loudspeaker system or array. As you walk around in a room, the sound quality from the loudspeakers varies. This is really obvious when listening to "pink" noise, which should contain equal energy per octave.

In short, for every listener, or listening position, in a room there is a different and unique transfer function between the listener and the loudspeakers. The sum (average) of all these transfer functions is approximately the power response of the loudspeaker system, but more on this in a future article.

The final reason for equalisation is the correction of room response. Generally this is not a simple transfer function because it is complicated by other factors which effect our perception of sound, particularly the time response of the room, otherwise known as reverberation.

As you may have deduced, there are many transfer functions daisy-chained in a sound system and things can and do become quite messy. It's a tall order to use one equaliser in the middle to sort it all out. None-the-less, good equalisation, or lack of it, can

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The Facts On EQUALISATION

and often does make the difference between mediocre and excellent sound.

What Kind Of Knobs Would You Like On Your EQ?

Equalisers come in many flavours – graphic and parametric, digital and analogue, passive and active, boost/cut and cut-only, constant “Q” and constant bandwidth, also known as combining.

Equalisation is also surrounded by a lot of mythology, too. I’ll start by exploding some of the EQ myths; so as Julius is wont to say, letters to the editor please!

Fact 1: All equalisers are minimum phase. In fact, regardless of what type of equaliser you use to achieve a given transfer function, the phase response is dictated by the resulting transfer function not the type of equaliser! If a brand of equaliser is marketed on being minimum phase, then either the manufacturer doesn’t know what they are talking about, or they are trying to suck you in with pseudo-science – both good reasons to be sceptical of the product.

Fact 2: All equalisers “ring”. Equalisers use tuned (resonant) circuits; that’s how they work! Passive equalisers ring just as much as active, cut-only just as much as cut/boost. Try this little experiment: take a third octave equaliser, digital or analogue, or digitally controlled analogue – you choose, and push all of its faders to full scale (+12dB), then listen to some music through it. It should simply be boosting the gain of the signal by about 15 – 20dB depending on its type (constant “Q”, constant bandwidth or buggery box!).

What you will hear is an effect akin to a cheap and nasty spring reverb. Just in case you think this is a result of the excess gain, try it with all faders at full cut. After compensating for the loss of gain, it sounds just the same! Passive and cut-only equalisers ring too. By the way, I’m not claiming there isn’t any difference in the sound quality of different brands of equaliser, I’m just trying to cut through some of the crap. The moral of the story here is less is better – use equalisation sparingly.

Fact 3: Combining equalisers suck just as much as Constant “Q”. Putting this another way for the intellectually challenged – a transfer function is a transfer function is a transfer function! It doesn’t matter how you get it. Manufacturers of combining or constant bandwidth equalisers like to extol the lack of ripple in the output frequency response, which is true.

The down side of combining equalisers is that they are like stupid dogs – they won’t do some of the tricks you want them to do. Have a look at Figures 1 & 2 to see what I mean. (These figures are screen snapshots of Shure’s DFR11EQ, which is discussed later in the text.)

Choosing The Best System Equaliser For The Job

Once you have used the channel EQ on your mixer appropriately as suggested above, that leaves us to correct for the loudspeaker system’s power response and the room response. If you’ve got microphones and loudspeakers that are acoustically challenged, as I

suspect many of you will, then there maybe some feedback problems to deal with as well, but I’ll discuss that later.

Let’s assume that you have some Brand Perfect loudspeakers with ultra flat frequency responses. Bully for you! Now put your Brand Perfects in a room. The acoustic load of the room will be non-linear against frequency, and so will be the output from you now not so perfect loudspeakers. This is the first problem we can deal with easily.

By the way, Brand Perfects probably only have a flat frequency response on axis, great for the handful of people sitting where axes of the left and right systems cross (usually behind the mixing console), but too bad for everyone else. Forget the constant directivity or controlled directivity claims of loudspeaker manufacturers too – the only constant is the bullshit!

In reality, we will need to adjust the response for an average for the listening area. This is not easy. Whether you are using a real time analyser or the built-in analyser in your head, it takes a lot of experience and a lot of walking around. You can’t do it from behind a mixing console!

Of course, we don’t have Brand Perfect loudspeakers, they are not available yet. So we’ll have to compensate for the native frequency response of the loudspeakers as well. Still, as long as your loudspeakers are reasonable performers in the time domain, ie they do not have too many severe resonances, it is relatively easy to flatten their response out.

Boxes that are hard to equalise in a live (reverberant) room are those with severe cabinet resonances and/or power response anomalies. All the “plastic” box systems such as Bose 802’s, Electrovoice Sx300’s, JBL Eon’s, etc, etc. can be difficult to EQ. The best place for these types of loudspeakers is often someone else’s! That’s not to say they

useless – all three examples cited are highly portable, high performance systems.

So now we have decided what we should be equalising with the system EQ, the next step is to determine the type of equaliser to use and how to set it. In the first instance, we need to decide between using a parametric and a graphic equaliser.

Unfortunately, loudspeaker faults and room anomalies do not fall nicely on ISO standard frequency centres, so the ideal equaliser is a full parametric that allows complete control over filter centre frequency, bandwidth and gain. This approach, if properly implemented, will result in the use of the least number of filters to achieve a given transfer function, and hence conforms to the “less is better” rule of equalisation.

It’s interesting to note that this approach is also “complementary phase” which means that in correcting frequency response anomalies you will also largely correct phase anomalies as well. Graphics will never do quite as good a job because of their fixed centre frequencies.

However, parametrics do not lend themselves to adjustment without signal analysis equipment. I suggest that if you don’t have suitable test equipment, it’s probably easier to stick with the more



Figure 1: Shure's "Combining" mode equaliser. Compare the frequency response with fader positions. This is not a "graphic" equaliser!



Figure 2: Shure's "True" 1/3 octave equaliser mode. Compare the frequency response curve with Figure 1. This is a "graphic" equaliser!

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*The opinion of many in the commercial sound reinforcement industry.

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familiar graphic. Don't be fooled, however, because all graphics are not created equal, irrespective of topology, be it analogue, digital or digitally controlled analogue.

The most significant difference to understand is that between constant "Q" and constant bandwidth equalisers. Manufacturers don't usually trumpet the fact that a given model is constant bandwidth, but they sometimes misleadingly call these units "combining".

A constant bandwidth or combining equaliser is NOT a graphic equaliser, even if it has conventional slider controls. The transfer function of constant bandwidth equalisers almost never looks like the slider positions - to call them graphics is a misnomer.

Constant bandwidth equalisers are nearly impossible to set up properly, even with an analyser, because all of the bands interact. Eventually you end up with all of the faders moving towards extreme positions, just to get some mild EQ. Like plastic box loudspeakers, these units are best when used by someone else!

Some very reputable companies make these horrible things; Furman, JBL, Yamaha, Peavey, SCV, White Instruments and Klark Technic being just some of the better known. Unfortunately, just to confuse the issue, some of these companies make constant "Q" equalisers as well, for example Yamaha's GQ2031B, which looks like two GQ1031C's in one box, but definitely isn't! The GQ1031C is a vastly superior unit, if a little fiddly to use because of its short fader throw. (See Figure 3.)

Some of the best available constant "Q" equalisers in the world are made right here in Australia. If you want the ultimate analogue graphic equaliser performance, look no further than ARX. (See Figure 4.) Back in about 1986 I did a gig in the Festival Theatre for John Williams, the classical guitarist. He is a little unusual in that he does his own system EQ adjustments. Naturally

he specified Klark Technic DN27A's, which for many years were considered the "Rolls Royce" of equalisers.

I stuck an ARX in front of him and asked him to humour me. He must have liked it because the next time he came to Adelaide a year or two later, he asked for an ARX and he didn't want the Klark offered to him! And I can understand why - they are a real pain to set up.

What I can't understand is why Klark Technic persisted with the constant bandwidth design when they released the DN360, and even more staggering is that their DN3600 digital equaliser emulates a

DN27A!

This brings me to the next subject - digital equalisers. Be very wary. Don't assume that the equaliser is doing what it says it is. A classic example was Yamaha's discontinued DEQ7. Put one of those on an analyser and look at the output. Start moving lots of "faders" well off their "0" position and before long the whole thing falls apart. If you've got a DEQ7, it belongs with the plastic box loudspeakers!

Digital equalisers, or digitally controlled analogue equalisers, are great for their remote controllability and the ability to store presets, but until recently have been hellishly expensive. About the sexiest thing in EQ at the moment is Shure's DFR11EQ (see Figure 5) with Windows based control software. What's better is you don't even have to own one to play with it. The software is freely available from Shure's web site (www.shure.com).

To use a bit of techno-jargon, the DFR is feature rich with an in-built limiter, high and low pass filters, delay and dynamic notch filters for feedback control. The GUI (goopy or Graphical User Interface for the nerd naive) is particularly easy to understand and use and displays frequency responses too. There's a parametric option and even a "combining" mode for the



Figure 3: You could be forgiven for thinking the lower unit is two of the upper units in one box. It isn't!



Figure 4: The ARX EQ60 is one of the best equalisers in the world, made right here in Australia!

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The Facts On EQUALISATION

masochists out there! At \$2,350 RRP, it's bloody good value considering the savings on other outboard equipment if you use all its features.

EQ'ing Your Way To Sonic Heaven

OK, so now we've got an equaliser, how are we going to adjust it? In the first instance I always use at least a portable real time analyser. If that is what is available, you'll need to walk around a lot with pink noise playing and take a visual or mental average of what's going on. Try to flatten the average response of your listening area. It's quite an eye opener walking around like this – the frequency response will be all over the place like "Brown's cows", to quote my mother. Good luck is all I can say!

A better approach is to use analyser software like MLSSA or it's cheaper imitation CLEO, both of which require a dedicated processing card, or SIA SMAART Pro (see Figure 6) which uses the sound card in your computer. These programs allow you to average the response at several positions, then invert the resultant curve.

By plugging your equaliser in line with the analyser, you can adjust the equaliser to null out the inverted curve and BINGO you've come close to correcting the power response of the loudspeaker system at a first pass! In the not too distant future, it will be possible to download the inverted curve from SMAART Pro straight into some brands of digital equalisers, saving some virtual knob twiddling time.

A few hints on choice of analyser microphone locations won't go astray here. Firstly you don't want to sample in the new field of the

loudspeakers. Start at least five times the largest dimension of your loudspeaker array away – probably five metres for a small system, more if you've got sub-woofers.

The first point to sample is on axis, then move to new positions progressively more off axis until you reach the edge of the listening area. I usually use a microphone height of about 1.5 to 1.8 metres, rather than seated ear level, to avoid too much interference from the seat backs.

If your loudspeaker system is axis asymmetrical, which it most likely is (see Figure 7 for an extreme example!), you'll have to repeat this process twice, once along a line in the left-right audience plane and once along a line front to back, but not on axis. If you're using an axis symmetrical coaxial such as Tannoys (see Figure 8), you only need to sample along one line, and it doesn't matter which way it is; just start on the axis and work outwards.

Twelve samples is a reasonable number to record (less for a coax) and doesn't take long to do, especially if you have a remote microphone and someone to walk it around. Make sure they stand several metres away from the microphone whilst you take the samples.

Be wary of taking samples past the critical distance, which is the distance at which the reverberant sound field is stronger than the direct field. Usually there is a line on the floor, don't we all wish! The more reverberant the room, the shorter the critical distance.

Have a look at the family of frequency response samples – you should be able to see if your array is optimally aimed. Watch out for



Figure 5: Shure's DFR11EQ. Two fit in one rack width.

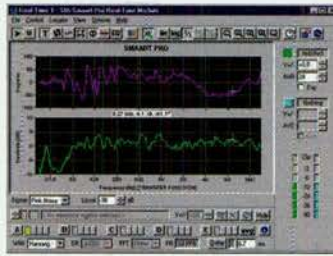


Figure 6: SIA SMAART Pro software based audio analyser in real time mode. Phase is displayed in top trace, transfer function (frequency) in bottom.



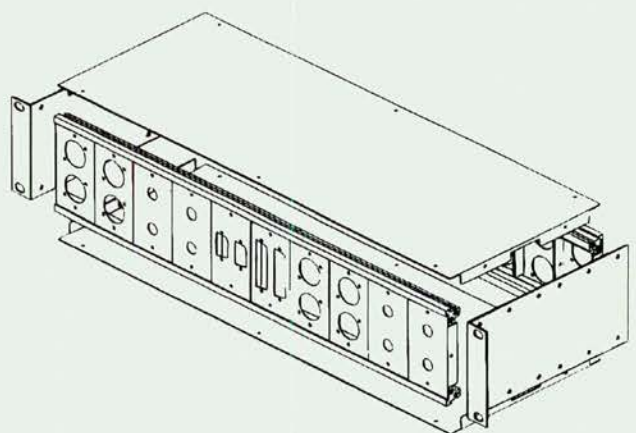
Figure 7: Non-symmetrical loudspeaker system. This one'll be a little difficult to equalise!

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The Facts On EQUALISATION

holes appearing in the frequency response just below crossover frequencies near the edges of your listening area. If all looks hunky-dory, set up your EQ's as above. Be wary of a different result from left to right channels. If the room and your array are mirror images, the EQ should be the same. If it's not, it's time to go faultfinding.

So now we have a base line equalisation which corrects for the power response of our loudspeaker/room interface. All that is left is to adjust for the room response. Generally I would expect that little or no adjustments will need to be made, but if the room has an audibly degenerative persistence at some frequencies, there is nothing to do but to reduce the gain at those frequencies until the sound quality improves.

Normally the adjustment required will be one of tapering the high frequencies or low frequencies until it sounds right – not too boomy and not too bright. It shouldn't take much. Some equalisers, such as the Meyer CP-10 (see Figure 9), have tapering controls just for this purpose. As usual, the rule is less is better. Fortunately the audience will

usually have a beneficial effect on the room acoustics, so be wary of doing too much EQ'ing on an empty room.

Finally, you may still have some feedback problems. The best option is to use dedicated dynamic or static narrow-band notch filters to pick off unstable frequencies. Many equalisers now feature these in addition to their regular filters. The trick with controlling feedback is to attune one's ears to the ringing persistence in sound that occurs before feedback begins. That way you can get on top of it before it takes off.

If you are going to "ring out" a public address system, please insert a limiter and adjust the threshold to control sound levels to a safe level during the process. Not only will you prevent damage to your loudspeakers, you may also prevent damaging your own or someone else's hearing.



Figure 8: Symmetrical loudspeakers like Tannoys are easy to equalise.



Figure 9: Meyer CP-10 parametric equaliser incorporates tapering controls for easy room compensation by ear.

John Matheson is a sound system designer with Bassett Acoustics, an independent firm of consulting engineers. Call him on +61 8 8363 1000.

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S&R

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Studio ROUNDUP



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ARTIST PRODUCER ENGINEER/PROGRAMMER NOTES

New South Wales

A# Sharp	Jeff Cripps	Tel: (02) 9153 9988	24 Tk. Analogue & 8 Tk Digital	
Hit Factory	Jeff Cripps			Demo
Anglican Youth Works	Jeff Cripps			Christian Kids CD
Grounded	Jeff Cripps			C.D.
Samoan Express	Jeff Cripps			C.D.
Ian Blakeney	Jeff Cripps			C.D.
Aphek Studio	Greg Dixon	Tel: (02) 9876 8170.	1" 16Tk + 8Tk hard disk soundcraft ghost	
The Hunchbacks	Band	Greg Dixon		Album
Imagery	Band	Greg Dixon		Album
Dearne	Dearne/GregDixon	Greg Dixon		Album
John Connell	John Connell/Greg Dixon	Greg Dixon		Album
Audioscapes. Jim Blackfoot	Tel: (02) 9550 4205.	8 x 32 Tk Protocols	24/mix.	
Monica Trapaga	Julian Gough	Jim Blackfoot		Album
Brent Street	Linda Nagle	Jim Blackfoot		Performance Backing
N.S.W. Amnes	Darrell Hilton	Jim Blackfoot		Educational
Eddie The Dinosaur	Abxaxx Animation	Jim Blackfoot		Promo
The Scoop	Julian Gough	Jim Blackfoot		Jingle
Damien Gerard Studios	Elia/Marshall	Tel: (02) 9555 1710.	2" 24 Track Music Facility	
Grinspoon	Jonathan Burnside	Russell Pilling (E)		Album
Andy Kent (You Am I)	Andy	David Trump (E)		Demos
Power Plant	Rob	Russell Pilling (E)		Single
Pete Wells	Pete	Russell Pilling (E)		Album
Geraldine Turner	Brian C. Onion	Russell Pilling (E)		Mix Down
Enrec Studio Steve Newton.	(02) 9858 2686.	Hard Disk, ADAT, Ampex /Analogue, MIDI		
John Williamson	John Williamson	Steve Newton (E)		2 Singles
Feral Studios. Jon Robertson	(02) 6299 3224.	16Tk For Real Bands.		
J.D. Brothers	Jon Robertson	Jon (E)		Album mixes
Kandi Dox It	Jon Robertson	Jon (E)		Demo's
The Roys		Jon Robertson (E)		Demo's
Exhibit A	Jon Robertson	Jon (E)		Album Tracks
Joseph Italiano	S Bowles	S. Bowles (E)		E.P.
Hindsong Studio	David & Lyn Hinds.	(02) 6582 7070	Digital Project Studio.	
Balance	David & Lyn Hinds	David & Lyn Hinds		AlbumTracks
David & Lyn Hinds	David & Lyn Hinds	David & Lyn Hinds		Jingle Remix
Hullabaloo Music. Geoff.	(02) 9906 2933			
Paul Hanna	Paul Hanna	Daniel Bowers		2 x Audio Books
'Doing Time'	Stephen Peters	Glenn Heaton		Audio Post Production
ABC Audio	ABC Audio	Daniel Bowers		Childrens Releases
Tandy	Angela Heuppauff	Glenn Heaton		TV Com. Audio Post
Igloo Recording Studios	Chris Davies/Chris Carter	(02) 4924 6822	16 Tk analogue.	
Lotus Eaters	Chris Davies	Chris Davies(E)		Demo
Licorice	Chris Davies	Chris Davies (E)		Demo
Undermine	Undermine	Chris Davies (E)		Album
Stength to Strength	Chris Davies	Chris Davies (E)		Single
Fruition	Fruition	Chris Davies (E)		Demo
JMF Recording Studio	Fran Esther	Tel: (02) 9790 4097.	32 Tk-X850 1" 24tk, 24 Tk Adat	
Inwood	Daniel Barrett	Ralph Esther (E)		Album
Commora	Band	Ralph Esther (E)		
Jonas	Jonas	Guy Saminaden (E)		Album
Robert Favotto	Robert Favotto	Ralph Esther (E)		Album
Lukstat	Band	Mike Ward (E)		Demo
Lindsay Butler Studios	Shaza Leigh	Tel: (02) 6760 5010.	32 Tr Digital, 24 & 16 Tr Analogue.	
Shaza Leigh	Lindsay Butler/Shaza Leigh			Shaza Leigh
Brian Letton	Lindsay Butler			By Request
Tracy Coster	Lindsay Butler	Lindsay Butler		New Release
Jeff Brown	Lindsay Butler	Lindsay Butler		New Release
Nu-Town Studios	Greg Hopping.	Tel: (02) 9516 3306	16 Analogue, 32 Digital - Production	
Mark Edwards	Greg Hopping	Sofie Lorou (PR)		Demos
Anita Spring	Greg Hopping/Kylie Neven	Sofie Lorou (PR)		Album
Jai Jones	Greg Hopping	Greg Hopping (E)		Single
Navigator	Greg Hopping/Sonny Agirillo	Sofie Lorou (PR)		Single
Exude	Hopping/Lorou	Hopping(E) Lorou (PR)		Remix
Paradise Studios	Bill Field	(02) 9357 1599	MCI JH16/24, Studer A800; Automation	
Nancy Vandal	Whitten/Band	Tim Whitten		Mixing Album
Preshrunk	Stavrou/Band	Mike Stavrou		Mixing E.P.
Gina Jeffreys	Jeff McCormack	Whitten/Nyle		Album Tracking
Phillipa Nyle	Whitten/Nyle	Tim Whitten		Album Mixing
Whitlams	Denholm	Dan Denholm		Album Trackin
Q Recording	Richard Muecke	Tel: (02) 9212 4851.	2" Analogue	
Steve Prestwich	Steve Prestwich/Ike Brunt	Richard Muecke		Album
Segression	Segression/Richard Muecke	Richard Muecke		Album
Louis Tillet	Louis Tillet	Richard Muecke		Live Album-Mix
Bich	Dave Leslie	Mik Seage		E.P.
Richard Clapton	Richard Clapton/David Nicholas	David Nicholas		Mix
Rockinghorse	Anthony Lycenko	Tel: (02) 6688 4005.	48 Ch Neve, Studer 24 Trk, ProTools	
Pirol	Christian Pyle	Anthony Lycenko (E)		Album Mixing

Bharti	Artist	Michael Worthington (E)	Tracking
Scott Tinkler & Greg Sheen	Artist	Anthony Lycenko (E)	Album Tracking
Beau Brummels	peter Noble	Michael Worthington (E)	Remastering
Dave Duddley	Peter Noble	Michael Worthington (E)	Remastering
Sony Music Studio	Melissah Kochel	Tel: (02) 9383 6461	24 Tr Anal/D Video/Audio Post.
Storm & Serenity	Storm & Serenity	Louise Taylor (E)	Demos
Zoom	Simon Tonx	Simon Tonx (E)	Album
Human Nature	Human Nature	Simon Tonx (E)	Demos
Elsewhere Fine	Elsewhere Fine	Tod Deeley (E)	E.P.
Lisa Brayshaw	Lisa	Ross Ahern (E)	Demos
Soundwarp	Meredith Brooks	Tel: (02) 9905 7144.	Mastering
Various	Andrew Kotatko	Meredith Brooks	Tracks for film
Various - "Contact"	David Holmes	Meredith Brooks	Album
"Sharko Crusoe"	Jack Lloyd	Bill Syratt	CD Rom
Duncan Appleby	Duncan	Bill Syratt	Demos
Cara Lyn	Carolyn Crawford	Meredith Brooks	Albums
Studios 301 Mastering	Jacqui Espie	Tel: (02) 9211 7301	CD Mastering Facility
Troy Cassar-Daley	Garth Porter	Steve Smart (E)	Forthcoming Album
Simone Hardy	Victor Van Vught	Don Bartley (E)	Forthcoming Album
Lino	Lino	Steve Smart (E)	"Wasted" single
Regurgitator	Magoo	Steve Smart (E)	Forthcoming Album
Richard Clapton	Richard Clapton	Don Bartley (E)	Double Anthology
Spider Bait	Phillip McKellar	Steve Smart (E)	"Plastic" single
Studios 301 Recording	Suse Fewster	Tel: (02) 9211 7301	64 Channel SSL-G series
The Whitlams	Rob Taylor	Rob Taylor	Mixing continues
SureShot Studios	Kev Tel: (02) 9679 9628	16 Track digital studios with CD burning	
Uncovered	Kevin Ballard	Kevin Ballard	Demos
Why Not	Kevin Ballard	Kevin Ballard	CD
Jedd	Kevin Ballard	Kevin Ballard	CD
Top Cat Recording Studio	Brad Wann	Tel: (02) 6628 0843.	24 Tk 1" An, 24Tk Dig & Master'g
Dalo Alto	Band	Brad Wann (E)	EP Tracking & Mixdown
Six Seconds Slower	Brad Wann	Brad Wann (E)	EP Tracking
Seven	Brad Wann	Brad Wann (E)	EP Tracking
Richard Gutwin	Brad Wann	Brad Wann (E)	Album Tracking
Chillblaine	Brad Wann	Brad Wann (E)	EP Mixdown
Trackdown Digital	Mike Duffy	Tel: (02) 9550 6890.	2-64 Tk. Digital, Post Audio & Music
Magic Pudding	Chris Harriott	S. Leadley (E)	Feature film
Hi 5	Chris Harriot	S. Leadley (E)/D. Candusso (E)	Album
Flipper	Yoram Gross/EMTV	T. Ryan (E) T. Lista (E) D. Candusso (E)	Post
The Healing Wave	Hugh Benjamin	A. Belletty (E), R. Sanderson (E)	Doco
Cut	Mushroom films	G. Cross (E/P), S. Leadley (E)	Film
Troy Horse Mickey	Levis	Tel: (02) 9319 1799	24 Trk fully automated
Jigzag	Peter Kennard	Colin Wright (E)	Album
Fields	Band/Blicka	Blicka (E/P)	Album
Caviar	Band/Worrall	Mark Worrall (E)	EP
Wildcat	Veterli/Worrall	Mark Worrall (E)	EP
Peg	Tony Bonza	Jason Blackwell (E)	Album
Velvet Sound Recording	Studios Dave McCunn	Tel: (02) 9267 2915.	32 Ch./24 Tk. 2"
Belle's Pocket	Steve James	Steve James (E)	Album Tracking
A Clockwork Orange	Ava Larkin	Paul Searles (E/PR)	Stage Musical Score
Cryogenic	Tony Jarrett	Adrian Grigorieff (E)	Album Tracking
Jo Membroery	Steve Balbi	Tony Wall (E/PR)	EP track & mix
Junket	Band	Tony Wall	EP track & mix

Queensland

Sound Barrier Recording	Alan Andrewartha	Tel: (07) 4055 9938	16-24 Tr Analogue/Digital
"Birdwing"	Band/Alan Andrewartha	Alan Andrewartha (E)	Demo tracks
"Harry Orbit"	Band/Alan Andrewartha	Alan Andrewartha (E)	Album tracks
Yarrabah State School	Paul Samson	Alan Andrewartha (E)	Project CD
"Crossbow"	Alan Andrewartha	Alan Andrewartha (E)	Demo tracks
Taramalin Sound	Allan Lahey	Tel: (07) 3208 9736	24 Tracks Analogue & digital: Pro Tools
Jerry Harrington	Jerry Harrington	A. Lahey	DVD
Damon Fealy	Damon Fealy	A. Lahey	Acoustic Demo
Pickford Jones	Stewart Stewart	A. Lahey	Drum Tracks
Joist & The Jay	Vaughn Jones/Mick Martin	A. Lahey	Mastering
David Chittick	David Chittick	A. Lahey	Mastering
Vandersound Studios	Eric Vandersande	Tel: (07) 5546 8100.	All Digital & Valve, ADAT/XT
Ian Francis		Andrew Hines (E)	Mix Album
Mystery of Sixes	Les Jobson/Andrew Hines	Andrew Hines (E)	Mix Demo
The Hub	S. Mulready/A. Hines	Scott Mulready (E)	Demo

South Australia

Disk-Edits	Belinda Kent	Tel: (08) 8340 1377	Pre-Mastering, Post Production, CD & Cassette
My Artic Surrender	C. Wilton/G. Truman	Neville Clark (E)	CD release
King Pin	J. Redgate/S. Marcovic	Neville Clark (E)	CD release
Sugar Pill	M. Arezio/S. Staben	Neville Clark (E)	CD release
Lez Karski	L. Karski/M. Wordley	Neville Clark (E)	CD release
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Audio Post in Perth

An Industry Sampler, by Andy Ciddor

ABC Television

ABC television in Perth has long been involved with post for co-produced and outside productions. The facility currently is based around an Edi-Tracker digital editing system driving a two-inch analogue multi-track recorder and mixing down to Dolby SR through a Neve desk, although various Digital Audio Workstations are currently under consideration.

The most recent project was the documentary series *Winds of Change* for Electric Pictures, shortly to be screened on TVHK, the BBC and SBS in Australia.

Double G Post

Double G are a full service post production house offering a 35mm film scanner, 3D modelling and animation and both linear (digital betacam) and non-linear (Flame/Inferno) video editing in addition to the two audio post suites. Equipped with matching DSP Poststations, each suite has a fully floating ADR/Foley studio, while the larger suite also provides Dolby Surround capabilities and a musician's workstation which is commonly used for scored commercials.

Although Double G have a library of 60,000 music and effects tracks, a composer is also available on call to score productions. Recent work has included commercials for Toyota's *Hot Hot* campaign, Murdoch University, *Diving School*, a seven part documentary series for the ABC/Channel 5/ Discovery Channel, annual reports for Wesfarmers, the replay inserts for the WA Lotteries Commission's *Peak Performance Awards* and full post production of the short film *Pilbara Pearl*.

Editel

A complete range of video production services are available from Editel, ranging from in-house producers through to a video studio and full video post production with a Quantel Editbox with HAL for on-line work and Avid media Composer for off-line. The audio post facility features a DSP Poststation with a Yamaha O2R and eight-channel output into a Sony PCM 7040 recorder.

The majority of Editel's work is ADR and sweetening in the broadcast commercial and corporate production areas. Recent corporate projects include productions for BHP, Sandalford Wines, Dampier Salt and BankWest. On the drama side, Editel have completed the audio post for twenty-six episodes of *Fast Tracks* for Barron Entertainment.

Flash Frames

A complete range of post production services for video and sound are on offer at Flash frames. On-line video editing is available through either a Quantel Editbox Magnum for non-linear or a Grass valley Group analogue linear system whilst off-line facilities include two Avid non-linear systems and 3D image composition from 3D Studio Max.

Audio post facilities at Flash Frames are built around a Sonic Solutions Digital Audio Workstation and an 8 bus Mackie desk. The principal work undertaken by Flash Frames is high-end television commercials, although recent projects have included corporate documentaries for Preston Resources and Westrac Equipment, commercials for the Blockbuster Video chain and the *WA at Your Service* program for NEW10.

Hamdon Sound Studio

The Fairlight MFX plus based system at Hamdon Studios is used for ADR and effects track laying and mixing on a wide variety of corporate and commercial production projects in addition to the documentary *Whale Song* for Storyteller, the science fiction feature *Pitch Black* for Skywalker Sound/Lucasfilm and *Big Sky*.

Planet Sound Studios

Now back in Australian hands after being purchased by Kevin Peek in February of 1999 from its former Japanese owners, Planet is transforming one of its music studios into a post production facility with the addition of a SADiE Octavia + Portia for hard disk recording, editing and mastering and the modification of the 'live' room into a Foley studio.

Planet have recently completed a 90 minute documentary special *The Princess* for National Geographic and The Discovery Channel and are currently working on the music, dialog and effects for the animated series *Ginger Meggs* which will be seen on Network Seven.

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Studio ROUNDUP

Burn baby burn

The other day, as we were walking through Myer, the kid said to me "Dad, can we get that Abba CD there. They play it at school."

My heart skipped a beat.

The wheel of cool has obviously turned full circle if an 8 year old likes Abba!

I looked at the CD - Abba Gold - special signature version, with the signatures printed on the CD case in gold. - \$28.95 for a collection of tracks that had already made so much money 25 years ago that the CD could be given away free and not lose money!

Hmm, no wonder re-issuing CDs is such a goldmine for record companies.*

"I haven't got enough money on me today," I told her. "I'll see what I can do later."

Bigger that, I thought to myself. I already have all these tracks on the original vinyl albums. Buying all four of them (Arrival marks the end of their golden period, in my opinion) on vinyl had cost me less money than the CD greatest hits re-issue.

And I've got a CD burner. And a stack of music software, an Aphex type C, an ARX EQ60, MIXXmaster and Afterburner (surprise, surprise!). And I've already paid for these songs. Why should I pay again?

That, I suspect, is the problem for the record companies. Their monopoly is rapidly eroding. Let's not discuss Internet distribution just yet, but stick to CDs. There must be millions of aging baby boomers like myself out there, with a decent computer, a CD burner, and a stack of vinyl. If you've got an ear for music, and a program like Sound Forge or Cool Edit Pro, a decent stylus (and a working turntable - not that easy to find!) then what's stopping you doing it?

Because, to be brutally honest, it seems to be hard to make a worse job of re-mastering than the record companies do.

Want an example? OK. The Jimmy Barnes double CD of re-mastered hits. One of the guys at work had this, and was listening to it on his Walkman while he busily soldered his fingers together. I had a look through the tracklist on the cover. All the hits were there.

"Can I borrow it?" I asked. I've always been a bit of a post-Chisel, but pre-peroxide Barnesy fan, and if I liked this then I'd probably go and buy it. Finding it hard to say no to one of the bosses, he naturally agreed!

I took the CDs home, popped the one with Working Class Man on it into the CD player, sat back and - Wow - what a disappointment.

That delicious fat, slammin' singles sound was replaced by blandified, meticulously cleaned up pristine quality tracks, with all the energy of a Volvo in quicksand. There

was nothing at all there that would make you want to jump out of your seat, pour a jug of beer over your head and throw yourself around the dance floor. And isn't that what it's all about?

I pulled out one of my boxes of 45s marked 80's and rummaged through it for the vinyl single, found it, then slipped it onto the turntable. Ah, what a relief - there was that BIG sound I remembered, the total 'in your face' excitement of a really well produced single.

I took the CD back to work, said thanks but no thanks, and decided to transfer all the Barnesy singles onto a CD. Total cost? A bit of time doing it, but a labour of love really,

since it gave me the opportunity to study the production process of the tracks in great detail.

It was great fun, and I decided I would transfer all my favourite tracks to CD. Doing this rather than buying reissues lets you play producer to some extent, and fix up anything that you'd like to

change. Who amongst us, for example, hasn't thought that Bob Seger's Old Time Rock and Roll could use a lot more bottom end? Or maybe it would be nice to hear some of the bass guitar on Status Quo tracks. Well now you can dial up enough bottom end to blow the speaker cones across the room if you like.

Personally I always felt that the Rolling Stones Wanna be Your Man (yes I know I'm an old fart, no need to tell me!) was a bit short at 1 minute 27 seconds, so I repeated the solo and chorus - now it's just right. And so on

Anyway, to return to Abba, I thought I'd do the same thing. So I dug out the albums, picked out the hits off them, and transferred them into the computer. And I tell you what, they might not be everyone's cup of tea, but the production values of the songs are superb. Trivia for Abba fans - the Ring Ring album was originally released as being, not by Abba, but by Bjorn, Benny, Anna and Frida (see pic). I guess that pretty early on they must have realised that Abba was a bit easier for non-Scandinavians to say!

Cleaning up the intros and outros, normalizing the levels, and other tweaking took about 3 nights work all up, then I burned the tracks onto a CD, wrote their names in gold text on the front, and showed it to the kid a couple of days later.

"Oh, that's great Dad," she said. "Actually I only wanted to listen to Ring Ring, but thanks anyway!"

-Duncan Fry



* A record company accountant was asked if his company had ever made mistakes in artists' royalty payments. "Oh, yes, quite often," he agreed. And were these mistakes ever in the artists' favour? "Oh no, never" he smiled.

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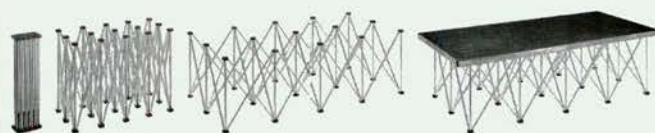
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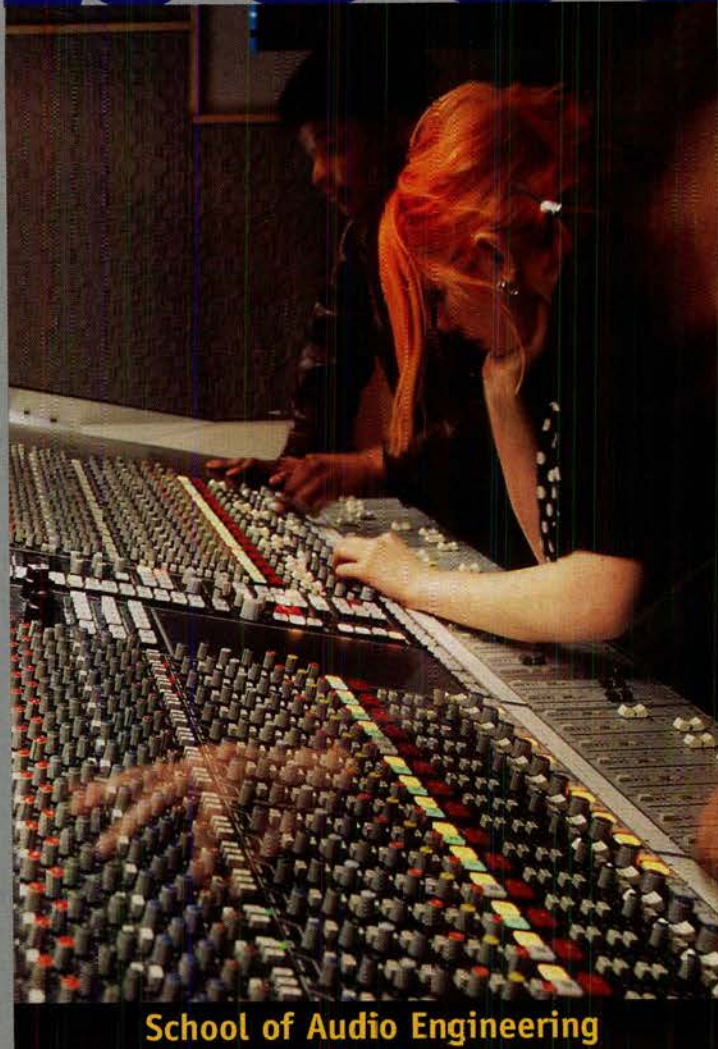
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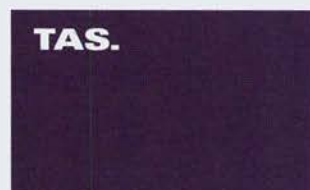
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Email: crystal@greatcircle.net.au
Contact Name: Joe Ca'ra.
Dedicated audio mastering suite with Sonic Solutions, Apogee UV22, time aligned main monitoring, Genelec nearfields and hi-end analogue or digital processing. Mastering also available for 'Enhanced' CD projects. Recent clients include; Horsehead, Plasticine, Kismet, Ice Cream Hands, Magic Dirt, Oscarlina & Superheist. Recent enhanced CD mastering completed for Bodyjar, Nancy Vardal & Frenzal Rhomb.

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Dex Audio

CD & Tape Production, CD Manufacturing
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Fax: (03) 9376 5118
Email: dexaudio@rucc.net.au
Contact Name: Paul Rigby
Established for 21 years. Dex manufactures CDs, CD ROMs and Cassettes. Burns short runs of CDs and ROMs, has digital mastering, graphic design and printing.

Dex Mastering

Audio Mastering & Restoration
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Email: mart@edensound.com.au
Web site address:
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Contact Name: Martin Pullan.
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Midi and audio arrangements, backings, digital recordings, CD's tapes, orchestral scores, music transcribed, multitrack recording compositions.

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Jets Studios

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Fax: (03) 9466 9192.
Contact Name: Mark Hobbs.
Banyule City Council Youth Service project. \$25 Rehearsals. \$20/hour. 16 track digital recordings.

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Fax: (03) 9701 6005.
Email: lorizzo@one.net.au
Contact Name: Marcello Lo Ricco.
24tk logic audio platinum, 16tk ADAT XT, Midi programming facilities, various microphones and outboard equipment.

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Fax: (03) 5474 2844.
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Analogue Hammond, Leslie, Wurliizer, etc. specialists in acoustic instruments. Beautiful country retreat 1 hr 10 mins north of Melbourne.

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Full service recording studio. Servicing film, television, radio, advertising, multimedia and music. Incorporating casting sound design, music production. DVD audio production, mixing and post production. State of the art digital equipment. 2 voice production studios and mixdown suite (studio 3). Facilities Toni Wright. Marketing Brad Fry.

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Web site address:
musicandeffects.com
Contact Name: Victor de Koster
Sound post production for film and
television. Ad format Dolby mixing.

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Recording Studio.
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mics and outboard gear.

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Specializing in acoustic based music
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Latest fully optioned protocols system.
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STUDIO 52

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Manufacturers and wholesaler of
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Sonic solutions audio mastering with
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buyers guide::

AMPLIFIERS

Prices INCLUDE sales tax and were correct on 15th September 1999. All care taken, no responsibility for errors. Four models only are shown in each category although these manufacturers have many more. Indicative only.

COMMERCIAL/100v

ARX

ARX Systems Pty Ltd +61 3 9555 7859
ZR350C Dual ch. 10Cv line amp. 2RU, Bal jack and XLR in, Speakons out, Signal and clip LEDs, level controls. 100 Ws RMS/ch. into a 100v line. ZR550C and ZR850C also available. \$1692.75

Cinema Pro CP550 Dual ch. cinema amp with onboard 2 way 24db/octave crossover. 2RU, Bal XLR in, Speakons out, Signal and clip LEDs, rear panel level controls. 200 Ws RMS/ch. into 8 ohms. CP850 also available. \$1972.75

PowerDrive LITE Unique Three ch. (A, B and Sub) amp with onboard speaker processing. 2RU, Bal jack and XLR in, Speakons out, Signal and clip LEDs, level controls. Sep access to Sub ch. for full bandwidth use, eg. mors. A and B 250 Ws RMS/ 8 ohms, Sub 460 Ws RMS/ 4 ohms. \$2702.

MicroDrive Unique Three ch. (A, B and Sub) amp with onboard speaker processing. 2RU, Bal jack and XLR in, Speakons out, Signal and clip LEDs, level controls. Sep access to Sub ch. for full bandwidth use, eg. mors. A and B 250 Ws RMS/ 4 ohms, Sub 320 Ws RMS/ 4 ohms. \$2536.50.

AUDIO TELEX

Audio Telex +61 2 5647 1411

IC30 compact reliable mixer amp, features 3 bal XLR microphone inputs and dual RCA phono inputs. 100v, 70v and 4 ohm outputs. Optional vox muting on ch.s two and three from input one. \$304.

ACM120 Aus made mixer amps, four universal inputs with bal XLR and dual RCA inputs. 100v, 70v, 4 and 8 ohm outputs. Inbuilt four tone generator, vox muting and phantom power. \$695.

ACM250 Aus made 250W mixer amp. six universal inputs, 100v, 70v and 4 ohm outputs. Phantom power, tone generators, muting and extensive protection system are all standard. \$695

SA120 premium range of mixer amps. 6 universal inputs, bal output, tape output, insert point are all standard features. Rack mounting is standard, whilst muting and tones are optional features. \$952.

BGW

Group Technologies Australasia +61 3 9872 5000

PS4 440W 8 oh /925W 2 ohm. Conservative FTC rating. Switchable limiting, high pass filters, THX, ultra-efficient power supply enabling remarkable headroom. \$6000.

PS3 FTC 330W 8 ohm/700W 2 ohm. Same features as PS4. And like the PS4, built like a tank! \$4000.

Millennium 3 THX or constant voltage amp. Can deliver 500x500W into 100 volt line or 450W FTC 4 ohm. Strong enough to take on the road. Cinema TMC-2 card features. \$4000.
Grand Touring Series 2 x 1000W per ch.. Capable of driving 1 ohm. No compromise touring amp, unequalled in engineering, reliability and stability at low impedance. \$7000.

BIAMP

EAV Technology +61 3 9417 1835

CPA 130 dual 65w/ch. into 4 ohms passively cooled. Optional 2E/70/100 volt transformers. \$1373.

CPA 650 dual 325w/ch. into 4 ohms passively cooled. Optional 2E/70/100 volt transformers. \$1830.

CREST AUDIO

Production Audio Services +61 3 9415 1585
CKV Series CKV00 3RU, 400wpc, 70.7V.

CKV1600 4RU, 800wpc, 70.7V. CKV2400 4RU, 1200wpc, 70.7V. From \$5495.

CROWN

Jand's Electronics +61 2 5582 0909

CT Series Comtech. The CT range of amplifiers feature the ability to handle both low impedance and constant voltage applications (switchable per ch.) within the one amp, without the need for step up transformers. The CT range is also fully PIP-2 compatible and comes in a number of power sizes - CT210 -150W/ch, CT410 - 240W/ch, CT810 - 490W/ch and CT-1610 870W/ch. Backed by Crown's famous 3 Year NO FAULT warranty 2/3RU. From \$2395.

ELECTRO VOICE

TELEX/EVI +61 2 9648 3455

2504 4 Ch. auto mixer. \$5,077.

2505 4 Ch. auto mixer. \$5,682.0

2508 8 Ch. auto mixer. \$7,607.

2509 8 Ch. auto mixer/with remote. \$8,465.

INTER.M

Magna Systems & Engineering +61 2 9417 1111

PA4000 120w RMS; 6 switchable line; mic input; 5 spk zone selector; 3 band graphic; priority muting. \$700.

PA2000 60w RMS; 6 swtchable line; mic input; 5 spk zone selector; 3 band graphic; priority muting. \$630.

PA1000B 30w RMS; inputs: Mic 1, Mic 2, Aux; priority muting. \$300.

PAM 120 120w RMS; 6 line/mic input; 5 spk zone selector; sep high/med/low controls on each ch.; phantom power; AC/DA. \$900.

QSC AUDIO

Technical Audio Group +61 2 9810 5300

USA400/OT185 Two Ch. 185w/Ch @100v. 3RU. 15Kg. Convection Cooled. Neutrik Combo Inputs. Switchable Limiter and Low-Freq. Filter. Short-Circuit. Open-Circuit. Thermal. Ultrasonic & RF Protection. \$1,795.

CX4T Two Ch. with Internal Output Transformers. 175 Ws/ch @ 100v. 2RU. 18Kg. Two Speed Fan. Low-Freq. Filter. Short-Circuit, Open-Circuit, Thermal, Ultrasonic & RF Protection. \$2,395.

CX6T Two Ch. with Internal Output Transformers. 250 Ws/ch @ 100v. 3RU. 25Kg. Two Speed Fan. Low-Freq. Filter. Short-Circuit, Open-Circuit, Thermal, Ultrasonic & RF Protection. \$2,995.

CX12T Two Ch. with Internal Output Transformers. 500 Ws/ch @ 100v. 3RU. 35Kg. Two Speed Fan. Low-Freq. Filter. Short-Circuit, Open-Circuit, Thermal, Ultrasonic & RF Protection. \$3,995.

PHONIC

CMC Music +61 2 9905 2511

Icon 300 2 x 150W @ 100V/70V; 2 x 300W (2 ohms); 2 x 200W (4 ohms); 2 x 120W (8 ohms). XLR in/out plus barrier strip 25, 70, 100V. Full protection; high pass filter; 2 speed fan cooling.
Icon 700 as Icon 300. 2 x 350W @ 100V/70V; 2 x 550W (2 ohms); 2 x 400W (4 ohms); 2 x 240W (8 ohms).

RANE CORPORATION

Jand's Electronics +61 2 9582 0909

MA3 Multich. Amp: 3x40W @ 8 ohms; Input Limiters; Quiet Fan; E:roblock In/Out. 70.7/100V transformers also available. 2RU. \$2195.
MA6S Multich. Amp: 6x150W @ 4 ohms; Input Limiters; Quiet Fan; E:roblock In/Out. DC Power Kit adapts MA6s for +/- 24VDC Operation and output 70.7/100V transformers also available. 3RU. \$4995.

REDBACK

Altronic Distributors +61 8 9328 2199

A 1826/36 125/250W Models, 6 selectable inputs, AGC, Overload, Signal and VU LED indicators, AGC limiting, fan cooling, 100V / 70V, 4-16, 24VDC operation, Aus Made, 5 year warranty. \$899/\$1099.

A 1824/25/34/44 125,125 x 2, 250, 50CW Power Amps, AGC, Overload, Signal and VU LED indicators, AGC Limiting, fan cooling, 100V / 70V, 4-16, 24VDC operation, Aus Made 5 year warranty. \$699, \$1249, \$899, \$1495.

A 1820125W, 5 zone speaker selector, vox muting, 6 inputs (4 mics or 6 aux). Pre-announcement chime, MOH output, telephone paging input, overload protection, 24/24V power operation. \$699.

A 2001/03/11 30/40/60W Models, PTT muting, bal microphone inputs, stereo aux inputs, optional vox muting, 100V, 4-16?, 24VDC operation (A2003/11), 2 year warranty, Aus Made. \$279/\$399/\$499.

MILES

Horwood Australia +61 2 9585 1011

MPR-450S 6 ch. amp; 60w/ch. @ 8 ohms; 75w/ch. @ 4 ohms; bal input; varispeed longlife fans; output can be bridged; drives any load impedance. \$2995.

MPR-500S 3 ch. amp; 1RU high; 180w/ch. @ 4 ohms; 140w/ch. @ 8 ohms; 70 volt option available; for distributed systems and studio mons. \$3795.

MPR-1K big brother to MPR-450; same features but more power; 6 ch.s; 110w/ch. @ 8 ohms; 170w/ch. @ 4 ohms; 70 volt option available. \$5950.

YAMAHA

Yamaha Music Australia +61 3 9693 5185

PA050 4 ch. amp. 50 W per ch. @ 8 ohms or 140 W stereo, 1RU. \$2295.

XH150 High Impedance Distribution Amp: 150W per ch. with selectable impedances of 64 ohms (100V) or 32 ohms (70V); low cut & high cut filters; XLR and barrier strip inputs/barrier strip outputs; 16kg. \$1295.

XS350 Stereo 230W / CH @ 8 ohms, 350 W / CH @ 4 ohms, 700 W bridged. A & B ch. variable filters (LPF 25Hz-125Hz) for sub-woofer systems. Low Cut switch. 31 position precision attenuators, stereo/ bridge/ parallel modes, XLR & barrier strip inputs, barrier strip & binding post outs, comprehensive protection circuitry, variable fan speed and signal/clip/protection/power LEDs. 20Kg, 3RU. \$1295.

PA450 Stereo 460W / CH @ 8 ohms, 620 W / CH @ 4 ohms, 1240 W bridged. 15Kg, 2RU w/EEE Technology. \$1795.

PA

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Acoustic Technologies +61 7 3376-4122

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M-1000B SERIES 2 two ch.s @ 500 Ws. ch. into 4 ohms, 1200 Ws bridge. Level controls, - 20dB and clip indicators, XLR input and output connectors. 2RU 16.5KG. \$2495.

AMERICAN DJ

American DJ Australia +61 2 9568 2100

V1000 130w RMS per ch.; DC, overload, short circuit and on/off protection; dual speed fans + heatsink. \$599.

V2000 250w RMS per ch.; DC, overload, short circuit and on/off protection; dual 2 speed fans + heatsink; front panel reset; 2 limiters and H/P filters 30Hz, 50Hz. Turn-on thump protection. \$349.

ARX

ARX Systems Pty Ltd +61 3 9555 7859

ZR350 Dual ch. power amp. 2RU, Bal jack/ XLR in, Speakons out, status LEDs, level controls. 'Headroom Enhance' circuitry, Plugin crossover or speaker processor modules. 150 Ws RMS/ 4 ohms per ch.. ZR550 and ZR850 also available. \$1440.

SX1500 Powerful Dual ch. power amp. 2RU, Bal XLR in and loop out, Speakons out, Status LEDs, level controls, heavy duty power supply. 'Headroom Enhance' circuitry. 650 Ws RMS/ 4 ohms per ch.. A real PA workhorse! SX3000 @ 1,000 W RMS/ 4 ohms also available. \$2487.

ZX3200 Powerful Low Impedance model dual ch. power amp. 2RU, Bal XLR in and loop out, Speakons out, Status LEDs, level controls, massive power supply, multiple dual output devices. 'Headroom Enhance' circuitry. 700W RMS into 8 ohms, 1000W RMS into 4 ohms, 1250W RMS into 2 ohms, 2000W Bridged into 8 ohms, 2500 into 4 ohms. \$3376.

PowerDrive Powerful Three ch. (A, B and Sub) amp with onboard ISC speaker processing. 2RU, XLR in, Speakons out, Signal and clip LEDs, level controls. Sep line outs for connecting other amps. A and B 580 Ws RMS/ 4 ohms, Sub 1050 Ws RMS/ 2 ohms. PowerDrive LITE installation model also available. \$3718.50.

AUS MON

Audio Telex +61 2 9647 1411

PA800 Four hundred Ws per side into 4 ohms, dual speed twin fan cooling, optional limiter and filter cards, speakon and binding post outputs, 21 position detented attenuators and the reliability that AM are famous for, make this amp unbeatable value. \$1499.

PA1200 Four hundred Ws per side into 4 ohms, dual speed twin fan cooling, optional limiter and filter cards, speakon and binding post outputs, 21 position detented attenuators and the reliability that AM are famous for, make this amp unbeatable value. \$1847.

cx100 Six sep one hundred W amps in a two rack unit chassis. Each of the six amps delivers 100 Ws into 4 ohms. Optional 100v outputs are available making this amp suitable for multi zone paging systems for clubs, schools etc. \$3016.

AM3002 The "big brother" delivers a massive 1180 Ws per ch. into 4 ohms or 3200 Ws bridged at 4 ohms. Features include inrush current suppression protection, short circuit protection and indication, high efficiency toroidal mains transformer and a super efficient cooling system. 3ru. \$3997.

BGW

Group Technologies Australasia +61 3 9872 5000

PS4 440W 8 oh /925W 2 ohm. Conservative FTC rating. Switchable limiting, high pass filters, THX, ultra-efficient power supply enabling remarkable headroom. \$6000.

PS3 FTC 330W 8 ohm/700W 2 ohm. Same features as PS4. And like the PS4, built like a tank! \$4000.

Millennium 3 THX or constant voltage amp. Can deliver 500x500W into 100 volt line or 450W FTC 4 ohm. Strong enough to take on the road. Cinema TMC-2 card features. \$4000.
Grand Touring Series 2 x 1000W per ch.. Capable of driving 1 ohm. No compromise touring amp, unequalled in engineering, reliability and stability at low impedance. \$7000.

CREST AUDIO

Production Audio Services +61 3 9415 1585

CA Series CA6 2RU unit, 600W, 4ohms stereo. CA9 2RU unit, 900W, 4ohms stereo. CA12 3RU

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unit, 1200W, 4 ohms stereo. CA18 3RU unit, 1800W, 4 ohms stereo. From \$3250.

V/Vs Series V/Vs 900 3RU, 450W, 4 ohms stereo. V/Vs1100 3RU, 550W, 4 ohms stereo. V/Vs 1500 3RU, 750W, 4 ohms stereo. From \$1795.

CKS Series CKS8002 3RU, 800wpc, 2 ohms. CKS12002 4RU, 1100wpc, 2 ohms. CKS16002 4RU, 1400wpc, 2 ohms. From \$6595.

Pro Series 8001 3RU, 1225wpc, 4 ohms stereo. 9001 3RU, 2200wpc, 4 ohms stereo. 10001 4RU, 5000wpc, 2 ohms stereo. 10004 4RU, 1224wpc, 4 ohms x 4 ch.s. From \$ 8350.

CROWN

Jands Electronics +61 2 9582 0909

CE Series CE 1000 - 560 W/ch(15kgs). CE 2000 - 975 W/ch (18kgs). The CE range features XLR, " " and barrier strip inputs and speaker outputs, input compressors, removable front panel controls and proportional speed fans. Optional SST modules add crossovers for an all in one solution to loudspeaker drive. Backed by Crown's famous 3 Year NO FAULT warranty. 3RU. from \$1695.

MA Series Macrotech. Models include MA-600, MA-1200, MA2400, MA3600VZ, MA5000VZ as well as MA24x6 and MA36x12 biamp models. Power ranges from 400W/ch to 2500W/ch (2 ohms). All amps feature ODEP protection, IOC indicators and PIP compatibility, allowing a plethora of combinations of smart amp and signal processing to be made. Backed by Crown's famous 3 Year NO FAULT warranty. 2/3RU. from \$3395.

MT Series Microtech. Models include MT-600, MT-1200 and MT2400. Similar to the Macrotech series above, but without PIP compatibility and with only protection indicators on the front panel. Power ranges from 400 W/ch to 1050 W/ch. Backed by Crown's famous 3 Year NO FAULT warranty. 2RU. from \$2695.

K Series The K Series feature Crown's BCA technology, generating about 1/10 of the heat of a conventional amp design. The sealed chassis and convection cooling mean low maintenance and very low operating noise. Available in two sizes, the K1 (750 W/ch) and the K2 (1250W / ch). Backed by Crown's famous 3 Year NO FAULT warranty. 2RU. from \$3895.

CYBERLOGIC

System Sales +61 3 95292633

CyberLogic NC812 series 8 ch powerframe, 1400 Ws 2 /ch. Railset™: ch. independent tailoring of voltage rail to exact load/loudspeaker requirement - ultimate protection, no headroom or clarity sacrifice. Up to RRP \$21,726

CyberLogic NC807 series 8 ch powerframe, 900 Ws 2 /ch. Railset™: ch. independent tailoring of voltage rail to exact load/loudspeaker requirement - ultimate protection, no headroom or clarity sacrifice. Up to RRP \$17,816

CyberLogic NC412 series 4 ch powerframe, 1400 Ws 2 /ch. Railset™: ch. independent tailoring of voltage rail to exact load/loudspeaker requirement - ultimate protection, no headroom or clarity sacrifice. Up to RRP \$10,875

CyberLogic NC407 series 4 ch powerframe, 900 Ws 2 /ch. Railset™: ch. independent tailoring of voltage rail to exact load/loudspeaker requirement - ultimate protection, no headroom or clarity sacrifice. Up to RRP \$9,038.

dB

CMI +61 3 9315 2244

MPA-1004 Stereo Amp. 500w RMS @ 4W/310w RMS @ 8W. Bridged 1000w RMS @ 8W DC, RFI, Soft Start and Short Circuit Protected; Mains, Peak, Audi Signal, Protection LED indicators plus Hi & Lo Temperature; Input Connectors, 6.35mm Jack & XLR; Output, Speakon 4; 19 kg Weight; 2 RU; Ground Lift. \$1,649.

MPA-504 Stereo Amp. 250w RMS @ 4W/180w RMS @ 8W. Bridged 500w RMS @ 8W DC, RFI, Soft Start and Short Circuit Protected; Mains, Peak, Audi Signal, Protection LED indicators plus Hi & Lo Temperature; Input Connectors, 6.35mm Jack & XLR; Output, Speakon

4; 13 kg Weight; 2 RU; Ground Lift. \$1,149.

MPA-204 Stereo Amp. 100w RMS @ 4W/75w RMS @ 8W. Bridged 200w RMS @ 8W DC, RFI, Soft Start and Short Circuit Protected; Mains, Peak, Audi Signal, Protection LED indicators plus Hi & Lo Temperature; Input Connectors, 6.35mm Jack & XLR; Output, Speakon 4; 7 kg Weight; 1 RU; Ground - Lift. \$799.

ELECTRO VOICE

TELEX/EVI +61 2 9648 3455

EV P1200 Dual 550 W power amp. \$2,799.

EV P1250 Dual 550 W power amp with B2 Alignment etc. \$2,999.

EV P2000 Dual 900 W power amp. \$3,899.

EV P3000 Dual 1400 W power amp. \$4,399.

ESP TECHNOLOGY

ELSTA +61 2 9568 2100

P1000 Aus made Mosfet power amp with plug-in crossover. DC and thermal protection; distortion management system; dual speed fans + 5 optional input cards available; 5 year warranty; 540w RMS per ch.. \$1899.

P500 Aus made. Features include exclusive interchangeable input processing cards; unique auto distortion and signal management systems; 5 year warranty; 250w RMS per ch.. \$1199.

FENDER

Fender Australia +61 2 9666 5077

SP1 6000 2RU; 300w into 4 ohms p/ch; 600w bridged mono into 8 ohms; dual speed fan cooling; extensive protection circuitry; switchable Dela comp limiting; 5 year warranty. \$1499.

GEMINI

Disco World +61 3 9735 0588

XG3000 Fan cooled bridgeable stereo power amp - 200 Ws RMS per ch. at 8 ohms or 320 Ws RMS at 4 ohms RMS 640 Ws at 8 ohms bridged mono - Fan cooled - A/B speaker selection. \$1299.

XPM - 600 Fan Cooled Stereo power amp - 200 Ws RMS per ch. at 8 ohms or 270 Ws RMS per ch. 4 ohms - 550 Ws RMS mono bridged at 8 ohms. Mosfet output. \$1499.

XPM - 900 Fan Cooled Stereo power amp - 280 Ws RMS per ch. at 8 ohms or 400 Ws RMS per ch. 4 ohms - 800 Ws RMS mono bridged at 8 ohms. Mosfet output. \$1859.

XPM - 1200 Fan Cooled Stereo power amp - 360 Ws RMS per ch. at 8 ohms or 530 Ws RMS per ch. 4 ohms 1060 Ws RMS mono bridged at 8 ohms. \$1999.

INTER.M

Magna Systems & Engineering +61 2 9417 1111

M700 220w per ch @ 8ohms; 350w per ch @ 4 ohms; twin fan cooling; input sensitivity 0.775Vms; THD less than 0.1%; S/N 100dB; freq. 10Hz-35kHz +/-0.5db. \$799.

M1000 330w per ch @ 8ohms; 500w per ch @ 4 ohms; twin fan cooling; input sensitivity 0.775Vms; THD less than 0.1%; S/N 100dB; freq. 10Hz-35kHz +/-0.5db. \$999.

P2000 500w per ch @ 8ohms; 750w per ch @ 4 ohms; 1000w per ch @ 2 ohms; 1500w bridged @ 8 ohms; 2000w bridged @ 4 ohms; dual monoral power supply; various protection circuits; LED status arrays; paralleled input ch.s; mode selector switch; variable twin cooling fan; bal input connectors. \$1999.

PSR3200 750w per ch @ 8ohms; 1200w per ch @ 4 ohms; 1400w per ch @ 2 ohms; 2400w bridged @ 8 ohms; 2800w bridged @ 4 ohms; dual monoral power supply; various protection circuits; LED status arrays; paralleled input ch.s; mode selector switch; variable twin cooling fan; bal input connectors.

JBL

Jands Electronics +61 2 9582 0909

MPX Series amps feature " " XLR and barrier strip inputs, and binding post outputs. Fan cooled and fully protected. High pass filters on all ch.s. 3RU. Power ratings from 300 w/ch to

1200 w/ch (4 ohms). from \$2195.

MPA Series amps feature optional input modules that incorporate crossovers, CD Horn EQ, limiting etc. Output connectors are barrier strips, inputs " jacks and XLRs. Fully protected and variable speed fan cooling. 2RU and 3RU high. Power ratings from 275 w/ch to 1200 w/ch (4 ohms). from \$2995.

MPC Series amps feature " " XLR and barrier strip inputs, and binding post outputs. Fan cooled and fully protected. High pass filters on all ch.s. 3RU. Power ratings: 350 w/ch (2 ohms)/175 w/ch (100v), 450 w/ch (2 ohms)/250 w/ch (100v), 900 w/ch (2 ohms)/500 w/ch (100v). from \$2195.

LEEM

CMI +61 3 9315 2244

LA-1200 Stereo Amp. 600w RMS @ 4W/330w RMS @ 8W. Bridged 1200w RMS @ 4W. Two-speed fan cooling/Clip, Limit, Signal, Protect, Active LED indicators, DC, Over load & short Circuit Protected /2 RU. \$1,499.

LA-900 Stereo Amp. 450w RMS @ 4W/250w RMS @ 8W. Bridged 900w RMS @ 4W. Two-speed fan cooling / Clip, Limit, Signal, Protect, Active LED indicators, DC, Over load & short Circuit Protected /2 RU. \$1,299.

LA-600 Stereo Amp. 300w RMS @ 4W/160w RMS @ 8W. Bridged 600w RMS @ 4W. Two-speed fan cooling/Clip, Limit, Signal, Protect, Active LED indicators, DC, Over load & short Circuit Protected /2 RU. \$1,149.

LA-400 2 x 200w rms into 4 ohms, 400w mono bridged into 8 Ohms. \$699.

MACKIE DESIGNS

Aus Audio Supplies +61 2 4388 4666

Mackie M800 800 Ws @ 4 ohms bridged, 400 + 400 Ws @ 2 ohms stereo, Variable freq. low-cut filters, Constant Directivity horn/Air EQ, Limiter, Bal XLR & TRS inputs, XLR thru outputs, 1/4" and 5-way binding post outputs, Superior forced-air T-Design cooling, selectable stereo, mono and bridged amp modes. \$1495.

Mackie M1400 1400 Ws @ 4 ohms bridged, 700 + 700 Ws @ 2 ohms stereo, Variable freq. low-cut filters, 18dB/oct. subwoofer crossover with 2 selectable frequencies, Limiter, Bal XLR & TRS inputs, XLR thru outputs, Neutrik™ Speakon™ and 5-way binding post outputs, Compact 2-rack space design, Superior forced-air T-Design cooling, selectable stereo, mono and bridged amp modes. \$1895.

Mackie M2600 2600 Ws @ 4 ohms bridged, 1300 + 1300 Ws @ 2 ohms stereo, Variable freq. low-cut filters, 24dB/oct. subwoofer crossover with 3 selectable frequencies, Limiter, Bal XLR & TRS inputs, XLR thru outputs with selectable fullrange, & crossover low/high outputs, Neutrik™ Speakon™ and 5-way binding post outputs, Superior forced-air T-Design cooling, selectable stereo, mono and bridged amp modes. \$1895.

PEAVEY ARCHITECTURAL ACOUSTICS

Audio Telex +61 2 9647 1411

DPC1400x one rack space lightweight digital power amp, delivers 1400 Ws in a 4 ohms bridged or 700 Ws per ch. at two ohms. Variable speed fan and DDT speaker protection. Weights only 7.5kg. \$3572.

CS200x one rack unit, whisper quiet, low distortion and high slew rate are some of the features of this amp. 85 Ws per ch. into 4 or 8 ohms, 170 Ws bridged at 4 or 8 ohms. \$1093.

IP4c Peavey IP4c delivers 210 Ws per side into 4 ohms, or 500 Ws bridged at 4 ohms. Two speed fan cooling, SPS speaker protection, rear panel input controls, make this amp particularly suitable for installations in almost field. \$1165.

CS800s Lightweight Peavey amp which delivers 420w per ch. at 4 ohms, or 1200w bridged at 4 ohms. Two speed fan cooling and DDT protection. Modular inputs and outputs are available including the 2-3 way active crossover modules. \$2060.

PHONIC

CMC Music +61 2 9905 2511

MAR 1 2 x 150W (4 ohms); 2 x 120W (8 ohms); 1RU; 9.5kg; Neutrik connectors. \$699.

MAR 2 2 x 300W (2 ohms); 2 x 230W (4 ohms); 2 x 150W (8 ohms); 2RU; 12.5kg; fan cooled; Neutrik connectors plus barrier strip. Bridgeable. \$1095.

MAR 4 as MAR 2. 2 x 550W (2 ohms); 2 x 425W (4 ohms); 2 x 270W (8 ohms); 2RU; 15kg; dual fan cooled; Bridgeable. \$1350.

MAR 6 as MAR 4. 2 x 1000W (2 ohms); 2 x 650W (4 ohms); 2 x 400W (8 ohms); 3RU; 18.5kg. \$1695.

QSC AUDIO

Technical Audio Group +61 2 9810 5300

PLX Range Stereo. Five Models: 400, 600, 800, 1,050 and 1200w/ch @ 4", 9.5Kg featuring PowerLight Technology, XLR in/Speakon out, Clip-Limiter, HP Filters, Variable Speed Fan, Full Protection, 2RU. \$1,895-\$4,395.

MXa Series Stereo. Three Models: 600, 725 & 1,300w/ch @ 4". Conventional Heavyweight Amps featuring Open Input Architecture for Internal Limiters, Cross-Overs, EQ etc. Two Speed Fan, Short-Circuit, Open-Circuit, Thermal, Ultrasonic & RF Protection, 2/3RU. Entech Award Winner. \$2,595-\$4,995.

PowerLight Series Light Weight 8.2Kg! 10 Models 400-1,600w/ch @ 4". Dual Variable Speed Fans. Neutrik Combo Inputs. Data-Port. DC, Sub Audio and Thermal Protection, 2/3RU. Entech Award Winner. From \$3,295-\$7,295

PL 9.0PFC 3,200w/ch @ 4". Very High Power Amp but weighing just 23Kg! and 3RU. Neutrik Combo Inputs, Data-Port, DC, Sub Audio and Thermal Protection, Variable Speed Fans. \$14,495.

SONY

Sony Australia +61 2 9887 6666

SRP-P150 2RU, 150W+150W or 440W(mono), Stacking. \$2,100.

SRP-P300 3RU, 300W+300W or 900W(mono), Stacking. \$3,400.

SRP-P500 3RU, 500W+500W or 1,600W(mono), Stacking. \$6,900.

PA-A1600M PA Amp, 2 x Mic & 3 x Line inputs, Paging, 4 ohm and 70/100V outputs. \$2,100.

STEWART

CMI +61 3 9315 2244

WORLD 2.1 Stereo Power Amp. 1050w RMS @ 2W / 775w RMS @ 4W / 450w RMS @ 8W. Bridged 2,100w RMS @ 4W. Switch Mode Power Supply Amps. Weight 7.7kg, 2 RU, with Intelligent Short Circuit Protection, World class reliability plus "Harmonic Shift Correction" and "Superior Sonic Performance". \$3,995.

WORLD 1.2 Stereo Power Amp. 2 ch. @ 420w RMS into 4 Ohms, 1,200w RMS @ 4 Ohms mono bridged with Intelligent Short Circuit Protection. RU. \$2,699.

YAMAHA

Yamaha Music Australia +61 3 9693 5185

P1600 Stereo 160W/CH @ 8 ohms, 200 W / CH @ 4 ohms, 400 W bridged. 12Kg, 2RU w/ EEE Technology. \$1095.

P3200 Stereo 340W/CH @ 8 ohms, 440 W / CH @ 4 ohms, 880 W bridged. 15Kg, 2RU w/ EEE Technology. \$1495.

P4500 Stereo 460W/CH @ 8 ohms, 620 W / CH @ 4 ohms, 1240 W bridged. 15Kg, 2RU w/ EEE Technology. \$1795.

XS350 Stereo 230W/CH @ 8 ohms, 350 W / CH @ 4 ohms, 700 W bridged. A & B ch. variable filters (LPF 25Hz-125Hz) for driving subwoofer systems. Low Cut switch. 31 position precision attenuators, stereo/bridge/parallel modes, XLR & barrier strip inputs, barrier strip & binding post outputs, comprehensive protection circuitry, variable fan speed and signal/clip protection/power LEDs. 20Kg, 3RU. \$1295.

ZECK AUDIO

Horwood Australia +61 2 9585 1011

PT3 German built stereo; 330W @ 4 ohms per side; 800W @ 4 ohms bridged mode; speak on connectors; NLR and thermal protection; 2RU height. \$2990.

PT5 German stereo amp; 540W @ 4 ohms per side; 1360W @ 4 ohms bridged mode; speak on connectors; NLR and thermal protection; 2RU height. \$2699.

PT7 German stereo amp; 720W @ 4 ohms per side; 1960W @ 4 ohms bridged mode; speak on connectors; NLR and thermal protection; 2RU height. \$3299.

PT9 German stereo amp; 920W @ 4 ohms per side; 2300W @ 4 ohms bridged mode; speak on connectors; NLR and thermal protection; 2RU height. \$4199.

STUDIO

BGW

Group Technologies Australasia +61 3 9672 5000

PS4 440W 8 oh / 925W 2 ohm. Conservative FTC rating. Switchable limiting, high pass filters, THX, ultra-efficient power supply enabling remarkable headroom - \$6000.

PS3 FTC 330W 8 ohm / 700W 2 ohm. Same features as PS4. And like the PS4, built like a tank! \$4000.

Professional Series 750G 495W 4 ohm. Premier quality studio amp, as seen in numerous recording and television studios around the world. \$7000.

Professional Series 350A Model 350A will stay cool without forced air. This amp has been an industry standard for twenty five years. \$5000.

CROWN

Jands Electronics +61 2 9582 0909

Studio Reference Series is designed as a no compromise powerhouse for critical studio monitoring applications. Features include extremely wide dynamic range, super low harmonic and intermod distortion, and a damping factor in excess of 20,000 delivers superior low freq. control. Two models, the Reference 1 delivers 1160 W/ch (4 ohms) and the Reference 2 delivers 555 W/ch (4 ohms). Fully PIP compatible, and backed by Crown's famous 3 Year NO FAULT warranty. 1RU. from \$6895.

D Series Broadcast has long been an industry standard in broadcast applications, acknowledged for its small size, high quality construction and bullet proof reliability. Two models complete the range, the D45 (35W/ch) and the D75A (55W/ch). Both feature speaker and headphone outputs, and like all Crown amps, is backed by Crown's famous 3 Year NO FAULT warranty. 1RU. from \$1295.

K Series feature Crown's BCA technology, generating about 1/10 of the heat of a conventional amp design. The sealed chassis and convection cooling mean low maintenance and very low operating noise. Available in two sizes the K1 (750 W/ch) and the K2 (1250W/ch). Backed by Crown's famous 3 Year NO FAULT warranty. 2RU. from \$3895.

CYBERLOGIC

System Sales +61 5 95292633

CyberLogic NC812 series 8 ch powerframe, 1400 Ws 2/ch. Railset™: ch. independent tailoring of voltage rail to exact load/loudspeaker requirement - ultimate protection, no headroom or clarity sacrifice. Up to RRP \$20,236.

CyberLogic NC807 series 8 ch powerframe, 900 Ws 2/ch. Railset™: ch. independent tailoring of voltage rail to exact load/loudspeaker requirement - ultimate protection, no headroom or clarity sacrifice. Up to RRP \$16,963.

CyberLogic NC412 series 4 ch powerframe, 1400 Ws 2/ch. Railset™: ch. independent tailoring of voltage rail to exact load/loudspeaker requirement - ultimate protection, no headroom or clarity sacrifice. Up to RRP \$10,875.

CyberLogic NC407 series 4 ch powerframe, 900 Ws 2/ch. Railset™: ch. independent tailoring of voltage rail to exact load/loudspeaker requirement - ultimate protection, no headroom or clarity sacrifice. Up to RRP \$9,038.

QSC AUDIO

Technical Audio Group +61 2 9810 5300

USA400 Two Ch. 250W/2", 200W/4", 125W/8". 3RU. 11Kg. Convection Cooled. Neutrik Combo Inputs. Switchable Limiter and Low-Freq. Filter. Short-Circuit, Open-Circuit, Thermal, Ultrasonic & RF Protection. \$1,395.

USA900 Two Ch. 550W/2", 450W/4", 270W/8". 3RU. 15Kg. Two Speed Fan. Neutrik Combo Inputs. Switchable Limiter and Low-Freq. Filter. Short-Circuit, Open-Circuit, Thermal, Ultrasonic & RF Protection. \$1,695.

PLX Range Stereo. Five Models: 400, 600, 800, 1,050 and 1200W/ch @ 4", 9.5Kg featuring PowerLight Technology, XLR in/Speakon out, Clip-Limiter, HP Filters, Variable Speed Fan, Full Protection, 2RU. From \$1,895-\$4,395.

STEWART

CMI +61 3 9315 2244

Pro Reference 100 Stereo Power Amp. 420W RMS @ 4W / 225W RMS @ 8W. Bridged 725W RMS @ 4W Switch Mode Power Supply Amps. Weight 5kg, 1 RU, with Polished Chrome front face plate, Gold Plated inputs, World class reliability plus "Harmonic Shift Correction" and "Superior Sonic Performance". \$2,799.

Pro Reference 50 Stereo Power Amp. 230W RMS @ 4W / 130W RMS @ 8W. Bridged 400W RMS @ 4W Switch Mode Power Supply Amps. Weight 4.5kg, 1 RU, with Polished Chrome front face plate, Gold Plated inputs, World class reliability plus "Harmonic Shift Correction" and "Superior Sonic Performance". \$1,999.

YAMAHA

Yamaha Music Australia +61 3 9693 5185

P1600 Stereo 160W / CH @ 8 ohms, 200 W / CH @ 4 ohms, 400 W bridged. 12Kg, 2RU EEE (energy efficient engine) technology allows the amp to produce the same amount of output power with approx. half the input power required. \$1095.

P3200 Stereo 340W / CH @ 8 ohms, 440 W / CH @ 4 ohms, 880 W bridged. 15Kg, 2RU w/ EEE Technology. \$1495.

P4500 Stereo 460W / CH @ 8 ohms, 620 W / CH @ 4 ohms, 1240 W bridged. 15Kg, 2RU w/ EEE Technology. \$1795.

MIXER AMPS

ALLEN & HEATH

Technical Audio Group +61 2 9810 5300

ICON Digital Powered Mixer, 8 Mic/2 Stereo Line Inputs, Dual Digital Effects and Song Parameter Save/Recall, 600W @ 4" Power Amp. 4 Band Parametric EQ, Four Aux, Mid/Foot Switch Control. \$3,495.

BIAMP

EAV Technology +61 3 9417 1835

CMA 30 6 ch. 30W commercial mixer amp. Built in chime, insertion points, phantom power. Muting facility. \$858.

CMA 60 6 ch. 60W commercial mixer amp. Built in chime, insertion points, phantom power. Muting facility. \$1168.

CMA 120 6 ch. 120W commercial mixer amp. Buffered recording outputs. Remote master level control. \$1355.

CMA 350 6 ch. 350W commercial mixer amp. Mic/line inputs master level control. \$1953.

DYNACORD

TELEX/EVI +61 2 9648 3455

POWERMATE 600 10 Ch. Dual 300 W powered mixer. \$3,299.0

POWERMATE 1000 12 Ch. Dual 500 W powered mixer. \$4,499.

POWERMATE 1600 16 Ch. Dual 500 W powered mixer. \$4,899.

FENDER

Fender Australia +61 2 9666 5077

LX 1504 4 ch.s.; 150W into 4 ohms; 2 way EQ; FX and mon. sends; 1/4" jack and XLR inputs; 5 year warranty; spring reverb; 6 ch. version also available. \$899. \$1499.

SRM 6302 6 dual 150W into 4 ohms for tandem or mains/mon operation; 9 band assignable GEQ; 3 band EQ; spring reverb; phantom power; FX and mon. sends; 5 year warranty; 8 ch. version also available. \$1299.

SR 6520 6 dual 52W into 2 ohms; 9 band assignable GEQ; Deltacomp protection circuitry; 3 band EQ; fan cooled; spring reverb; phantom power; 5 year warranty; 8 ch. version also available. \$1799.

LEEM

CMI +61 3 9315 2244

SB-125K 12 Ch. stereo, 500W RMS into 4 Ohms, 3 band active EQ with mid-sweep, bal XLR and line inputs, DSP programmable effects, feedback eliminator, rack mountable. \$1,799.

LP-1447ME 14 Ch stereo, 700W RMS into 4 Ohms, DSP programmable effects. \$2,399.

PRO-104D10 Ch. stereo "head" style, 40Cw RMS into 4 Ohms, XLR and Jack inputs, dual 7 band master EQ, 64 program digital effects. \$1,099.

CSP-801 8 Ch. compact stereo mixer amp, 70W RMS, 2 band EQ per ch., tape return/playback, 4 XLR inputs, 2 stereo line inputs. \$549.

LM AUDIO

Ampower Marketing Services +61 3 9435 1745

LM 30 mono 30W, 8 ohm/100v. 1 mic/line; heavy duty board; "Power Plus" transformer; 2 year parts and labour warranty; made in Australia. \$250.

LM 50 mono 50W, 8 ohm/100v, 70v. Features 4 bal mic/line in; priority VOX mute ch. 1 over 2,3 and 4; adjustable mic sensitivity and VOX mute level; remote 3 wire master volume facility. \$360.

LM 150 mono 150W, 8 ohm/100v, 70v. Features 4 bal mic/line in; priority VOX mute ch. 1 over 2,3 and 4; adjustable mic sensitivity and VOX mute level; remote 3 wire master volume facility; ultra low noise operation; instant "on" mic. \$595.

LM 450 mono 4 x 50W amps in one 2RU case. 4, 8 ohm/100v, 70v. Features priority VOX muting zone 1; VOX any or all zones with adjustable level; remote 3 wire master volume all amps; soft "on" arti thump; microphone "auto off"; 2 year parts and labour warranty. \$1825.

MACKIE DESIGNS

Aus Audio Supplies +61 2 4388 4666

Mackie PPM808S 1200 Ws @ 2 ohms from twin 500-W FR Series High-Current power amps, amps switchable as stereo mains or main + mon, 8 mic/line ch.s w/master phantom power, 32-bit custom EMAC™ digital effects processor, Rugged injection-moulded case, Active 3-band EQ on each ch., Two 9-band audiophile-quality graphic EQs. \$2495.

Mackie PPM808M 1200 Ws @ 2 ohms from twin 500-W FR Series High-Current power amps, amps switchable as stereo mains or main + mon, 8 mic/line ch.s w/master phantom power, 32-bit custom EMAC™ digital effects processor, Rugged injection-moulded case, Active 3-band EQ on each ch., Two 9-band audiophile-quality graphic EQs. \$2295.

Mackie PPM408S 500 Ws @ 2 ohms from twin 250-W FR Series High-Current power amps, amps switchable as stereo mains or main + mon, 8 mic/line ch.s w/master phantom power, 32-bit custom EMAC™ digital effects processor, Rugged injection-moulded case, Active 3-band EQ on each ch., Two 9-band audiophile-quality graphic EQs. \$2295.

Mackie PPM408M 500 Ws @ 2 ohms from twin 250-W FR Series High-Current power amps, amps switchable as mains or main + mon, 8 mic/line ch.s w/master phantom power, 32-bit custom EMAC™ digital effects processor, Rugged

injection-moulded case, Active 3-band EQ on each ch., Two 9-band audiophile-quality graphic EQs. \$1895.

PHONIC

CMC Music +61 2 9905 2511

Powerpod 615 "Brick-style" powered mixer; 150W; 6 ch.s.; digital delay; phantom power; tape in/out. \$599.

Powerpod 7 "Brick-style" powered mixer; 2 x 200W; 7 ch.s.; digital reverb; 2 x 7 band graphic EQ; tape in/out; bridgeable 400W; 3 band EQ each ch.. \$895.

Powerpod 1060 as Powerpod 7; 3 x 200W; 8 ch.s.; digital effects. \$1295.

Powerpod 1860 desk-style powered mixer; 2 x 300W/bridge 600W; 256 digital effects; 2 x 7 band graphic EQ; mute + PFL each ch.; 8 mic/4 stereo ch.s.; phantom power each mic input. \$1995.

SPIRIT

Jands Electronics +61 2 9582 0909

Power Station Range consists of 10/2, 12/2, and 20/2 Powered Mixers, Mono & Stereo inputs, 175W, 300W, or 600W per ch (4 ohms), Lexicon Digital Effects processor inbuilt, 7 band Stereo Graphic. Fully protected varispeed fan cooled amp sections, versatile patchbay for easy setup. Rack mountable. From \$2995.

PowerPad 10/2 Compact Powered Mixer: Folio NotePad mixer stage, 4 Mono & 2 Stereo inputs, Phantom Power, Fully protected varispeed fan cooled amp sections - 30W per ch. \$1195.

YAMAHA

Yamaha Music Australia +61 3 9693 5185

EMX640 11 input powered mixer (4 mono, 2 twin (stereo) 1 mono sub in & stereo tape in). 3 band EQ, mon and effects send with digital effects & 7 band graphic on FOH & mon outputs, XLR Mic inputs with phantom power, 2 * 200 W amps switchable to bridge mode; w/EEE Technology. \$1095.

EMX860ST 14 input powered mixer (6 mono, 2 stereo, 1 stereo return & stereo tape in). 3 band EQ, PAD, Pan, 1 mon and effects send with 3 program digital effects & independent 7 band graphics for FOH & MON, XLR Mic inputs with phantom power, 3 * 200 W amps switchable stereo FOH + MON, bridge FOH + Mon. Outputs section includes stereo, mon & stereo tape output. \$1695.

EMX2000 18 input powered mixer (8 mono, 2 stereo, 2 stereo sub in & stereo tape in). 3 band EQ, PFL, AFL, 2 mon and effects send with 16 program digital effects & 7 band GEQ, XLR Mic inputs with phantom power, 2 x 200 W amps switchable stereo FOH, FOH / Mon and bridge FOH. 2 stereo, one mono & stereo tape output, 14 Kg; w/EEE Technology. \$1995.

ZECK AUDIO

Horwood Australia +61 2 9585 1011

PD10-14 stereo 350W @ 4 ohms per side; 99 digital FX; 14 inputs on 10 ch.s.; stand-by switch; special sonic processor; sep input card for each ch.; German built. \$3999.

next month::

PA SPEAKER
SYSTEMS

email:
catriona@conpub.com.au

How to do it

DUNCAN FRY'S LIVE SOUND MIXING SERIES

- MICROPHONES (Part 19)

WIRELESS (RADIO) MICROPHONES

Every vocalist wants one. And if they like to prance around a lot and run up and down the stage, jump up on the front of house boxes, dive into the audience, that sort of thing, well it's a lot safer that having them get tangled up in a microphone cable and break a leg!

Wireless microphones are getting better all the time, and their prices are coming down too, but they can still drop out at the most unexpected times, and the lower priced ones are prone to picking up radio operators, taxis, FM radio, TV or other wireless microphones! The True Diversity ones are best; these transmit two signals, and the receiver automatically switches between them for the clearest and loudest signal.

However, there are extremely stringent regulations covering the use of wireless microphone frequencies, and often a permit to use them may be required. Read the paperwork that comes with them **very** closely.

Remember too that they are designed as a system - the microphone with the transmitter and the receiver with the aerials are a matched pair, and can't individually be swapped with other units, even from the same manufacturer.

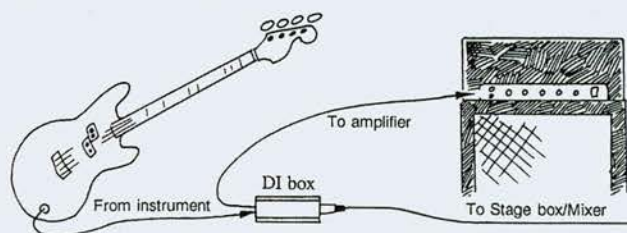


Here are some suggestions to follow:

1. Keep the batteries fresh or freshly charged. **Always** have fresh spares ready to go.
2. Locate the receivers near the stage box, or the monitor mixing desk, rather than in the Front of House mix bunker. The distance from microphone to receiver is shorter, and there is probably less chance of it getting damaged than out front.
3. Wireless microphone receivers often put out a really LOUD signal. You may get better results plugging them into a LINE input on the channel, to avoid overloading the sensitive microphone input.
4. Check them out thoroughly before the show. Walk around with them, on the lookout for 'dead' spots, noisy areas, whatever. When you're satisfied, switch the microphone off and put it away safe until showtime. I once had a wireless microphone die on me because someone knocked it over before the show and dislodged the battery. The singer came on, picked up the microphone, yelled "Hello" and there was nothing. Which leads me on to the next point
5. Whenever you are using a radio microphone system for an important gig, you should ALWAYS have a backup microphone and cable plugged in, tuned and ready to go, in case of emergency. Try and be prepared for anything.

D.I. BOXES (DIRECT BOXES)

DI stands for Direct Injection, a way of bypassing the use of microphones when amplifying many instruments. It converts a High Impedance (Hi Z) instrument signal into a Balanced Low Impedance (Lo Z) signal that the mixing desk can handle.



Instead of the instrument amp being miked up, the output of the instrument itself is plugged into the system directly through a DI box. By doing this you successfully eliminate all of the microphone hassles, unwanted stage noise, leaving just the sound of the instrument itself.

It's great with Bass, Synthesizers, Drum machines, anything electronic. They are not so good on guitars unless you can plug it into a LINE OUT or PRE AMP OUT socket on the back of the amp. In any case, guitars often rely on the interaction between the guitar and the amp/speaker combination to get the correct sound, and for this reason DIs are not commonly used on guitars. They are great, though, for getting a good fat signal out of an acoustic guitar piezo or 'bug' pickup.

If you do try one with a guitar amp, **don't plug it into a speaker output socket unless there is a switch on the Direct Box marked 'Speaker Input' or something similar!** If you do, you run the risk of frying the expensive transformer or electronic circuit inside the DI box.

PASSIVE D.I. BOXES

Passive DI's consist of a High Impedance to Low Impedance audio balancing transformer, IN/OUT guitar jack sockets, an Audio Earth/Ground lift switch, and a balanced XLR type output, all inside a shielded metal case.

There are no batteries, nothing really to go wrong. It will work all day, every day unless you plug it in wrongly (see above warning). However, it is only as good as the transformer inside it. A cheap passive DI will mean a cheap transformer, often prone to humming and easily distorting when a percussive signal like some 'slap' bass is sent through it. It can also be noisy, since the signal sent down the multicore snake is very weak and makes you increase the Gain at the console, resulting in poor signal-to-noise ratio.



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.

How to do it

TOM MISNER'S PRACTICAL STUDIO TECHNIQUES

- MICROPHONES (Part 19)

SUMMARY OF STEREO MICROPHONE TECHNIQUES

The quality of the stereo recording is dependent upon the electronic quality of the equipment used and the acoustic environment used for the recording. An engineer specialising in stereo recording should therefore have extensive acoustic knowledge. The choice of stereo microphone technique is dependent upon three main factors: the size of sound source (orchestra), previous experience with that technique, and the acoustic environment in which the performance takes place.

The course of study most suited to people wishing to know more about stereo recording of classical music is the School of Audio Engineering's Tonmeister program, which specialises in this field.

CLOSE MIKING

In the studio, most instruments are recorded with the microphone placed very closely to them. This is to ensure the microphone picks up the direct sound of the instrument with very little reflected sound or spill (leakage) from other instruments - giving the engineer greater control during mixdown. An instrument which has been recorded close up can be sent to the back of the mix with the use of effects such as reverb, however, an instrument which has been recorded at a distance can not be brought forward during mixdown.

RECORDING INFO: Using "out-of-phase"

When recording a drum kit leave the overhead microphones out of phase, thereby creating "NO" centre image. This will leave the centre image free for other instruments. Sometimes the same concept can be used on brass or string sections, however this is not as common. It is important, when using this concept to monitor the mix in "mono" to check what effect it will have upon the overall mix. To achieve this effect use the phase switch found on most consoles.

RECORDING TIPS AND MICROPHONE USAGE

The following are tips and considerations for miking numerous musical instruments.

ACOUSTIC GUITAR

If the acoustic guitar is the feature instrument in a song, the stereo MS technique (discussed earlier) is worth considering. This gives the guitar a very 'up-front' sound without having a wide stereo spread. If the guitar is in the rhythm section of a song it should be recorded with a single microphone. The choice of microphone is dependent upon the sound of the guitar, e.g. if the guitar sounds a little dull the AKG C460 would be an excellent choice, since it will 'brighten up' the dull sound. It is important for the guitarist to remain in the same position whilst playing the guitar. Movement of the guitar closer or further away from the microphone will cause a noticeable change in the sound of the instrument.

ELECTRIC GUITAR

The electric guitar can be recorded through an amplifier with a microphone placed in front, or via a studio guitar effects processing system (e.g. Ensoniq DP/4), which has the advantage of no spill from other instruments.

If close miking a guitar amplifier, a dynamic microphone is often a good choice because guitar amplifiers tend to be very noisy. Often a

second microphone placed about 5 ft behind the first microphone will produce a fuller sound. The final choice of how to record the guitar will be with the guitarist, as he or she must be comfortable with the sound. A note for all guitarists:

"What sounds good on stage will often not sound good in the studio."

An amplifier can produce a very loud guitar sound, which will give the engineer many problems during the recording session, most notably spill into other microphones.

DRUM KIT

There are two distinctly different approaches to miking up a drum kit:

- 1) Overhead stereo miking with some close placed support microphones.
- 2) Close miking the whole drum kit.

The first approach uses two microphones placed overhead using one of the previously discussed stereo techniques, with close mikes on the snare and kick drums. The engineer won't have much control over the individual sound of each drum, but will have a more 'transient' live sound.

The second approach gives the engineer the advantage of complete control over every drum sound during mixdown. The disadvantage is the use of many more tracks. The advantages we gain by placing many microphones around the drum kit can also be lost due to the overall increase of phase cancellations.

To gain maximum possible separation between the drums, use low sensitivity cardioid dynamic microphones. However, if the engineer chooses to use condenser microphones most will need the pad (-10 dB) switched on to protect the microphone from excessive levels.

When miking the kick drum, the front skin is usually removed and the microphone is placed inside the drum. The microphone must be able to withstand extreme sound pressure levels. Placing a blanket inside the kick drum will reduce the resonance of the drum, making it easier to record to tape.

The snare drum is miked from the top, keeping the microphone well out of the way of the drummer to avoid getting hit with the sticks. The microphone should be able to withstand excessive peaks and have high off-axis rejection, to minimise spill from the hi hat.

When miking the toms, it is advisable to use the same type of microphone on all toms in order to maintain the character and timbre of the drums.

On hi hat the choice is dependent upon the final sound the producer is looking for. If a 'tsss' sound is required, the AKG C460 is suitable. If a 'shhh' sound is required, the choice would be a Neumann microphone.

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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LIVE

PRODUCTION REPORTS



R.E.M.

UP: The World Tour



Photos: Diana Scrimgeour

After a four-year absence from the road, R.E.M. are touring once more. A number of new or unusual technologies makes this production significant above its many contemporaries.

The audio department is benefiting from the new Audio Toys Inc Paragon II Monitor console and Clair Brothers' first totally new PA system in nearly 25 years (the i4).

And, the visuals are as off the wall as one would expect from Willie Williams, the man who, with Mark Fisher, created the eye candy that was U2's PopMart.

The moving imagery here is provided by a wholly unexpected source. Based on what Williams describes as "a cross between Hong Kong New Year and the Blackpool illuminations", the new R.E.M. stage set is essentially formed from suspended aluminium framed "motifs", made from rope light. "Everyone laughs at rope light for being so terminally cheesy, which is certainly part of the appeal, but used the right way rope light can become very elegant," said a defensive Williams.

The rope light used for this tour was manufactured by Hong Kong-based Neo-Neon Holdings - the source for most of the world's rope light, and indeed a fair proportion of "cheesy disco lights".

Although physically based around the Hong Kong rope light, the symbols chosen by Williams came largely from reinterpreted Western graphic design clip-art which, to some degree, was influenced by the whacky Up album cover.

"I drew up and collected about 150 simple line drawings as contenders and sent them to both the band and to Neo-Neon," said Williams. "The band picked out their favourites, Michael Stipe adding several new ones, including some of the funniest ones, like the anatomically correct stick figures. Neo-Neon then assessed the designs and via many faxes we devised the best way to get the result I was after."

When Neo-Neon finished the original or-

der, the band ended up with 45 individual motifs which break down into around 100 8' x 4' panels - this was essential for transportation purposes. "Some of them have several circuits to allow them to go through their simple animations" explained Williams.

The finished pieces are a joy to behold - what is so amazing is that at the start of the performance the motifs appear as nothing more than a lifeless metal junkyard above the stage, until they are lowered into their elegant state, each taking their turn to come alive in a range of static or animated permutations. "The rope light has to run in one continuous piece, as with real neon, and some of these designs are pretty complex, so Neo-Neon had to find ingenious methods to make them work. Some of them, like the dogs, the Chinese writing and the coffee cup, are uncomplicated but just beautiful to look at; others, like the animating Polaroid camera [a stroke of genius plugging the pause in 'Everybody Hurts'], and earning a big thumbs up on the lighting riser!, were complex for me to design, but their interpretation makes it look very simple and really charming."

LIGHTING DESIGN

Williams's aim, as ever, was to design a show appropriate for R.E.M.'s music, which may not have been so easy considering

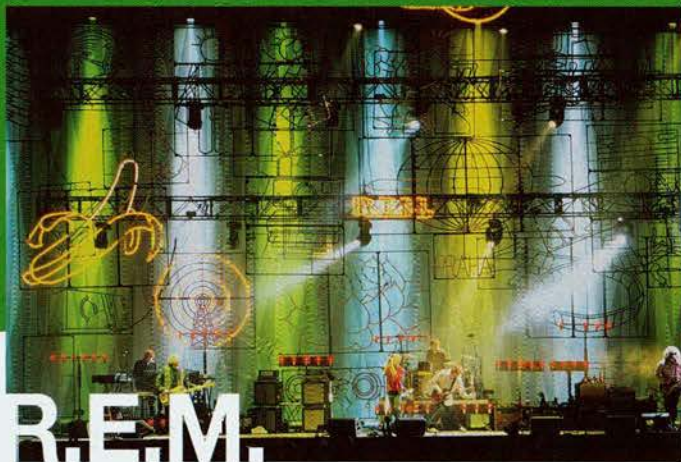
that the rehearsed pool of songs dates back 15 years. "I built an entire rig which has no sharp-edged fixtures and, bowing to Mike's wishes, uses no white light. It's all very... blurred!" he said. "In fact, a lot of purist LDs will no doubt cringe at what we've done here. Somehow it never seems to become entirely "real", always cast in strange and murky off-colours. It reminds me of how I remember scenes from dreams, which is, after all, what R.E.M. is all about."

The five truss rig is fitted mostly with moving lights although there are some

continued on page 64



Willie Williams (left) with Tony Panico of Bandit Lites UK and Bruce Ramus



conventionals. The kit line-up features 30 Studio Colors, eight Coemar 1200s, two diffused Lycian Starklight follow spots in the truss, and 40 Lowel Totas - a linear 1kW cyc light bulb or "Nook" light alternative to Molefays, gelled with Lee 100 "Spring Yellow" dichroics and pointed at the audience.

Behind "rope light city" is a diamond-patterned backdrop which extends on to the stage floor. It was a cyc which Stipe and Williams spotted at a theatre in San Remo, and liked so much that they went home with it. (Exactly how one walks out of a theatre with a backdrop, unnoted, is beyond me.)

A Wholehog II console is used by Ramus to run the moving lights, while Williams, for the early tour dates at least, was running the Avolites Pearl which controls the rest of the rig, including the rope light.

NEW ADVENTURES IN PROGRAMMING

For this tour, R.E.M. rehearsed a collection of no less than 64 songs, all of which required programmed audio and lighting cues.

While the lighting programming was undertaken by Ramus and Williams at RAF Alconbury, Joe O'Herlihy got to grips with the recall facilities of his favoured Midas XL4 console.

"I'm sticking with the XL4 for the moment," said the man with rock'n'roll's most spectacular beard. "It's the perfect console for this tour because it's a six-piece band and everybody apart from the drummer and Michael change instruments on almost every song. You are therefore at the mercy of the different velocities of each musician's playing. One might hit the bass harder than the other, and that can make a huge difference with the fader movements. So I find the automation a delightful tool for dealing with this. It's not all plain sailing though. We have 64 songs programmed into the console, and around 25 or 26 are chosen for each show literally minutes before the start. But even then it could change halfway through the performance, which is typical R.E.M.!"

MODEL OF EXCELLENCE

O'Herlihy is one of several other crew members who also share a loyalty with U2 whom he has mixed since 1978. He started with R.E.M. around September 1994, in readiness for the Monster tour, and claims that the close-knit relationship of the two bands and respective managers has led to a handy situation for all. "When R.E.M. are on the road it almost always coincides with U2 recording an album. It works out brilliantly."

Monitor Engineer Don Garber is currently using a new ATI Paragon II Monitor console - the second to be purchased by Clair Bros. "So far I have been very pleased with its performance. A lot of bands, like R.E.M., are combining the original Series I Clair 12AM wedges with in-ear monitoring (IEM) so you need outputs for both. In that respect I'd say that it doesn't ever compare with any other console - no other company has come close."

The winning formula he said, is in the number of outputs. "Out of each channel there's up to 44 different ways out, which is

continued on page 66

The Clair Brothers i4 System

Joe O'Herlihy was eagerly looking forward to exchanging his Clair S4 system for a sparkling new i4 rig in the USA.

But we found the new rig on the road with Roger Waters in the meantime.

It's also been heard on the current Paul Simon/Bob Dylan and Backstreet Boys tours. Clair Brothers Greg Hall teased us by saying: "It's small, trapezoidal, lightweight, easily hung, and our version of the "perfect" line-array system."

If the company are hush hush on i4, you can't stop an engineer/customer from talking! Joe O'Herlihy was keen to discuss the new technology. "Bass is bass, low-mid is low-mid, and all the high range frequencies are exactly where they should be. There's nothing removed. There's a big 18-inch speaker in there, four 10-inch speakers, four 2-inch drivers and 12 super high tweeters - all fitting in a box that's 50 inches wide x two feet tall x two feet deep. When you put a pile of them together, with a column of 12 on one side, a column of 12 on the other, they start talking in a line array and in an arena situation it's a very clever system that works".

The new system is a specific reaction to the modern-day economic pressures on touring. Fewer tour accountants are giving their blessing to a spec which includes a huge, truck space-eating PA, even if the sound is supreme. This has forced manufacturers and rental companies - yes, even Clairs - to develop smaller, louder, more compact systems.

Roger Water's FOH engineer Trip Khalaf says: "At Clair Brothers, we have been fighting against this for years only because we think that the S-4 system is, or was, the greatest PA in the world. But given the constraints of today's touring situations we decided to come up with one of these smaller

systems, with a difference. Our S-4 system started out as a line array, but situations arose whereby we had to add more and more cabinets to the point where we were touring with big clusters of devices, like a lot of other people. The problem with a true line array is that in order for it to work as intended it has to go from floor to ceiling, and it has to be straight.

"As soon as you bend it, the entire concept goes out the window and you start to make trade-offs.

"The fabulous brains at Clair Brothers, however, have found a way to bend it using a bunch of patented, groovy names that aren't really my concern! We have cabinets of different angular configurations that get bent, and the waveguides of the high frequency devices actually work as a functioning bent line array. You don't have a bunch of devices pointing in different directions, resulting in a billion reflections and different arrival times, and to me that represents Audio Nirvana!"

In its complete form, i4 consists of three different

continued on page 67





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BURNT PIANO

The Fairfax at the Victorian Art Centre was the venue for the new MTC production *Burnt Piano*. The play by Australian playwright Justin Fleming was about a woman so obsessed with the works of Samuel Beckett that she travels to Paris in an attempt to meet him so that she can resolve her guilt over the death of her son.

Performed on a simple but striking set designed by Hugh Colman, the action takes place in Paris, represented simply by a large opaque paneled window. The rest of the set was made up of a large beech coloured platform, black gloss floorboards on the forestage, and spread around the space basic set pieces - a hat stand, a cane rocker, a café table and chairs. Prominently on a revolve, set into the platform, was a black grand piano which was used throughout the play.

The lighting designer was Ben Cobham, one half of Melbourne concept lighting company Blue Bottle. Ben explained he and Hugh Colman worked strongly in their designs to not give the space any sense of place.

"Because it was so literal in its dialogue everytime you were 'somewhere' it told you 'where' so I guess I tried to push it into more of a dream place. I tried not to delineate that the park was a park. I took no notice of whether it was day time or night time - sometimes I made it feel like night time so you'd question the difference between the dialogue of the text and what actually happens.



Ben Cobham

"The concept was to heighten the dream place so that they could dream a bit. And I tried to make the second half even more dreamy. I wanted to make it as if I'd put a bit of Lee 119 in front of everyone's eyes. I'd like to do that. Give everyone blinkers rather than peepers."

Ben described his design as a "compact little rig" using around 80 theatre fixtures. He resisted using much in the way of front of house light, instead drawing inspiration from the angles in the set

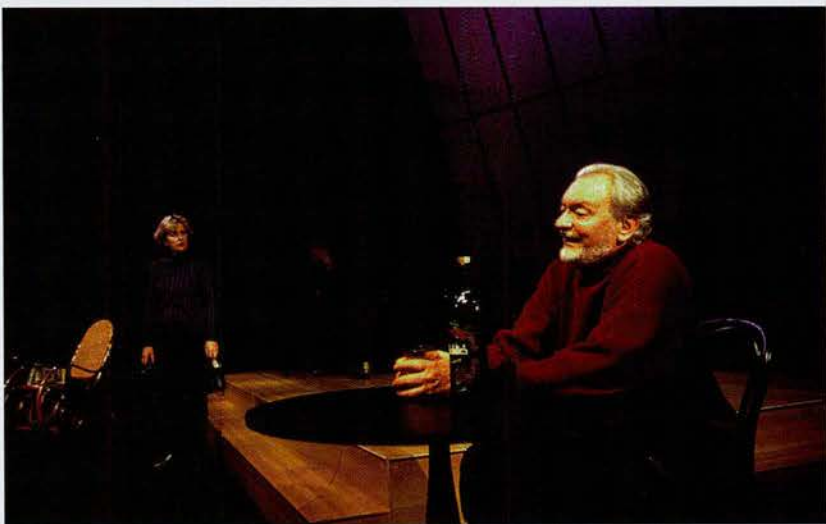
design to create shafts of light from interesting angles.

"The shaft thing to me was really an architectural thing to do with those two angles of the set - one side comes in at 90° to the big window, and everything from the other side comes in at 90° to the floor panel."

The result was a design of dramatic angles, tightly shuttered patches of cool light to highlight a set piece or to create a claustrophobic acting space.

"I like performers to have to work for their light a bit, but in saying that it's a bit high and mighty. There were certain actors in the show who found beautiful little pockets which I always think is much more interesting - to put people in a little installation and let them find the light for their scene. It's probably a little bit naughty to do that but when I get bored I like to experiment."

Even though Ben is not fond of using 'Birdies' in a theatre setting, a single unit was utilised to create one of the most powerful images in the play. Placed at the edge of the stage in front of the



piano, the Birdie cast a garish shadow of the grand piano and its ornate music stand onto the opaque window panels to represent the event that claimed the life of the lead's son. The recurring image coupled with a sound effect of a fire was extremely evocative and one that Ben was very happy with.

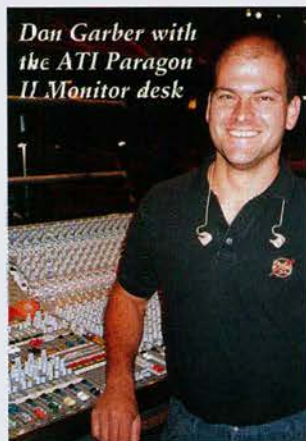
More important to Ben's design than the inclusion of light, was the absence of it. Characters appeared dimly lit or backlit by a single source. In the final scene the actors walk on stage and stand silently with their backs to the audience, silhouetted against the floodlit moonlight blue paneled window.

R.E.M. *continued from page 64*

an incredible total. You can do anything with this console and never be faced with the problem of telling an artist, "sorry, I can't give you any more mixes."

Using the Garwood Radio Stations purchased for the Monster tour, three of the six musicians are R.E.M. benefit from IEM, wearing Futuresonics EM-1 ear monitors. Garber explained the way each member uses them: "Michael Stipe uses one ear monitor for pitch purposes, although he's listening off wedges 90% of the time. There are a few mellow songs where pitch is important and if he's feeling slightly uncomfortable he'll stick the ear monitor in just to help. Mike Mills is on one ear monitor constantly throughout the show because he's so active and moves everywhere on stage. Joey is 100% on IEM, and doesn't even use a butt woofer for the low end feel - there's enough coming back at him from the house."

•Mark Cunningham



Don Garber with the ATI Paragon II Monitor desk



The angled panel of windows was an active element of the set throughout the play. Ben used different lighting styles on certain panels to create mood. In some scenes, Ben lit the centre panels with shuttered profiles, and in others a glow was created behind a block of the panels with a fresnel. A plastic film over the glass gave the light a soft diffused effect. Ben's design was predominantly cool in colour, featuring a range of blues and colour correction filters.

"I'm more interested in colour temperature than I am in colour, that's probably been my latest phase. I ended up using more gel colours from the end of the swatch book than the beginning, put it that way. I'm quite good at knowing the gel numbers so I like to cut bits off the swatch book and drop them on the table so I don't know what they are anymore and then I'll arrange them so all the blues are together and get rid of the ones that jar a bit, then I'll stick them on the window and look at them. Quite frankly I'm a bit of a devil's advocate with everything."

• Mandy Jones

The Clair Brothers i4 System

continued from page 64

cabinets with vertical dispersions of 2.5°, 5° and 10°. The horizontal dispersion is 90°. And as has been the case for almost the entire history of the S-4 system, Clair Brothers has stayed with JBL components. "The truth is, although we've screwed around with alternatives, we can't find anything better than JBL for our systems," said Khalaf.

For the Waters tour, there were generally two configurations of the system designed for either indoor arena or amphitheatre ("shed") applications. In the sheds, arrays of six 2.5°, four 5° and four 10° cabinets were flown per side, and the rig was from thereon decreased depending on the venue size.

Khalaf used his beloved t.c. electronic remote device with a long cable to EQ the system. He said: "The components that aren't pointed at you, from 300Hz up you really don't hear. You sit at the mix position with these 2.5° boxes pointing over your head and you think you're EQing something, but you go up in the seats and all of a sudden you walk into this soundfield. I start by EQing the 2.5° cabs, then walk down to tweak the 5° boxes, and getting nearer the stage as the dispersion gets wider I concentrate on the 10° boxes. You can tailor these so that you can walk from the front row all the way to the top of the seating and the SPL stays pretty constant everywhere. I can't believe it, but it works!"

Khalaf also commended his rack of XTA DP226 loudspeaker management units which were, in fact, used as a development tool during the design of i4. "The XTA units are performing crossover/EQ/limiter functions which run the i4s until we get our own DSPs up and running. They are in late prototype stage and my friend Bruce Jackson will have them working as soon as possible."

Khalaf did point out that complementary subs were still required (12 on the Waters dates), but hinted of a forthcoming Clair initiative to incorporate these frequencies into the flown rig.

"I despise low end on the floor," he frowned. "Our future plan is to get the bass up in the air. With every other one of these small systems you have to put all this low end on the floor and fans are paying \$1,500 to scalpers to sit in the front row and have their teeth bashed out by an avalanche of low end. My guess is that Clair Brothers will have an answer to this problem soon."

SHOWS WE'VE SEEN LATELY

A Punter's Perspective

DAVID COPPERFIELD

JOURNEY OF A LIFETIME

A David Copperfield show is as much fun for a cynic as it is for a believer. Trying to work out the mechanics of the tricks is just as enjoyable as believing he really can fly or make people vanish.

Looking around the theatre, the audience demographic was mainly professionals and 'expendable income' types, as you would need to be with the cheap seats starting at \$70, and the best seats \$180 each.

The two hour performance features eight or nine "grand scale illusions" before the grand finale where 13 randomly chosen members of the audience vanish.

In 'The Fan' Copperfield manages to pass through the rotating blades of a fan, in 'Laser' he is sliced in half by the beam of a laser (or a Trackspot mounted on a very Get Smart looking laser base), and the rest are variations on a theme, usually someone disappearing from an impossible situation and reappearing somewhere else in the theatre.

But Copperfield's trademark illusion is flying, and it is totally convincing. Suspended on cables against a tinsel curtain background, Copperfield appears to be floating on air.

And with the help of his extremely nimble flymen working the cables, the movement is graceful and without restriction allowing him to move in different directions, hang upside down and even float inside a sealed glass case.

Throughout the performance people were chosen from the audience to take part in the various illusions. Now, I don't want to suggest that these people were paid 'plants', however it just so happened that most of these people (especially the attractive female ones) weren't at all shocked to be plucked out of the audience, didn't say anything to the person sitting next to them as they were led to the stage, and were incredibly trusting and obliging.

Two of the male 'plants'... I mean 'randomly selected audience members' were strapped into a lounge and then levitated 40 feet above the stage without so much as a "whoaaaaa" from either one of them. Call me cynical but that struck me as odd.

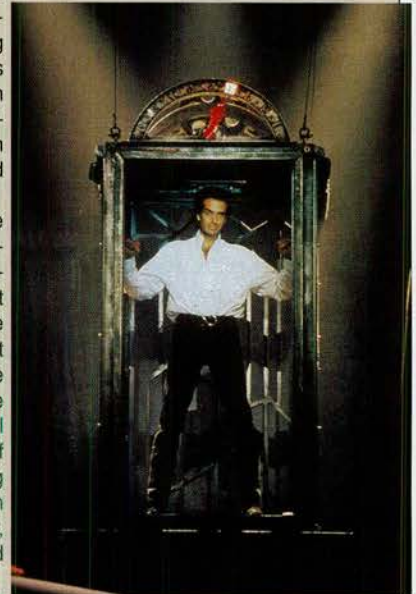
Copperfield engaged in banter with each of the people chosen from the audience but the dialogue, and in particular his one-liners, seemed scripted.

The selection process for the final trick, the disappearance of 13 people, involved throwing huge silver balls into the audience and bashing them around in a cross between a game of musical chairs and an activity at Big Day Out. Members of the audience holding the balls when the music stopped were then taken up on stage and prepared for the disappearing act. (Perhaps the 'balls' system should have been used to decide the winner of the Victorian election.)

The 13 were then seated in chairs on a large metal box frame which was then covered by white screens to mask the people. Each of the people were given torches to shine from inside the screens to prove that they were there right up till the last minute. Then suddenly the screens were taken away and the seats were empty. And even though you try to explain away the spectacularness of it by working out the mechanics, the precision and the speed at which the transformations occur is amazing.

Technically, the show was trying to be slick, but poor audio and a few missed cues let it down. The lighting was typically 'effects' for a show of this type, and extremely clever in the way it was used to mask the mechanics of the tricks. The use of large projectors and live video feeds allowed for small scale card tricks to be shown on a large screen, and archival footage of Copperfield and his family showed the beginnings of the magician.

• Mandy Jones



Riding on the success of *Baby Did a Bad, Bad Thing*, which has been used on the *Eyes Wide Shut* soundtrack, smooth crooner Chris Isaak flew to Australia to perform at the NFL game held at Stadium Australia and to perform nine shows in thirteen days around the country. You get the impression the tour was hastily arranged around the football with only one date played at Sydney's State Theatre. Surely an artist of his popularity could sell-out a few nights. Then there was the gig at the Yallah Woolshed near Dapto.....



Photos: Cat Forcer

Chris Isaak

.....what the hell is this venue?

"It was a shock for us - the band were nearly getting burnt the lights were that near their heads!" said Lighting Designer Lane Hirsch, the man who admits to also being the drum tech. "We have no idea why we're playing these venues. The last two nights we were stuffed into The Mercury Lounge in Melbourne and we were wondering why we were there. Chris walked in and said 'No!' in disbelief."

In the States Lane had been using Martin gear - PAL1200's, MAC500's and MAC600's as well as the Case2 controller - i.e. all a semi full of lights.

"It only took me a couple of weeks to train on the Case2 and then I completely had it down," he said.

The Australian dates were based on Lane's plot for his outdoor US shows using two straight trusses but unfortunately not the eight Cyberlights he requested. Instead Vari*Lite's were used.

"I don't think they're as good as the Cyberlights because the bulbs aren't as bright and we also don't have rotating gobos," said Lane. "I've never been a big Vari*Lite fan. I'm sold on High End and Martin. I really don't have a choice. If I say 'this isn't going to work..' they say 'tough, you have to deal with whatever is in the budget!' But if they don't give me the best gear, I can't have the best light show. I'm pretty much at the mercy of the promoter and what he decides to spend. The lighting on this tour hasn't been that important and we haven't had time to programme."

FOH man was Terry Pearson, making a drastic change from his usual clients - Sonic Youth, David Byrne and Beck. Terry had only been with Chris and his band since June but was enjoying the 'chemistry'.

"I've worked with Jands quite a bit in the past using

their Clair boxes but, considering the venues we've been in, it has made sense to use the Meyer MSL's this time," said Terry. "The coverage has been really good. Even the Woolshed sounded good! But playing these venues makes you a better engineer."

Terry was using a Yamaha FM4000, a 'good serviceable desk' although he really is a Midas man.

"The good thing about the Yamaha is that it's a standard," he explained. "You know the gain structure is always the same, they always sound the same and are very workable. It's quite a busy show with lots of different cues, vocally and musically. When I got this job, there were certain specific requirements - one was delay times for every song although it's my discretion as to how apparent that delay sounds. It adds a nice ambience to the vocals."

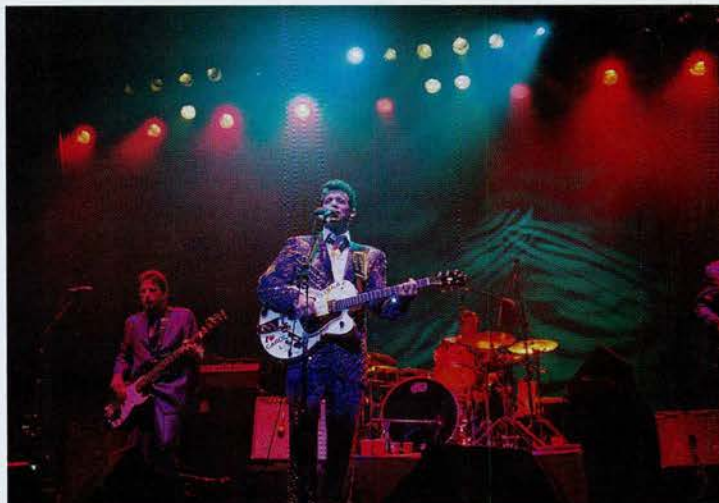
There were a variety of effects including a t.c. electronics 2290, a PCM80, an Eventide 3000, two SPX990's, one SPX900 and a t.c. electronics M2000. Chris has a pair of Compact Monitors specifically dedicated for him which travel everywhere. The rest of the band had Clair M12 wedges. Chris was using a stereo Garwood in-ear monitor piece, the rest of the band a mono in-ear monitor. Monitor desk was a Midas XL3.

Chris' main vocal mic is a Shure SM87 with Shure 56's and 57A's used for background vocals.

Lighting and audio was supplied by Jands.

The Sydney gig was cut short to one hour twenty minutes as Chris was battling the flu and his voice was on the way out. However, he sojourned to the foyer to sign autographs and pose for pictures as compensation - what a gentleman. Hopefully he will return to Australia next year for a proper tour!

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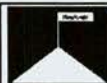


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GEARHOUSE & BYTECRAFT ANNOUNCE STRATEGIC PARTNERSHIP

Gearhouse and Bytecraft, two of Australia's leading suppliers of services to the Lighting, Vision and Audio Visual staging markets, announce the formation of a strategic partnership in order to offer a wider range of specialised products and services to clients.

Bytecraft are renowned for their innovative automation systems, support of major theatrical and concert events such as Phantom of the Opera, Sound of Music, Chicago, Bee Gees and major permanent installation and engineering projects such as Crown Casino's Atrium, The Melbourne Arts Centre Spire and Sydney's Fox Studios.

Stephen Found, Director of Bytecraft commented that the deal opens up new markets for their services including the expansion of their successful Melbourne based rental operation into the Sydney market. He said the deal included the purchase of Gearhouse's lighting assets in Sydney & Melbourne.

The desire to offer a wider range of products and services to clients has set the scene for a partnership between two of Australia's leading suppliers of services to the Lighting, Vision and Audio Visual Staging markets.

Gearhouse, Australia's premier event staging company brings to the partnership a countrywide network of offices. The most important aspect of Gearhouse's operation is the hire of presentation equipment, skilled operators and associated services to the corporate and event sectors, along with specialised products and expertise in large screen video & data projection systems, which include their range of Digital Light Projections DMD units and Barco products. Specialised technology, including Optiscreen, a LED daylight video screen as used on recent projects that have included the

continued on page 75

PLASA NEWS

VARI-LITE TO SELL FIXTURES

After eighteen years rental only, the worlds leading moving light company moves with the times.

H. R. "Rusty" Brutsche III heads a US \$100 million company that is considered to contain the greatest intellectual capital in the lighting business. The CEO and Chairman of Vari-Lite International spoke with Julius Grafton in London.

Rusty Brutsche



Vari-Lite will now sell their heavily patented moving light technology, breaking with a business plan that emulated that of another great Texan firm, the Hughes Drilling Tool company. Howard Hughes got rich by only renting his patented oil drilling tool. Likewise history has been kind to Vari-Lite, who have rented, hired and leased a progressively series of award winning high tech lighting products to a hungry market for eighteen years.

But recent times have not been so kind. A rash of competitors have challenged Vari-Lite and largely impacted onto its rental business. Tens of thousands of High End, Martin, Clay Paky and Coemar fixtures are in rental fleets worldwide, not to mention rental competition from companies like LSD with their ICON range.

continued on page 74

INSIDE LIGHTING



FINALLY - THE ICON M DMD MOVING LIGHT

page 78



COLOR KINETICS

page 79



PLASA NEW PRODUCTS

page 80



FAME - VL7 DEBUT

page 88

BUYERS GUIDE: FOLLOWSPOTS

VARI-LITE TO SELL FIXTURES

continued from page 73

PLASA NEWS

Vari-Lite have taken legal action against some of the above companies. It is understood that High End Systems, also Texas based, faced legal costs of US \$5 million to defend actions which held up their Studio Color line for some years. High End were forced to presell Studio Color at attractive prices to several international dealers to fund part of this legal stoush in recent years.

Happily High End and Vari-Lite have settled their legal actions, and High-End have gone on to great success with their moving yoke products. Martin now face an injunction from Vari-Lite, preventing them selling their Mac 500 and Mac 600 in the USA, but this does not prevent customers hiring these fixtures.

Against this climate I was apprehensive at meeting H R. "Rusty" Brutsche III in London.

Rusty is straightforward and less Texan than I had imagined. He was once playing bass in a band doing bad Otis Redding covers. In 1970 he started Showco with a partner, Showco is today one of the great sound reinforcement rental companies in the world. In 1971 I sat one hundred away as Rusty mixed Led Zeppelin before 20,000 people with a 3,000 watt Showco PA. It was this day which is to blame for my involvement in the industry 28 years later.

BUY YOUR OWN VARI-LITE

"The world lighting production market is worth a touch over US \$1 billion" says Rusty. "We've got ten percent of that. We want another US\$50 million, so it is an important strategy to access more".

The strategy recognises that concert production is in decline



worldwide, admitted by Rusty. But corporate theatre and TV are growth markets. Together the picture is not so rosy for growth in rental markets.

Selling Vari-Lite fixtures is a strategy that has been in planning for at least a year, with R & D having signed off two new fixtures available for sale later this year. They will be revealed next month at LDI in Orlando, but we can confirm they are based on VL 6 and VL 7, a wash and a beam moving yoke. They will be self contained fixtures, not requiring external racks like existing VL products.

They will be joined later by a version of the Vari-Lite Virtuoso console, running VL and DMX protocol.

Vari-Lite say they will be competitive, and sources say they will carry an approximate 15% premium against the competition. While the worldwide rental market is worth US \$1 billion, the sales market is worth more again. It is another line of business that Vari-Lite, now a public company, needed to pursue.

PATENTS

"We (Vari-Lite) have a lot of patents. The first patent we ever took is the one in litigation with Martin now. It involves a dichroic colour changing system. I can't be specific about it".

"There is one patent involved" confirmed Martin CEO Kristian Kolding. "We will have 100 million Euro turnover this year and make a profit. A year ago we were making a loss", he stated.

Martin are putting on a brave face.

"Vari-Lite won round one, they got a Texas judge to place the injunction", said Kristian. "We won round two in Washington, and had the injunction set aside and returned to Texas. They won round 3, because the original judge wasn't going to say 'hey, I was wrong!' So now we face round 4, then round 5, and then next year the patent expires anyway! After this the free market will decide who wins".

STRATEGY

Vari-Lite are appointing distributors to sell their new products. There is some talk of limiting sales to installations, and withholding access to the new products to other rental firms. This may meet with potential legal difficulties in some markets, including Australia.

Jands Electronics are on a very short list to act as Vari-Lite sales distributors in Australia and possibly New Zealand too. CEO Paul Mulholland confirmed Jands were very interested.

Vari-Lite Australia deny dishonoured booking allegation

The rental business is not always rosy, and suffers peak demand periods along with very quiet times.

"We have never been as overbooked as now" says Vari-Lite CEO Rusty Brutsche. "But we have good geographic spread and can move equipment around to meet demand".

But Rohan Thornton, a long time Vari-Lite fan and head lighting designer at GTV Nine in Melbourne, has complained to Vari-Lite over what he claims is a dishonoured booking.

"We booked VL 7's and VL2c's back in July from Vari-Lite Australia for an arena special soon (The footy show finale). Just before I left (to come to London) I had a message that they were now unavailable. I have to redesign the show. And this is not the first time this has happened".

Taking his allegation to the top, Rusty Brutsche said "I'm sorry that occurs. In Australia we contract with Jands" (who run Vari-Lite Australia as a distributor) and they decide. It's really expensive to ship gear there. We have, very occasionally, sent extra gear down".

"The Nine network has been using Vari-Lite since 1986 - the V_1's" says Rohan. "I also had a small Vari-Lite system in Melbourne before Jands opened up down there. But this is the last straw".

In recent times GTV Nine have purchased a Coemar moving yoke system.

Vari-Lite Australia say they are unaware of any situation arising along these lines. "We suggest you ensure you have the correct information before printing something that could be viewed as potentially libelous" said David Sneddon.

MY FAVOURITE GEL COLOUR

BAZZ BARRETT

Lighting Designer, Powderfinger



"My favourite gels would be in the range of 180, 181, 106. I wouldn't have done a light show without using 132 Blue, 117 for steely looks, and a combination of 104 with a 147 Apricot on the top of it for amber, which gives you this golden tone that nothing else even touches. And I like lots of colour corrections like 202. They give everything a nice even touch."

MARTIN SETTLE RUMOURS

Legal action by Vari-Lite in the USA only, says CEO

By Julius Grafton

Two years previous Martin held a press conference and former CEO Peter Johansen went ballistic. He lashed out at High End Systems in an amazing display of - no other word for it - temper. The media later decided not to give him any oxygen, and buried the story.

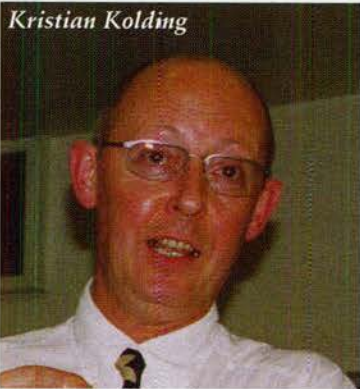
This year in the same place, at PLASA in London, new CEO Kristian Kolding presented a contrast in style, with a concise and frank briefing.

"There is a lot happening. Last year the company was in dire straits, money was pouring out and we were making a loss. Then late last year we made the money go the opposite way and now it is very good".

"We will turn over 100 million Euro's this year and make a decent profit. The change is to common sense. You need to sell at a little higher than cost. You need to do it right the first time".

Mr Kolding said that founder and former CEO Johansen was completely out of the company.

"We have also maintained the competitive edge, and our R & D team has further increased to almost fifty people. We have a new I.T. system which nearly killed us for two months, and a new headquarters - at increased cost!"



Kristian Kolding

Aside from the measured and confident tone projected by Mr. Kolding, the press later reflected that he dealt well with the hot issue, the lawsuit from Vari-Lite. A lawyer was present during the briefing, such is the atmosphere. But he put the chronology of the matter clearly and got his message across. This is that no Martin user is prevented from using any Martin product as a consequence of the legal action, an injunction in

the United States.

The injunction prevents sale of Martin MAC500 and MAC600 moving lights, and was granted because Vari-Lite claim a patent covering a dichroic colour system was breached. Martin say that they expect that they will be able to sell the fixtures once again in July next year, as the patent will expire then. Sales of MAC250 fixtures are un-affected, and the action only relates to the USA.

GEARHOUSE & BYTECRAFT ANNOUNCE STRATEGIC PARTNERSHIP

continued from page 73

South East Asian Games and the Pan Pacific Swimming Championships, provides clients with an effective and efficient service.

Rhona Walker, Managing Director - Gearhouse Melbourne stated "The ability of companies to present themselves or their products effectively grows ever more important, and helping our clients to achieve this is our mission. I am delighted that the new arrangement helps us to fulfill our mission even more effectively".

Both companies are committed to a long-term successful arrangement that will continue to offer clients the Total Event Staging Solution at every level from boardroom presentations & themed events through to major outdoor events and concerts.

Jands signs with High End for console distribution

Flying Pigs and High End merger leads to new deal



Paul Mulholland with the Hog 500

An exciting development, was how Jands CEO Paul Mulholland described his new deal with High End Systems. Now Jands Hog 500 and Hog 1000 (formerly the Echelon 1k) lighting control desks will be distributed worldwide by High End Systems, the Texas based manufacturers of moving light systems.

Jands have had considerable export success with their lighting control consoles since first exporting the Instinct desk early this decade. Today Jands Event consoles are everywhere and appear on many riders worldwide. The Echelon was the first Jands console to adopt the Flying Pigs Whole Hog operating system, a licensing deal which saw Jands pay the Pigs a royalty stream.

Now that High End and the Pigs have merged, Jands have come up with a winning deal that they say will lift sales. Unclear is the fate of the rest of the Jands range, the Event and ESP consoles which until now were subject to another distribution arrangement with another firm.

New developments in the Jands lighting console range: the HOG 500 is a smaller version of the HOG 1000, itself formerly known as Echelon 1k. Features include version 3.0 software, a 'significant enhancement, which will load back to the old consoles' says Paul Mulholland. Hog 500 has 500 channels, without palettes, and 8 playbacks verses 16. Otherwise it's business as usual in this smaller, and almost more attractive new console.

The EVENT 4 is a moving light version of the classic Event, with a moving light section nailed on the end. "It is for those who need to plug and play and not spend two days learning how to use a console" says Paul. (see page 87 for information)

Checking Everything: Luminaires

It's been a busy day, perhaps frantic is more accurate. The extra gear eventually turned up from the hire company; except that the 25 degree profiles turned out to be supplied as 11 degrees, which only meant de-rigging and moving about one third of the rig, after the LD was finally located, asleep on a couch in the foyer. Which was just as well, because it also gave you a chance to find out exactly why Lee 271 Mirror was listed as the colour in half of the FOH rig and to sort out what luminaire was represented by the symbol on the plan that looked like a flowerpot. It's time to start flashing out the rig. Aside from the 20% of the rig which has been wrongly patched, (well Les can't really help the fact that he transposed the dimmer and circuit numbers; besides everyone knows he has dyslexia,) about another third of the rig isn't coming up at all.

There's a fair chance that many of those luminaires weren't working before they were rigged and that quite a few others in the rig may turn around and bite someone during the focus. As it's so much easier to change the lamp, un-jam the focus mechanism, pull out the stuck decal, replace the missing shutter or get the melted gaffer tape off the lens while the gear is on the floor, why rig the gear until you've checked it out?

Some of the luminaires may be tagged as having been tested by a sparky¹ or an approved testcentre, but just ponder for a moment on what the tag means. Aside from the fact that it indicates that someone cares about the health of their equipment, a tag shows that at the moment of the test the luminaire had safe wiring and a good reliable earth connection. Unless that test was conducted right there under your nose in the last five minutes, it serves no real purpose for your rig.² Certainly regular testing is useful for keeping track of wear and fatigue related issues, but there is no testing process which can predict that a roadcase would be run over the luminaire's tail as it was being unloaded to be rigged, or that the lamp will blow after spending four hours on bumpy roads on the way to the fit-up. In the end, the only test that counts towards whether that luminaire is going to be safe and work for you today is the one you carry out immediately prior to rigging. ie. Assume nothing.

If you're going to test your luminaires safely there are a couple of procedures to follow. If at all possible, test the luminaires on a GPO3 with earth leakage⁴ (RCD, GFI, CBR, ELCB) protection or failing that, use a portable "safety switch" box or cable on your test cable. If you aren't certain that you are protected then you should avoid powering up a luminaire whilst you are either holding or touching it

Don't leave luminaires powered up for prolonged periods if they're resting on a flammable or easily damaged surface. After testing a bunch of PAR64 cans it is not uncommon to find inexplicable circular marks on the floor: the electricians equivalent of the mysterious crop circles regularly featured on television specials about the paranormal. Whilst occasionally lending character to an otherwise uninspiring floor design, the circles are usually not appreciated by set designers and have been known to char wooden floors so badly that they have set off the smoke detectors. Especially avoid leaving fresnel or PC spots running with their barndoors closed, as the reduced airflow over the lens has been known to result in cracking.

The first step in the test procedure is to make an inspection of the luminaire: checking for frayed, damaged or melted cable tails or plugs. In the case of a parcan with an exposed ceramic EMEP connector, your inspection should include the cabling to the connector. If anything even slightly untoward is found, the luminaire should be pulled out of the rig at this point for repair or replacement with a spare (well, it's nice dream about having spare gear). There is no point in rigging a suspect luminaire, firstly because it may let you down, but more importantly because it may later become a lethal trap for some poor sod. Who knows, it may even be you who's up the 'scope focussing at the time.

Although it's not a safety issue, the next step in your test ought to be to check that focus mechanisms move freely, that shutters are (a) present and (b) actually move, that barndoors or snoots are firmly attached and rotate as required and finally that there is no gobo left in the gate or gelframe in the colour runners. (Don't forget to re-tighten the locks on those slide focussing lenses and lamp trays.) It's quite amazing how often a luminaire with a piece of Congo Blue or a small leaf breakup gobo fitted is mistaken for being dead when flashing through the rig under full worklights.

If the luminaire has made it this far through the check, it's time to power it up. Do not hold on to the luminaire, don't even touch the body at this point. Plug it in to your known working (and hopefully, protected) power supply and listen carefully for sizzles, pops or bangs. If all appears well, touch the back of your hand very gingerly on an unpainted surface of the luminaire such as the suspension bolt or the hook clamp. If the body of the luminaire is live, your hand will be kicked safely away by the potential causing a brief muscle spasm. This is preferable to having your hand spasm and lock around the luminaire while you are electrocuted. If all is well then you have probably got a luminaire which is both working and safe to use.

Oh, and don't forget to open the shutters or barndoors as soon as each luminaire is rigged. Luminaires are generally more effective if the light actually gets out at the front.

MY FAVOURITE GEL COLOUR

KAIT HALL

Lighting designer, School Spectacular "Dreamscapes"



"I'm really a moving light person so I don't use many gels. I'll avoid analogue lights as much as possible. I do like Lee 181 as it is probably has the richest colour and no moving light can get that depth, they tend to get 'UV-ish'. Basically I like the richer, primary colours. Rosco 27 is a nice red, very rich and deep, and Lee 139 is up there too."

¹ Electrician

² This is not a criticism of testing and tagging, rather a warning that testing alone doesn't guarantee reliability and safety. If you know of a method of predictive testing which takes accidents into account, please contact Connections because we would be interested to write an article about it.

³ General Purpose Outlet or power point

⁴ For more information on earth leakage protection see Tech Talk in Connections, August 1999.

Responses, suggestions or personal abuse to
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FIRST DMD MOVING LIGHT ROLLED OUT

ICON M A BOLD STATEMENT FROM LIGHT & SOUND DESIGN

Texas Instruments first unveiled the DMD (Digital Mirror Device, the heart of its Digital Light Processing system) a few years back as a technology to replace the LCD (liquid crystal display) engine in data and video projectors. Now it looks set to become a major technology in stage lighting with the release of the Icon M moving yoke luminaire.

Shown in London last month, Icon M impressed crowds with its seemingly endless stream of moving gobo type effects, which were video generated. Shown sitting static and projecting onto a fixed screen, the Icon M is a Vari-Lite 7 sized fixture that is theoretically capable of projecting moving video - but not yet.

For now this 1,200 watt MSR fixture has an onboard library of up to 1,000 digital effects - named gobo's, but not as you know them - and will store another 250 customer designed vector or bitmap images as well.

Because it is all done digitally, gone are the wheels, shutters and motors of the current crop of moving lights. Instead, think of this as a video projector on a moving yoke.

Light & Sound Design have built Icon M to be compatible with the existing Icon moving light system - and this means a common control protocol, along with the ability for the Icon M to be driven from existing Icon control. This saves them the trouble of re-defining how lighting designers use fixtures, as pure video cannot yet be run straight into the Icon M.

A handheld diagnostic tool has been created which will show full fixture status even if the unit is powered down.

The colour system is called Parametric, and of course allows any possible colour to be mixed. An additional colour wheel is supplied for extra dichroic 'special' colours.

There are twenty pre production units nearly on the road, and the talk is that the unit will be on rental next year. They will not be available for sale.

The demo showed a fixture which produces simply amazing graphics, shooting onto one screen whilst stationary. The challenge will be to do this while panning and tilting, and to prove reliability. On stand it wasn't possible to discern actual light output relative to anything else.

Expect a rash of DMD moving yoke luminaires once someone figures out how to control them, designs a common protocol, and once Jands,



The Flying Pigs, Celco and AvoLite come up with full video mixing and serial addressing control consoles. Once that happens no name OEM DLP/DMD projectors will be sourced in Asia and bolted onto moving yokes. Then you've got your new millennium moving light!

● *By the way, we first (correctly) wrote about this almost two years ago, and were accused of being wrong by many.*



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Lighting::INSTALLATION LIGHTING

BY::Julius Grafton

PLASA NEWS

Color Kinetics expand digital colour changing lamp line

Boston firm sweep awards with radical architectural lighting products based on extremely low heat solid state LEDs. They redefine cool, as Julius Grafton discovers.....

LONDON: Imagine an MR 16 lamp that is dmx controllable for colour changing – and it installs into a standard fixture. How do they do that?

Color Kinetics have seized on that reasonably new LED technology which is seen on huge outdoor projection screens. Those ultra bright coloured LEDs are used, packed into a little MR 16 sized lamp reflector. Red, Green and Blue LED's allow almost infinite colour mixing, exactly the same way as a jumbo screen uses RGB LEDs to create coloured pixels.

The iColor lamp is just so clever.

It has twelve tiny DIP switches on the rear. These allow a standard DMX address, so each little lamp, with an inbuilt micro-processor, knows which of the possible 512 dmx channels it belongs to. DMX control allows sophisticated programming of colour changes, effects and fades. But you don't need DMX to use the iColor.

The microprocessor allows internal preset effects to be chosen using the DIP switches. These include colour crossfades, washes, random colours and strobes.

So if using DMX, how does the control signal get into the tiny MR16 sized lamp? Does it have a five pin XLR connector on the back?

No way! What the clever people at Color Kinetics have done is devise a DMX multi-

plexer that sends the DMX signal down the mains. This means existing fixtures and existing wiring and tracks can be used. Just pop in the iColor, wire up the DMX demuxer at the head of the mains, and go colour!

New to the Color Kinetics line are some larger light heads, packed with more LEDs than fit in the MR16. The C30, C75 and C200 are made from extruded alloy, feature a diffuser lens and a hanging yoke. Same principle of operation applies. The C200 is a water proof version for outside.



CEO George Mueller

These C series fixtures have a 22 degree beam spread and of course being solid state emit no UV and virtually no heat!

The CEO of Color Kinetics is George Mueller, aged 29. The team are young and smart, and the product packaging is a graphic art statement. Everything about Color Kinetics is cool, and for a lighting company this is almost an impossible dream! Call Coemar De Sisti Australia +61 3 9467 8666.



NEWS

NEW LSC NETWORK

Lighting Control Systems has taken the bold step of how it will deal in the Australian and New Zealand markets, by appointing an "Authorised Distributor Network".

As of September 1, 1999, released in conjunction with the company's new Price List, all LSC products are available through twelve distributors chosen for their ability to stock, sell and service the extensive LSC product range.

Marketing Director, Alan Graham, explained "Previously LSC had dealt with over 200 direct clients, whether reseller, stockist or end-user and this led to large confusion on discounts, poor af-

ter sales service and in some cases unnecessary discounting of the products true worth. Setting up concise Distributor Agreements with companies capable of providing a high level of service to the professional user, will bolster LSC's reputation and improve the company's position in this important marketplace."

Graham also stated that in the upcoming months LSC will put into place "Authorised Service Agents" in a bid to improve service turnaround on all LSC products manufactured over the last 20 years.

LSC Lighting Systems +61 3 9561 5255.



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The free HORIZON CD-ROM is actual software, it is not a demo. It allows you to write cues, assign channels, prepare groups, submasters and even parked channels.

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Connections July 99 p36

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WA- ProDesign Lighting (08) 9409 8964
www.pro-design.com.au/focus-pg.htm

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PLASA HIGHLIGHTS

● The French made **Con'dome** (!) is a range of inflatable domes to protect almost any lighting fixture against weather. Two holes expell air near the top fast, so rain can't get in. They fold flat into a kind of cymbal case, and the clear plastic part can be replaced if it gets tired.

A very cool idea!

Represented by ULA. +61 7 5532 9922.



● **Celco** celebrates almost a year of independence after a management buyout saw Colin Whittaker and Keith Dale buy the firm. Their new 3rd generation consoles were attracting interest at PLASA.

Giotto Spot 1200



● **SGM** rolled out an impressive new **Giotto Spot 1200**, a 1200 watt moving yoke companion to the Giotto Wash 1200. The Wash also gets a 5 motor rotating DMX barndoor, for extra control of beam spread. You could dynamically mask your scenery with this guy!

Using a MSR 1200SA discharge lamp, the Giotto Spot 1200 also features 540° pan/270° tilt, auto reset, 72 colours + effects wheel, remote lamp on/off, 4 beam angles, shutter strobe and more.

Represented by Ashton Admor +61 8 9478 3800.

● **Rosco** launched three new fog systems - the **Delta 3000** with its choice of three remote controls; **Cold Flow** for producing low lying fog on demand and the **Hazemaker II** a controlled fog output for enhancing stage and lighting design features.

A new range of 40 metal **Motion Gobos** designed specifically for rotating gobos was introduced as was two low-cost pieces of user-friendly software - the **Gobo X-plorer** and **Fusion F-X CD ROM**.

Represented by Rosco Australia +61 2 9906 6262.

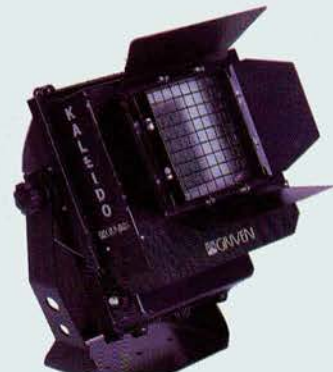
● Trouble always travels in a group. **Coemar deSisti Australia** took a group of customers to PLASA (London) and IBC (Amsterdam) along with a bunch of other sites. Pictured from left are Richard Grenfel (*Staging Connections Melbourne*); Colin Williams (*Key Lighting*); Warren Maher (*Clifton Rigging*); Jason McKinnon (*GTV9*), Rohan Thornton (*GTV9*) and host Peter Kemp (*CDA*). Missing at pic time was Roger Hind of the Outdoor Lighting Company.



● Luigi Pederzani CEO of **Griven**, pictured with Cuono Biviano of ULA. They were celebrating the release of new **Acrobat** moving yoke 250 watt luminaires, which boast a series of MAC250 beating features, they claim! Apparently the 2000 hour MSD 250w lamp has a powerful light output due to the high precision optical system. Also available is the Acrobat Fresnel version.



Kaleido is the new compact architectural colour changer from Griven, featuring a C (cyan) M (magenta) and Y (yellow) subtractive colour mixing system, and a 575w MSD lamp. It's weather proof and can withstand dust particles larger than 1mm. Other features include stand-by function on black-out for lamp life extension, built in power saving system, multi unit synchronisation via master/slave option, linear 0 to 100% dimmer, strobe effect and easy lamp replacement.



Represented by ULA +61 7 5532 9922.

● **Studio Due** presented a brother for the CityColor - the **CityBeam** - which is similar to the CityColor but with a very narrow beam angle to be used over a greater distance.

It can cover (without a diffusion filter) a surface of about 40m² at a distance of 50m and it uses a 1200W lamp. The beam angle can vary between 15° - 20°.

Represented by Show Technology +61 2 9838 4111.

● The **Teatro** entry in the Show Catalogue promised a surprise in store on their stand and they were referring to their new 1200 watt, 80 volt as yet unnamed follow spot. The prototype is hot off the press and has been in intense development over the last

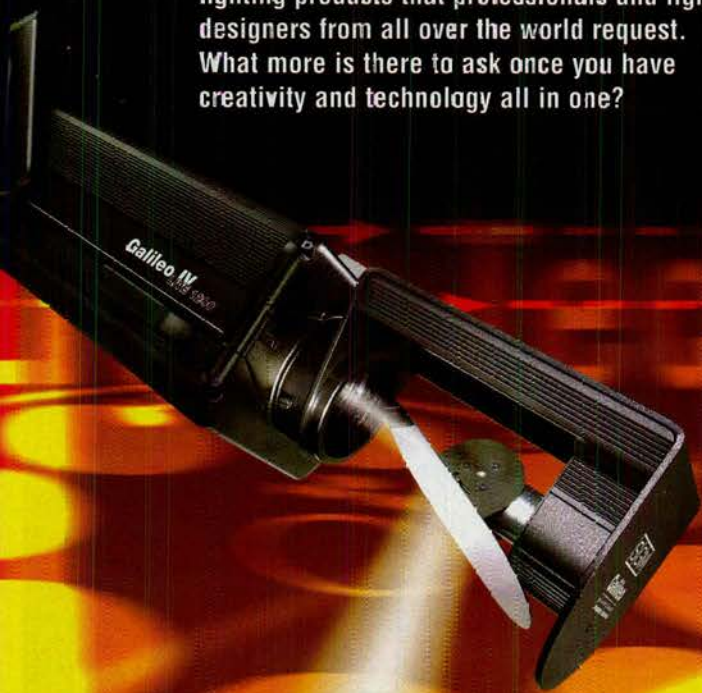
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PLASA HIGHLIGHTS

six months with most of the work being completed in the past three months. In response to a market that has expressed desire for low voltage followspots Teatro have developed the new 80 volt lamp with Phillips. With an electronic transformer, DMX control, dichroic mirror and maximum light output- minimum heat; the new followspot will be something to look out for when it hits the marketplace.

Represented by Lightmoves Technologies +61 2 9560 0000.

● This year there are two additions to the range of Avolites lighting control solutions - The ART 2000 range of dimmers and the Azure Shadow console.

ART 2000 is designed for modern lighting rigs containing numerous intelligent fixtures as well as conventional lanterns. To facilitate the constantly changing needs of today's shows and events, the ART 2000 has four bays that can be fitted with either mains distribution or dimming channel mod-



Azure Shadow

ules.

Avolites continue to expand their console range with the Azure 2000 Shadow. The Azure 2000 Shadow features all the facilities offered by the Azure 2000 with the additional functionality of the 'Shadow' live playback buttons that have always been integral to Avolites' consoles. Avolites have listened to customer feedback which revealed that traditional users felt more comfortable with the Shadow rock'n'roll buttons as opposed to the waterproof membrane of the Azure 2000.

Represented by ULA +61 7 5532 9922.

● Le Maitre has launched a raft of new products. Chief amongst these is the new ProSno - a powerful new snow machine that will find a wide range of uses in pubs, theatres and clubs. Also launched the Electric Air Cannon - a cost-effective electrically fired Air Cannon capable of shooting streamer, confetti, glitter - you name it - up to 15 metres. Also previewed was a new a Dry Ice machine; this is small, compact and capable of delivering low cool fog in conjunction with high pressure liquid CO₂.

Represented by ULA +61 7 5532 9922.

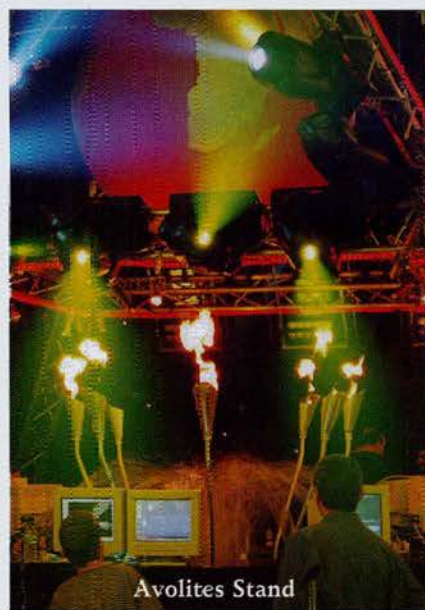
● MAD time as GUET's Eilly Mawer (right) tries to prove that you will not go blind closing it his way the new AXIS 250 watt moving yoke fixture is close, the prototype at PLASA boasted smooth motor operation and, as you can see, a lot of light output. Using a MSD 250/2 lamp, a colour wheel with six colours - white, five indexable rotating gobos, the Axis also has an interchangeable effects wheel and a fresnel flood lens.

MAD also launched a new range of scanners called the ITM-250 Professional Lighting Series. The range comprises of the ITM-250 Color Changer, ITM-250 Star effect and a choice of two ITM-250 scanners.

Represented by GUET +61 7 3358 5118.

● Columbus McKinnon showed a prototype of their new Lodestar motor to be called the Silent Lodestar. The prototype was only completed a few days before the show and is designed to reduce noise, amongst other qualities, which can't be revealed at this stage in the motor's development. The Silent Lodestar has been developed in direct response to the market place and the team at Columbus McKinnon are currently assessing the market before going into production.

● Selecon had a vibrant and colourful stand design, with a hos-



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PLASA HIGHLIGHTS

of Pacific Luminaires attracting a lot of admiration. The industrial design of Pacific is outstanding, and the lanterns got a lot of 'hands on'.

● As well as heavily promoting the relatively new MX-1 Scanner and the Trackpod, Martin launched the first in the new CX Series of colour changers - the CX-2 - featuring a new futuristic design, a colour wheel housing 15 colors, an effect wheel with 10 patterns, 5 iris gobos and frost as well as an electronic dimmer and variable strobe. The CX-2 is DMX controllable and contains a 250 watt halogen lamp.

On show was the new MAC250+ is visually the same as the MAC 250 yet features a colour wheel with 12 replaceable color slots with split color possibilities, indexible rotating gobos, and achromatic lenses for sharper image quality. Also new was the compact version of the Exterior 600 with full CMY colour mixing, remote lamp On/Off functionality and manual selectable beam angles.

The new FiberSource QFX 150 is a DMX controllable fixture featuring a colour wheel with 9 interchangeable colours and smooth, full range mechanical dimmer. A full range of up to 40



Martin CX-2

different colours is available for extra flexibility. Other features include a shutter and variable strobe on the dimmer wheel. An optional kit is also available which changes the dimmer functionality to a twinkle wheel, creating sparkling effects for star ceiling and star curtain installations.

Represented by Martin Professional Lighting Australia +61 2 9898 1111.

● Coemar had a boost with TCP (Sydney) announcing they had ordered 16 CF 1200 and 14 HE 1200 moving yoke luminaires along with a Compulite Sabre console. These join a rental inventory that already features 32 NAT TM 2500, most recently used in KL for the opening of the Petronas Towers.

● Vari-Lite launched the VL6B Spot Luminaire which retains all the features of the VL6 unit but adds 13-35° zoom optics, rotating gobos and strobing. Also new is the VL7B Spot Luminaire which adds four framing shutters to the VL7 unit, along with a collection optics system that produces a bright, even field from just 700W of arc power.

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FOLLOWSPOTS

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American DJ Australia +61 2 9568 2100

FS1000 new high powered followspot. Bright 150w HTI discharge lamp. Uses a new specially designed reflector that is supposed to produce more light output than a standard 1000w lamp. New iris design with a blackout feature. \$654.92.

COEMAR

Coemar De Sisti Australia +61 03 9467 8666

Pilota 1200 MSR/SA Beam Angle 7 - 12; 10m - 70m Working Distance; In built colour changer with 6 colours; 5 colour magazine option; Smooth Iris; Separate dimming shutter; Weighs 42.5kg including ballast (ballast part of unit); Easy lamp replacement. \$9,313.11.

Testa 1200MSR Beam Angle 6 - 11.5; 20m - 50m Working Distance; 5 colour magazine option; Smooth Iris; Separate dimming shutter; 18.2 kg weight, 17.1kg ballast; Easy lamp replacement; Standby mode. \$4,955.74.

Testa 2500SHA Beam Angle 7 - 13.5; 20m - 70m Working Distance; 4 colour magazine option; Smooth Iris; Mechanical Louvred Dimmer; 41.3 kg weight, 28 kg ballast; Easy lamp replacement; Standby mode. \$12,688.52.

DOUGHTY

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Roller Race Spigot Bearing mounted spigot to suit most followspots allows for totally jerk-free pan of the fixture. Variable tension allows for custom adjustment. Suits all professional applications. \$499.

Professional Followspot Stand Heavy duty steel & aluminium construction, casters, height adjustable legs fold up storage, excellent stability, suits all professional spots. \$1,660.66

Followspot Stand 2 stage telescopic, sturdy construction, suits all types of professional spots. \$449.18 ex-tax.

FAL

American DJ Australia +61 2 9568 2100

PF027 1000w halogen lamp; force cooling by 2 axial fans; extruded aluminium and steelplate body; beam divergence -13°; made in Italy. \$1310.66.

PF029 FAL's most popular followspot with HMI575 discharge lamp. Force cooling by 2 axial fans; 4 x 96mm dichroic filters or coloured gels plus clear; made in Italy; beam divergence -14°. \$1802.46.

LIMELIGHT

Bytecraft +61 3 9587 2555, 2 9550 3955

Limelight Followspots are manufactured by Lighting Technology (UK) and are designed for the

professional user requiring exceptional performance and handling. The Limelight uses a 2kw Xenon lamp and has superb colour rendition. It is lightweight and compact with left or right side operation, built in soft focus effect, and 6 frame hand operated colour changer. Cables are detachable and the electronic ballast weighs only 21kg. From \$27,500.

LYCIAN

Jands Electronics +61 2 9582 0909

1290 XLT 2kW Xenon long throw followspot. Centre mount 6 colour boomerang. Ball bearing movement on pan and tilt. Throw range 100ft - 450ft. \$27,045.

PROLITE

Prolite MFG PTY LTD +61 7 4632 7312

FS12-MSR (COMPACT) 1200W MSR, Length 1180mm, Body 200x237mm, Weight 33kg, Integral Gear, Integral Colour Mag, Fan Cooled, Freight included. \$2200.

FS22-MSR 1200W MSR, Length 1330mm, Body 247x270mm, Weight 41kg, Integral Gear, Integral Colour Mag, Fan Cooled, Freight included. \$2600.

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buyers guide::FOLLOWSPOTS

The most recent addition to the Strong line-up of spotlight products, this compact and versatile unit fills a major need in the market by producing 10% more light in a structure that is 20% lighter and 25% smaller than comparable units. The Super Trouper II features rock-solid construction for a steady beam, controls that can be operated from either side, and a totally new optical system that delivers more performance punch. Also available: Xenon Super Trouper, Xenon Super Trouper Medium Throw and Xenon Super Trouper Short Throw.

Strong Xenon Gladiator III® (47061) The massive Gladiator III is the largest and most powerful spotlight in the entertainment industry. For larger venues and jobs requiring maximum performance.

Strong Xenon Gladiator II (47050) One notch below the Gladiator III yet more powerful than Super Troupers, the Gladiator II is ideal for large auditoriums and arenas.

Strong Roadie® (18000) This unit is designed to go anywhere you want a spotlight to go. Featuring a powerful and dependable HTI light source, the Roadie is equipped with a number of advanced operating features. Portable and easy to use.

TAS

Coemar De Sisti Australia +61 03 9467 8666

Inse 1200MSR Beam Angle 8 - 22; 15m - 40m Working Distance; 4 colour magazine option; Smooth Iris; 13.4 kg weight, 13.2 kg ballast; Easy lamp replacement; Mechanical louvred dimmer option. \$2,622.95 ex-tax

CONVENTIONAL UNDER 2K

CLAY PAKY

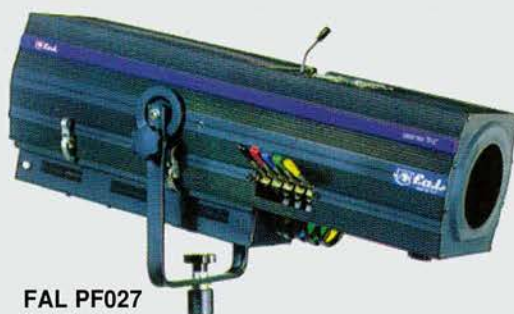
Show Lighting Australia +61 2 9898 1666

Shadow Basic 575 Equipped with a HMI 575 lamp, this luminaire is the ideal choice for hotels, schools and churches - where performance requirements can be adapted to fit a budget. Available in either normal angle or wide angle version and can be operated from the built in analog panel. \$5,531.96.

Shadow basic 1200 This unit is the same as the Shadow Basic 575, with a 1200W lamp. \$6,450.

Shadow HMI1200 QS-ST An Electronic Short Throw model, the power and brightness of this luminaire make it particularly suited to TV and cinema uses. Compact size, takes HMI 1200W lamp and features full DMX 512 control/remote operation. \$8,687.70.

Shadow HMI 1200 QS-LT An Electronic Long Throw model for permanent installations or mobile applications where maximum lightput is required.



FAL PF027

Requires a HMI 1200W lamp and features full DMX 512 control/remote operation. \$10,138.52.

PROLITE

Prolite MFG PTY LTD +61 7 4632 7312

FS12-1.2K 1200W, Length 890mm, Body 200x237mm, Weight 16kg, Integral Colour Mag, Fan Cooled, Freight included. \$1195.

SELECON

Aust wide dealer network.

Chorus 1200 Quartz Followspot For the smaller theatre, school stage and entertainment venue. 1.2kw tungsten halogen, condenser optics with beam angle adjustable - 9 - 21 degrees. Provides 1000 lux at 18m. Includes adjustable iris, braced yoke and platen spigot for smooth operation, adjustable front and rear guide handles. Accessories include four colour changer, dimmer module and control, fold down stand. Auto mains power disconnect. L - 915mm, W - 220mm. Height on stand adjustable - 1087 to 1357mm. Wgt - 13.0kg. \$1200.

Performer 1200 MSR With a choice of Long throw and Short Throw the Performer MSR range meets the needs of the larger theatre, out door venues etc. The Long throw model provides 1000 lux at 57m, the Short throw at 37m. Fully featured Followspot with adjustable iris, dimmer, adjustable balance point etc. Accessories include - 6 colour changer, fold down and professional followspot stand, front and rear handles. L 1100mm, W - 344mm, Wgt - 25.5 kg. \$5640.

STRONG

Chameleon +61 2 9310 5222

Strong 575 (41000) The Strong 575 is a general-use, high-intensity spotlight designed for permanent installation or trouping in a variety of situations. The 575 features an easy-to-operate, one-touch start. The Strong 575 is available with a shortened base for use in locations where space

limitations or low ceilings are a factor.

Strong Trouperette III® (45003) ideal for smaller venues such as schools, churches and community theatre. It's dependable incandescent light source delivers a good, economical performance.

TAS

Coemar De Sisti Australia +61 03 9467 8666

Inse 1000/1200 Beam Angle 8 - 22; 8m - 23m Working Distance; 4 colour magazine option; Smooth Iris; 12.8 kg weight; Easy lamp replacement (650/1K/1.2K); Convection cooled - completely silent. \$1,339.34.

CONVENTIONAL 2K & OVER

COEMAR

Coemar De Sisti Australia +61 03 9467 8666

Testa 2000 Beam Angle 5.5 - 12; 15m - 35m Working Distance; 5 colour magazine option; Smooth Iris; Separate dimming shutter; 20.5 kg weight; Easy lamp replacement; Complete with lamp. \$3,755.74.

PROLITE

Prolite MFG PTY LTD +61 7 4632 7312

FS12-2K (COMPACT) 2000W, Length 890mm, Body 200x237mm, Weight 16kg, Integral Colour Mag, Fan Cooled, Freight included. \$1255.

FS22-2K 2000W MSR, Length 1036mm, Body 247x270mm, Weight 24kg, Integral Colour Mag, Fan Cooled, Freight included. \$1450.

SELECON

Aust wide dealer network. NSW - Herkes ph 02 9319 3133; QLD - The Production Shop ph 07 3216 1340; VIC - Clearlight ph 03 9553 1688; SA - Osmonds - ph 08 8410 1111; WA - Stage & Studio ph 08 9227 9932; TAS - K.W.McCulloch ph 03 6343 1034

Performer Quartz Followspot 2000w or 2500w Followspot for the larger school hall, mid size theatre etc designed for throws of 25 - 30 metres. Provides 1000 lux at 22m. Fully featured Followspot with adjustable iris, dimmer, adjustable balance point etc. Accessories include - 6 colour changer, fold down and professional followspot stand, front and rear handles, dimmer module and control. L 1100mm, W - 344mm, Wgt - 25.5 kg. \$2,750.

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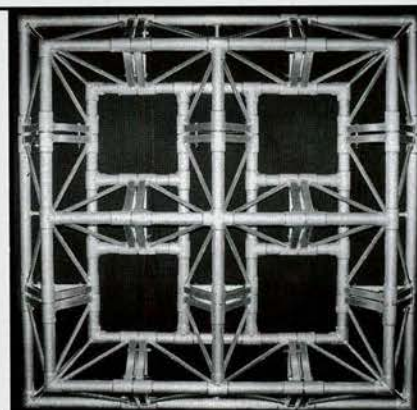
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new products::

SELECON PRECISE RANGE OF MOTORISED YOKES

Selecon have introduced two ranges of motorised yoke suitable for use with Selecon luminaires. The yokes are designed for remote focusing in hard to access positions or where the demands of repertoire programming require fast repositioning of the lighting rig.

The two ranges available at present are:

- Precise 410 with a yoke width for Selecon 1200 range.
- Precise 410 EX (extended) with a yoke width suitable for the Arena range.
- Precise 500 for the Pacific.

Accessories include motorised focus drive for Fresnels and P.C. luminaires and motorised iris.

All yokes include a DMX connection for a colour scroller.

All pricing is subject to separate quotation as it depends on the requirements of each particular project including the model of luminaire used. For further details please contact Selecon Australia 02 9664-8237 or your nearest Selecon dealer.

JANDS EVENT 408 AND 416 CONSOLES

Jands have launched a new range of Event 4 consoles which combine the simplicity of two preset lighting consoles with a powerful palette-based moving fixture and scroller controller. The reaction to the new models at PLASA was extremely positive, according to Jands managing director Paul Mulholland. "We received many orders at the show," he said.

Designed to control a combination of up to 20 moving lights and 80 colour scrollers as well as conventional lights, the Event 416 offers 512 control channels with the familiar Event operating procedures. Three parameter wheels and a 20 memory palette for each parameter type (focus, colour and beam) ensure easy programming. Additional features include 36 x 2 preset fader channels and 16 assign masters, single or double fader crossfade stacks, parameter masking in memories and chases, manual control of fixture parameters, cue linking, simplified patching, timed crossfade in 0.1 second increments and MIDI control.

The Event 408 offers 350 control channels, 24 x 2 scene presets and eight assign masters.

Contact Jands on +61 2 9582 0909.

HORIZON BUILD 675

HORIZON Build 675 has just been posted on the Rosco/Entertainment Technology website, www.rosco-et.com. The latest HORIZON software release offers many new features and enhancements including the ability to import parts of show files; autoscroll to cue list; 'Apply only to group' to record function; and added support for multiple Parallel Interfaces, 11024 Node and Playback.

To try out these and other new features, download HORIZON Build 675 and install the software on any PC that runs Windows 95/98. Use 'demo mode' to access all HORIZON features free of cost or obligation.

CLUB METRO LASER

TCP install large laser system

Total Concept Projects have installed one of Australia's biggest laser systems into Melbourne's Club Metro.

TCP upgraded the existing laser system to full colour high power laser capable of projecting spatial images, animations, logos and 3D images with a cost totalling about \$160,000.

Equipment used includes one Coherent Sabre White Light main frame laser max output 15w; one Alt Risc laser control computer and software; one Cambridge X'Y scanner set; one Crystal (PCAOM) for colour selection; and one 5m x 4m black sharks tooth scrim for graphics and animation projection.

In operation the Sabre laser requires a 100 Amp 3 supply to provide the maximum light output of 15 watts. The use of the main frame laser was to enable the club to expand the system in the future and provide multiple outputs to scanner sets around the club via fibre feeds.

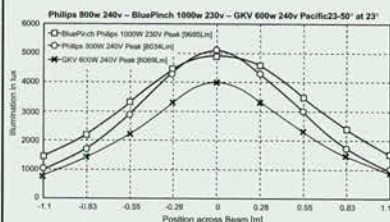


SELECON

PERFORMANCE LIGHTING COLUMN

NEW 800W LAMP FOR PACIFIC

The Design Engineers at Philips, in consultation with Selecon have designed a new 800w lamp for the PACIFIC, being a higher output version of the GKV 600w lamp. This lamp provides very good light output in a beam that can be adjusted to a high output centre peak. The graph below details the light output achieved at 23 degrees for the 600w, 800w and 1000w lamps.



The 800w lamp fits into the 600w lamp module (blue handle) and is available now from Selecon or your nearest dealer.

With the benefits this new lamp has to offer, the PACIFIC range continues to deliver unmatched performance with yet more choice!

SELECON CD-ROM VERSION 2.0



Following the hugely successful first run of our CD-ROM, we are pleased to announce an improved and expanded Version 2.0 – brighter and bolder than before with full explanatory notes on our Theatrical and Architectural ranges, including details on focusing and peak-to-flat light distribution. With the added advantages of being able to trial all of the luminaires in Virtual Theatres, the CD-Rom also provides useful information such as stage lighting formulas and a gobo guide, plus cut sheets for all products which can be downloaded directly.

This is an exceptional tool for everyone from school teachers to technicians to lighting designers, specifically designed by lighting professionals with a dedicated commitment to the world of performance and display lighting. Call Selecon or your nearest dealer now for your free copy.

CONTACT YOUR SELECON DEALER OR SELECON FOR FULL DETAILS

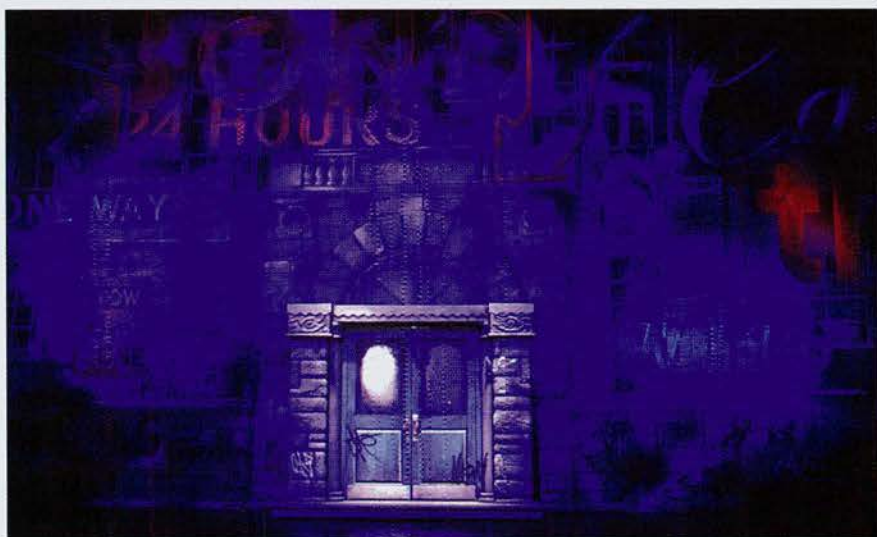
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Write in Reader Service Number: 148

FAME

the musical



VL7 makes an Australian debut

Fame The Musical, directed by David Atkins with choreography by Kelley Abbey, opened last month at Sydney's Star City Showroom. Lighting Queen Trudy Dalglish is the first Australian lighting designer to use the VL7 on an Australian production. A mixture of inhouse and hired gear was used giving Trudy the combination of Martin, Clay Paky and Vari*lite moving lights.

"I'm using 8 MAC500's, 6 MAC600's, 6 Goldenscans, 10 VL6's, 9 VL5's and 4 VL7's," said Trudy. "The VL7 is a lovely lamp and everything you've read about them is true. It has the most amazing optical system I've ever seen in a lamp. The best thing about them is that they can go from a pinspot headshot out to about 60° to take in the proscenium opening. With two lamps you can do the whole of the proscenium opening. When you count that with rotating gobos well, it really gives you quite a versatile lamp.

"They have a beautiful crossfade of colour, words cannot describe how beautiful they do it. Unfortunately because they respond so delicately to pan and tilt, it takes you ages to get them in the right position - the slightest touch of the wheel sends them a foot. To actually focus them on anything is really difficult and then if you play the cues back and plot out of sequence, sometimes they have a bit of trouble finding their way back to where they should be. Once we got the show up and running and we ran the cues, the VL7's settled down. However, if I was to now replot a cue with the VL7's and insert it in the show, all the cues there after would be a little bit out.

"I still think the applications for theatre, especially FOH theatre, are astounding.

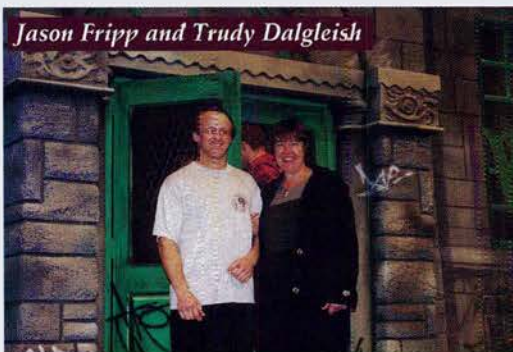
The only thing with theatre is that they are a large lamp and it's a two person lift to get them up. If you were hanging them from over stage bars in theatre I don't think you could hang a conventional unit at least within three feet of it. I can't wait to try them in an arena production.

"They're beautifully bright however we are finding that when we change over a whole unit, when that lamp comes into play in the cues we're having trouble getting it to read same intensity and also softness of beam. We've made a preset focus of the beam so now we just re-record the beam information. They have a very even field with no hot spot at all.

"To finally have a rotating gobo in a Vari*lite is great. The gobos have 12 positions, with 6 rotating gobos and as many colours as you can get out of a VL2c. I think the VL7 will replace the VL2c and the Artisan will become a thing of the past.

"I'm not sure how many VL7's Jands have in stock - I have four in the show plus a spare and I think *Burn The Floor* had ten. I'd love to see them stay in the country but if people aren't 'speccing' them in their designs they won't stay. I just hope lots of designers do use them as they really are a very versatile lamp. When they're out of focus you can make them a semi-fresnel."

All the lighting is rigged in front of the proscenium line leaving the stage area for the band. An extra truss was placed FOH to house the two followspots thus giving them a steeper angle - usually they are placed on the back gantry which causes them to be flat and spill over the set. The entire show is run off a



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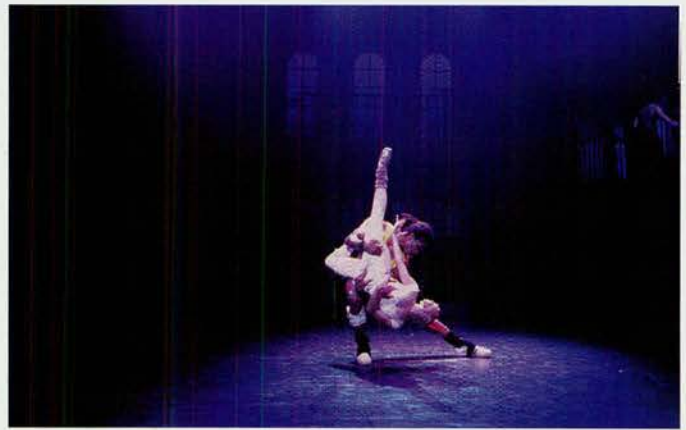
It's the first time Trudy has used the MACs for theatre with a row of six MAC500's and six MAC600's for all the back light.

"I'm loving using the Martins," Trudy said. "The main detraction with the MAC500's is the beam angle isn't great enough for theatre - it's only 19°. I love the MAC600's strobe ability, the closest Vari*lite is a VL5 Arc which doesn't have a strobe. However I love the Arc because you can go from a spot to a flood, which you can't do with the MAC600. Martin MAC's are like the Tonka Toy moving light - I don't know how many noses I'm putting out of joint by saying that - there's no colour mixing, the little things that make a difference in theatre. However the MAC500's as back light really kick arse.

"It's been really nice to have the opportunity to mix all the moving lights. The Goldenscans are on side booms about 50ft from the centre of the stage and up about 30ft. It gives a lovely angle."

Not many conventional lights are used in the show - about 30 profiles, a couple of fresnels and 100 par cans. Four ancient Pattern 23's are also in the rig. Special touches include a few profiles with rotators producing a 60ft shot through the middle of the sliders.

"It's been an interesting room to try conquer," admitted Trudy. "Because the show is transferring to a proscenium theatre I've tried to keep the plotting exactly what I'll be doing next. We've



only got three days to put the show in when we go to Melbourne and I was very aware of that. I tried to make it a proscenium theatre show as opposed to a showroom. It meant that I didn't really solve some of the problems that are inherent in this room and if this had been a one off, I would have done some things differently."

Trudy is currently reproducing John Galow's Broadway lighting design for *The Sound of Music* which opens in Sydney next month.

CREW

Followspot Operators Scott Smith.
Kylie Mather Programmer Jason
Fripp Production Manager Tim
Newmar Sound Design Wyn
Milson Stage Manager Jodie
Hitchcock Touring Mechanist
David Moore Sound Engineer Bart
Barkman

NEWS

COEMAR DE SISTI AUSTRALIA SPREAD THEIR WINGS

Due to an increase in NSW sales Coemar De Sisti have appointed a NSW Sales Support Executive - Scott Polkinghorne. Scott has had an association with Coemar De Sisti and its products over a number of years working for their authorised dealers.

Scott's role is to regularly service all of the trade customers in NSW together with calling on consultants, specifiers etc. This will increase the brand name awareness of CDA's product line, thus increasing sales and hire potential for their dealer network.

CDA have also appointed a local service support facility for the entire Coemar De Sisti product range.

A number of dealers have requested a local service centre in NSW to enable faster service of CDA products, so a local company has been appointed to undertake this work. The staff are fully conversant with the CDA product line and will be continually updated with factory certified training as new products are introduced.

All repairs are booked through Scott on the numbers listed below. Should you have a specific requirement and are in the NSW area please call Scott and he will be pleased to come and see you and assist where necessary with products demonstrations/trails etc.

Scott can be contacted on 0412 555 557

CHAMELEON NEWS'S

Chameleon's outdoor lighting team were contracted by Staging Connections to light the outside of 60 Castlereagh St for the opening of this new building. Imperial 4kW Searchlights, Studio Due City Colors, High End Studio Colors (in eco-domes) were used to paint the building for it's launch.

MANITOBA THEATRE CENTRE UPGRADES LIGHTING FIXTURES

When the Manitoba Theatre Centre decided the time had come to replace its old and obsolete lighting fixtures with new units they engaged Bill Williams, one of Canada's best known and most accomplished lighting designers, to assist in the process.

Assisted by Denis Crymble, M.T.C.'s Head Electrician (together having over 60 years combined ex-

perience with similar equipment), they set their objectives and requirements for what would be their ideal fixture. Eight products from leading manufacturers around the world including Selecon were set at the starting line and after performing and repeating tests over several weeks on a number of different occasions the competition was narrowed to three. The eventual result was a clear win by Selecon's Pacific 12-28 Zoomspot, the fixture being described as exceptional in all respects and an outstanding performer in all of the intensive tests conducted.

For the complete report on the visual evaluations and comparisons and why EO Pacifics will now grace the stage in Canada's first and longest running regional theatre see "Selecting a New Spotlight for the M.T.C." on the website at www.escape.ca/~williams/mtc.htm



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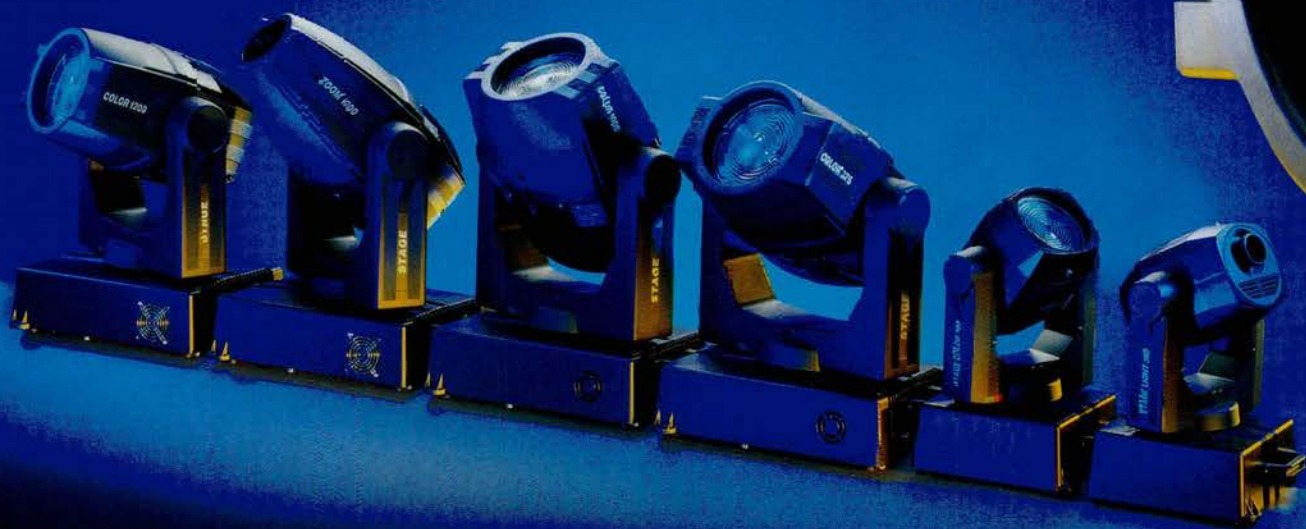
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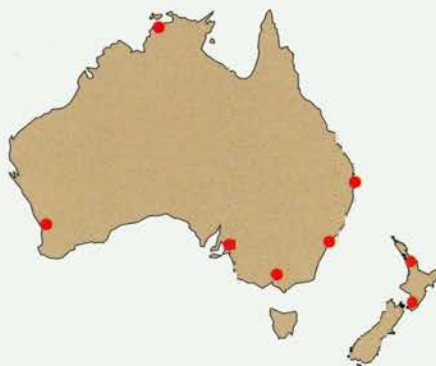
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