

Free in this issue: **NEW PRESENTATION TECHNOLOGY MAGAZINE**
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Connections

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JULY 1999



FREE INSIDE...

Issue 1 of

PRESENTTECH

ISSN 320-5595



Print Post approved: PP255003/00751
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Trade News**

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Change
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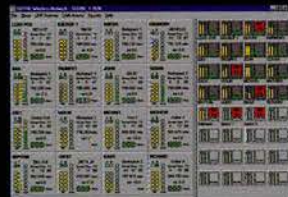
Because while the lights, speakers and even the stage may have to be reinvented to accommodate different acts, all the ultra-flexible Shure

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What's more, the optional UA888 networking interface lets you monitor and control over 20 compatible channels simultaneously from your laptop or PC. The UA888 identifies and

lets you avoid RF interference - from dead zones on stage to cab radios to DTV. This powerful combination lets you handle any application in any venue, any time.

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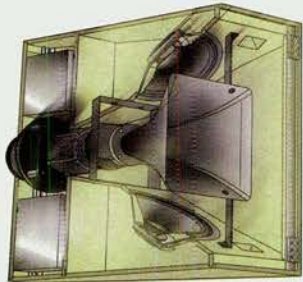
CONTENTS

#67, July 1999

The Entertainment & Presentation Technology monthly

HUGE DJ equipment buyer's guide inside! Page 44

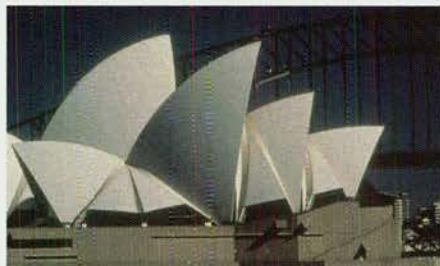
EAW's KF 750 on the road in Brisbane. Page 26



Swan Lake: a stunning local arena production LIVE, Page 54



WEIRD SCIENCE! Design shapes bass dispersion of new sound system in the Opera Theatre Page 30



Amber and AVID make up	7
Oceania open up in Australia	7
Penn expand range	10
Liquid audio CEO at Sydney conference	11
PRO AUDIO NEWS	12
dbx 576 : tested by Sid Kidman	16
STUDIO ROUNDUP	18
New sound system at the Sydney Opera House	30
Duncan Fry : U drive, U pay!	40
DJ Equipment Buyer's Guide	44
How to do it: Live Sound explained	47
How to do it: In the Studio, with Tom M:snr	48

LIVE

Fashion Week four days of frocks and fresnels	52
Swan Lake stunning local arena production	54
Cruel Sea deep down and dirty	57

LIGHTING

LSC in Recovery-	
Melbourne manufacturer fights back	61
Burswood Casino Gaming Room revamped in style	62
Big Boys Toys a testosterone-charged exhibition space	66
Tech Talk: What Can You Measure With a Multimeter?	68
Product Comparison: Talkback Systems	70
Merchant Of Venice - Lighting the Bell Shakespeare play	76
Buyers Guide: Lighting Control	78
Bytcraft: Where Diversity Equals Strength	81
The PA Page: Michael Orland	82



Recorders! Looking for a DIRECY replacement for your analogue multitrack? Read on! Page 18



TALKBACK! All you ever needed to know, and things you didn't! Our guide starts page 70

PRESENTECH

Contents: see page 43

Publishers note -

We have finally launched a companion magazine PRESENTECH - which is included with this issue of Connections. It then goes out alone bi-monthly from the second issue, released at newsagents in September.

Although some readers may miss the audio visual content which until now has been part of Connections, we can now actually concentrate on, and improve your magazine.

One very exciting aspect is that with the finalisation of our new IT and layout network here at the cyber cottage, we can now work on improving the look of Connections.

As evidence of this, check out the fresh and contemporary look of PRESENTECH - courtesy of our graphics guru, Sharon Miceli.

Please do tell us what you think about all this!

COMING IN CONNECTIONS:

AUGUST: Hire & Production Directory

Buyer's Guides: Studio Mixers, Lighting Dimmers. **Deadline** 15th July. **Onsale** August 11th.

SEPT: Film & Broadcast Pro Audio Feature

Buyer's Guides: Microphones, Fresnels & Floors. **Deadline** 15th August **Onsale** September 1st.

OCT: Post & Music Studio, Replication, Duplication, & Mastering directory

Buyer's Guides: Amplifiers, Follow spots. **Deadline** 15th september. **Onsale** October 6th.

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

The Meyer Sound Self-Powered Series

Since the 1995 introduction of the Self-Powered Series, over 13,000 units have been sold. With the advent of this new innovative series, Meyer Sound took a huge technological leap beyond all existing loudspeaker systems. Listen to what some of audio's top professionals have to say about these powerful, industry-defining tools...

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Jeff Thomas ◦ FOH Engineer, The Dave Matthews Band

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

"Only Meyer Sound's Self-Powered Series guarantees us a world-class sound system preferred by most artists and producers."

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"Setting up 18 stages in one week... we never could have done it without the Self-Powered Series. Nothing is easier to use, easier to maintain, or sounds as great."

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

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

Mike Klasco ◦ UPA-1P Review ◦ DJ Times Magazine, May 1998

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Meyer Sound

Write in Reader Service Number: 185

Meyer Sound Downunder in '99

On behalf of John Meyer,
Meyer Sound Australia wishes to thank
the hundreds of Australian audio professionals
who attended our recent seminar series.

Your positive feedback and favourable comments
say it all and have inspired John to want to
come back downunder again next year.

Meyer Sound also wishes to thank all of those
companies who contributed their venues, expertise
and equipment to make this event happen.



WELL DONE.

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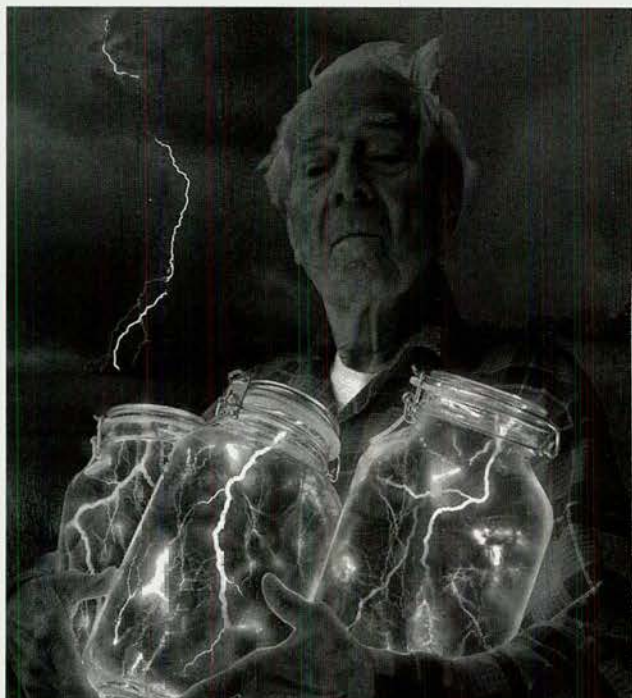
AUSTRALIAN DISTRIBUTOR: Production Audio Services Pty Ltd, 6-8 Elizabeth Street, Richmond, VIC 3121

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

Connections

THE PRESENTATION & ENTERTAINMENT TECHNOLOGY MAGAZINE



Avid and Amber Kiss and make up

Avid Technology Inc, makers of digital audio and video tools have relinquished direct ownership of their Australian distribution subsidiary.

In a statement at presstime, Avid Technology announced the extension of its franchise operation in its international territory with the establishment of Avid Australia.

Amber Technology managing director Peter Amos will be heading up the new organisation as Managing Director.

Avid say that Peter Amos created a market for Avid by distributing Avid editing products in the early 1990's. "Peter has over 20 years experience in the broadcast, video and audio

arenas. He has been successful in establishing companies directly involved in servicing the entertainment and information industries with professional and consumer products" says Avid.

Jim Graham will be continuing with Avid Australia as General Manager.

Amber Technology built Avid's market share, until a U.S. owned branch operation was established in Sydney.

Distribution of DigiDesign products, (an Avid company) are unaffected by the new arrangements. ProTools and other DigiDesign products are directly supported from the USA, with local technical support outside of Avid Australia

Oceania open in AUST

Melbourne to host new audio production firm

OCEANIA AUDIO, New Zealand's largest audio company, has announced that it will open an office in Melbourne in early July.

Oceania provides all manner of sound systems and crew for productions ranging from West End Theatre Shows and corporate events to indoor and outdoor rock concerts- and orchestral and opera events.

The company has worked extensively throughout the Pacific Rim including Australia, Japan, Korea, Hong Kong, Singapore, Fiji, New Caledonia, Samoa and the Cook Islands.

Oceania has assessed the economic conditions within the Australasian entertainment sector as being particularly favourable to start an Australian operation.

The ability for Oceania to supply its clients with a cross-Tasman service marks a new beginning in the production industry in this sector. The

company's five-year strategy is to place itself as one of the top 3 audio service providers within the Australian market by 2004.

Whilst the head office will remain in Auckland, Oceania will open its Australian arm in Yarraville, Melbourne.

Oceania has announced the appointment of Rob Baumanis, formerly of Jands Production Services, as General Manager.

Mr Baumanis said that the company's two major goals in the 99/00 year is to, 'establish the Oceania name as providing an alternative to the usual players in the local market'.

'We want to build a constituency within the local industry, that appreciate the value of the practice of audio production' he said.

Simon Venning from Oceania New Zealand will also be an integral part of the operation in Melbourne.

Inventory will include a Cadac Type 56 console (*below*).





UNRIVALED FIDELITY. TOTAL CONTROL.

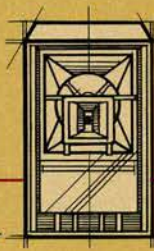
Deliver the best possible sound to every seat in the house
with X-Array Install™ speaker systems
and Merlin™ integrated signal processors.



X-Array Install™



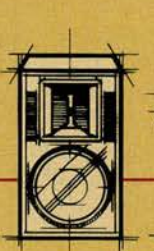
XI-2153/64
XI-2183/64



XI-1153/64
XI-1183/64



XI-1151



XI-1152/64
XI-1152/94



XI-1122/85

EV X-Array Install™, in combination with Merlin™ integrated signal processing are the quintessential high-fidelity sound system solution for performing art centers, theaters, auditoriums and churches.

Rugged construction and flexible flying system makes X-Array Install™ ideal for portable and touring applications.

PERFECT FIDELITY AT ALL SOUND PRESSURE LEVELS

X-Array Install™ speaker systems, like the EV X-Array™ touring systems, feature EV's exclusive Ring-Mode Decoupling (RMD™), the exact technology that gives the Rolling Stones their incredible touring sound quality.

Ring-Mode Decoupling (EMD™) produces vastly improved tonal character and fidelity at all sound pressure levels.

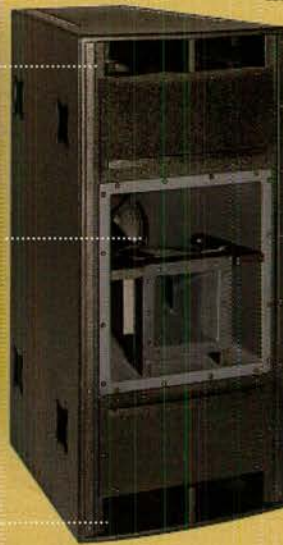
Traditionally, loudspeakers are plagued by time-domain "ring modes," which hang on after the signal has stopped to unpleasantly color the sound and decrease vocal intelligibility. Furthermore, the effect of ring modes is aggravated as sound levels increase, tempting a system operator to adjust system EQ during an event—with little or no success.

RMD™ attacks resonant modes at their source, not with an equalizer. It mechanically suppresses mechanical modes—in speaker diaphragms and cones—or in horn and enclosure walls. It acoustically suppresses acoustic modes—air-column resonances in horns and enclosures, or cavity resonances in compressor drivers. RMD™ is a fundamental reexamination of transducer design and behavior.

1 Top woofer slot

2 Mid-bass horn mouth

3 Bottom woofer slot



The "tripole configuration of the Xi-2153/64—where output from the mid-bass horn joins that of the spaced, dual low-frequency sources—provides exceptional vocal clarity in reverberant spaces and resistance to feedback beneath the loudspeaker, by extending a precisely controlled radiation pattern to unusually low frequencies.

With RMD™, you're ensured truly amazing unchanging fidelity across the full range of frequencies and sound levels.

"TRIPOLE" CONFIGURATIONS FOR EXCEPTIONAL CLARITY: FRONT ROW, ORCHESTRA OR BALCONY

The X-Array install™ Xi-2153/64 system employs a unique "tripole" configuration—where spaced woofers flank and operate with the mid-bass horn, to extend vertical directivity control to the unusually low frequency of 125 Hz.

This precisely controlled radiation pattern prevents reverberant low-frequency energy (125-600 Hz) from degrading vocal fundamentals. This can happen when significant acoustic energy reflects from floors, ceilings and walls. In conventional systems, poor vertical directivity control results in "spill over" under the enclosure, which not only degrades intelligibility but also limits gain-before-feedback on stage.

By precise directivity control, X-Array Install™ delivers very high gain-before-feedback from the source microphone and excellent vocal clarity.

MERLIN™ ISP-100: A 1-RU DSP SYSTEM MANAGER THAT CAN BE CONFIGURED BY THE DESIGNER

Merlin™ ISP-100 is a truly flexible, fully configurable control system that fits between the mixing console and system power amplifiers. It has the power to manage the voicing and directivity control of the Xi-2153/64 in "tripole" configuration. In addition, the designer may determine to suit his needs:

- The signal flow from inputs to outputs
- The number of modular inputs and outputs
- The location within the signal-flow diagram of "management blocks"; crossover and EQ filters, gain, limiters and signal delay

The ISP-100 has an ultrahigh audio quality that begins with its 24-bit analog-to-digital front end. And the capability to provide performing arts with a wide range of configuration possibilities for crossover, EQ and other signal management—from stereo two-way to state-of-the-art left-center-right applications that complement our EDA Spatial Imaging Technology™ LCR panning mixing consoles.

The heart of the Merlin™ ISP-100 is the "QuickMAP™," each of which is a system configuration—or signal-flow diagram—that incorporates the system designer's requirements for signal-routing and multi-way loudspeaker management. The VUE-IT™ software includes many standard QuickMAP's for typical applications as well as allowing custom configurations. Brian Ethwell's QuickMAP's at left, are examples.

This exciting, advanced configuration employs two ISP-100's to accommodate three two-way LCF speaker sources with cross-fed, delayed signals that optimize coverage of the audience space.



QuickMAPs designed by Brian Ethwell, Acoustic Dimensions, Dallas, Texas

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Write in Reader Service Number: 129

CONNECTIONS PUBLISHING

Pty Ltd. (ACN 058443182). An Australian private company, established 1992.

All Mail to:

P.O. Box 439, Epping, NSW 2121 Australia
(deliveries ONLY to 16 Willoughby street)

Phone: +61 2 9876-3530

Fax: +61 2 9876-5715

E-Mail: mail@conpub.com.au

Large files: images@conpub.com.au

Web site: www.conpub.com.au

ADVERTISING: Deadline 15th of each month

Call 1-800-635-514 or +61 2 9876-3530

Director: Caroline Fitzmaurice-Grafton caroline@conpub.com.au

EDITORIAL: Deadline 15th of each month

Publisher & Editor: Julius Grafton

Email: julius@conpub.com.au

Assistant Editor - 7th year

Catriona Forcer Email: catriona@conpub.com.au

Profile journalist: Madeleine Murray

Editorial Alliance: Total Production Magazine (UK)

Regular Contributors:

ADELAIDE: John Matheson **BRISBANE:** Sid Kidman **PERTH:** Andy Ciddor **MELBOURNE:** Mandy Jones, Duncan Fry **SYDNEY:** John Grimshaw, Michael Orland.

EUROPE: Zenon Schoepe, Mark Cunningham (London),
Jacqueline Molloy (London)

USA: Buck Freeman (Detroit), Gary Kayye (NC)

SINGAPORE: Nazir Keshvani **HONG KONG:** Sandy Goh

CREDITS:

Production Manager, Art, Layout: Sharon Miceli sharon@conpub.com.au

Business Development, Marketing: Nicole Morris nic@conpub.com.au

Fiscal Whiz: Jenny Royal **IT Network fixer:** Brendan King

Web: Andy Ciddor **Printing:** Superfine, Syd. (3rd year) *Ta Gaz!*

Reprographics: Omicron, Sydney (7th year) *Call Ari for film!*

Platform: New G3 Mac -but update everything for system 8.5

Newsagents Distribution: NDD, Sydney. (7th year)

DEADLINES:

Monthly except January, deadline 15th of the month prior.

SUBSCRIPTIONS:

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

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

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

PENN PUSH MILLION

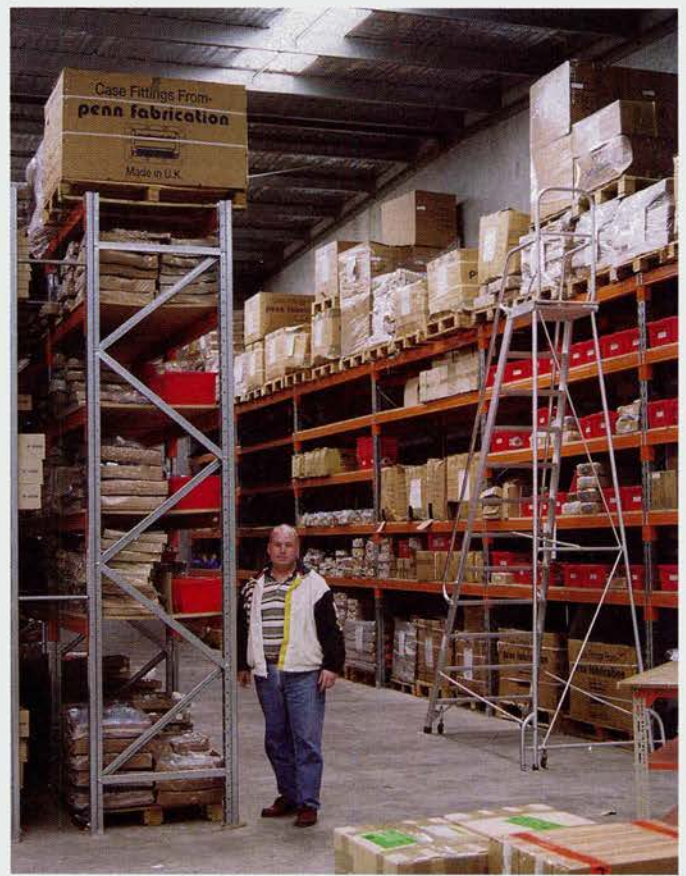
MELBOURNE: Penn Fabrications will almost double stock lines at their distribution facility this month. The new warehouse has allowed stocking an extra 600 product lines, which are on the sea at presstime. This brings the Australian distribution point into full stock of almost all catalogue lines from the 100+ page catalogue.

Penn now carry all lighting truss lines, along with virtually every kind of roadcase hardware and accessory. There are now 1,400 lines stocked at Tullamarine, making up around one million components. Regional manager Andrew Rushen

(below) is working on palletised supply of plywood sourced in Malaysia, and already has a variety of sheet products available, such as metal speaker mesh.

Penn have progressively built their market in the region as the major supplier to roadcase and cabinet manufacturers since humble beginnings in 1982 as a small product line imported by audio distributors Klarion.

Penn Australia founder Mark Dryden went on to head up the North American arm of Penn, and now plans to return to Australia in August. He will leave Penn, having an association that runs back to 1982. •



SMPTTE on this month

It's held each second year in Sydney at the Darling Harbour Convention complex, and it is ground central for the television, film and multimedia businesses.

Opening Tuesday July 13th at 10am, the tradeshow is free - and occupies 10,000m². You'll see a lot of great technology there! It rolls on for four days, closing at 3pm on Friday 16th July. Try to go.

More info can be found at www.expertiseevents.com.au/smpte99/ or call the organisers on +61 2 9939-4445.

Gemini Births!

Adelaide, a 9lb baby girl, to Peter Grisard (Jands) and Francine Cutler. Born on June 5th in Sydney.

Harrison to Con and Christine Andrews (Black Express) in Sydney, a healthy boy born on June 6th.

Moved

• **AAA Productions** are now at 1 Thurso road, Myaree WA 6154. Phone and fax unchanged.

• **Ogden IFC** in gorgeous accomodation at 'The Pavilion on the Lake', Brisbane Ent. Centre, Melaleuca Drive, Boodall QLD 4034.

• **Video Replay Systems** are now at 2A (rear of 3) Nelson street, Annandale, NSW 2038. New numbers: ph: +61 2 9516-5377, fax +61 2 9516-3438.

Sabine demo tour

Dr Bob McPeck from Sabine USA will be visiting Australia in July for a series of product demonstrations in conjunction with local distributor Audio Telex Communications.

Dr Bob McPeck is an experienced audio engineer and professional product trainer for Sabine.

The dates for the product demonstrations are as follows:

Melbourne July 15
 Canberra July 16
 Sydney July 19
 Brisbane July 20

Two sessions are scheduled per day. The demonstrations are open to anybody with an interest in signal processing and feedback control.

Space is limited so please contact your local Audio Telex office for full details or to reserve a seat.

New Agencies:

• Soundtracs Mixing Consoles are now distributed by **Studio Connections Australia**. Call +61 3 9874-7222.

• **The Resource Corporation** are pleased to announce their appointment as Australian Distributor of SC Systems, manufacturers of modular stage and riser systems. The staging systems use a unique herring-bone style folding support structure which is extremely strong as well as compact. +61 3 9877 8233

Stage & Screen

The directors of Stage & Screen Travel have accepted a share swap with Flight Centre Ltd, the largest retailer of travel in Australia. Ken O'Brien states the business will remain as a separate entity. +61 2 9383-4544.

Peavey has NOT purchased EAW and/or Community

Our report last month, which stated that 'Peavey are understood to have purchased EAW and Community' was NOT CORRECT.

Filed on deadline by Buck Freeman, the report originated in the USA and confirmed what we had just heard from other sources.

We work fast on Connections. Our deadline is less than 2 weeks before your copy is delivered. Because we have a passion for up to date information, we interrupted this page last month - after it was completed - to bring you what we understood to be breaking news. It was Saturday, and the USA was closed for official verification.

In November Buck Freeman correctly broke the news in these pages that Peavey had purchased Crest Audio.

Connections Publishing unreservedly APOLOGISES to EAW, Community and Peavey - along with their distributors, staff and representatives, for any HARM or CONFUSION this incorrect story may have created.

- J. Grafton, Publisher.

This retraction is not published as the result of legal actions, nor the threat thereof, bought against this publication. It is run according with our code of ethics, and carries more prominence than the original report, which was placed in this position of magazine last month.

Liquid Audio CEO heads conference

The fourth national entertainment industry conference opens early month in Sydney - with the largest program yet devised.

Hosted each other year by music industry publicist and guru Phil Tripp, the conference attracts over 500 delegates from

the music and entertainment business in the region.

Robert Flynn (*pictured*) - co-founder of Liquid Audio - will speculate on the exciting future of digital downloading of music & entertainment software.

Many other industry leaders

are scheduled to talk. The Conference is at Sydney's ABC Radio Centre, held August 6th/7th.

"Thanks to an aggressive build out of Internet infrastructure including widespread availability of broadband services and the high penetration of PCs in the home, Australias music fans are uniquely positioned to take advantage of the full potential of the Internet as a viable vehicle for promotion and secure digital delivery of music" says Flynn.

- www.immedia.com.au/tab
- Phone: +61 2 9557 7766.

MAJOR EVENTS

- PALA, July 8-10, 1999. Suntec City, Singapore. Ph. +65 227-0688.
- SMPTE, July 13-16 th, 1999. Sydney. Ph. +61 2 9977-0888.
- National Entertainment Industry Conference, Sydney. Aug 6,7. +61 2 9557-7766
- PLASA, Sept 5-8, 1999. London, Earls Court. www.plasa.org.uk
- INFOCOMM ASIA, Sept 15-17, 1999. Singapore. Ph. +65 297-2822. www.icia.org
- AES 107th, Sept 24-27, 1999. New York. Fax +1 212 682-0477. web: www.aes.org
- LDI Nov 19 - 21st, 1999. Orlando. Ph +1 212 229-2965 web: www.etcync.net
- NAMM, 3 - 6 Feb 2000. LA. www.namm.com
- ENTECH 2000, March 5th - 7th, 2000. Sydney Exhibition Complex at the Olympic site, Homebush. Fax + 61 2 9876-5715. web: www.conpub.com.au
- MusikMesse, March 15- 19th 2000, Frankfurt. www.messelfrankfurt.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 +1 904 273-2760 www.nasca.org

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Ethics watch

We have recently rejected a complaint from a facility, who claimed that an editorial item we ran on their facility, didn't carry the prominence of another nearby item detailing a competitive establishment.

PRO AUDIO NEWS

JULY 1999

Meyer Down Under 1999

By Sid Kidman

BRISBANE: Meyer public relations manager, Mark Johnson opened the day, in a very personable style, with slide and video presentation.



Meyer Sound

Forty-five of Brisbane's entertainment industry people attended at the new Queensland Performing Arts complex, Southbank.

Basically, certain points were rammed home—in the nicest possible way; every Meyer product is the result of serious research and development on a sound scientific basis.

Manufacture is driven with quality and reliability in mind.

Customer support and satisfaction is important.

The virtues of self powered systems were extolled, and yours truly provided a comic interlude, competing to get an un-powered system up and running, more quickly than a powered system.

An MSL-6, (reinforcement loudspeaker), an SB-1, (parabolic sound beam) and the PSW-6, (reinforcement cardioid subwoofer) were set up on the lawn outside, to impress the attendees.

John Meyer rounded out the seminar, talking about MAPP, (Multipurpose Acoustic Predic-

tion Program) which will be released as a plug-in for auto cad fairly soon.

I enjoyed the day, feeling it was genuine, and informative, but I was blown away by the demo of the cardioid bass. To be able to walk in and out of that much body pummeling sub was a real surprise.

Fairlight On Air Systems Expands Product Range

Fairlight On Air Systems are pleased to announce their expansion into the Pro AV market by being appointed as the exclusive distributor in Western Australia of Amber Technology's pro audio products.

The entire range includes products from leading manufacturers such as TCP Electronics, Neutrik, Canare, Otari, Dynaudio Acoustics, Neumann, and Re'an, as well as now distributing Fairlight ESP's range of mixing, recording and editing audio production systems.

• **Fairlight On Air Systems**
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Melbourne Demos

CC's Light & Sound are holding "Mic's & Macs", an industry evening to provide the latest information and advice on the impact of DTTB on VHF wireless microphones, and to showcase UHF wireless microphone and In-Ear monitoring systems from AKG and Shure.

Also on demonstration will be the Mac 250 and Mac 300 moving heads from Martin.

"Mic's & Macs" takes place on Monday July 26th from 6.30 pm to 9.30 pm at Barracuda, 64 Smith Street, Collingwood 3066.

Mix'N'Scratch

CC's Light & Sound in conjunction with Kiss FM are proud to present Melbourne's Inaugural DJ & Turntablist Expo, "Mix'N'Scratch".

Showcasing the hottest in DJ and Club technology from Technics, Denon, Rane, Numark, Citronics, Shure, Martin, Geni, ADJ and Jem, Mix'N'Scratch is open to all ages.

"Mix'N'Scratch" takes place on Sunday July 25th from 12pm to 6 pm at Barracuda, 64 Smith Street, Collingwood 3066. Tickets are \$10 at the door.

• **Information, call Arsenio at CC's Light & Sound on Freecall 1800 63 33 63**

Digidesign Makes Unprecedented Offer to MDM Owners

In an effort to increase awareness of the advantages of a Pro Tools digital audio workstation, Digidesign is offering \$1,000 toward the purchase of a Pro Tools|24, Pro Tools|24 MIX or Pro Tools|24 MIXplus system.

The \$1000 is for the trade-in of an Alesis ADAT, Tascam DA series, Sony PCM9000 and Fostex RD8 modular digital multitrack (MDM) recorder.

Digi say this offer is designed to inspire the 150,000 to 175,000 MDM owners to graduate from a linear recorder to the non-linear digital audio recording, mixing, processing and editing capabilities provided by a Pro Tools system.

"We strongly believe that Pro Tools is superior to tape-based systems," says Digidesign's vice president of sales, Chas Smith.

"More and more professional music projects are being created entirely in Pro Tools without use of any tape at all".



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Off-axis rejection is equally impressive, allowing sensitive podium and lavalier mics to achieve levels that were previously unheard of. The result is greater articulation, clarity and intelligibility than ever before.

A wide range of vertical dispersion patterns can be created quickly and easily, thanks to our flexible rigging system. And only Apogee provides a choice of models to meet any requirement. The ALA-3 (pictured above) comprises dual 10" cone drivers and dual 1" throat horns, and is ideal for theatres, ballrooms, houses of worship and similar venues.

The ALA-5 is equipped with dual 15" cones and higher power HF drivers, for larger venues ranging from theatres to sports arenas. And finally there's the ALA-9, a three way, tri-amped system suitable for the biggest concert venues, indoors or out. Apogee Linear Array Loudspeakers give you the means to win the war against problem venues. Just think of what they'll do in the easy ones!

Call, fax or write today to learn more about this advanced technology or to arrange for a demonstration.



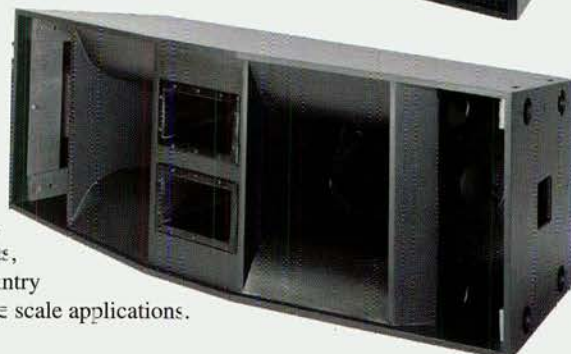
ALA-3

Suited for theatres, hotel ballrooms, houses of worship and more.



ALA-5

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ALA-9

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APOGEE
SOUND INC.

Soundtracs and SADiE announce recorder/console

Following the recent agreement between Soundtracs PLC and Studio Audio & Video Ltd, significant progress has been achieved on an exciting new product with the development title "Digitracs".

Soundtracs are subsequently pleased to be able to provide the following overview:

"Digitracs" will be a Soundtracs digital product based on the architecture of their new DS-3 digital console - combined with integrated SADiE random access audio editing and video playback. SAV are currently modifying their existing SADiE, PORTiA and 24.96 software and hardware products to enable Soundtracs to provide a combination tool for post production, foreseeably capable of unprecedented levels of productivity.

The benefits are decisive, says Soundtracs.

It is a fully featured digital console. Unlike many other "DAW with control surface" products, Digitracs will facilitate large numbers of external signals to be combined with the DAW tracks.

It is promised to provide comprehensive processing without straining the DAW DSP, allow multi-stem, multiformat bussing and utilise the DPC-II's powerful NCO (Numerically Controlled Oscillator) to relock the various studio devices being brought into the mix.

It is a powerful DAW: SADiE software is firmly established in the fields of radio editing and mastering.

Version 3.5 in combination with the 24.96 hardware heralds its restructure specifically for post production which will facilitate rapid editing, simultaneous cross-fading across all 24 or 32 tracks, easy file exchange with other common platforms and will include PORTiA, a random access video system to speed

sync posting.

It is integrated. Sub-frame accurate sync between audio, video and automation allows fast and fine spotting, treatment and mixing of all sound elements.

Edit-conforming ensures that edits on the DAW are instantly echoed in the automation again speeding productivity.

Single-step filing simplifies the administration of sessions as all data is loaded, saved, archived and restored in one operation to a single media.

As a self-contained system it presents a single set of connections to the outside world, reducing both installation and session set up times.

The product will be previewing at the IBC Exhibition in Amsterdam (Sept 10th-14th) and AES Convention in New York (Sept 24th-27th). The initial ship date is projected for the end of '99.

This is a unique and fully integrated Soundtracs product, therefore an upgrade path for existing Soundtracs digital consoles and current SAM DAWs is not anticipated.

MACKIE & ANTARES ANNOUNCE SOFTWARE PARTNERSHIP

Mackie Designs and Antares Audio Technologies have announced an exclusive partnership for the development of Auto-Tune real time pitch correction software for the Mackie Digital 8-Bus console.

Auto-Tune is a fully automatable software Plug-In that provides the ability to correct the pitch of a voice or solo instrument, without distortion or artifacts, while preserving all of the expressive nuance of the original performance.

<http://www.mackie.com>

RCF EXPAND RANGE INTO SMALL SPEAKER SYSTEMS

RCF are proud to announce a new range of installation and contractor style speaker systems.

RCF (which in Italian translates Radio-Cinema equipment for those who asked), are well known for robust and high quality speaker components and accessories.

They have been the primary supplier for many of the worlds foremost pro audio manufacturers for more decades than anybody would care to remember.

Though by nature a conservative company, recent years have seen some highly innovative RCF designs in the areas formally inhabited by the top shelf "boutique" audio manufacturers. One area that received their attention was commercial audio. In recent times the contractor market has broadened from the small and unobtrusive to a need for small and loud.

RCF responded with the Monitor series, ultra compact

high-powered enclosures featuring Kevlar composite cone drivers which offer high fidelity with real SPL for the "distributed system".



Adding to the Monitor series is the new development that brings high quality sound reinforcement to a market now swamped with little plastic boxes. This is the 'Vision' series.

This is a range of five high output full range, two way bass reflex systems and a reflex/horn loaded sub. For complex applications, the addition of the RCI digital crossover, (2 in 6 out) with fine delay adjustments and thirty band parametric EQ deliver complete control and system protection. The speaker systems also feature new generation compression drivers and horns that can be configured for short and medium throw.

The range starts with the PA 261, at A\$1,495 retail. It offers two 6" Kevlar bass drivers and titanium partial horn loaded tweeter in a trapezoidal painted birch ply enclosure with full M 10 rigging points.

The PA 281 is similar with 8" bass drivers. Its frequency response is stated as true 50Hz to 18KHz and nominal power (RMS) 300 watts. RCF usually rate their speaker products with a crest factor of at least 9dB.

The rest of the range includes 12"/15" speakers with 1" or 2" horn drivers up to 500Watt handling capacity. These boxes can be bi-amped or passive operation and can be rigged for medium or long throw array.

The other key feature of this product range, says RCF, is the quality you get for a relatively small price. A highly respected British digital audio company manufactures the digital processor for RCF.

All Vision speaker components are manufactured by RCF.

For prices and information in Australia call Group Technology +61 3 9872 5000.

VHF wireless mic frequencies

Connections reader Russell E. Williams works at the Australian Communications Authority (ACA).

He says:

"I was looking around our Internet site and came across this paper. Although it addresses bio-medical telemetry, in many cases the frequency bands (the VHF TV bands) are shared with wireless microphones".

"You, and your industry colleagues, may like to be aware of the paper and, at least make a need/want known, too".

The direct site address is:

<http://www.aca.gov.au/frequency/proposal.htm>

Shackles

... is on tour with John Farham this month. His column should return next issue.



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	1000 W	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" G-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	59 kg / 129.8 lbs	36 kg / 79 lbs	59 kg / 130 lbs



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TESTED

The dbx 576 tube compressor from dbx

By Sid Kidman

dbx Professional Products have provided some winners over the years, particularly compressors. Selling for \$ 2995 (RRP), this two rack unit processor is 230 mm deep, and weighs 5.9 kg.

Removal of the cover exposes the pair of 12AU7 valves, and a large toroidal transformer. The circuit board is mostly surface mount technology, with components in satellite clusters close to the facilities that they serve. Nothing to fault here — very reassuring.

Testing the functions

Each side has three controls — labeled, drive, level, and threshold. Drive enables the 12AU7 valves to be fully exploited, the user choosing the degree of valve saturation. On full drive with a guitar, or voice, these valves cream out a beautiful tenth harmonic. Level, in both cases is marked - 15 dB to + 15 dB. This amount of attenuation is insufficient to compensate for overdriving the valve, to make the fullest use of the valve distortion.

The threshold control is the patented dbx peak plus limiter. This will control overdrive, but does introduce a flavor of it's own. (An adjacent red led indicates limiting operation.)

The red led to the left of each VU meter indicates circuit overload, but not where this might be.

In the preamp, there are four tone controls. They are conventional, but a mid range variable sweep would be preferred to the existing wide/narrow option. A hard wired tone control defeat switch, and a processor loop insert switch, complete this section.

On the compressor side, the four controls are; threshold, attack, and release. dbx make great compressors, and this unit is up to standard. The familiar over-easy switch (always been useful), the green, yellow, and red leds (indicating the state of compression), and an auto switch, complete this suit. The auto switch is not superior to manually derived settings. (just easy)

Inputs and outputs, and switch functions

Three consign switches under each VU meter latch the meter to; valve drive level, or preamp insert level and compressor gain reduc-

Beware! The range of impedances suit professional work, but may lead to problems in the home situation. One example; the huge gain on instrument input will amplify spurious noise from a faulty guitar lead, or tarnished jack contacts, as happens with equipment which may lie around a home studio.

A Plus - Three folded metal sections are bolted into a sturdy box. The finish is immaculate. The facade is classy, with beautifully notched potentiometers, and positive feeling switches, and a pair of large, quality, analogue meters. This is no doubt serious gear, beautifully manufactured, but of course at a serious price for a suitably serious customer.

tion, or output level – this arrangement is good – and a row of five self explanatory switches on both sections, add versatility in a nice way. DITHER and SHAPE indicate digital readiness.

On the rear panel, inputs and outputs are both 6.5 mm balanced jack and XLR. Whilst there are mic, instrument, and line levels, and -10dB/+4dB switching outputs, this is a less versatile setup than it would appear.

Impressions gained through use

Functioning purely as a preamp in both sections, the dbx 576 is *extremely* quiet, and has a pristine transparency.

Bear in mind some small mixing desks sell for around the same price, and sound just as clean, and may prove much more versatile in the average small studio. This is the benefit of surface mount technology and large scale marketing.

As an instrument or mic processing unit, it is possible to exploit the valve stages for selected degrees of distortion.

There is little point in stuffing around looking for some special distortion here when these effects are so easily achieved on many readily available guitar amps, even for getting creative with vocals.

The compressor functions superbly from imperceptible levels to heavy control of transients, but in no way is a cure all for poor recording.

Summing up

An expensive piece of equipment with limited uses, but much finesse – A classic!

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(And where I like to put it...!)

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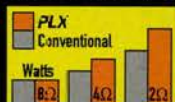
faster than a conventional supply. The result — chest pounding bass, more headroom and consistent crisp,

clean sound. And because the PowerWave power supply is so stiff, PLX gives you more power at two ohms compared to a



Model	Watts per channel *		
PLX	2Ω*	4Ω	8Ω
1202	600	325	200
1602	800	500	300
2402	1200	700	425
3002	1500	900	550

conventional amp.



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Write in Reader Service Number: 187

Replacement decision becomes even harder

What standard? Once, a tape was a tape - and played anywhere it fit. Changing formats now requires luck, forward vision and psychic ability! Julius Grafton investigates ...

What's a perfect multitrack recorder? Without doubt the greatest shift away from retiring analogue recorders has been into work stations - where the actual recording function is interfaced with endless track editing facilities. But not everyone wishes to forego the mixer and recorder combination.

The mixer lives on, wherever there is a multitrack recorder - which these days can take the form of a traditional analogue tape machine, a modular digital multitrack (MDM) like an Adat or Tascam DA88, or a multitrack hard disk recorder.

Sony started the democratisation of digital audio formats when they released the DASH (Digital Audio Stationary Head format) format in the 1980's.

Today the DASH PLUS format goes from strength to strength with over 100 Sony PCM-3348HR machines now installed around the world. 100% record and playback compatible with existing 16-bit DASH machines, the PCM-3348HR offers full 24-bit recording precision across 48 simultaneous tracks, making it the perfect complement for the Oxford console as well as other digital and high-end analogue mixing consoles.

But while this is the easy choice of ultra high end facilities, the price tends to stretch a little beyond most operators budget.

WORKSTATIONS NOT ALWAYS THE ANSWER

While there are hundreds of sites out there with Pro Tools, Fairlight, dsp, Paris, and endless other PC or Mac based systems, some users are taking it to the max and combining both modular digital multitrack (MDM) technology with a workstation.

"I just wrote a cheque" says Doug Kelly from Woodstock Music in Longford, Tasmania. He has an Ensoniq Paris workstation, running on a Mac G3 - along with three 8 track Alesis Adat MDM's.

"The Adat's and the Paris interface well - the Adat's are for field recording, and the Paris for studio editing. It offers plenty of power for an acceptable price".

Another site firmly in the workstation mode is Move Records, from Melbourne. Martin Wright says that his ProTools 24 system is cheaper and more flexible than a tape based system.

The price of equipment has already changed the face of the recording industry as we know it, and allowed many more people to explore their creative urges at home, instead of within the four walls of a commercial studio.

"My existing PC based setup could be done with less than \$6000, says Steve Newton, from Enrec Studio in Sydney. "For \$30k one could buy a very powerful computer based setup indeed and if you had \$50 or more to spend you would be very well fitted up. This is around the cost of a high grade 24 track analog recorder - and you'd still have to buy a mixing desk!"

DIGITAL SOLUTIONS

The arguments about digital sounding different to analogue have dried up in the past 12 months, as 24 bit audio slowly supplements

Once upon a time there was analogue multitrack. And that was that. Then Sony introduced the DASH format which today is the leading choice of those who seek the ultimate. ADAT started a revolution towards affordable modular digital multitrack recording with ADAT, now available in 20 bit format (centre). And the 'workstation' approach has migrated and diversified from the PC and Mac - evolving into 'turnkey' systems like Fairlight MFX and dsp Postation (bottom). There is no 'standard'!



COMING UP:

SEPTEMBER: Film & Broadcast Pro Audio Feature. SEND EDITORIAL! Deadline 15th August

OCTOBER: Post & Music Studio, Replication, Duplication, & Mastering directory. Hurry, listings close 31st August.

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- ✓ Built-in dual battery charger for transmitter batteries, most models. (A charged battery is always available.)
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Replacement?

16 bit. "Tascam has been involved with the manufacturing and servicing of analogue multitrack recorders for more than 2 decades. We produced products like ATR-80 2 inch 24 and 32 track recorders all the way down to cassette based 4 track recorders. Most of these are still in use and many of their owners will not sell them because they like the sound they make" says Travers Falkiner, the Tascam product specialist for Australia.

"Digital recording is, by comparison a relatively new phenomenon", says Travers. "Most of us remember the quality of sound that emanated from our first CD player. I was so disappointed that I sold mine and waited another 5 years before replacing it with better technology. I believe the same type of evolution has been experienced with Digital multitrack recorders. Those who may not have liked the sound 5 years ago should re-investigate the market and experience the benefits of improved A/D's and D/A's and improved sampling rates."

"Our experience with the recently introduced 24-bit DAT recorder, the DA45HR which offers 113dB dynamic range as a case in point. The best dynamic range we could ever get with 2" tape was 110dB running at 30ips and using hot tape. This type of technology points to the way of the future for TASCAM. We perceive the performance gap between Digital and Analogue widening".

Still, industry experts talk about the difficulty perceiving the difference between a quality 16 bit system and a 24 bit alternative.

While CD audio remains in the 16 bit realm, there will be a big future for today's 16 bit MDMs and systems.

Darren Halifax at **Satellite Recording Studio** (Burswood) sends this nice pic of the recording room, designed by Aro Technology after he saw their advert here in Connections a few years back. It is mechanically decoupled from the outside world, which is what you do if you need audio isolation! Chris Morton from Aro has more recently designed the acoustic treatment of the control room - which was all shipped over from Adelaide. Satellite has 64 tracks of ProTools Mix. Call them on +61 8 9470-4003

**STUDIO
NEWS**



20 PLUS BITS

Everyone has a 20 plus bit wish list. "I want the ease of use of an analogue machine, with the editing facilities of a hard disc based machine. And total consistent reliability" says Barrie Clissold from Wombat Road Recording Studio from Boisdale.

Alesis have upgraded Adat to a 20 bit system, with the M20, LX20 and XT 20 all offering feature sets and the ability to play tapes created on earlier Adat's. Adat and Tascam's current range of DTRS recorders, (DA-98 and DA-38) are enormously popular worldwide, and are often used with Yamaha's family of digital mixing consoles - offering



BASF National Tracking Guide

ARTIST **PRODUCER** **ENGINEER/PROGRAMMER** **NOTES**

New South Wales

A # Sharp	Jeff Cripps	Tel: (02) 9153 9988. 24 Track Analogue		
Hooty Toots	Jeff Cripps		Jeff Cripps	CD
Anglican Youthworks	Jeff Cripps		Jeff Cripps	Christian CD
Church Missionary Society	Jeff Cripps		Jeff Cripps	Christian CD
Nathan Tasker	Jeff Cripps		Jeff Cripps	CD
Fowlhouse Jack	Jeff Cripps		Jeff Cripps	CD
@ FX Audio Post & Design	Robert Searls	(02) 9555 6603 Fairlight MFX3, Track edit/mix		
Robert Searls	Robert Searls	Kidspeak, Coke, Thredbo, RTA etc.		
Damien Gerard Studios	Simon Pickworth	Tel: (02) 9660 8776. 24/32 Track Studio		
Big Fat Country	Band		Russell Pilling	EP
Johnny Gretsch	Pete Wells		Russell Pilling	Album
Noiseworks II	Marshall Cullen		Russell Pilling	Live At The Metro
New Christs	Rob Younger		Russell Pilling	Album
Fluidified	Band		Pete Jones	Album
Enree Studio	Steve Newton	Tel: 0418 683 431. Digital Multitrack, Demos, Post, etc.		
John Williamson	Artist		Steve Newton	mixes for new album
John Williamson	Phil Matthews/Robyn Sylba		Newton/Moylan	Post Audio, Video
Feral Studios	Jon Robertson	Tel: (02) 6299 3224. 16 Track & Mastering		
Mr Fistar	Jon Robertson		Jon Robertson(E)	Album
J.D. Brothers	Jon Robertson		Jon Robertson(E)	EP
Lonesome Mick	Jon Robertson		Jon Robertson	Demo
JVB	Jon Robertson		Jon Robertson	Demo
Exhibit A	Jon Robertson		Jon Robertson	Album
Festival Mastering	Bianka	Tel: (02) 9395 8070. Mastering		
Fountainshead	Band		William Bowden(E)	Single
Ruby Fruit Jungle	Jeremy Allom		William Bowden(E)	Album
The Tennants	Phil McKellar		William Bowden(E)	Single
Niagara			William Bowden(E)	EP
Lavish	Clint Mansell/Jeff Lovejoy		William Bowden(E)	Album/Single
Festival Studio	Bianka	Tel: (02) 9395 8070. Recording/Tracking		
Whitlams	Tim Friedman		Rob Taylor/Mark Thomas	Album Tracks
Leonardo's Bride	Wayne Connolly		Wayne(E)	Album Tracks
Celibate Rifles	Band		Mark Thomas(E)	Album
Brenda Starr	Keith Cleversley		Keith Cleversley(E)	Album
Motor Ace	Paul McKercher		Paul McKercher(E)	EP
Fishtank@Festival	Bianka	Tel: (02) 9395 8070. MIDI Sequencing & Hark Disk Recording		
Amiel Daemion	Josh Abrahams		Josh & Clare	Debut Album
Kylie Minogue	Josh Abrahams		Josh & Clare	Tracks for Soundtrack
Nicole Kidman & Ewan McGregor	Josh Abrahams		Josh & Clare	Tracks for Soundtrack
Deadstar Remix	Josh Abrahams		Josh & Clare	Remix of Single
Hullabaloo	Geoff McGarvey	Tel: (02) 9906 2933. 2 ProTools Suites, Audio Post Production		
Potbelly	Engine		Glenn Heaton	TVC Campaign
Greater Union	Engine		Glenn Heaton	TVC
Crosby Sisters	Jodie Grosby/Heaton/McGarvey		Glenn Heaton	Single
Various	ABC Radio		Daniel Bowers	Children's Albums

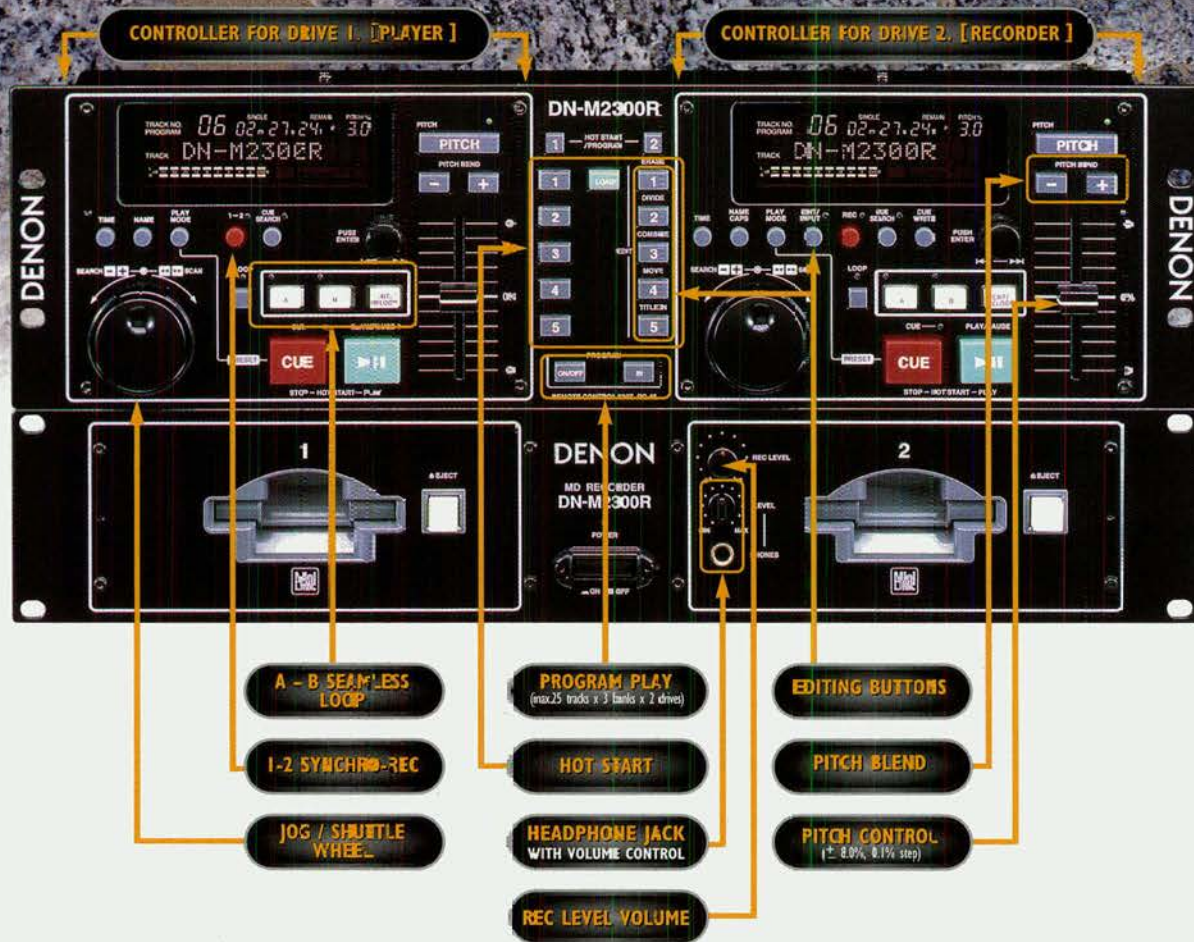


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THE DIRECT REPLACEMENT FORMAT

In a business searching for easy acronyms, no one has yet put a title on a machine that directly replaces a 16 or 24 track analogue recorder.

One such device is the Otari Radar, (pictured above) which recently was reborn in 24 bit format. "An Otari Radar is as good as we could get, it comes closest to replacing our Otari 2" (analogue) machine. The only hassle is backing up projects" says Mickey Levis from Troy Horse in Newton (NSW).

A Radar is the ideal alternative for Barrie Clissold as well.

Tom Misner has recently ordered several Radar II 24 bit systems for his new Mirage ~ Studio 301 complex, approaching completion in Sydney.

"RADAR's learning curve can be measured in minutes, not days or weeks. Simply connect to the 24-track I/O's, arm the required tracks and press "Record" - that's it!" says John Fitzpatrick, General Manager of Amber Technology in Australia.

Fostex went a similar different direction, several years ago, recognising that many users of their existing 8 and 16 track analogue recorders sought a direct replacement.

The D160 is the latest 16 track hard disk system from Fostex, joining the D108 8 track. Once again, simplicity is the key, because you just plug and play.

Recent and ongoing advances in digital media mean projects are now more portable than before. Exabyte offer 20Gb tape drives, and new USB removable hard drives can be plugged in without the need to restart a workstation. These will shortly come in 18Gb size.

New direct replacement format 24 bit machines are also due soon from Yamaha (d24) and Euphonix (R1). •



Here's Glenn Dormand from **Audio Sweet** in Chippendale NSW. They do lots of cool stuff there, and feature his dad's old hi-fi speakers. check them out!

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ARTIST	PRODUCER	ENGINEER/PROGRAMMER	NOTES
Igloo Recording & Rehearsals	Chris Davies Tel: (02) 4927 6822.		
Terri Wilson	Chris Davies	Chris Davies(E/PR)	Pre Prod Demos
Peter Gilchrist	Chris Davies	P. Gilchrist(PR)/C. Davies(E)	***
Serrated	Chris Davies/Artist	Chris Davies(E)	3 Track Demo
Davola	Dave Carter/Artist	Chris Davies(E)/Dave Carter(E)	EP
Dai-ichi	Band	Dave Carter(E)	Pre-Prod Album
JMF Recording Studio	Fran Esther (02) 9790 4097. 24 Tr. 2", 32 Track Digital, 24 Tr. ADAT		
Gelato	Band	Mike Ward(E)	Demo
Cod	Band	Mike Ward(E)	Demo
Robert Favotto	Artist	Ralph Esther(E)/Robert(E)	Demo
Cold Turkey	Band	Guy Saminaden(E)	Album
Loko Uama Recordings	Abel 'eltoro Tel: (02) 519 4355. Dance music specialists		
DJ Abel 'eltoro	DJ Abel 'eltoro	HJ Kim	Track mix
Megaphon	Guy Dickerson Tel: (02) 9550 6576. 40 Track Music Recording		
Nancy Vandal		Tim Whitten	Album
Jive Bombers	Mike Gupp	Guy Dickerson	Album
Karma County		Jeremy Allom	Tracking
Deep Lounge	Jacky "O"	Guy Dickerson	Album
Alan John		Guy Dickerson	Film Score
Nu-Town Studio	Greg Hopping Tel: (02) 9516 3306. 32 Track Digital		
Anita Spring	Greg Hopping	Sofie Loizou(PR)	Single
Cheeky	Greg Hopping	Sofie Loizou(PR)	Album Tracks
Jim Shipstone	Greg Hopping	Sofie Loizou	Demos
Navigator	Greg Hopping1	Sofie Loizou	Single
Powerhouse Studios	Greg Stace Tel: (02) 9318 1220. 24 Track Music		
The Radiators	Peter Blyton	Peter Blyton(E)	Album Completed
Deborah Wood	Greg Stace	Greg Stace(E)	Tracking, Mix, Master
The Louisville Sluggers	Peter Blyton	Peter Blyton(E)	Single Completed
Fury	Mark Warrell	Mark Warrell(E)	Album Completed
Real Food	Mark Warrell	Mark Warrell	Single
Q Recording	Richard Muecke Tel: (02) 9212 4851. SSL G+, Studer A827		
Jimmy Barnes	Mark Opitz/Jon Farriss	M. Opitz(E)/M. Seage(E)/J. Farriss(E)	Album
Human Nature	Andrew Clippel	Richard Muecke(E)/A. Clippel(PR)	Overdubs
Grinspoon	Mark Opitz	Mark Opitz(E)/Mick Seage(E)	Film S'track
Bodimen Big Band	Dein Perry/Lawrence Maddy	Lawrence Maddy	Film Soundtrack
Anthony Warlow	Peter Casey	Glen Phimister(E)	Album
Rockinghorse	Anthony Lycenko Tel: (02) 6688 4005. 24 Tr. Analogue. 64 Track Pro Tools		
Pirol	Christian Pyle	Anthony Lycenko(E)	Album Mixing
Brendan Smoother	Geoff Andrew	Anthony Lycenko(E)	Album Tracking
Junk Beats	R. Walsh	D. Brammah(PR)/M. Worthington(E)	Alb. Mast.
Noosphere	Band	Michael Worthington(E)	Album Mastering
Ujun	Rob Walsh/M. Worthington	M. Worthington(E)	Tracking & Mixing
Skylab	David Russell Tel: (02) 9310 4774. 24 Tracks 2" Analog. 32 Track digital adat		
Juliet Obsessed	Artist	Josh McLeod	Album
Peter Stein	Artist	David Russell	Album
Sam Hawksley	Artist	Dave Russell	Mastering Album
Smokin Guns	Jasper Wilson	Dave "Space man" Russell	Album
Silensphere	Band	Dave Russell	Album
Sony Studio	Sarah Tel: (02) 9383 6461 Fax: (02) 9383 6467.		
Leonardo's Bride	James Cadsky	James Cadsky	Recording Album
Dale Barlow	Artist	Ross A'hearn	Recording Album
Lucid	Band	Simon Tonks	Recording Tracks
Atmosphere	Band	Ross A'hearn	Mixing Album
Slater, Barker, McMahon & Armstrong	Band	Ross A'hearn	Recording CD
Sound Level	John Soane Tel: (02) 9552 3200. 24 Track DA88 - Paris Hard Disk Cubase		
James Sowers	Artist	Patrick Salloch(E)	Demo
Primary Music	Artist	Jamie Fonte(E)	Demo
Bullet Proof	Artist	Jordan Brebach(E)	Demos
Dave Tice	Artist	John Bee(E)	Demos
Peter Davis	Artist	Jordan Brebach(E)	Demos
Soundwarp	Meredith Brooks Tel: (02) 9905 7144. Mastering		
Passionflowers	Lee Cutelle	Meredith Brooks (E)	Single
Various	PAV	Meredith Brooks (E)	Tibetan Conference
Neale Marshall	Artist	Meredith Brooks (E)	Album
Dale Nougher	Artist	Meredith Brooks (E)	Compile
Liz Gee	Elizabeth	Meredith Brooks (E)	Demos
Studios 301	Fiona Simpson Tel: (02) 9211 7301. Mixing & Mastering		
Brenda Starr	Keith Cleversley	Keith Cleversley	Album Mixes
Karma County	Jeremy Allom/Brendan Gallagher	Jeremy Allom	Album Mixes
Studios 301 Mastering	Jacqui Espie Tel: (02) 9211 7301. CD Mastering Facility		
Dianna Ah Naid	Nick Hartley	Don Bartley	Forthcoming Album
John Williamson	Steve Newton	Don Bartley	Forthcoming Album
Universe	Steve Balbi	Don Bartley	Forthcoming Album
Eskimo Joe	Band	Steve Smart	Forthcoming Single
Mick Hart	Mick Hart	Steve Smart	Forthcoming Single
Tiger Recording	Danielle Tel: (02) 9922 4700 32 tr Sonic Solutions		
Mark Duffy	Michael Szumowski	David Hemming (E)	Album
James Morrison	James & John Morrison	David Hemming (E)	Album
Vanessa Corish	Paul Begaud	David Hemming (E)	Album
Leesa Gentz	Paul Begaud	David Hemming (E)	Single/Demo



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ACTIVE



ARTIST	PRODUCER	ENGINEER/PROGRAMMER	NOTES
Leah	Paul Begaud	David Hemming (E)	Album
Top Cat Recording Studio	Brad Wann Tel: (02) 6628 0843	24 Track 1"	Analogue/Digital
Seven	Band	Brad Wann(E)	EP Tracking
Sphinx	Band/Brad Wann	Brad Wann(E)	Album Tracking
Tracey Nowlan	Artist/Brad Wann	Brad Wann(E)	Single Mix/Mastering
Adrian Gawain	Artist	Brad Wann(E)	EP Mix/Mastering
Soulture	Band/Brad Wann	Brad Wann(E)	Alb Tr, Mix & Mast
Trackdown Digital	Geoff Watson Tel: (02) 9550 6890	2-64 Track Digital/Audio Post/Music	
Soft Fruit	Anthony Partos	S. Leadley(E)/T. Lista(E)	Film Mix
Flipper	Yoram Gross/EMTV	T. Ryan(E)/T. Lista(E)/D. Candusso(E)	Audio Post
Allniters	Allniters	Tim Ryan(E)	EP - Mix
Bananas In Pyjamas	Chris Harriott	Kathy Naunton(E)	Live Record & Mix
John Hawkesworth	Artist	Tim Ryan	Library Music - Record
Velvet Sound Recording Studios	Dave McCunn Tel: (02) 9267 2915	32 Channels. MCI 2"	
Indecision	Charles Fisher	Femi Juyr(E)	Album Tracking

Queensland

Big Time Recording Studio	Dave Fitzgerald	(07) 4772 1822/0417 705 284	16 Track ADAT
Pod	Band/Dave Fitzgerald	Dave Fitzgerald	Single
Jack Wilson	Artist/Dave Fitzgerald	Dave Fitzgerald	
Twisted Sisters	Dave Fitzgerald	Dave Fitzgerald	CD
Hybrid	Band/Dave Fitzgerald	Dave Fitzgerald	Single
Soul Cellar	Band/Dave Fitzgerald	Dave Fitzgerald	Single
Vandersound Studios	Eric Vandersande Tel: (07) 5546 8100	Digital & Valve 02R	
Ian Francis	Eric Vandersande	Andrew Hines(E)	Mix Album
The Daisycutters	Eric/Andrew/Damien	Andrew Hines/Damien Newell	Mix & Master
Pre-Dance School	Eric Vandersande	Eric Vandersande/Andrew Hines	Edit, Mix CD
Amphibious	Andrew Hines	Joel O'Reilly	Mix & Master Demo
David Macdonald	Andrew Hines/Artist	Andrew Hines(E)	Record, Edit, Mix

South Australia

Mixmasters Productions	Mick Wordley Tel: (08) 8278	24 Track 2"	
Jim Hermel	Phil Cuneen	Mick Wordley	Mix Album
Spiral Black	Mick Wordley	Mick Wordley	EP
J.C. Jazz	John Collisto	Mick Wordley	Album
Third Degree	Les Karski	Les Karski	Demos/Pre Production
Jed Palmer & Band	Jed Palmer	Jed Palmer	Album

Victoria

Cavalier Music	Jeff/Justin Tel: (03) 9437 0444	16 Track ADAT/Hark Disk	
Shovel	Band/Justin	Justin Skim	EP
Oversize	Band/Justin	Justin Skim	EP
Downfall	Band/Justin	Justin Skim	EP
Dandelion Wine	Band/Justin	Justin Skim	Demo
Musket	Band	J. Skim/S. Banko	Demo
Crystal Mastering	Joe Carra Tel: (03) 9326 2318	CD Mastering	
Horsehead	Cameron McKenzie	John Ruberto(E)	Single
Ice Cream Hands	Band	John Ruberto(E)	Mastering Album
Discordia	Band	Joe Carra(E)	Mastering Album
Paul Coleman Tr o	Band	John Ruberto(E)	Mastering Album
St. Vitus	Michael Waugh	Joe Carra(E)	Mastering Album
Edensound Mastering	Martin/Robbie (03) 9682 9066	Professional CD Mastering	
Michael Thomas	Artist	Martin Pullan	Album
Jane Saunders	Joe Camilleri/Sam See	Martin Pullan	Album
Vika and Linda Bull	Paul Kelly/Renee Geyer	Martin Pullan	Album
Deep Purple	Band	Martin Pullan	Double Album
Renee Geyer/CDBPound System	Paul Kelly/John Camilleri	Martin Pullan	Single
Fortissimo Recording Studios (Aust)	Andy Parsons Tel: (03) 9699 5811	24 Track Analog	
Steve Prestwich	Tony Cohen	Tony Cohen(E)	Solo Album
Doug Mansfield & The Dust Devils	Andy Parsons	Andy Parsons(E)	Album
Spencer P. Jones & The Last Gasp	Tony Cohen	Tony Cohen(E)	Album
Peter Caulton	Andy Parsons/Artist	Andy Parsons(E)	Album
Astrid Munday	Tony Cohen/Artist	Tony Cohen(E)	Album
Lo Ricco Sound Studios	Marcello Tel: (03) 9701 6220	16 Track ADAT XT/24 Track	
Geoff Willis	Geoff Willis/Marcello Lo Ricco	Marcello Lo Ricco(E)	CD Single
Brad Meekcoms	Artist/Marcello Lo Ricco	Marcello Lo Ricco(E)	Album
Kingsley	Kingsley	Marcello Lo Ricco(E)	EP-CD
Metropolis Audio	Toni Wright Tel: (03) 9696 2111	Music	
Killing Heidi	Paul Kosky	Paul Kosky(E)	Album
Petrophonic Productions	Petros Georgiades Tel: (03) 9532 2658	MIDI Suite/Digital Rec	
Jeff Richardson/Client Direct	Petros	Petros(E/PR)	Sales Tapes
Thomas Brumhead	Petros	Petros(E/PR)	Voice Overs
Doug De Vries	Petros	Petros(E/PR)	Demos
Yollette Stewart	Petros	Petros(E/PR)	Solo CD
Mark Joseph	Petros	Petros(E/PR)	Solo CD
Precision Recording Studio	Nathan Johnson (03) 6427 0906/0417 144 290	Adat, ProTools	
Peter McGrandle	Artist/Nathan Johnson	Nathan Johnson (E)	Solo Album
Lee Thorpe	Artist/Nathan Johnson	Nathan Johnson (E)	Solo Album
Si Cazaly	Artist	Nathan Johnson (E)	Album PreProd
Shellbacks	Artist	Nathan Johnson (E)	EP/Demos
Studio 52	Paul Higgins Tel: (03) 9417 7707	Studio A: 32 Track, Studio B: 24 Trk ADAT	
Robert Shrigley	Artist	Tim Cummins/Andrew Meakes	EP

ARTIST	PRODUCER	ENGINEER/PROGRAMMER	NOTES
Tunari	Willy Quiroga	Trevor Carter	Tracking New Album
Good Shepherd Anglican School	Emma Cornish	Trevor Carter	Xmas Album
Christopher Spencer	Tim Cummings/Glen Poulter		Demo in Studio B
Youth	Paul Norton	Doug Brady/Tim Cummings	New Single
The Ranch	Norman James Tel: (03) 9419 1506	Digital 24 Track	
Judy's Game	Stewart	Norman James	Album
Various	Australian Music Marketing	Norman James	O/S Promo CDs
Nikka	Michael Andre	Michael Andre	Album
Shenanigans	Gary King	Norman James	Album
True Form Music Services	Neil Gray Tel: (03) 9391 0907	24 Track Digital/Analogue & HD	
Rumberos	Neil/Band	Neil Gray	CD Edit & Master
Audabon	Finn/Band	Finn Keane	Mix EP
Unos	Neil Gray	Barrie Clissold	EP
Melodic Swell	Neil/Band	Neil Gray	ADAT Transfer
Wombat Rd. Recording Studio	Barrie Clissold Tel: (03) 5145 4204	16 Anal/16 Digital	
The Molly Maguires	Band/B. Clissold	Barrie Clissold(E)	Mixing, Mastering
Debbie Nygrin	S. Thorpe	Barrie Clissold(E)	Demo Tracks
Industrial Deafness	Band/Clissold	Barrie Clissold(E)	Demo CD
Archipeligo	J. Cribbes	Barrie Clissold	Live Recording
D. McMahon	D. McMahon	Barrie Clissold	Demo Tracking

Western Australia

Planet	John Villani Tel: (08) 9382 2211	48 Sony/32 Otari/24 Studer/Sadie Octavia	
Rita Barnett	Alfredo Mallo Bello	John Villani (E)	Album
Kim Taggart	Kevin Peek	John Villani (E)	Demos
Greg Harrold	Kevin Peek	Les Williams (E)	Demos
E. Green	Kevin Peek	John Villani	Single
Vdelli	John Villani/Band	John Villani	Demos
Revolver Sound Studio	Vic Manfrin Tel: (08) 9272 7505	32 Tr Analog & Digital	
CrawlSpace	Band/Ben Glatzner	Ben Glatzner	Album Tracking
Hifalutin	Band/Ben Glatzner	Ben Glatzner	EP Tracking
Flavour Of The Month	Grant Ferstat	Ben Glatzner	Album Tracking/Mix
Plato's Dog	Band/Laurie Sinagra	Ben Glatzner	Album Tracking
Christian Jones	Artist/Vic Manfrin	Vic Manfrin	CD Single
Satellite Recording Studio	Darren Halifax Tel: (08) 9470 4003	ProTools - 48 Tracks	
Zydecats	Lucky Oceans	James Hewgill	Album
Lucky Oceans	Artist	James Hewgill	ABC Miniserries
Left Nut	Band	James Hewgill	EP
Dame Edna Everidge	Belinda Roberts	Darren Halifax	Radio commercials
An T Eilean Mor	Band	Darren Halifax	Album

Northern Territory

Masters Studio & Production	Lindsay Masters Tel: (08) 8932 1754	8 Track, Digital Editing	
17-33	Band/Lindsay Masters	Lindsay Masters	5 Track Demo

Tasmania

Woodstock Loft	Doug Kelly Tel: (03) 6391 2277	Ersoniq Paris/24 Track ADAT	
Equinox	Doug Kelly	Doug Kelly(E/PR)	Demos
Dead Fred's Left Head	Doug Kelly	Doug Kelly(E)	Album

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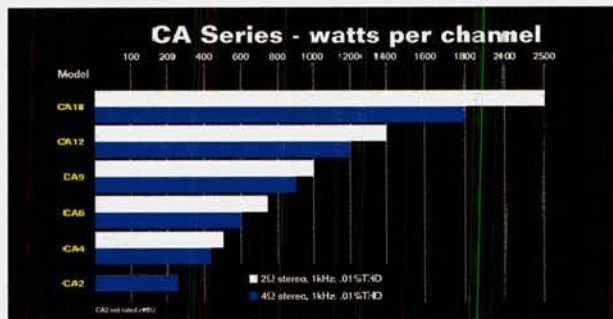
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EAW KF750s in service

— Or how Ivan Simon got a jump on his competitors —

By Sid Kidman

Ivan Simon owns and operates (with the help of a very happy looking crew) IJS Concert Sound And Lighting. IJS does full sound and lights, up to large outdoor concert rigs, and also has a thriving hire department.

Ivan is very happy to talk about his eighteen new ultra compact EAW KF750 boxes.

Some two years ago, the IJS business was constrained by what Ivan describes as the “black box” syndrome. This amounted to a large collection of black boxes that were bulky, old fashioned, and suffered the constraints of yesterday’s gear. New equipment was required, to give company turnover a lift.

Including the 18 KF750 bins, IJS now has a thoroughly contemporary stock list, including the latest RCF self powered monitors and subs for hire.

In the interim, a full Court system of 24 boxes was acquired. This was the main rig, doing every thing from festivals, to halls, and tours. It proved so popular that now it is in constant hire for touring.

Last year, the purchase of a JBL Venue System – twelve small boxes that sit in a truck at one row and a half, also proved to be a good move.

Sustaining growth needed a more flexible system, which had to satisfy a number of conditions. It had to have the right;

- 1 size
- 2 weight
- 3 portability
- 4 coverage

Ivan trolled the Internet for information. He had heard of a “V - DOSC” (French) system, but purchase had complicating

constraints. Fortunately, the EAW web site mentioned the development of the KF750 series.

At this point in time, a number of major hire companies had stocked up with the EAW KF600 and KF800 series. Apart from the fact that the KF700 series is the most technically advanced series so far, the 600s and 800s did not offer the convenience for which

Ivan was looking. For example, he considers the 800 series too difficult to handle (size and weight wise; i.e., 180 kg per 840 bin). Also, the KF750 series would equip IJS with the most contemporary stock in Australia.

Ivan had the NYE '99 gig coming up at the RNA Sheep and Wool Pavilion, and so committed to eight KF750 boxes for this show. They were so new, that IJS was EAW's first customer for an array of 750's.

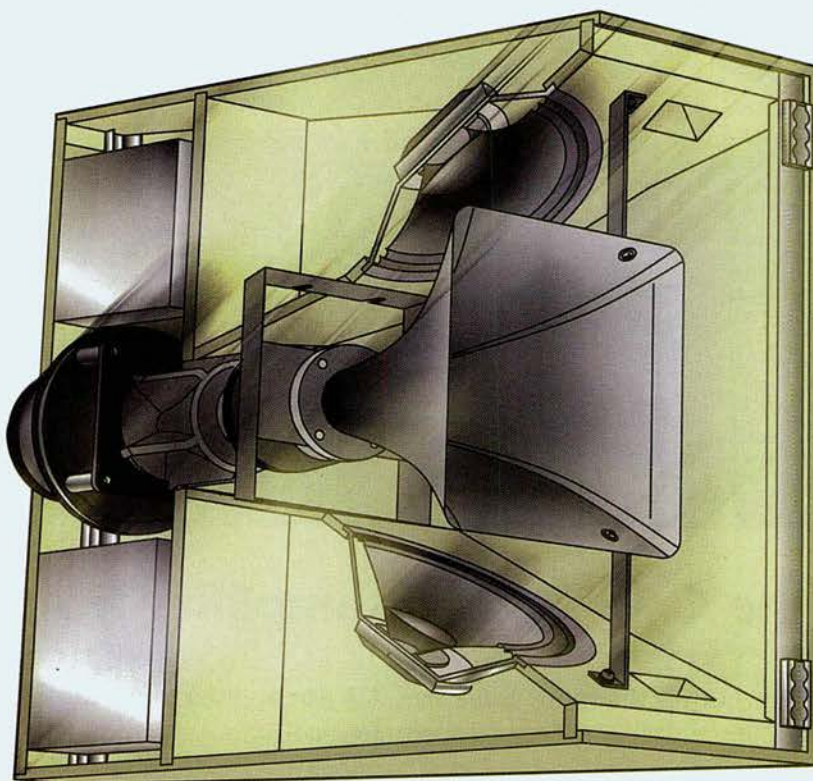
This fact was confirmed by Karen Anderson, Marketing Services Manager, EAW.

The eight boxes arrived on Dec. 30, giving Ivan's team barely enough time to rewire their racks to suit.

The product lived up to all their expectations and then some. Ivan's crew had done this gig many times, and knew the room well. Basically, the room is a tin shed on a concrete floor, with some fifty by one hundred meters to be covered.

The KF750s delivered smoothly to every part of the room. The only down side was that six Court subs could not keep up with the 750s.

Therefor there would



KF750's at the Queensland day celebrations



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The GA console, which comes in either 24-input (GA24/12) or 32-input (GA32/12) versions, has some other nifty features as well. You get four band EQ on the inputs, three band EQ on the outputs, a two-mix matrix, PFL, AFL and channel on/off switches. And, you get the rugged construction, reliability, and sonic performance you have come to expect in a Yamaha console.

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be a need to hunt up suitable subs, but that is another story, with Brisbane's Acoustic Technologies building subs to their specs.

Since then IJS has had to purchase another ten KF750 boxes to satisfy their current demand. The only downside according to Ivan is the value of the \$ Aus. At a retail price of 18.5 grand, they are quite a financial commitment. We can assume that Ivan didn't pay quite that amount each.

The KF750 specs out pretty impressively.

It is a high "Q" three way triamped full range system in a trapezoidal enclosure. It includes a pair of twelve inch woofers, a ten inch mid, and a two inch horn.

Each box is flat (+/- 3 dB), with a response from 48 Hz to 18 kHz, and can maintain around 135 dB SPL long term @ 1 meter. All that in a cabinet that presents a front 787 mm high and 686 mm wide, and weighs in at 86.5 kg.

Stacked head to tail and two high, the entire stock of 18 occupy a very small foot print. Set up could not be more simple for flying with the rigging supplied. Aligning the boxes in horizontal or

vertical array at a gig is as simple as punching in the parameters developed by EAW for various conditions. IJS input these parameters into their JBL DSC260 crossovers.

As is often said when an evaluation is needed, "The proof is in the eating of the pudding." For the recent Queensland day celebrations, the 18 KF750s were employed at the River Stage, which is a large open air amphitheater in the old Brisbane botanical gardens.

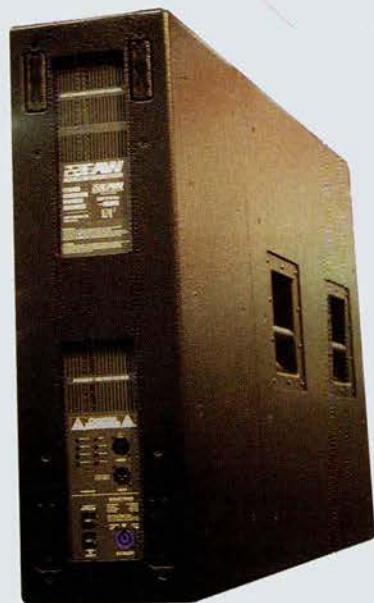
There was also a large crowd there for the day. The rig went up quickly and easily.

The sound was clean and full, (according to this author), for both the TV type speech and children's entertainment, and the main show, Men at Work.

Although the groups of boxes looked diminutive against the large stage, they worked superbly, comfortably doing more than adequate dBs, at more than fifty meters, and out to the extreme wings of the ground.

According to Karen Anderson (EAW), the internal power amp module (see picture above) is under still development for the KF750. Ivan's boxes certainly have the cavity and fixtures ready for the installation of the self powering units. Although he is happy with his Crest amps, this will be more temptation for Ivan to raid his piggy bank.

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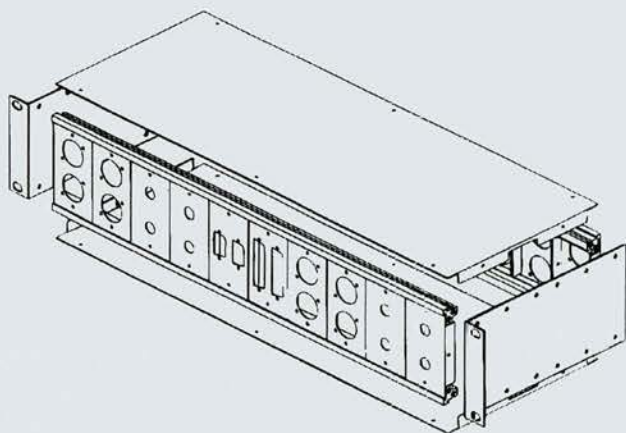


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Write in Reader Service Number: 172



Electrically Tapered Array in the SOH

Weird science shapes sound in an unusual installation

By Julius Grafton

Opera isn't normally amplified. Nor is a symphony orchestra. But sometimes some sound reinforcement is used. A venue like the Opera Theatre at the Sydney Opera House amplifies singers if, for example, it's an operetta style production in English and it's necessary to understand the jokes, or a performer has strained their voice and needs assistance while they recuperate.

These days there is a subtle trend towards the subliminal amplification of opera and orchestra, according to David Connor, technical manager for sound at the House.

"Small classical ensembles are benefiting from amplification" he says. "If you subtly and repeatedly amplify a classical concert then no-one will notice the amplification, but rather experience an increased presence and clarity that they would only identify if the sound system was turned off. Bruce Cook (Sound Supervisor) and Bob Scott (Sound Engineer, general talent type person) are delivering excellent results for Musica Viva, subtly enhancing small classical ensembles up in the Concert Hall".

Audiences have also come to expect a louder show, says David Connor, revealing that this is a tricky and somewhat political issue. "People sit at home and turn up the volume. The digital age means that a lot of homes are getting high quality sound. You *can* turn it up and it sounds good. I mean 'Ride Of The Valkeries' should be loud. The audience is starting to expect it in the concert and opera halls as well."

One of the prime considerations is for the listener to localise sound back to the performers. The ear can be tricked into locking on to a source if the sound system itself is slightly delayed. This is the 'Haas effect' (See sidebox).

The Opera Theatre also hosts dance and ballet, which are often substantially amplified. The original sound system in the Opera Theatre was installed when the house was built, and hasn't been used for years. Instead, the sound crew flew in various combinations of JBL, Meyer, EAW, and Tannoy loudspeakers according to what was required. This worked fine for dance and ballet, but wouldn't be suitable for Opera.

"It's most likely that in the next couple of years we will need to amplify Opera. The object was to get our technical infrastructure ready for that". After a review of requirements, a new system was deemed possible, and David Connor set about writing the performance specification.

SPECIFICATION

The specification called for a six-channel system, made up of two left-center-right arrangements - one for the stalls, and one for the circle. This allows dialogue to be centred with a mix of music, and some music and effects panned to the left and right.

"The specification was complex," says David, "and defined a proposed system in descriptive outcomes as well as quantifiable specifications".

It said:

The loudspeaker system for each channel shall:

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- Exhibit a flat frequency response so that a similar sound quality is experienced by each audience member in the target area;

please turn the page

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Electrically Tapered Array in the SOH

- Produce a similar sound pressure level for each audience member in the target area
- Minimise acoustic reflections from 'Other' areas
- Evenly excite the reverberant field
- Maximise the acoustic gain from on-stage at all frequencies
- Minimise response anomalies onto stage

The frequency response of the system shall be defined for three areas :

- Audience
- Stage
- Other

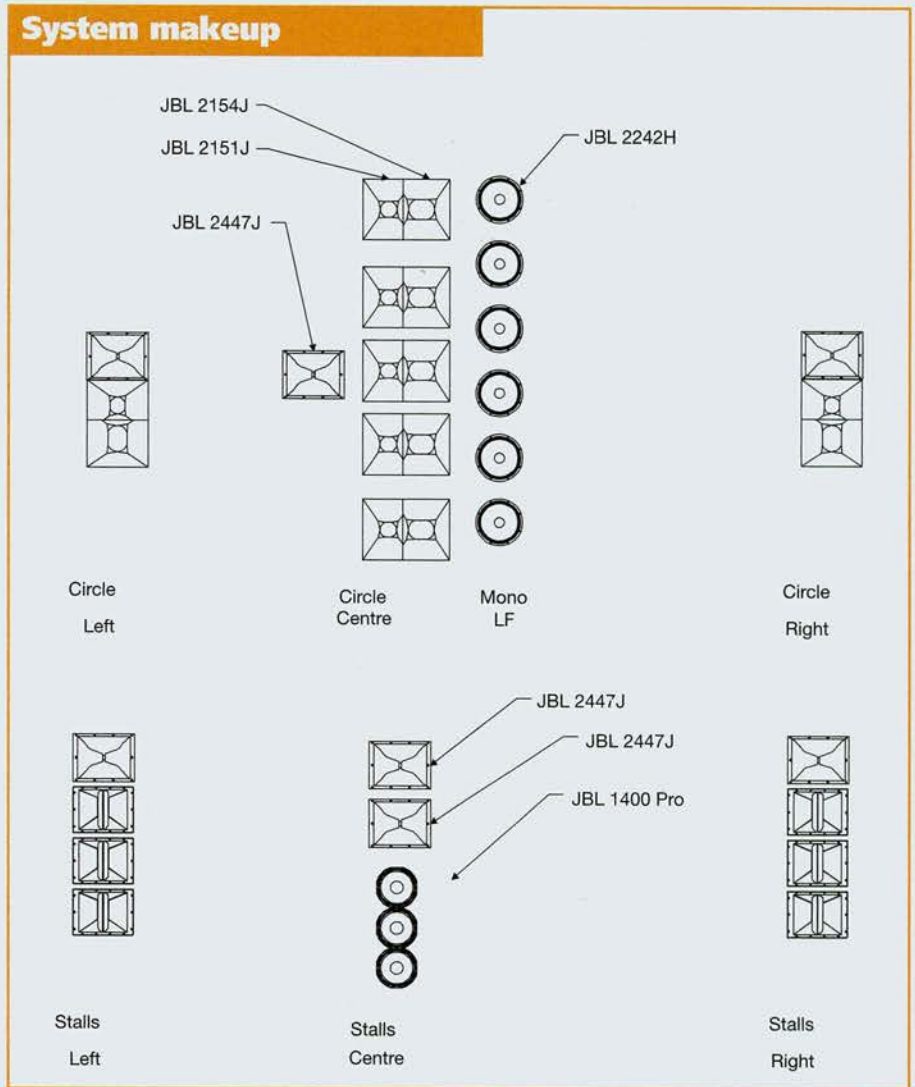
This required that the system can produce a minimum 'direct' sound pressure level of 105dB continuous RMS (+/- 6dB) over 90% audience area, with a minimum 'reverberant' level of 110dB SPL +/- 4dB.

The frequency response was to be measured *without* reflections, so the frequency band arrival time needed to be at or under 80 milliseconds. At this arrival time, the tolerance was to be no worse than plus or minus 6dB in the range from 40Hz to 12kHz for twelfth octave analysis.

This was something that many vendors could superficially design a system to obtain, but the tighter tolerance of the fast arrival time probably made it tough.

However, the specification also called for 10dB lower *and* frequency consistent sound pressure levels at *nine positions onstage* - behind the PA.

Because of the physical layout of the theatre, the whole system needed to sit



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Write in Reader Service Number: 192

into the front of the proscenium, as far back as the building framework allowed. Cabinet depth was an issue, to the point where the sub-woofer cabinets ended up less than half a metre deep.

The real challenge came with the need for the two systems, one for the circle, and one for the stalls, not to interfere with each other. In particular, the system aimed at the circle needed to project sound there without it spilling down onto the stalls or into the orchestra pit.

An educated solution at first may be to select a variety of existing high 'Q' (narrow dispersion) concert cabinets, and array them, aimed at the circle. The flaw in this approach is that lower frequencies would still spill back onto the stage, as directional sub bass is still not possible from most commercially available speaker cabinets.

Reasoning behind the specification was to maximise gain before feedback without external equalisation that would degrade the source signal.

To actually achieve the specification, a custom design and construction was called for.

David Connor says that one of the difficulties with current sound contracting practices is that often the designer (or salesman) aim a combination of existing stand-alone speaker cabinets at the audience, and produce pretty coloured pictures from an acoustic modelling program to justify their design. Often this is done at only one frequency and only considers the audience position. This is a recipe for disaster.

"We know from our experience that if you fly a group of boxes then you get lobing and all sorts of destructive interference. It upsets the reverberant field resulting in the sound engineer spending most of the show trying to re-eq the system, only to give up in disgust and blame the acoustics," says David Connor. "We used to get a lot of systems through the Concert Hall and they all sounded different - even if they used the same product. These days the best results in the Concert Hall are coming from our house systems which are designed and tuned over a long period and take into account the venue. David Claringbold (Sopund & AV coordinator) and Steve LeRoux (Head of Engineering) are producing excellent results, coming from both technical and experiential backgrounds."

"I hope the days of 'point and hope' speaker design are over and we can get into sound systems that will perform as well as people have come to expect from the systems in their homes."

"The sound system for the Opera Theatre was to be

permanently mounted in the proscenium walls, and disappear both visually and audibly from the audience. That is, the sound system was not to distract from the performance."

THE SOLUTION

When the job went out to tender, the JBL distributor in Australia, Jands Electronics, sought outside advice. They turned to Glenn Leembruggen, a Sydney based consultant who has had experience with difficult sound system designs. He was instrumental in the recent and famous alternative specification at Stadium Australia, where the originally specified system was replaced by another brand.

Glenn advised Jands that the system required in the Opera Theatre needed to be a vertical array - with a difference.

The concept is called an electrically tapered array. It calls for a vertical array of components which are fed slightly different signals to tailor the behaviour of the whole array.

The subwoofer array has the hardest task of all. A column of six

please turn the page

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TECHNOLOGY

Write in Reader Service Number: 130

Electrically Tapered Array in the SOH

18" JBL woofers centred on the proscenium, needed to act as one source and project the low frequencies forward- minimising lows in the pit and on stage.

The six woofers were divided into three signal chains. The top and bottom speaker were given a crossover feed with more low-mid frequency signal than the rest. The inner top and inner bottom speaker are fed slightly less upper low frequencies, and the centre two speakers had the lowest crossover points. This mishmash of signals result in the collective array assuming a directional characteristic.

Having dealt with the sub bass element of the design, Leembruggen turned to the slightly easier task of directionality of mid to high frequency components.

The centre array for the stalls is positioned alongside the sub bass vertical array. Where the sub bass array features six 18" speakers, each in its own custom built cabinet and with custom spacers between the upper and lowermost boxes, the mid/high array is a different proposition.

In keeping with the tapered array concept, five horn loaded cabinets were used, these were essentially the low/mid element magazine direct out of the JBL 4892 Horn Loaded Array (HLA) cabinet. These are loaded with a 14" woofer (low frequency horn)

and a 10" mid driver and horn. This combination of HLA components is turned sideways, to form a vertical stack of five HLA's.

This way five 14" horn loaded low-mid frequency drivers, and five 10" horn loaded upper midrange drivers form a vertical array. The top and bottom elements are spaced away from the centre three.

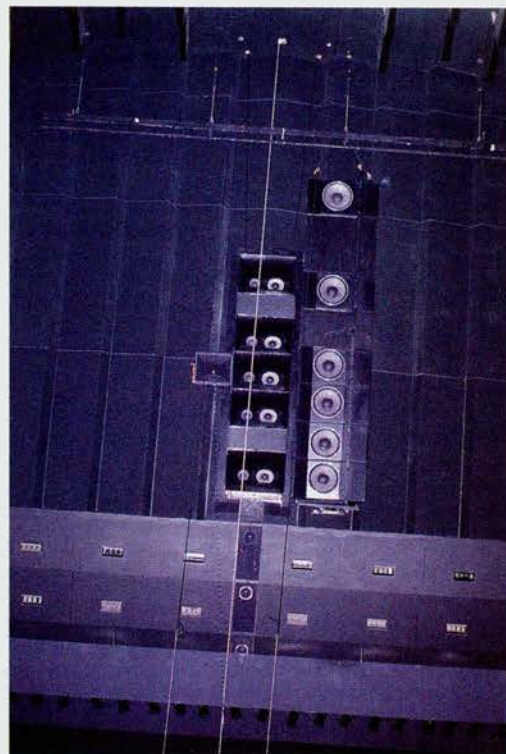
One lonely JBL 2447 high frequency compression driver on a constant beamwidth horn handles all high frequency signal for the circle. By virtue of its standard 90° x 40° dispersion pattern it is possible to visualise that the 5 metre tall tapered array of six woofers, and the 3.6 metre array of HLA modules (five low mid and 5 hi mid speakers) also distribute in a (roughly) 90° x 40° pattern. This horn was chosen due to dispersion characteristics.

This array illustrates rather dramatically how efficient a high frequency driver can be, when it requires so many cone drivers to handle lower frequencies!

While the centre tapered array is tall and unusual, the left and right speaker systems for the circle are standard JBL



*SOH Technical Manager,
Sound & AV David Connor*



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HLA boxes - one high frequency horn, one 10" and one 14" speaker, horn loaded, each side.

Down in the stalls, a different combination of speakers are used. The centre cluster is a smaller tapered array of three 14" woofers, and two 2447 horns. The reason for two horns has nothing to do with power handling capacity, rather they are needed to cover a deeper vertical field than which exists in the circle.

The left and right speaker systems used in the stalls differs yet again, using three JBL VS 2210 mid/high modules, a 10" horn loaded device. These are beam shaped again using different signal feeds from the slew of JBL DSC260 processors which handle signal crossover and tailoring in the installation.

Once again, one JBL 2447 high frequency driver on a CD horn top off the left and right arrays.

Amplification is achieved using existing Opera House Australian Monitor power amplifiers.

Installing the system is almost another story - it was, according to Peter Grisard from Jands, very complex. Extensive pre planning was required with a lot of photography and measurements. The onsite work was laborious.

RESULT?

Tony Lawrence (Sound and AV Co-ordinator) organised the project for the House. David Connor is very, very happy. The system has been initiated with a variety of programs. "It can work with peaks of up to 117dB - far more than we would ever need. Indeed, this is rock band or dance club levels", he said.

Readers who have heard the V-DOSC system or the EAW line array concert PA will recall that in the right hands these line array type systems can deliver an 'in your face' consistency - not unlike the effect of sitting in the path of a pair of near field monitors.

So how does it sound at 'the house'? Even at the very back of the theatre, the sound is extremely dry and intimate - and the tonal balance is excellent.

"The system is so well balanced that during commissioning, we were able to hear changes to the equalisation of only 0.5dB in most third octave bands" says Glenn Leembruggen.

Consultant Glenn Leembruggen



WHAT IS THE HAAS EFFECT?

If the same sound is emitted by two sources, as would occur for example if a mono signal were fed into two similar loudspeakers, the brain appears to fuse together the two signals provided that the time difference between them is less than about 50ms. There is a perceptible time interval if the difference is greater than about 50ms.

With differences less than 50 ms not only do the two sources appear as one but the apparent single source tends to be towards origination of the first arrival. For the delayed source to seem as loud as the undelayed one it must be higher in level by an amount which depends on the time delay.

-From the Sound Engineer's Pocket Book, by Michael Talbot-Smith. (Available from the Connections Shop).



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100 watts rms, 4 OHMS
Digital Delay
Individual Channel Equalization
1/4" and XLR inputs
RCA jacks for record and playback
3-band master EQ

PM-602D

6-Channel Powered Mixer
200 watts rms, (100w+100w) 4 OHMS
Individual Channel Equalization
1/4" and XLR inputs, Phantom Power
Individual Monitor level control
band master EQ
Delay reverb/effects level control
1/4" headphone jack & level control
RCA tape/CD record and play jacks with level control

PM-802D

8-Channel Powered Mixer
300 watts rms, (150w+150w) 4 OHMS
Individual Channel Equalization
1/4" and XLR inputs
Individual Monitor level control
band master EQ. Delay reverb/effects level control, 1/4" headphone jack & level control, RCA tape/CD record and play jacks with level control



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DR. G's Gadget Grab Bag

There is NO END to the number of potentially useful Gadgets out there. The trick is finding the exact one needed to solve the problem at hand. As **John Grimshaw** searches for - and finds- the gadgets reviewed here, it is hoped that someone, somewhere will be able to say to himself/herself/itself, "Damn it - I wish I knew about THAT thing last week!"



Focus 60 Radio DMX Remote

This little guy was mentioned in the May issue of Connections (page 79) amongst other DMX controllers, but I think this particular one deserves special mention.

As a wireless remote control, you can be up and down ladders and changing channels without missing a beat. Transmitter broadcasts on 433.92 MHz, and has an effective range up to 100m line of sight. The device does turn itself off after 10-15min but, unlike other units, this does not affect the lights that are up - even when you turn it back on.

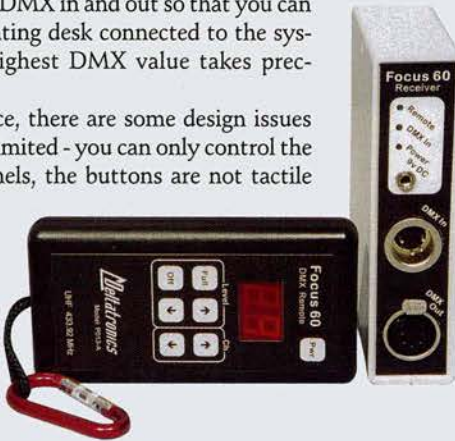
You can also have any of the 60 channels up at any level at the same time. It is so simple, I am going to install it for use in one of my venues, to be used by lecturers for remote control of houselights, specials etc (and we all know how vague lecturers can be!).

The receiver has a DMX in and out so that you can leave your main lighting desk connected to the system at all times (highest DMX value takes precedence).

As with any device, there are some design issues that make it a little limited - you can only control the first 60 DMX channels, the buttons are not tactile (so while focusing, if you turn off the one channel that is up, you then can't see or feel the controls to bring up the next one), there is no indication of the level a channel is at, and the scrolling from Ch1 to Ch60 is a little clumsy.

Despite this, I think the device is a great idea and its potential uses are very wide. I actually used it to control a lectern special at a dinner function - from my table!

- Herkes Electrical, Sydney +61 (0)2 9319 3133
- Focus 60 - \$680 rrp



Wireless Infra Red Extender

As the name suggests, this device will allow you to place your equipment further away from the person operating it. I have looked a few different products for this, and this system is the best I have found.

The system has a transmitter and receiver with communicate via 433.92 Mhz radio frequency. Like the Focus 60 above, this gadget is perfect for use where the control of equipment needs to be done from a place where the equipment is not.

Coupled with a learning remote, I can now give a technically inept person total and easy control over a presentation that in-



clude things like video, Cds, DVD's etc.

In my case, I have modified the transmitter to be able to run off a 9V battery. The mod was easy because it seems that the device was originally designed to have this feature, but it was not included in the released product - probably due to battery draining if left on. The documentation says that the device has a range of up to 100m line of sight, but it is always best to test the device in the space it is meant to work.

- Jaycar Electronics - outlets in all Australian capitals and Auckland
- Wireless IR Extender (Cat. No: AR-1805) - \$119.00

You will notice that this device broadcasts on the same frequency as the Focus 60 mentioned above. Despite this fact, neither seems to effect the operation of the other when used in the same room (unless to try to use them both simultaneously). This is due to the fact that they both are sending data to their respective receivers, and when each device does not understand what it receives, it ignores the transmission!

Software Audio MPEG Codec

Opticom (the company that brought us the original L3 audio MPEG encoder) has recently released its latest offering for those of us that work with sound files on a PC - MP3 Producer. It comes in two formats, "Advanced Plus" and "Professional" and is one of the fastest audio encoders you can get.

On my P2 350, files encoded to the highest standard where converted at less than half the real time of the track. Essentially, the only difference between the two options offered is there are some added compression rates in the "Professional" version. This version is specifically targeted at studios, but the "Advanced Plus" version is able to cope with most of the MPEGing requirements a user may have.

Both options also include a ".wav" compression codec, allowing any other software that used to deal with wave files the ability to now handle MP3s.

- Opticom can be found at www.opticom.de
- Advanced Plus US\$59
- Professional US\$199

Sabra Microphone Shock Mount

Of the various brands and types of shock mounts available on the market, this particular one is versatile enough to be able to be used on just about any microphone, as well as being not too expensive.

Why use a shock mount?

Well, whenever you have a situation where mechanical vibrations will travel through the stand to the microphone element, using a device like this isolates the microphone from that noise. This particular mount is designed so that the two support rings can be moved to any position on the silver rod, thus making the mount adjustable to almost any microphone.

The mount can be attached to a standard microphone stand via the universal thread.

- Audio Sound Centre +61 (0)2 9901 4455
- Sabra Shock Mount SSM-1 \$98.00





Altronic Speaker Brackets

These appeared recently on my desk (thanks to Altronics) for me to look at for this column.

Well here they are, and I'm going to buy more because they are such a well designed and well priced product.

You might be thinking, "Isn't it just another bracket?", but what sets this apart from other products I have seen is ease of installation.

There is a piece to attach to the wall (or set), and a piece to attach to the speaker. Snap them together and that's it. A ball and socket arrangement allows for speaker angling to suit requirements, and this is firmly

locked in place by three screws. The bracket comes in white and black.

- Altronics - +61 (C) 8 9328 1599 or in Australia 1800 999 007
- Maxi Mount Speaker Swivel Mount - H8040 (for black) \$59 rrp



80B Camera Filters

I regularly take photographs of stage shows, sets and lighting for the purposes of recording the event.

Most standard films are "day-light" colour corrected, and if you were to use this film to shoot under standard theatrical lighting, the resulting effect would be a very yellow tinge to the photographs.

You can correct this by buying tungsten corrected film, but it is usually much easier to screw on a filter that can do the same job. The 80B filter is the one I use for this. The filter colour is a shade between Lee filter colours 201 and 202, and makes the photos much more colour realistic.

You may want to consider the 80A (darker) and the 80C (lighter) filters, but I prefer the 80B.

- Available at any camera store
- Prices vary according to size

Neutrik Tone Generator

This "thingo" (as Julius called it) allows you to take your tone generator on the road - in your pocket. Armed with its RCA and XLR outputs, you can quickly send tone up anywhere.

The device can output several waveforms, some at various frequencies, and all at a wide selection of output voltages/levels.

The combination of Sine, Square, White & Pink Noise, and a Polarity Test signals allow for a wide range of tests.

The unit is also capable of a sine wave sweep. This is not a traditional continuous sweep, but a sweep in 31 steps - each tone being played for a preset amount of time. This time is set by the user, and the sweep is then repeated

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Gadget Grab Bag

continuously with a 1kHz reference tone before each sweep. The output level is also set by the user between -76dBu (less than microphone level) to +6dBu (greater than line level). These output levels can also be displayed in volts and dBV.

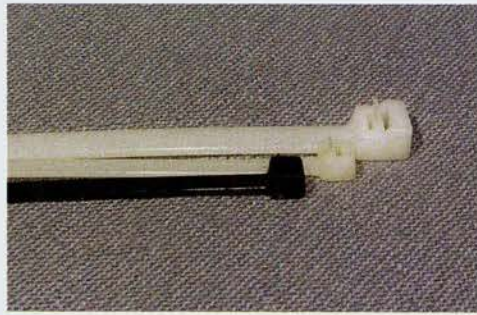
The unit is a versatile tool for the audio technician. Used in conjunction with a basic VU meter, this device can easily be used as a "poor tech's" spectrum analyser. The control interface is a little clumsy - it could have done with a few more control buttons, but it is still relatively simple to operate.

- Amber Technology +61 (0)2 9975 1211
- Minirator MR1 - \$341.60 rrp

Re-useable Cable Ties

The name speaks for itself. I was asked to track down this little gadget for someone that runs a mobile video studio out of his van. The problem was that every time he wanted to add a cable to his neatly cable tied looms, he had to either re-tie the loom, or leave the cable loose.

These nylon cable ties offer an alternative that is quick and easy to use, and come in a range of



sizes. They are made by Panduit, and are available (on request) through most electrical wholesaler/resalers. To give you an idea of the costs, a packet of 100x 160mm standard locking ties would cost around \$14.90. The re-useable version of this cable tie (PRT1.5S-C0) would cost \$32.50.

If you know of any devices that are worth mentioning here (or better than ones mentioned), please let me know!

Email: mail@conpub.com.au (attention Dr. G)

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U Move, U Pay

Great Trucking Stories of the Millennium Bug

By Duncan R Fry

I rented a truck in the States once. There was a stack of old exhibition and superseded display stock to collect from the US office and various dealers and then ship back to Oz. It was far more than would fit in a car, even a station wagon, since it included a bunch of speaker cabinets, and it was obvious I needed a truck.

So, it was down to the local U Move rental depot. After establishing what kind of vehicle I'd need, I handed over my Heavy Driver's Licence (that's heavy vehicles, not a warning stamped over my picture!).

The girl started entering my details into the computer.

"Excuse me sir, but what's this date?" she asked, staring at the licence with a perplexed look.

I looked at the part where her finger was pointing. "This part here, sir, the expiry date."

The date read 19-06-01.

"Yes, it's the date the licence expires," I agreed.

"No, but what does it mean?" she persisted

"Well, it means that the licence expires on the 19th of June, 2001," I explained.

"Oh my Lord," she exclaimed, "2001 – like the movie? Wow, that's so long away; I've never ever seen a date like that before" and so on.

The trouble was, the computer had never seen a date like that before, either. This was 1992, and obviously the concept of a ten year driving licence was totally alien to the worthy computer programmers at U Move HQ.

"I'm sorry sir, the computer keeps rejecting this date – do you have any other ID?"

"Well, how about my passport – would that do?" I asked

"Oh, that would be great. Thanks," she said as I handed it over.

"Oh no," she exclaimed, "This expires in 2002!" It was a brand new ten year passport. "I'll just have to do this by hand," she said, blowing the dust off a pile of forms that looked as if they hadn't been used since before she was born. Still, at least *they* didn't reject me as being alien devil spawn.

Finally the deal was done, the agreement was signed, she handed me the keys and took me out to see the truck.

And what a truck it was. A Ford F350, with a TurboSlushmatic auto tranny, big aluminium pan on the back, air-ride suspension and only US\$22.50 a day. Sounded like a bargain and drove just like a big American station wagon! Various insurances came to another 15 dollars, but it was still very reasonable.

The killer was the mileage - 17c a mile from the minute I turned the key in the ignition. Not too bad, you think? Here maybe, but not in LA. This is one big spread out city, and a mile over there is like 100 metres here. Most rental car companies give you either unlimited mileage, or at least 100 free miles per day. Not U Move, though. They know when they're on to a good thing and they stick to it!

From Anaheim where I was staying to the office in Silverado was at least 35 miles there, and the same coming back. Over to a music shop on Ventura Boulevard was about 40 each way, and then to a promoter's office was another 35, then 30 or so back to the motel. By this time it was too late to get to the shipping company, so I had the truck for the night. Doing a bit of late night shopping took care of another 25 miles, and then the next day it was about 35 miles out to the shipping company who were conveniently (for them, not me) near the airport, and then another 40 miles to take this gas guzzling monster back to the rental company.

As soon as I started clocking up the miles in this thing, I thought about disconnecting the speedo. Let's face it, rental

companies know down to the last cent exactly what a truck costs to run. If they didn't, then they wouldn't stay in business. And I'm sure they know that at least 50% of their customers will disconnect the speedo, and they build that into their price.

But these U Move guys were expecting slippery customers like me. I went to pull the speedo and gauge panel out of the dashboard, so that I could disconnect it from that end, but the whole assembly was screwed in with Torx security screws. A standard Torx is like a standard screw head with a six pointed star shaped hole, and fairly easy to undo with a flat bladed screwdriver, but these had a raised dimple in the middle of the star, making it impossible to get anything but the correct shaped screwdriver into it.

So I got out my trusty 'bucket o' tools', a collection of various tools that I used to keep in the States and take with me on my habitual wanders around car wreckers, in case I chanced upon that essential spare part that would keep the Dodge on the road a little longer. I grabbed a flat bladed screwdriver and a file, and filed a little U shaped hole in the centre of the flat blade.

Bingo – it fitted perfectly. About an hour later I had removed all 22 of the screws, and the gauge panel fell into my lap. But when I reached for the end of the speedo cable, I found that the nut where it attaches to the back of the speedo had been drilled, wired, and sealed with a lead seal like you find on electricity meters!

Damn – all that f**king work for nothing, I thought as I slowly replaced the 22 screws. But I wasn't finished yet. The speedo cable runs down to the transmission, and can be disconnected at that end too. So, tools in hand, I climbed under the truck, only to find that they had done exactly the same thing to the nut on that end as well!

There was nothing for it but to keep using it until I'd done all the driving around, take the thing back, smile as I handed over the keys and my credit card, and sign the bill, which came to something like \$275 US!

And, sad to say, despite the Driver's Licence problems, the credit card bill was totally unaffected by the Millennium bug. The transaction was duly converted at the appallingly low exchange rate that only seems to apply to credit card transactions (you know, 65 cents for everyone else in the country, and somehow VisEx Card manages to find the nanosecond when it dropped momentarily to 59 cents Australian to convert my transaction!) and ended up costing \$400 Australian.

Modern cars (and probably trucks soon) use electronic speedometers that just run off a single piece of electric wiring. Disconnect one of them in your rental car and it will probably automatically call the rental company, the police, and the immigration department, and you could end up starring in your very own OJ Simpson freeway chase.

Sort of takes the fun out of it, really!

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PRESENTTECH

Included with this issue of Connections is the first - the prototype - copy of our new magazine, PRESENTTECH.

It's the magazine for presenters and event-ers, people who work at the pressurised coal face of the corporate presentation and event industry. Increasingly this is where much of the action occurs for many people we know who once worked on stage shows.

We've been continually impressed with the imagination and skill that goes into many these projects. Sometimes we are amazed how amateur some seem too! And we've also known that coverage of much of this sector wasn't always possible, or pertinent, in Connections.

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It's bi-monthly, so the next issue comes out September, then November, then January. We are selling advertisements - right now!

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9876-5715 and we will send you a free introductory copy.

The new magazine means our AV and Presentation coverage now migrates out of these pages.

This actually allows us an exciting opportunity to improve Connections, because your magazine can now concentrate on audio and lighting, in every guise. We've got some knockout new ideas for Connections, which will start to become evident in the issues ahead.

If you have subscribed to Connections primarily to read about AV and Presentation Technology, please get in touch if you'd like us to transfer your subscription to PRESENTTECH. It's no problem at all!

Otherwise, you can subscribe to PRESENTTECH for A\$25/year, NZ\$40 in New Zealand or A\$45 from Asia. Call us on 1-800-635-514 or fax +61 2 9876-5715 or email mail@conpub.com.au to get started.

Watch for PRESENTTECH #2 onsale September 1st at Newsagents.

Events:

- Lunch with Danny Yezerski from TP events. Whiz Kid?
- Miracle Ball - it was terrific!

Special Feature:

InfoComm Orlando 1999 - full coverage, new technology from our show news team

News:

- ICIA Presentations Academy for ENTECH
- Gearhouse looks forward
- ENTECH opens Presentation Hall at tradeshow
- Infocomm takes NAB thunder
- MIAA changes head, name change defeated

New products:

- Sony boom with X2000 projector : Product profile
- Barco go megascreen
- Test: Roland V5 video mixer
- TECH TIPS: All about PLASMA SCREENS

Video

conferencing:

- Victorian court system goes high tech to beat delays

Portable Projectors:

- Selection Guide
- Hiring not buying - our survey

Venues:

- Checklist to select a venue

COMING UP:

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buyers guide::

DJ MIXERS & SAMPLERS

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

SAMPLING DJ MIXERS

AKAI

Australis Music (02) 9698 4444
S20 8 voice polyphony, 16 Stereo samples, 4 Track sequencer, editing, Up to 17 Mbytes memory with SIMM's. \$1195.
Remix16 8 Voice polyphony, 16 Stereo samples, 4 track sequencer, editing up to 18 Mbytes with SIMM's. Mixer input for deck or CD Player. \$1795.

GEMINI

Disco World 03 9735 0588
PS676 PRO 10 inch 3 stereo channels; 1 phono / line convertible, 2 phono, 2 line 1 mic input; 3 channels; built in 12 second digital sampler with adjustable pitch; true cut feature (-26db) for bass mid and high of each channel; removable crossfader; beat sync indicators; gain controls for each channel. \$676.
PS900 19 inch 4 stereo channels; 3 phono / line convertible, 5 line, and 3 mic input; 24 second digital sampler, five memory banks with battery back up; (-32db) cut features for low mid and high on each channel; Gain high mid and low tone controls on each channel; Balanced master outputs. \$999.
PDM 24S 19 inch 4 stereo channels; 3 phono / line convertible, 5 line, 2 mic input; tonal and level controls for mic; 24 second digital sampler with 5 memory banks; battery back up; dual 7 band graphic equalizer; 12 volt BNC light jack. \$929.

PHONIC

CMC Music (02) 9905 2511
DM 3025 8 seconds digital sampler. One touch playback, undistinguishable from the original source. As DM 3010 apart from sampler. \$599.

SAMPLERS

AKAI

Australis Music (02) 9698 4444
S2000 32 Voice sampler Expandable to 32 Mbytes, Inc. SCSI. \$1895.
S3000XL 32 Voice Sampler Expandable to 32Mbyte, inc. SCSI 10 outputs. \$2995.
S5000 64 Voice Sampler (expandable to 128), Expandable to 256Mbytes with SIMM's, 8 Outputs (Expandable to 16). \$5495.
S6000 128 Voice Sampler, Expandable to 256Mbytes with SIMM's 20Bit 4 buss effects board and 16 outputs. \$9495.

GEMINI

Disco World 03 9735 0588
DS 2024 19 inch rack mount; 24 second digital sampler; 5 memory banks, two 2 second, two 4 second and one 12 second memory bank; battery back up; pitch and pan controls for sampling play back; robo-play; line and phono/line. \$499.
DS 1224 24 second digital sampler; 5 memory banks, two 2 second, two 4 second, and one 12 second memory bank; battery back up; 2 inputs (1 line & 1 phono/line convertible) pitch control and pan control for sampling play back; cue section for sampling play back. \$429.

NEXT

Moore Music (03) 9419 0344
DJS-24 24 bit, 2Mb RAM (expandable to 8Mb), 44.1 kHz sampling rate, seamless looping, reverse mode, cue point memory, PC software included, built-in 4 track sequencer. \$995.

ROLAND

Roland Australia (02) 9982 8266
SP-808 Professional re-mix oriented "Phrase-Sampler" and "Hard Disk Audio recorder" with 4 stereo digital audio tracks. Stores 64 minutes or 1,024 samples on 100MB Zip disks. Play up to 4 sample pads at one time. Automatic tempo calculation, sampling and time stretch functions. Revolutionary D-Beam controller. \$3,295.
SP-202 Groove-oriented "Phrase Sampler". Easy to use Portable Digital Sampler. Automatic BPM calculator & display for syncing loops. Six DSP algorithms. Samples stored on Smart Media cards. Battery or AC operation. \$895.
AR-100 Digital Audio Announcement Phrase Recorder-Player that uses no moving parts. Records up to 250 phrases on PCMCIA type Flash Ram Cards. Optional recording modes to optimize recording time. 9V, 24V or AC supply. Trigger phrases by MIDI or control terminals e.g., switch, relay or program timer. \$1,595.

YAMAHA

Yamaha Music Australia (03) 9693 5150
SU700 Loop Sampler exp. to 68 MB RAM plus 64 note poly; 40 sequence tracks per song; 12 assignable control knobs and touch-sensitive pads; realtime stretch and pitch shift; ribbon controller for scratching; 8 scene/8 marker memories; 3 effects; optional SCSI, extra outs and digital I/O. \$2,595.
A3000V2 Control Sampler exp. to 128 MB RAM plus 64 note poly; timestretch/pitch shift/Loop Divide/ Loop Remix functions; 3 effects & 4-band total EQ; 5 push-turn control knobs; 4 outs (optional 6 + digital I/O); scratch sequencer; WAV/AIFF/Akai/Roland/E-mu library compatible. \$3,995.

ZOOM

Dynamic Music (02) 9939 1299
ST-224 Sampletrack 24 assignable pads; up to 4 minutes sampling time; 22 built-in effects; real time sequencer - midi controllable; back-up data card + internal memory. \$775.

DJ MIXERS

AMERICAN DJ

American DJ Supply Australia (02) 9568 2100
XDM241 compact 2 channel "shredder" mixer, 2 phono, 4 line, switchable, 1 mic input, cue level, master level, uses high quality American DJ feather fader cross fader. \$149.
Q2221 2 channel 10 inch mixer - 2 phono, 2 line, 2 auxiliary, 1 mic input, 100% cut buttons for bass, mid and treble on each channel. Features hamster switch and fader curve switch and uses American DJ feather fader. Separate gain for each channel and LED display, Q start feature for playing CD's on CD300 CD Player. \$449.

XDM3633 4 channel 19 inch mixer - 3 phono, 6 line, 3 auxiliary, 3 mic inputs, bass, mid and treble control, LED display and gain on all channels. Features include 3 zones and outputs, assignable cross fader, cue mixing, effects send and receive to name a few. Uses Feather fader. \$779

XDM2221 2 channel 10 inch mixer - 2 phono, 2 line, 2 auxiliary, 1 mic input. Rotary kills for bass, mid and treble on each channel, changeable transforming switch button, cross fader, curve selection. Uses feather fader. \$379.

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Musiclink (03) 9429 9299
DX100 2 stereo ins (switchable line or phono with earth), mic channel, 3 band EQ, replaceable Panasonic cross fader (200,000 wipes!), punch buttons, PFL buttons, tape out. \$299.
DX500 3 stereo ins (switchable line or phono with earth), mic channel, 3 band EQ with kill buttons, replaceable Panasonic cross fader (200,000 wipes!), punch buttons, PFL buttons, tape & zone outputs, 12 second sampler. \$499.
DX1000 5 stereo ins (switchable line or phono with earth), 2 mic channels, 3 band EQ with kill buttons, replaceable Panasonic cross fader (200,000 wipes!), punch buttons, PFL buttons, tape & zone outputs, talkover, sub out with crossover. \$1,199.

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Universal Lighting & Audio 1800-648-111
CDM3 High performance low cost entry level Scratch Mixer. Extensive on-board features, start producing sophisticated professional mixes right away. Two channel, four inputs, 1 mic with eq, headphone mix. Now in Blue. \$332.31.

MSX-1 NEW! "Syncro" beat monitoring system that monitors the beats from channels 1 & 2 illuminating the blue LED in the centre when they are synchronised. Another new feature of the MSX-1 is the crossfade reverse switch so you get crossfade "Out" instead of crossfade "In". Three band music Eq with -26dB of cut and instant kills on each band. 2 Channel 7 Input Mixer, Dedicated 2 Band Mic Eq, Music Input Gain Controls, and much more. \$TBA.

MSX-2 NEW! The MSX-2 is an enhancement on the MSX-1 above with the addition of true digital readout for the BPM on both of the input channels. The resolution is down to 0.1 of a BPM for really accurate alignment. There is also a Beat offset bar that shows the difference between the BPM's on each channel and an LED in the centre that comes on when you have a perfect match and much more. \$TBA.
CDM10:4 10 Inputs comprising 2 Mic's, 2 CD, 2 Phono and 4 Line all with complete control of gain and Eq. The Mic inputs have gain control, 3 Band Eq, Pan, Level and an override system with variable sensitivity and depth. LED meter, fully assignable crossfade, punch buttons, booth output, aux send/return, illuminated cue buttons. \$1246.54.

ECLER

Universal Lighting & Audio 1800-648-111

SMAC First NEW! In just 14 cm wide, three mixable channels and 6 inputs: 2 phonos, 2 CDs, 1 balanced mic and 1 line. SMAC FIRST, easier, faster, closer. Among the features of the SMAC FIRST, there is a 3-band tone control and gain for each channel. The KILL and PUNCH-CUT controls are different: check and compare their way. \$TBA

SMAC Pro 3 NEW! The compact mixer with three real mixable channels and 7 inputs: 3 phonos, 2 CDs, 1 LINE, 1 balanced microphone. Electronic circuit that minimises the unwanted "click" sounds in the KILL and CUT-PUNCH functions, smoothing the unavoidable switching noises when the music gets abruptly cut, to the low crosstalk levels. \$TBA.

SMAC Pro 4 NEW! 4 mixable channels and 8 inputs: 3 phonos, 2 CDs, 2 LINE, 1 balanced microphone. ECLER uses special "dee'ay" versions of the ALPS brand (Japan) for knobs as well as for linear channel faders. Now, the SMAC series crossfader has an electronic VCA circuit which extends the fader's life to more than 300,000 operations (30 times the life of a high quality mechanical crossfader), and offers a transition curve which is specially designed for DJs. \$TBA.

ESP TECHNOLOGIES

ELSTA (02) 9568 2100
MIX1 2 channel compact mixer 150 x 200mm, 2 CD/line, 2 phono, removable small size cross fader, separate gains. \$99.
MIX3 4 channel slimline mixer, 19 inch, 3 RU, 6 CD/line, 2 phono, 2 mic inputs, bass treble and mid controls, LED display, assignable cross fader. \$399.

FORCE G

Universal Lighting & Audio 1800-648-111
PhatGA NEW! Innovative plastic cased mixer. 2 Ch + mic, bass, mid, treble and gain on each channel and out put, hamster switch and split cue. with built in 50 + 50 watt amp. 5 colours available - yellow, black, blue, red, purple. \$399.

PhatG NEW! Innovative plastic cased mixer. 2 Ch + mic, bass, mid, treble and gain on each channel and out put, hamster switch and split cue. 5 colours available - yellow, black, blue, red, purple. \$249.

Slim GA NEW! Innovative plastic cased mixer. 2 Ch + mic, hamster switch and split cue. with built in 50 + 50 watt amp. 5 colours available - yellow, black, blue, red, purple. \$299.

Slim G NEW! These new plastic cased mixers are causing a storm. 2 Ch + mic, hamster switch and split cue. \$169.

FURMAN

Horwood Australia (02) 9585 1011
DJM-6B six stereo inputs (2 x phono, 4 x line); VCA crossfader; separate sub-bass output; mono output for lighting sync; unbalanced version available. \$1477.
DJM-8B same as DJM-6B but with extra facilities including 8 stereo inputs, 2 mic inputs, effects loop, 2 zone outputs, stereo output meters, unbalanced version available. \$2363.

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BPM 1000 4 stereo channels; 1 phono/line convertible, 2 phono, 5 line and 3 mic input; 26db cut feature for low mid and high on each channel; low mid high and gain control for each channel; tone controls for mic; assignable and removable crossfader; BPM displays; beat offset indicators; balanced master outputs. \$999.

BPM 500 19 inch 4 stereo channels; 3 phono/line convertible, 5 line and 3 mic; BPM display; Beat offset indicators; 32 db cut for low mid and high for each channel; gain high mid and low tone controls for each channel; 12 volt BNC light jack; effects loop; balanced master outputs; dual mode display. \$TBA.

PS 626 PRO 10 inch 3 stereo channels; 1 phono/line convertible, 2 phono, 2 line, and 1 mic input; True 26 dB cut for bass mid and high on each channel; removable cross fader; beat sync indicators; gain controls for each channel; peak hold double function LED meters; master and balance rotary output controls. \$499.

INTIMIDATION

ELSTA (02) 9568 2100

Don II DJ mixer with BPM monitor, spectrum analysis, cross fader, 2 phono, 2 CD inputs, bass drum effects, kill switches and more. \$1,799.

BEHRINGER

Musiclink (03) 9429 9299

DX100 2 stereo ins (switchable line or phono with earth), mic channel, 3 band EQ, replaceable Panasonic cross fader (200,000 wipes!), punch buttons, PFL buttons, tape out. \$299.

DX500 3 stereo ins (switchable line or phono with earth), mic channel, 3 band EQ with kill buttons, replaceable Panasonic cross fader (200,000 wipes!), punch buttons, PFL buttons, tape & zone outputs, 12 second sampler. \$499.

DX1000 5 stereo ins (switchable line or phono with earth), 2 mic channels, 3 band EQ with kill buttons, replaceable Panasonic cross fader (200,000 wipes!), punch buttons, PFL buttons, tape & zone outputs, talkover, sub out with crossover. \$1,199.

NUMARK

Show Technology (02) 9898 1111

DM 1835X Like all Numark Pro mixers, this unit offers headphone mixing which means you can audition your cuts before they go to air! Some of the DM1835X features include 2 zone outs, individual EQ, Gain, Pan, PFL, 35dB KILL switches and balanced XLR outputs. \$1417.21.

DM 2002X Features cool blue face plate 5 line, 3 Phono, 1 mic input. Gain and Bass, Mid and treble on each input, -35dB KILL switches, , replaceable crossfader. Transform switching and beat lights. \$433.60.

DM 1002X is a 2 channel mixer, it's features include 4 Phono, 2 line, 1 mic input, and a -35dB KILLS for treble, middle and bass on each channel. Three band EQ on each channel with sweeping -30dB Pots. The unit also has an adjustable crossfader with a crossfader reverse switch. All Numark mixers use high quality ALPs Faders. \$351.64.

DM 1190 SE Special edition studio mixer - 4 channels featuring 8 line, 3 Phono, 2 mic inputs, replaceable crossfader, dual 6 band EQ, BNC lights, monitor level control and split cue monitoring. \$572.95.

PEAVEY

Australis Music (02) 9698 4444

CDMIX7 7 Channel, One Mic channel with XLT Input, phantom power 3 band Graphic EQ, Mic low cut, 3 phono inputs. \$695.

CDMIX9 9 Channel, 2 XLR inputs with 3 Band EQ and phantom power, 7 Band EQ, EFX loop, Beat Lights 3 phono inputs and auto voiceover. \$995.

PHONIC

CMC Music (02) 9905 2511

DM 1050 2 phono; 2 line; 1 mic input. Treble and bass on mic. Talkover. Gain controls each channel. \$225.

DM 2010 3 phono; 3 line; 3 mic input. Gain controls each channel. 3 band EQ each channel. Cue select. \$399.

DM 3010 3 phono; 3 line; 1 mic input. True cut feature (-26dB) for bass, mid and high. DJ booth output. Cue select. \$499.

PDM 4000 4 phono; 4 line; 5 mic input. 3 band EQ on 4 channels plus DJ mic. PFL. Autostart. Digital echo built-in high quality faders. \$895.

RANE CORPORATION

Jards Electronics (02) 9582 0909

MOJO MM8z Club Mixer has 8 Inputs; 4 Mixing Buses each with 3-band EQ; 2 Fx Loops; Zone/Booth Outputs; 2 Mic Inputs; Field Replaceable Active Crossfader with cross fade contour control. In the event of the fader failing, it is hot swappable, allowing replacement between cueing. \$2,795.

MP22z Club Mixer has 7 stereo inputs, 2 microphone inputs and 2 Fx Loops. Two input strips are provided, and each has 4 band EQ. An active crossfader design ensures reliability for many years to come. In the event of the fader failing, it is hot swappable, allowing replacement between cueing! Crossfader with cross fade contour control. Outputs include 2 master outputs, as well as two additional zones. \$2995.

TTM54 Turntablist Scratch Performance Mixer a 10" performance mixer designed in conjunction with the Steelworkerz crew in NYC. Features include: VCA Active Crossfader and Input Faders with continuously adjustable Contour and "Hamster" reversal controls, Accelerated-Slope, band-split 24 dB per octave tone controls provide more than 40 dB of Bass and Treble cut without effecting the vocal midrange, A proprietary. \$2795.

TTM52 Turntablist Scratch Performance Mixer a lower cost alternative to the TTM54 above. Features include: VCA Active Crossfader and Input Faders with continuously adjustable Contour and "Hamster" reversal controls, A proprietary, assignable Effects send and Independent 18 dB per octave high pass Rumble filters for each phono input. \$2195.

ROLAND

Roland Australia (02) 9982 8266

DJ-1000 Two Channel DJ Mixer. Three audio inputs and 3-way EQ per channel. Built-in BPM counter for syncing vinyl and CD to Midi. Powerful DSP with Filter and Modulation Blocks. Three position "Grab" switch allows quick Filter and EQ "grabs". Tap Tempo button sends Midi Clock to external Midi gear. Smooth action cross-fader. \$1,695.

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Series 4000 Microphones
from DPA



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buyers guide:: DJ MIXERS & SAMPLERS

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SONY

Sony Australia (02) 9887 6666
MDM-X4MK2 MD "Home Studio", Multi-Track "Edit" Recorder, 10 input "Tracking" mixer. \$1,995.

SPIRIT BY SOUNDCRAFT

Jands Electronics (02) 9582 0909
Folio Notepad ideal mixer for bedroom studios who require microphone preamps, phono preamps and line inputs for their recording setup. DAT quality; impressive EIN and high RF rejection. Four microphone and two stereo phono or line level inputs; Separate Mix and Monitor outputs. \$795.

TECHNICS

Universal Lighting & Audio 1800-648-111
DJ1200 award winning DMC Competition Mixer. 2 CD/line and 2 phono Durable high reliability faders for long service life Dust-resistant construction Easy-to-see/easy-to-use 3-column professional DJ level meter Spare faders stored onboard for quick change if needed Flat surface with minimal protruding parts Tone controls (+12dB, -24 dB) and trim controls. \$999.

VESTAX

Moore Music (03) 9419 0344
PMC 50A 4 channel; 5 outputs (XLR, 1/4" only); gain/aux/metering/pan/stereo insert point/3 band EQ on every channel; VCA crossfader with curve control. \$2995.
PMC 07PRO dedicated VCA fader 2 channel scratch mixer. Designed by "I.S.P" scratch DJ's. Curve control on all faders. Balanced outputs, 3 individual 3 band EQ. \$1895.
PMC 17A 3 channel multi-purpose mixer. 60mm channel faders; gain/aux/3 band EQ and pan on each channel. Best mixer award ETA 1998. \$895.
PMC 03A 2 channel, 2 band EQ on each channel, headphone crossfader, titanium finish. Mic input. User replaceable crossfader. \$495.

YORKVILLE

Dynamic Music (02) 9939 1299
DJM 806 800w high power fancooled stereo amplifier, rack mountable. 2 zone outs (1 EQ'd and 1 flat), 255 inbuilt effects plus more. \$2895.

DJ DEVICES

AMERICAN DJ

American DJ Supply Australia (02) 9568 2100
DB Display LED decibel level display for use with any audio product. Shows output level in 3 colours over 30 LED'S representing output volume in decibels \$199.

CITRONIC

Universal Lighting & Audio 1800-648-111
CD-2 Dual CD Player Citronic has added digital signal outputs for digital mixers, high resolution analogue output IC's for a cleaner more crisp audio reproduction and a pitch control with 0.1% resolution for accurate beat mixing. 8 Times Oversampling, 1 Bit D/A Converter, S/PDIF Coax Digital Outputs, 4 Speed Shuttle Search, Frame Jog Search, Auto-Cue to Start of Music,

±12% Pitch Control, 30 Track Program, Single or Continuous Play Modes, Full Cue Editing Facilities. The PD-1 comes complete with Stanton 500AL cartridge and Citronic slipmatt. \$1399.

PD-1 entry level direct drive model, a digital Beat-Out has been included, a digital signal used by some BPM and Tempo analysers including the new Citronic MSX range of mixers. The PD-1 comes complete with Stanton 500AL cartridge and Citronic slipmatt. \$672.50.

CompactCase Fit your Citronic CD-2 with your choice of 19" 4U high mixer in this compact, fully fitted roadcase. \$353.
CDStand-a-lone A simple, economical attachment to mount CD-2 controller safely and directly above the drive unit. \$14.64.

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Jands Electronics (02) 9582 0909
120XP Sub Harmonic Synthesiser has two separate bands of bass synthesis provide the best combination of smoothness and control, and the independent Low Frequency Boost circuit is designed to get the most out of high-performance low frequency speaker systems. Flexible system interfacing is achieved by providing main outputs which can be full range (including synthesis) or high frequency only, along with a separate subwoofer output with its own level control. 1RU. \$895.
266XL Stereo Compressor/Limiter/Gate 2 channels with switchable OverEasy/hard knee detection. Features include manually adjustable attack and release, threshold and gain reduction metering, side chain insert and balanced inputs and outputs. 1RU. internal PSU \$495.

EVOLUTION

Australis Music (02) 9698 4444
Dance Station 25 full size key trigger keyboard with amazing software 1000 loops to make your own dance songs. Includes lead and full software package. \$339.

MIX MACHINE

Universal Lighting & Audio 1800-648-111
Reverse Edition PLUG-IN is a device for Technics SL1200 turntables that allows you to run vinyl backwards. The PLUG-IN is a easy do-it-yourself module, adding increased functionality to your Technics deck. Double click the Start/Stop button to make the platter rotate backwards, even while the platter is running. \$157.34.
Reverse Edition TUNING is device for Technics SL1200 turntables that allows you to run vinyl backwards. The Tuning kit has two exclusive features.....double click the Start/Stop button to make the platter rotate backwards, even while the platter is running! and funky blue lights - Blue start stop light, Blue LED for pitch control when + or - (red in centre). Must be installed by Authorised Service Agent. \$218.32.

MUTRONICS

Shrape International (02) 9939 4004
Mutator Stereo analogue Filter with VCA/ VCF EXTERNAL triggering,panning and gating OPTIONAL MIDI. \$2599.

NUMARK

Show Technology (02) 9898 1111
Beatkeeper-BCM135 Automatically tracks the mix of up to 4 channels simultaneously, tracks phono or line level sources, updayes all displays on every beat, has accurate digital BPM displays of all channels, plus tempo and beat off-set bar graphs for total

mix control. \$572.95.
WS 111-Wireless Microphone lightweight, features include: a non diversity tabletop receiver; quartz crystal oscillator; mute switch on microphone, 8 hour battery life and multiple frequencies. \$286.06.

RANE CORPORATION

Jands Electronics (02) 9582 0909
PS1 Phono Stage RIAA Phono Preamplifier for turntables connecting into standard line level inputs: Stereo, RCA Inputs, Balanced Outputs. \$695.
MOJO MQ302S Graphic Equaliser Stereo 1/3 Oct Constant Q Graphic EQ featuring stereo faders to control both channels from the one fader with +/- 12dB cut and boost. Balanced XLR & 6.5mm inputs and outputs. 1RU. \$1,195.
MOJO MQ302L Graphic Equaliser Description as per MS302S above, but with long throw faders. 2RU. \$1895.
MOJO MC22 Compressor 2 Channel compressor that features a simple user interface that enables easy and quick setup. Each channel has a RMS compressor and an expander featuring Rane's ADX technology. Balanced XLR and 6.5mm connectors. 1RU. Internal PSU. \$995.

RED SOUND

Moore Music (03) 9419 0344
MICRO AMP 9v powered (AC or battery) headphone amplifier. 2w RMS output. Bass and treble tone control (+/- 12dB). Signal fed from headphone jack - cable supplied. \$199.
MICRO BPM compact headphone amplifier with built-in BPM counter. 2w RMS output. Bass and treble tone control. 90-180 BPM range. Cable and rack kit supplied. \$349.
MICRO SYNC compact midi tempo synchronization unit. Converts line level signal to midi clock output. Built-in 90-180 BPM counter. Cable and rack kit supplied. \$499.
FEDERATION BPM FX 4 fx in one with joystick control. Filter and LFO/panning/cutter/delay with real time controls. Built-in BPM counter. Also for studio applications. \$1395.

SHERMAN

Shrape International (02) 9939 4004
Filter Bank 19" rack mountable 2u or 3u, analog filtering module, has it's own pre-amp w/overdrive, two multimode VCF's w/ selectable harmonics, envelope follower, two VCA's, an LFO, ADSR and AR generator, all manually accessible by 25 knobs and switches. Total of 10 jack sockets for inputs, outputs and control sources as well as midi in/out and 3 mid thrus for versatility. \$1899.

SHURE BROTHERS

Jands Electronics (02) 9582 0909
Shure SC35C DJ Cartridge DJ needle for all applications. With a tracking force range of 4 to 5 grams, the SC35C provides for significant skip resistance. 4.0 to 5.0 grams tracking force, 5mV RMS output. \$79.
Shure M35S DJ Cartridge Designed for mixing, the M35's versatile Shure Type I medium-diameter cantilever can stand up to continuous, demanding use, yet it is compliant enough to trace signal modulations as small as a millionth of an inch. With a tracking force range of 3 to 5 grams, the M35S provides considerable skip resistance, 5mV RMS output. \$99.
Shure M44G DJ Cartridge a versatile performance needle, appropriate for both intensive scratching and mixing. With a tracking force of 0.75 to 1.50 grams, and a frequency response which is essentially flat from 20 to 20,000 Hz, the M44G produces a vibrant,

high-definition sound, while being kind to your vinyl. 6.2 mV RMS output. \$99.
Shure M447 DJ Cartridge Engineered for scratch DJ's and turntablists, designed not to skip under even the most demanding circumstances. Combining Shure's unique wide-diameter Type S cantilever with a tracking force of 1.5 to 3.0 grams, the M44-7's rugged construction is highly durable, but will not unduly wear your vinyl. With a 9.5 mV RMS output, the highest on the market. \$119.

SONY

Sony Australia (02) 9887 6666
MDS-E11 MD Deck, 1U rack, RS232, Control S & Parallel remote, XLR analogue, I/O, IEC958. \$1,390.
MDS-E52 MD Deck, 2U rack, RS232 & Control S remote, XLR analogue I/O, IEC958. \$1,290.
MDS-E58 MD Deck, 2U rack, Control S remote, Phono analogue I/O, IEC958. \$990.
MDS-DRE1 Minidisc DiscJockey, Digital vari-speed/pitch, Hot Starts, Back-track recording. \$1,990.

TECHNICS

Universal Lighting & Audio 1800-648-111
RPD1200 Headphones Designed for DJ use Large driver unit (41mm / 1-5/8") Free-style flexibility allows the speaker housing to swing into a comfortable monitoring position. Folds for easy transportation Carry pouch Single side cord with Litz wire Copper Clad Aluminium Wound voice coil Gold-plated (1/4") stereo plug Wide frequency response: 8 Hz - 30 kHz. \$279.
SL1200 Total quartz locked continuous pitch adjustment up to +/- 8% Precision moulded aluminium diecast cabinet and heavy rubber base material absorb unwanted vibrations Unwavering quartz DD accuracy: wow & flutter 0.01% WRMS, rumble - 78dB DINB) Very high torque (1.5kg.cm) for quick start-ups Highly sensitive low-mass tonearm with gimbal suspension Helicoid tonearm height adjustment. \$1200.
SL1200 Reverse Edition EXCLUSIVELY from ULA authorised dealers. Has two exclusive features: double click the Start/Stop button to make the platter rotate backwards, even while the platter is running! and Funky blue lights - Blue start stop light, Blue LED for pitch control when + or - (red in centre). \$1460.

YAMAHA

Yamaha Music Australia (03) 9693 5150
RM1x MIDI Sequence Remixer; 110,000 note/16 tracks; 20 songs; 960 preset/800 user patterns; 7,726 preset phase database; 654 sounds/46 drum kits; 3 effects; bass boost; 72 edit jobs; floppy drive (reads SMFs); 8 realtime control knobs; Grid Groove/Play FX/Harmonize functions; Arpeggiator; LARGE backlit screen. \$1,995.

ZOOM

Dynamic Music (02) 9939 1299
RT-123 lightweight compact rhythm machine; large number of presets; self lit pads; 80 drum kits; 25 bass programs; live input for guitar practice; midi capability. \$395.
Rhythmtrack 234 124 drum kits including percussion and SFX; 297 rhythm patterns; 50 bass programs; 13 velocity sensitivity pads; sound effects; midi capability. \$575.

next month::

STUDIO MIXING CONSOLES

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How to do it

DUNCAN FRY'S LIVE SOUND MIXING SERIES

- MICROPHONES (Part 16)

VOCAL MICROPHONES (CONTINUED)

The list of suitable vocal microphones is long, but here are some favourites, not in any order of preference but as they spring to mind.

Shure SM 58, Beta 58 or SM87
Beyer M 88
Sennheiser 421, 431
Electro-Voice N/D757, N/D457
Shure SM 57 or Beta 57

The SM 58 is also very robust. According to the ads it will withstand 6' drops onto a hardwood floor; not something I would try with a Beyer M 88. I suspect that the popularity of the 88 as a kick drum microphone is that it doesn't have far to fall, and when it does it's usually onto a pillow!

As a final word before we leave vocal microphones, remember that if you are running one monitor send to all the front line of vocal monitors, your job is made so much easier if all the vocal microphones are the same. Trying to EQ for 4 different models or brands on the one send can be a nightmare, as they all have different responses.

There will be so much cut out on the Graphic EQ that what you will end up with is reduced level in the monitors, which is usually the opposite of what the band wants!

DRUM MICROPHONES

The choice of Kick drum and Snare microphones is very important, and the others probably less so. Kick and Snare appear in every beat in every song, so they've got to be right.

A good Kick drum microphone must be able handle high SPL without its diaphragm breaking up and giving a distorted sound. Kick drum sound is very subjective. Some engineers will prefer lots of 'click', others want a 'thud' that will rattle your fillings, still others want a 'boomy' sound. It all depends on the sound the band needs. Whichever sound you prefer, it must be clean to start with. From there, your preferences can be taken care of by the desk EQ.

Here are some favourites
Beyer M 88
Electro-Voice RE 20
AKG D 12 or D 112
Sennheiser 421
Shure SM 57

Snare drum microphones need a lot of the same properties as the Kick, but in a more compact form. They also need accurate transient response, to give the true snare drum 'crack'. Try these

Shure SM 57 or Beta 57
Beyer M 201
Sennheiser 421
AKG 451 or 310

The microphones on the toms are less critical, so if your budget is running tight, then virtually anything directional will do. If you do have a choice, though, try these

Shure SM 57 or Beta 57
Sennheiser 421
Electro-Voice RE 20 or N/D408
Beyer M 201

When we discussed the Phase Reverse switch on consoles, this was one of the prime targets. The rule is, keep the microphones 3 times as far apart as each one is from its source. When other engineers talk about the 3 to 1 rule, this is it.

HI HATS

This microphone needs shimmering top end, and a tight directional pattern to try to lose the snare drum. Here are some suggestions
Beyer M 201

Shure SM 57, Beta 57, SM 81
Sennheiser 416
AKG D 140

INSTRUMENT MICROPHONES



GUITAR AND KEYBOARD AMPS

You can stick almost any microphone in front of a guitar amp, as long as it will handle a high SPL. Place the microphone in front of the speaker, but not in the exact centre where the dome is, unless you want it really bright. Place it between the dome and the edge of the speaker, and never in the space between two speakers (as on the Vox AC30 above, for example) unless you're really after a hollow thin sound.

ACOUSTIC GUITAR

Hopefully, most of the time the guitar will have a built-in pickup in the bridge, which you can run into the desk using a DI box. However, if you have to mike it up, then point the microphone towards the bridge area or the pickguard area, and about 4" (100mm) away from it. Then cross your fingers and hope that the guitarist will keep still! This will give the cleanest sound, but you will need the utmost concentration, as acoustic guitar sound tends to 'boom' very easily, and guitarists don't always stand still! Roll off quite a bit of LOW and LOW MID, and watch out for feedback.



ACOUSTIC BASS

Once again this will hopefully have a built-in pickup installed, but otherwise the same rules apply as for acoustic guitar. Shure recommend wedging a microphone with its body wrapped in foam rubber (not the grille) behind the bridge or between the tailpiece and body. Watch out for LOW and LOW MID feedback.



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 16)

MICROPHONES

Microphones and loudspeakers belong to an electrical family known as transducers. A microphone converts mechanical energy (sound waves) into electrical energy (audio signals). A loudspeaker converts electrical energy (from the power amplifier) into mechanical energy (sound waves).

The microphone is the first device in the recording chain. Its overall sound quality depends on a variety of elements: design, sensitivity placement techniques, acoustics and so on. There are four types of microphone design which are interesting to the audio engineer - dynamic, ribbon, condenser and valve.

DYNAMIC MICROPHONES

Dynamic microphones are units in which an electrical signal is produced by the motion of a conductor within a magnetic field. Dynamic microphones are subdivided into two sections: moving coil and ribbon type.

Moving coil microphones consist of a small diaphragm (1) and a voice coil (2) suspended in an intense permanent magnetic field. Sound waves striking the surface of the diaphragm cause the coil to move into the magnetic field, thus generating a voltage proportional to the sound pressure at the surface of the diaphragm. The magnet (3) produces a concentrated magnetic flux (approximately 10,000 Gauss) in a small gap.

The diaphragms were originally constructed of aluminium, though this proved too sensitive to excessive pressure. Diaphragms are now constructed from a polyester film known as Mylar. It is extremely tough and resistant to temperature variations and air pressure extremes.

RIBBON MICROPHONES

Ribbon microphones operate on a similar principle of magnetic induction, except the diaphragm/moving coil system is replaced with an extremely thin (2 micrometers) and lightweight metallic ribbon. The ribbon is corrugated to provide structural strength, and is suspended in an intense magnetic field. It moves in response to sound vibrations, generating a small current flow proportional to the sound. A built-in step-up transformer boosts the output level and impedance to acceptable levels. Ribbon microphones are generally more sensitive than dynamic microphones but, due to the construction of the ribbon, they are also very fragile.

CONDENSER MICROPHONES

The condenser microphone capsule consists of a small capacitor which is made up of two plates; one fixed (back plate) and one moving (front plate) sealed inside a metal case or housing. The front plate acts as a diaphragm. Some condenser mikes use dual diaphragms, offering the engineer a choice of polar patterns.

The diaphragm is constructed of a light polyester film with an extremely thin layer of metal (e.g. gold). This metallic surface is in electrical contact with the housing and forms the moving plate of the capacitor. The fixed backing plate is constructed of perforated metal. It is insulated from the housing and fitted close behind the diaphragm. Condenser microphones require a preamplifier and a source of power. The power source may come from internal batteries or from the mixing console through a system known as phantom power, which provides 48V DC to the microphone via the microphone lead.

The condenser's plates are connected to opposite sides of a DC supply, which provides a polarizing voltage. Current flows from one plate to another until such time as the gap between the plates is fully charged. At this point, no more current will flow.

The charge stored between the plates is determined by the value of the capacitance and the voltage applied to it. The formula is:

$$Q = CXV$$

where:

Q = charge in Coulomb; C = capacitance in farads; V = voltage

The value of the capacitance is determined by the size of the plates and the distance, between them. When sound pressure moves the diaphragm, the distance between the plates changes and therefore the amount of capacitance changes. Because $Q = C \times V$ and the value of C has changed, the charge between the plates must also change, causing current to flow in proportion to the sound pressure variations.

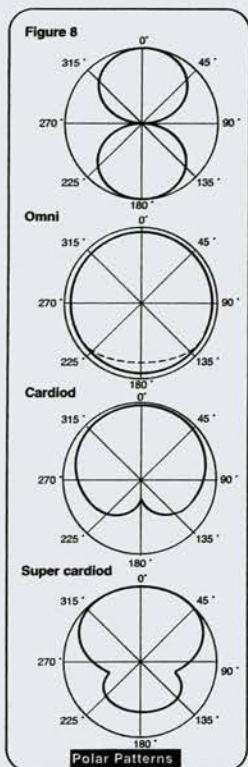
The current flows through a high value resistor, generating a voltage across the resistor in proportion to the sound pressure variations. The voltage is amplified by the preamp inside the microphone to minimize hum, noise and signal loss.

Valve microphones are a form of condenser microphone that uses valve circuitry to provide the required preamplification. They are highly regarded by engineers for their characteristic 'warm' sound.

Electret microphones are another form of condenser microphone, but they do not require a power supply. Their polarizing voltage is permanently stored in the plates as an electrostatic charge.

Another type of condenser microphone is known as the Pressure Zone Microphone (PZM). It is approximately 6 dB more sensitive and has a smoother frequency response with less phase cancellations, because of their design and acoustic placement when in use.

Condenser microphones have a high impedance and need to have attenuation pads to prevent high program levels from overloading their built-in preamplifiers. Most condenser microphones have a -10 dB pad switch to prevent this form of overload. Many condenser microphones also have a built-in high-pass filter to remove unwanted low frequencies caused by rumble and/or proximity effect.



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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AVALON Design VT-737 and full range (now) available in Australia. Contact Mixmasters Productions on (08) 8278 8506

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THE GAFFER'S HANDBOOK \$72

Harry C. Box. Edited by Brian Fitt. A friendly hands-on manual covering the day-to-day practices, equipment and tricks of the trade essential to the motion picture gaffer. The Gaffer's Handbook offers a wealth of information as well as aesthetic discussions focusing on what's important: when working on the set - trouble shooting, teamwork, set protocol and safety. This book describes the tricks and techniques for operating a cast array of lighting equipment including: the full line of tungsten and discharge sources, fluorescent units, carbon arc lights, electronic dimmer systems, underwater units, xenon units, camera synchronous strobes, black lights, lightning effects units and many others. Includes 10 appendices of handy reference tables. 132 Pgs. 1999.

A-Z OF LIGHTING TERMS \$35

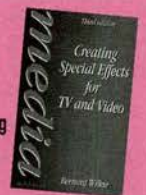
Brian Fitt. The A-Z of Lighting terms is useful for anyone in the lighting industry, especially students, who have heard terms or expressions and wondered what they meant. Many terms are expanded using illustrations to clarify some of the more complicated principals, formulae and laws. This publication would provide a good basis for the theoretical and practical side of training in the lighting industry. 224 Pgs. 1999.



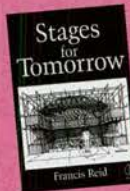
CREATING SPECIAL EFFECTS FOR TV AND VIDEO: 3RD EDITION \$38

Bernard Wilkie. A concise and practical introduction to the world of special effects, covered in a simple and practical form, supported with clear illustrations and photographs. Each of the following special effects are detailed with full descriptions of equipment, procedure, and type of effect obtained: The latest in computer generated effects, scenic projection, moulds and miniatures, underwater sequences, robots and monsters, pyrotechnics, fire and explosions in the studio, current safety procedures, bullet effects, prosthetics, breaking bottles and collapsing scenery, weather effects. Attention is also given to aspects of safety and the correct procedure for those engaged in dangerous sequences. 224 Pgs. 1996

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As reviewed last month...



STAGES FOR TOMORROW \$38

Francis Reid. "Stages for tomorrow" gives a unique insight to some of the key developments of live performance technology this century and offers a view of where the future lies. This book covers every aspect of staging a live performance: from its relationship with photographic and digital media, old and new, to factors affecting the architectural design of buildings which house performances of ephemeral arts. The technology of staging styles is covered, with ongoing engineering solutions for scenery, light and sound. The book also examines developments in costume design, marketing and training. 120 Pgs.

TO ORDER: SEE PAGE 69 FOR DETAILS

L I V E

PRODUCTION REPORTS



FASHION WEEK

Six months in the planning, six days to bump-in and in four days.....it was all over! Iain Reed tells all.

24 shows in four days over three catwalks located in the Fordern Pavilion at Fox Studios, Sydney. It was quite an accomplishment, given that the Fordern and surrounding areas were still essentially a building site: hard hats were secured right up until rehearsals. Remarkably, mains power was on, rigging dome was complete and there were only a few leaks in the building, thanks to Playbill Venue Management.

The three main venues were named by colour - Blue, Yellow and White. The shows were for the fashion buyers not the general public and the frocks revealed idea for next summer, very different from the ready-to-wear parades.

The Production Team consisted of Jared Clarke, Producer/Director, Rodney Cambridge, Production Co-ordinator and myself.

As Technical Director and Lighting Designer for all the shows at the Fordern and the surrounding events during the fashion frenzy. It was a tall order to maintain the level of production required and expected for such an international event but I think we did it.

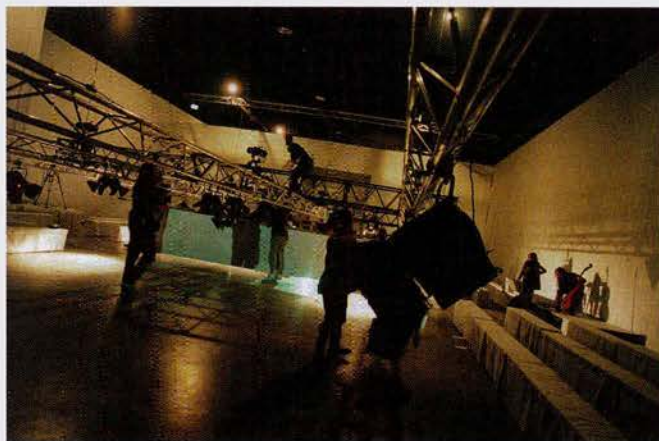
BLUE ROOM (the big one)

For this room Jands were appointed as contractor using 92 Castor 2K's, 10 Pollux 5K's, 16 1K's, 22 VL2c's, 8 VL5 arcs, 4 Lycian followspots and 2 Gladiator 3K Xenon followspots for lighting. Audio consisted of 10 MSL2's, and 4 JBL arrays driven by my Allen & Heath.

As the main production venue with three major set turn arounds per day (thank God for pole op lamps!), the Blue Room Co-ordinator Richard Breathnach did a great job wrestling the 4.8m set pieces from 4.8m mirrored revolves to the wall of doom: 500 Par 38's wired in matrix as a backdrop (96 amps a leg).

Francesco Calvi very kindly pushed the buttons for me - nobody does Artisan like Frank.

There were a number of high profiles in this room which, to the designers delight, attracted a lot of media attention. Wayne Cooper, Charlie Brown and Allannah Hill (whose show included ballerinas, swings, baby goats and a deer!) all played to packed houses each requiring show-stopping audio and lights.



FULL HOUSE:: THEATRE NEWS

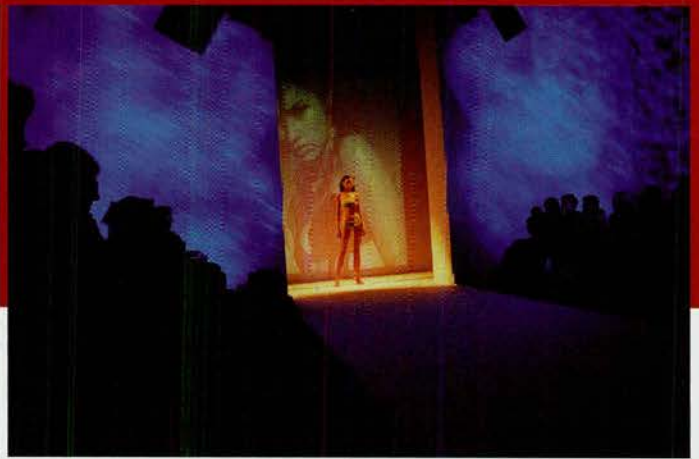
James Buick has been appointed Venue Manager of the **Cockatoo Centre Moonee Valley** in Melbourne. Due to open next January, the centre's facilities include a 514 seat proscenium arch theatre with fly tower, a 300

seat function room, a 100 seat meeting/function room, a 100 seat rehearsal space, plus a cafe with full catering. The Cockatoo is the first venue to be constructed according to the new Arts Victoria benchmarking.

Suzette Watkins, formerly of the Monash University Performing Arts Precinct, has been appointed General Manager of the new **Alice Springs Performing Arts Centre**.

Newcastle's historic **Victoria**

Theatre has been saved from the wreckers ball. A company bought the theatre for \$302,000 with plans to turn it into a toy shop. Featuring a dress circle and foyer, and with a functioning fly tower, the new owners said the toy shop will have a theatrical feel about it.



To top the week off we had to broadcast the Australian Fashion Awards from the venue. This involved a nine-camera shoot live to tape with performances by Polyanna, Human Nature, Kate Cebrano and The Australian Opera

The room format changed three times a day, so there was little to do apart from truss down and re-rig. The boys hated me for this but the effects we created looked great on camera.

Akira's show must have been one of the highlights with two huge video projection screens supplied by Gruchy Productions and live music. Other designers using this room included Scanlon and Theccore, Nicola Finnetti and the Lili label.

continued over

YELLOW ROOM (New York Style Salon)

32 Hundred Lighting were responsible for the production of this room. I used 96 Par 64's, 14 Castor 2K's, 10 High End Studio Colors and 12 of my new Clay Faky Stage Zooms which were flown in from Italy just in time. There were also 16 Iris One's to give a



Paula McDermott FOH

"lightbank" backdrop. For audio we used Martin EM 15's and ICT boxes, and lots of subs (small and discrete).

The vibe of the room reflected the genre of designers showing there - young, funky, cutting edge. These included names such as Bettina Liano and Karen Walker. In this room the Young Designer Collections and the swimwear was shown.

WHITE ROOM (Gallery Space)

The vibe of this room was to be simple, clean and beautiful. 32 Hundred Lighting took charge of this theme with 20 2K Castors and 20 1K's as well as 2 MAC500's. Audio was a Martin W8 system, big and boffy.



DATES OF DISASTER

I am the resident sound person at a Sydney RSL. I received a phone call from the promoter a few days before The Stylistics are performing. I informed him that the house PA has 8 sends for monitors BUT we don't have a separate monitor desk or engineer.

I receive a call later that day from guy who is going to supply a monitor desk but he's concerned that his system is wired differently to standard. I tell him about the club facilities.

Friday night a call from monitor desk owner - "I am at the club to setup this desk - when are you getting here?"

I arrive as scheduled at 5pm. The monitor desk is plugged into the wrong mains source, and the club wedges have been patched into club amps. Test the desk with a mic on channel 1, and the sends all work. GREAT

Alas no channels have been plugged in (from the split side of the stage box). He has left a couple of leads which have some other leads plugged into them. I am remembering the small problem he talked about with matching his system.

The tour manager arrives and announces he'll be 'MINDING the monitor desk this evening' ... "I use to do a bit of monitors years ago!" I begin to worry on two fronts. The monitors haven't been tuned at all (they are set FLAT) and time is being wasted on things that we usually wouldn't be wasting.

I get some help from a stagehand setting up the graphics. Just copy them from my notes I keep about the house graphics - seemed like a good idea, except they sound like shit - and of course the act is there now and asking for this monitor and that. Time is a wasting.

I have setup the mics and start checking the FOH. Normally I would do this as soon as I arrive but with this NEW TOY being there I was diverted.

The FOH of house has no sound. NOT A SQUEAK. After some time I find the FOH leads to crossovers have been removed when they were looking for the monitor sends.

The monitors aren't getting any better, the channels don't work in anything like a usual manner, flat all and so on

Talk about lost time. We normally open doors at 7pm and try to be ready at least 15 mins before this. It's 7.30 and we're going nowhere fast.

In 45 mins (approx.) we have everything sound checked and the doors open. The act was less than pleased that they wouldn't have the monitor engineer but the evening went fine, not fantastic but no lives (or livelihoods) were lost.

In the middle of all this the promoter rang to apologise for the guy who "had left him in this mess". All the usual talk from him.

By Miles Harris miles@harrismusic.com.au

Swan Lake

The arena production of *Swan Lake* was a smash hit when it premiered at the Royal Albert Hall in 1997. Conceived by the English National Ballet, the innovative production combined the beauty of classical ballet's most famous story with a modern approach to staging - the spectacular. Two years later, Michael Edgley has taken the production a step further by joining forces with the ENB and the Australian Ballet to re-create the ballet on the grandest scale yet; featuring 80 musicians and 120 dancers, and playing to average audiences of 8000 people per performance.

Taking on the challenge of lighting the spectacular was Richard Stuart, Executive manager of Production at QPAT. With an extensive background in lighting classical ballet through his long association with the Australian Ballet, Richard designed the rig for *Swan Lakes'* Hong Kong and Australian performances.

With a greater emphasis on set than the London production, the Australian producers brought in Melbourne designer Graham McGuffie to transform the stadiums into the romantic setting of *Swan Lake*. A huge painted backdrop dominated the stage, with the orchestra masked behind ornate screens, and two bridges and a central grand staircase provided entrances for the dancers. Gothic archways, chandeliers and thrones added to the grandeur of the setting, but the master-stroke was a two inch deep lake flowing under the bridges, complete with ripple effects thanks to a crew

invention.

"The ripples are achieved by a block of 3x1 timber attached to a ceiling fan with string. We named it the Water Rat.

"We've taken classical ballet, which we normally look at through the proscenium from one direction, and put it into an arena where we have to look at it from three directions, so what is front light for one side of the arena is backlight for the other and so on. In that sense the rig becomes very large and we've got just under eight hundred lamps in the air.

"It's basically made up of a two colour wash, warm and cold. Of course *Swan Lake* being the two blue acts with the swans in their white tutus. It's about very clear crisp although very blue, ballet lighting. We've broken the 68 feet wide and 80 feet deep dance area into four areas across and four areas deep and each area is then lit from four sides by pairs of par cans in both colours. And then each of those areas has a gobo treatment again in warm and cold with two gobos per area in each colour. We then overlay onto that a scroller wash with 36 medium cans with scrollers that give us the ability to lay in some heavier colour particularly to accentuate costumes.

"We're using Rosco 79 in the wash and double Lee 200 in the gobos, and it's always a dilemma to get the swans white and pick up the white of the tutus without washing out the blue and keeping it very ethereal and moody when it needs to be. So a lot of the time we're really balancing between the blue base wash with the gobos, and then we overlay those gobos with some even darker gobos in Rosco 85. And there's a lot of Rosco 85 in the backlights and the scroller washes.

"And then in the middle of the rig on the centre truss we've got more of the effect equipment and that includes four E-lite punch



FULL HOUSE::THEATRE NEWS

• Work begins this month on the upgrade of the **Sydney Entertainment Centre** at Darling Harbour. \$8 million has been allocated to external refurbishments with the deadline being the 2000 Olympics when the centre will host the indoor volleyball competitions. Architectural lighting will feature heavily in the new design, as will the principles of feng shui. There are no plans for upgrades to the centre's interior or auditorium.

• Another 'spectacular' is on the way to an entertainment centre

near you. This one doesn't have 70 swans in it, but it does have 80 professional dancers demonstrating a broad range of dance styles. **Burn the Floor** is a \$10 million arena spectacular from Producer Harley Medcalf. The show will tour Perth, Adelaide, Melbourne, Sydney and Brisbane.

• A recent rumour suggests the backstage crew on a current Melbourne musical took industrial relations into their own hands when management refused a pay increase. Apparently the crew worked

out a 'pro-rata' arrangement where only certain pieces of the set were loaded onto the stage for a prominent scene in the show. That's one way to get management's attention.

• Everyone's favourite musical **The Sound of Music** will be back in theatres by the end of the year. Produced by the Gordon/Frost Organisation, *The Sound of Music* will premiere in Sydney in November before heading off on a national tour. No announcements have been made about the design team or cast as yet, but hot tip is Lisa McCune

as 'Maria', the role made famous by Julie Andrews.

• **State Theatre of South Australia** are looking for a replacement Artistic Director following Rodney Fisher's announcement that he will be leaving the company at the end of the year.

• **Katherine Hough** has been appointed CEO of Australia's oldest theatre, Hobart's Theatre Royal. Katherine was previously Operations Manager for the Sydney Dance Company.

lights with scrollers on them which again allow us to lay some pretty heavy colour into the centre for solo work where we've often got the swans or the corp-de-ballet dressing the set around the perimeter of the dancefloor while the solo work is happening in the middle. So we've got a bit of flexibility there to hot up the centre and pull focus."

Richard specified Source Fours for his profiles, he wouldn't use anything else. Fortunately lighting supplier Bytecraft have a large inventory and were able to provide the 156 units of varying beam angles.

12 Cyberlights created effective water ripple effects layed over dry ice. 18 Dataflashes were also spread around the box grid for lightning effects, and 6 x 2k Xenon followspots were run from the catwalk for the necessary spotting of the principals.

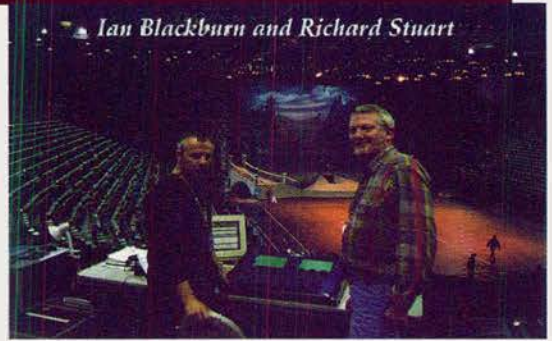
A combination of two DF-50 Haze makers, Rosco Smoke machines and six Australian made dry ice machines were used for

different effects. The DF-50s ran throughout most of the show to soften the room without dominating the audience, whereas the

Rosco smoke was only used for dramatic entrances.

Despite the enormity of the production and the lighting rig, operation was relatively straightforward. With only 75 cues, many of them subtle transitions between established states, the lighting fulfilled the producers' desire for understatement while creating a stunning result.

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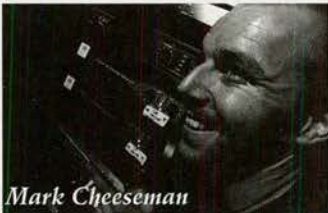


FASHION WEEK

continued from page 53

THE REST OF THE WORLD

During the rest of the week, the boys from 32 Hundred Lighting were busy illuminating Collette Dinneegan's parade at Boomerang, Lisa Ho at Bondi Life Saving Club, Billion Dollar Babe's opening at the Odeon in Kings Cross and Tea Rose at Customs House. There were also the catwalk shows in the RHI at the Exhibition Space, the odd press conference and the numerous functions in the marquees on site to illuminate.



Audio was handled by Paula McDermott, 32 Hundred's resident audio expert. Paula was Audio Director for the shows editing some thirty shows - 3 minute tracks had to become 7 minutes. In every venue there was also a live music element with designers such as Morrissey, Alex Perry and Akira utilising performers such as Marcia Hines and Lee Perry. As Paula used to say before the big shows "I'm not driving a car....no one's going to die". A good attitude to have unless you make a mistake...she didn't.

One final highlight from the whole event was having the pleasure of watching Simon Locke at the last show perform with a followspot like no other Executive Producer has before.

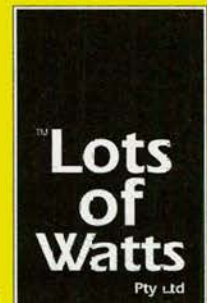
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The company everyone else uses



Lighting Console Operator was Ian 'Gooch' Blackburn, Lighting Crew Chief Sean 'Motley' Hackett, Lighting System Technician Rohan Harrison, Dimmer Technician Chris Lawrence, and Rigger Derek Weith.

The Sound Design and Production for the Hong Kong and Australian legs of the Tour was provided by System Sound Pty Ltd. The Sound Designer was John Scandrett, with Nick Reich as Mix Engineer, and Don Eickhoff and Cameron Herbert looking after System Engineering and the Comms and Video equipment.

System Sound make a specialty of sound reinforcement for Orchestral concerts in Arenas & Stadiums, often working with Orchestras and Opera artists in Asia, Australia and New Zealand. As far as Sound reinforcement was concerned, this was an Orchestral show, as the dancers aren't supposed to make any noise! In addition, Graham McGuffie's set placed the Orchestra on its platform in roughly the same place in the venues as it would normally be for a straight Opera concert.

Orchestral sound reinforcement, be it for a Ballet or supporting a Solo performer, is always an exercise in tightrope-walking. The Audience is often divided in their expectations. On one side are those critics and aficionados who regularly attend acoustic performances in traditional-sized venues, and expect that sort of expe-



rience to be re-created. On the other side are those audience members who have been attracted to an event like Swan Lake by the size and spectacle, many who listen to Classical music on their HiFi's a bit too loud, and who would find a traditional acoustic Orchestral performance a little underwhelming! Of course, it is the first group, who prefer it more low-key, who usually buy the seats nearest the stage (and the PA)!

System Sound usually uses Meyer Sound speakers for this work, and in this case, the main system comprised four identical clusters, each with 3 Meyer MSL-4s, and two PSW-4s in a single row, with a single UPA-1P slung below as downfill. These clusters were intentionally kept as short as possible, so they could peek under the Lighting trusses, while not blocking Audience sight-lines to the top of the set and the 15m high painted backcloth. Two clusters were hung as a main left & right pair, with the other covering the side seating areas. A set of 7 Meyer UPA-1Cs, on tri-truss, were used as delay fills to the upper-most levels of seats, farthest from the main clusters. These made up for the level and HF falloff over distance, allowing for an extremely low level difference from front to back. A pair of Meyer CQ-2 speakers in the set were used as fills for lower side seating areas.



No Foldback was needed to the dance floor area, as although it was vital for the dancers to hear the orchestra, the cluster design covered this area as if there were Audience there (as there would be if this had been a concert with a soloist). Introducing closer foldback speakers around the floor would have caused multiple sound arrivals from foldback & house PA, competing with the considerable acoustic energy of the Orchestra. These would have been most distracting to the dancers, as well as colouring the house sound.

As the Acoustics of the venues varied quite widely (with Sydney Entertainment centre being the "deadest", and Melbourne Park the "livest"), and none of them having the warm reverberant characteristics of a concert hall or Theatre, Scandrett installed a multi-source reverb enhancement system with 8 UPA-1Cs on the ceiling catwalks, fed by a separate reverb program to that used in the main mix. This system was used to a varying extent in each venue.

The Orchestra was mic'd with System's usual selection of quality condenser mics, mainly Schoeps, with some Sennheiser MKH40 and MKH80 models thrown in. A total of 45 mics were used. These were all raised to Line level at the stage, with a rack of BSS active splitters, before travelling up the multicore to the 56 channel Yamaha PM3500 console. The output of the console fed a set of three BSS Omnidrive 355s, which handled all of the System EQ and Drive, controlled by a laptop running "Soundbench" software.

Scandrett used a MLSSA analyzer when tuning the system. No compression was used (except for backstage feeds), but the Orchestra mix went through an inserted pair of Amek/Neve Parametric Eqs, for overall tonal control.

In addition to the PA, Don Eickhoff and Cameron Herbert presided over the wired and wireless intercom system (mainly Clearcom), and two CCTV video systems showing a stage picture to those backstage, and the Conductor to the dancers facing forward on the dancefloor.

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Cruel Sea

Whether it's their music, or just the raw charisma of front man Tex Perkins, the Cruel Sea are one of the best Australian bands to see live. I caught up with FOH Engineer Tim Millikan and Lighting Designer Damien Oxley at one of the band's smaller gigs on their recent five week pubs and clubs tour.

Damien's lighting design was extremely economical. Utilising only five Mac 600s, Damien was able to create rich colour washes to set the mood for the band. Perched on top of the speakers stacks at each side of the front and back of the stage, and the fifth placed mid stage left, placement of the Macs was Damien's priority.

"Because there are only five lights I need to be able to put them where I can get a shot at the frontline, backline and the backdrop. Sometimes in smaller venues the PA gets wedged in so tight that by the time the drumfills are added there's just no room for the Macs. I've only got five lamps and if I can't get those five in, there's nothing else.

"A lot of bands that I've worked for haven't really allowed moving lights and you actually have to gain their trust. I've worked for these guys since 1994, in between doing lighting for Nick Cave and The Bad Seeds, and I try to keep it as smooth and as simple

for them as I can. It's very hard to put a backdrop to a band and these guys are definitely in the 'too hard basket'. They prefer to start with a clean canvas each time they go out on the road so each picture I paint is a new picture depending on what music they're putting across.

"I always use a cyc because a lot of bands that I work for prefer not to use smoke in which case it's quite hard to get definition. So I tend to use the cyc as much as I can because that allows me to get maximum depth and it helps me to move the band a little bit more than they do on stage."

At this gig there weren't any smoke restrictions so the JEM Technohaze worked overtime. For control, Damien prefers a MA ScanCommand over Hogs or the Echelon because he finds it easier to 'wing it' in a live setting.

Damien takes his cues from the music but in a far less formulaic way than some LDs. Knowing the music and the nuances of the band so well, he doesn't do the standard rock and roll changes on the drumbeat.

"I've got six main colours that I use and with the combinations that I can get out of those six colours I base my show on a reverse scenario of one colour on the front, a second colour on the kit, and the first colour again on the cyc, and then I reverse those colours so I can get movement just out of those two particular scenes. So you can use two colours for one song and then when it comes to the chorus you can whack in something different, then maybe a slow move to a different position and then back to the first two steps."

FOH Engineer Tim Millikan was new to touring



SHOWS WE'VE SEEN LATELY

A Punter's Perspective

ART



Art is just the sort of play I like. Witty, thought-provoking, amusing and superbly acted. It runs for 90 minutes without an interval. I hate intervals - you lose your train of thought, there's a scrum for the bar and toilets - usually I sit waiting. Written by French playwright Yasmina Reza, Art is really an observation of the friendship that exists between three men. It is also a statement

about abstract art, about cultural pretension, philistinism and basically taste. Serge, played by Geoff Morrel, buys a minimalist all-white painting for 200,000 francs. His friend Marc, played by Tom Conti, describes it as 'Shit', preferring a nice Flemish landscape. In steps the third actor David Wenham who plays Yvan the mutual friend and arbiter. Yvan is the mediator who has 'no opinion of his own' and is consequently labelled an amoeba. That's basically it. The whole play revolves around the purchase of this painting and beforehand I wondered how that could fill 90 minutes. But it does, with clever dialogue and engaging acting. All three actors are masters of their art. The set was perfection, designed by Mark Thompson, reflecting the simplicity of the white painting. The lighting was designed by Hugh Varstone and was nominated for a Olivier Award in 1997. Again simple but extremely effective. There was little use of colour except at the very end when each actor was spotlighted in blue, green and red. A nice finish to such a 'white' play, it mirrored the graphics to the play. A Vari*lite was used to simulate shafts of sun light through a window and this was the only noticeable lighting effect. The stage would occasionally be darkened so one actor could be spotlighted, this was when they read their thoughts aloud. Lighting and Audio was provided by Jands. Sound designer was Mic Pool.

● Cat Forcer





with The Cruel Sea. He said he must be doing something right because it was three weeks into the tour and he hadn't been punched or sacked yet.

The sound system was supplied by Bruce Johnson's Big Beat Productions.

"The basic set-up is three MSL3s aside, four 650 subs powered by QSC 3000 on the sub and Powerlites on the mids and highs. I'm using a Yamaha PM3000 FOH desk. Effects are Delta Lab, Yamaha SPX90s and 990s, Lexicon MPX1s, an old Big Muff pedal for a bit of distortion here and there, 162 Compressor over the system, 902 over Tex and James' vocals using a de-esser, all the rest of them are 900 series compressors from dbx. Drawmer gates, and that's about it - a pretty stock standard pub rig.

"I like the Meyer systems, I had one with Paul Kelly earlier in the year. And there's no bottom end like a Meyer Sub. There's a real clarity to them that you just can't get with other systems.

"At monitors it's a Yamaha 3210 desk, Phase Linear amps, Clair Brothers ELPs for wedges, and R3s for sidefill and drumfill. That system works for these guys - they're used to it, they know what it sounds like, and the monitors engineer Chuck knows it backwards. And the monitors are great, I haven't had a single problem on this tour."

Tim used a range of standard mics: SM71 and SM88 on the kick, 57s on the snare (top and bottom) and on the rack toms, 94s for overheads and hi hats, 421s for bass mic, 57s on the guitars, an AKG 409 clip gaffed to the back of the melodeca, plus a DI on the bass,

and a rack of powered DI's for the keyboards.

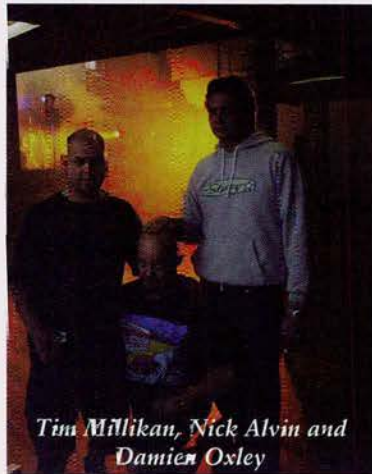
"I use standard SM58s on the vocals simply because they're very loud. Tex has got a lot of sibilance in his voice and the Betas can get too bright and pick up too much spill.

"It's all pretty raw. As far as effects, there's good sounds on stage, they've got the stage show together very well so I don't need to do much to it. Jim's drum kit is great, he's got a DW kit and it sounds

fantastic so there's not a lot I can do to it, I'm only gating the toms and the bottoms snare, I'm leaving the top one open because he hits it in all different positions to get different tones out of it and you lose all the dynamics if you start ripping everything out. I've got a gate on the kick but it's only there to stop a lot of the stage fill. I could tighten it up a lot more but you start getting that really triggered sound and I hate that, it's not what I'm about. I like natural sounds and if there's a horrible 'doink' in the snare well it's supposed to be there. You can limit it, but as far as compression goes it's really light.

"Tex is squashed up a little bit harder because he's so dynamic and he tends to ram the mic right down his throat and scream into it. Apart from that it's all pretty open. You get the odd spike or two but because of what Tex does with a mic, but he's not your standard singer. He leans into wedges, and sticks the mic down his throat and cups his hands around it to get different vocal sounds and that's one of the great characteristics of the band so you can't go taking that stuff out. You've got to put up with the odd spike - I just make sure they don't take the head off every punter in the room."

• Mandy Joaes



Tim Millikan, Nick Alvin and Damien Oxley

Crew:
Lighting Designer/Operator Damien Oxley **Lighting Rigger** Nick Alvin **FOH Engineer** Tim Millikan **Monitor Engineer** Chuck Xypolitos **Audio Rigger** Will Sweet **Stage Managers** Dave Mayer, Janie Trow **Truck Driver/Rigger** Andy Chapman **Tour Manager** Howard Freeman.
 Audio Equipment supplied by **Big Beat Productions**. Lighting Equipment supplied by **Phase Shift Lighting**, Melbourne.



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LSC IN RECOVERY AS E-PAK ROLLS OUT

It was worth saving. Lighting control equipment manufacturer LSC Lighting Systems is on track after a near death experience late last year. The original LSC company ran into financial trouble due to a combination of bad luck, management difficulties and lack of capital.

After entering into a scheme of financial administration, external finance was sought to allow the business to continue. There were 24 registrations of interest in the business, some were interested in the LSC brand alone, others the whole business.

The end of last year proved depressing for founder Gary Pritchard and partner Alan Graham. With the company under administration, most of the staff had been stood down with limited pay. Limited production of Atom and Axiom control desks continued, along with some Tour Series dimmer racks and DMX products. Cashflow was adequate to keep the company in a holding pattern.

Support was coming through in the form of letters from distributors - which today are kept in a 'Friends of LSC' folder. "The letters actually helped, because we could illustrate positive sentiment towards the company" says Alan.

But the Commonwealth Bank were less than helpful. "They told us we would both lose our

houses" said Alan. The Administrator, unfamiliar with the business and perhaps looking only at black and white, was similarly negative. He recommended

liquidation of the firm, and advised creditors of this.

It looked like LSC would die.

Gary and Alan were more positive - they understood the business, and knew the mistakes they had made. LSC products are, and were, well regarded around the world. Distributors in Australia and overseas were

still ordering. Why should a brand that research showed was identified as a quality product at a competitive price, fail?

The moment of salvation wasn't a moment at all, rather it took a little time to happen. Of the people in touch with the firm, two seemed to have complimentary interests.

One was Stan White, who has worked in and around the professional lighting industry for many years - originally in Melbourne. Although based in Perth, he undertook to visit LSC and see what could be done. "He said he would see if we could crack a deal, no strings attached" says Alan. "Stan has been in manufacturing and has had experience steering a company out of trouble in the past".

The other saviour was another manufacturer, Nigel Kukulka of Datacom. Nigel manufactures industrial modems and telecommunications equipment and by chance needed a larger assembly plant. LSC on the other hand realised they had too much space.

A deal was struck.

Stan White heads a new company, LSC Lighting Systems Pty Ltd which has four directors, Gary, Alan, Stan and Nigel.

When I called, the long awaited new ePAK dimmer racks were finally in assembly. Forward

continued over



Alan Graham and Patrick Base

INSIDE LIGHTING



BURSWOOD CASINO
page 62



BIG BOYS TOYS
page 66

TECH TALK with Andy Cidcor

page 68



PRODUCT COMPARISON:
TALKBACK SYSTEMS
page 70



MERCHANT OF VENICE
page 76

BUYERS GUIDE: LIGHTING CONTROL

MY FAVOURITE GEL COLOUR

PETER CRITCHLEY

Lighting designer



"I'm very attracted to blues. I prefer Lee out of all the other gel companies because I think their range is much more interesting. I always spec Lee gel, probably because I'm used to spec'ing it. But then I'm English so I prefer the English company over the American ones."



Burgwood Casino Gaming Room

The Gaming Room, financial ground-zero of the Burswood Island Resort Casino, has recently undergone its first facelift since opening in 1985. Casino management opted for what was essentially a lighting-only upgrade to achieve a more modern, glitzy look for the room within the constraints of minimal disruption to operations and maximum impact for the expenditure. The Gaming Room entrance and foyer, which previously had all the charm and character of a late-seventies shopping mall, now features columns with colour-changing capitals, a fibre-optic star-domed ceiling and a colour-changing Burgwood Island Resort logo set into the new granite floor. In the Gaming Room, new translucent-domed luminaires featuring constantly-changing kaleidoscopic patterns have replaced the original chandeliers, which would have been more at home in the grand-ballroom of a Russian

cruise ship, and thousands of metres of glowing optical-fibres have replaced the bud-lights outlining the barrel-vaulted ceiling. Robotic luminaires have also been added to the room for the projection of moving graphics and promotional material. Approximately two-thirds of the \$1.5million budget for the project went directly on the lighting, electrical supply and control systems, with the balance being for structural work such as the new foyer floor and ceiling.

Martin Klaasen of consultants Lighting Images, was the lead designer on the project, which not only had to meet Burswood managements requirements for looks and functionality, but also had to conform with the Chinese design principals of Feng Shui in deference to the high level of Chinese patronage enjoyed by the casino. "We made certain that the patterns and light flows in the designs matched with the energy flows determined by the Feng Shui consultant." Said Klaasen "The shapes and orientations of some of the elements of our design also required a few last minute adjustments in order to meet with Feng Shui principles." The complexity inherent in implementing a design where every section of the lighting



Foyer Logo and reflected Stars

system is individually controlled and programmable necessitated a level of design and engineering documentation which would make most electricians shudder in horror. The book detailing the location, specifications, cir-

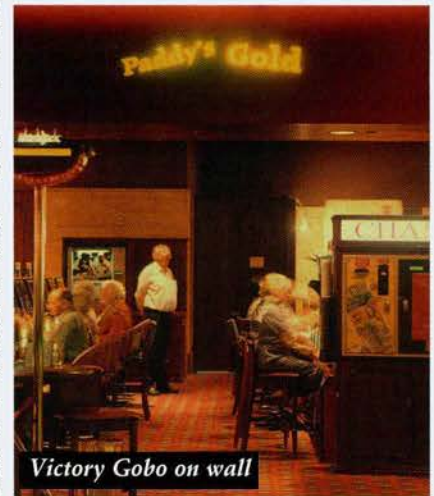
cuitry and sequencing of each element of the lighting system was a 200 page tome, over two centimetres thick. As an example: The detail for the foyer star ceiling was based on a Perth Observatory star map which detailed the locations of the 690 major stars visible from Perth, along with a further 1,100 star points which were used to represent the milky way. The star map was reproduced on the dome by projecting a correctly oriented transparency of the map onto the ceiling dome in order to place each of the fibres accurately. It's probably possible to cross the foyer of the casino entirely by astronomical navigation.

The fifteen new house light units which replace the original mirrored chandeliers feature a 2.4metre diameter, shallow translucent dish onto which an SGM ColourDynamic 100 projector has been focussed from above. The ColourDynamic uses a colour wheel and a device consisting primarily of a bundle of optical fibres to produce a series of ever-changing colour patterns which bear some resemblance to Mandelbrot's fractals. Legend has it that the fibre-optic module was originally developed to produce calming patterns as an aid to Soviet cosmonauts attempting to re-acclimatise to earthbound conditions after prolonged stays in the MIR space station. The connection between returning cosmonauts and roulette players is left as an exercise for the reader.

Almost every element of the Gaming Room upgrade involved fibre optics from Digilin: 2.9km of linear (edge emitting) Hilight 50 fibre was used to outline the edges of the barrel-vaulted ceiling, and various architectural elements around the entry foyer and 21.8km of end-emitting fibre ranging in size from 0.75 - 7mm was put to use in applications as diverse as piping light into floor mounted fittings and the capitals of columns, recreating the constellations of the Southern Sky and creating an abstract light sculpture on a Ying and Yang theme. In fact over \$500,000 of the project's budget was spent on optical fibres. Ian Jennings from Digilin's WA distributor, NMA Lighting who supplied, terminated and installed the optical fibres and light-boxes, was involved with the project from the very outset. "NMA acted as a sort of 'production electrician' on the project," recalls Jennings. "We were collaborating with the designer, the architects and the contractors to solve the problems created by the design, but we were also in the position of representing

cuity and sequencing of each element of the lighting system was a 200 page tome, over two centimetres thick. As an example: The detail for the foyer star ceiling was based on a Perth Observatory star map which detailed the locations of the 690 major stars visible from Perth, along with a further 1,100 star points which were used to represent the milky way. The star map was reproduced on the dome by projecting a correctly oriented transparency of the map onto the ceiling dome in order to place each of the fibres accurately. It's probably possible to cross the foyer of the casino entirely by astronomical navigation.

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Victory Gobo on wall



New Casino



Old Casino Lighting

Lighting::ARCHITAINMENT

BY::Andy Ciddor

Martin Klaasen's interests at contractors meetings."

The design presented a number of challenges in its use of fibre to illuminate and animate a two metre long Burswood logo and a series of crystalline cylinders which are set in to the foyer's granite floor. "As no significant structural work was being undertaken in this project" said Jennings "Martin set us the task of using optical-fibres to light the foyer logo because there was not going to be sufficient depth to install conventional lightboxes and there would be no means to access the boxes for servicing once the floor had been laid down." NMA and Lighting Images experimented with a number of materials until finding a crystal resin with the right properties to take the abuse of continuous pedestrian traffic whilst exhibiting the necessary optical clarity and diffusion.

To provide the subtlety of colour control required by Klaasen's design, the Digilin Archblaze 150 fibre-optic light-boxes used in this installation have two colour wheels on a common axis to allow for colour mixing. The stepper motors on the wheels have 2,500 steps per revolution which allows the drive electronics to produce very smooth transitions between the 256 positional steps which can be specified with a single DMX channel. One of the colour wheels contains seven colours and open white while the other has six colours, open white and a black section to enable blackouts.

The entire Gaming Room system is controlled using Dynalite dimmers, relays and protocol converters connected to three DyNet@ networks. The networks, although interconnected via a high speed data backbone for data exchange and redundancy, are separated on the basis of function. DyNet network A controls the robotic luminaires, network B controls dimming and switching, and network C controls the light-boxes for the fibre-optics. A supervising master clock triggers all network events, while each of the three networks has a redundant local clock on standby to take control should the master clock fail. Each device controller in a DyNet network stores its preset states in local memory, relying on a network controller only for the actual "go" commands to move to the next state or to initiate a programmed sequence.



LSC IN RECOVERY

continued from previous page

orders for 120 units ensure it will be a success, and the target is to make and ship 80 units per month. "We estimate we can sell one rack with every 12 channels of lighting control we sell" says Graham.

The Atom lighting console is the company's main bread winner and Axiom sales are going well, particularly in Europe, Spain and Scandinavia. Along with racks and desks, DMX distribution products also are exported.

The new LSC is leaner and more focussed than the old one, and is benefiting from new input. Having a new CEO in Stan White has left Gary Pritchard to concentrate on product development, while Alan Graham is in charge of marketing and sales. Nigel Kukulka is no stranger to the lighting industry, having at one time worked for Get Lit. Nigel is on site at the Clayton factory, integrating manufacture of his telecommunications products alongside LSC products.

A new clean room has been built, with wave soldering and auto pick and place equipment added.

There's been a lot of heartache for the directors, former staff, creditors and customers. But LSC is back, and hopefully it can resume growing again!

● Julius Grafton

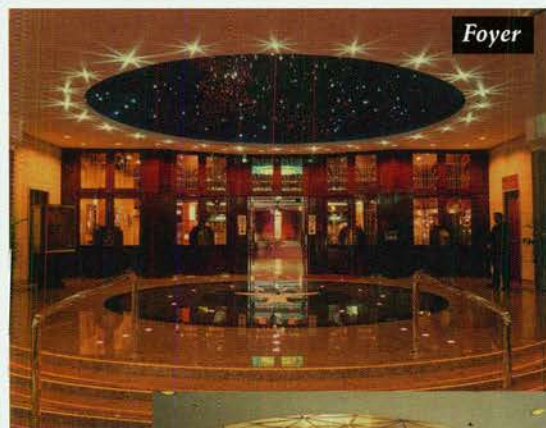


In a break with the traditional signage around the walls of the Gaming Room, Klaasen has employed six pairs of SGM Victory II Pro 150 robotic luminaires to project custom-etched gobos bearing the required messages. A gobo etching system was included in the purchase to enable the BIRC marketing department to change the messages according to the season and promotional campaign. The Victory II was selected for its efficient, longer-life HTI 152 discharge lamp and because, unusually for a unit at this end of the market, it offers bi-directional rotation on four of the seven positions in the gobo wheel. An additional pair of Victory II's have been installed to cover the entrance to the Cabaret lounge, although these luminaires are only required to perform effects duties. Together with all of the other devices in the Gaming Room system, the Victory II's are controlled through the Dynalite DyNet network and will be incorporated into special "Jackpot Sequences." It is

anticipated that the flexibility and functionality of these robotics will be more fully exploited once the BIRC staff become familiar with their capabilities.

Each device controller in a DyNet network stores its preset states in local memory, relying on a network controller only for the actual "go" commands to move to the next state or to initiate a programmed sequence.

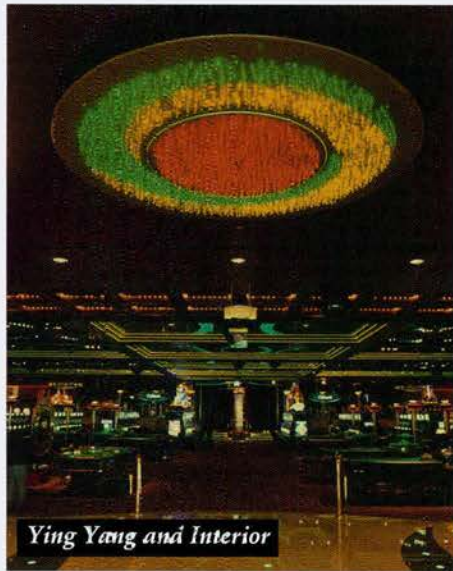
There are seventeen twelve-channel dimmer racks, (144 channels of 5amp dimmers and 60 channels of 10amp dimmers,) six twelve-channel relay (non-dim) controllers and eighteen twenty-four channel. DyNet to DMX512 interfaces in the system for a total of 708 control channels. Everything in the Gaming Room is changing, all of the time: the fibre optics are constantly cycling through colour sequences, the robotics are constantly changing, and the ColourDynamic house-light units change forever without repeating their patterns. Light Application, who designed the network and



continued over

Burwood Casino Gaming Room

continued from previous page



Ying Yang and Interior

supplied, installed, commissioned and programmed the Dynalite controllers had programmed many of the sequences in designer Martin Klaasen's "script book" off-site, but several days of fine-tuning were still necessary. Klaasen's design entails not only constantly changing looks for the fibre-optics but that the transitions between looks should be sweeping and dynamic: the colour changes programmed for the three rows of linear fibres outlining the barrel vaulted ceiling "sweep"

subtly from row to row during each colour transition and colour changes in the floor panels and on step risers are also programmed for sweeping colour transitions.

Each of the fibre-optic light-boxes has a programmed daily "siesta" of twenty minutes, during the Gaming Room's slow period from 4am to 6am to allow for maintenance and to give the light sources their recommended opportunity to cool down. There are special programmed lighting sequences in preparation which may be triggered by such events as jackpots and keno wins and along with a set of seasonal flavours to the colour schemes, a special setting for Chinese New Year and no doubt something spectacular will be created for New Year 2000, even if it isn't strictly the beginning of the new millennium.

MY FAVOURITE GEL COLOUR

DAVID MURRAY

currently lighting The Dogs Play & A Few Roos Loose in the Top Paddock



Although I try to approach each project with an open palette and agonise over colour selection to suit the designs and production style, I'm always grateful for the good range of frosts but have been unsuccessful in finding a replacement for 'oven bag' diffusions for followspots. Maybe a 1/8 and 1/16 Hamburg would be useful.

I love true bold colour especially set against a background of the richly saturated Lee

Tokyo Blue 071. I'd be grateful if Lee would create an additive mix of 116 and 161 which creates a good bright turquoise that's not too green and has not been available in any range since the demise of cinemoid.

The Rosco 23 through 26 softer orange/red range seem to mix well with other colours. The good clear range of Rosco pastels is useful for more sophisticated productions and lifting subtle costume work and skin tones often required in ballet. I like to see the more various Roscolux range locally available.

I often resort to the extensive range of GAM colours to pretty up light musical and awards presentations and look forward to using the ever increasing range of dichroic filters more frequently on long-term installations.

new products::

ONE FITS ALL!

Philips has announced a lamp adaptor called The Sink (TM) which extends the use of their Compact Source lamp (GKV family) to a wider variety of luminaires, including now, those which currently take the HPL lamp with its integral heat sink.

The Sink (TM) is reusable indefinitely and once installed allows the fitting of the lower cost Compact Source lamp instead of the

HPL. Furthermore, users and hire companies operating a mix of the new generation of 600W fixtures now only need to stock one lamp, the Compact Source, using The Sink where necessary.

When the lamp is inserted into The Sink (TM), a retention blade holds the G9.5 lamp base securely, ensuring accurate lamp alignment. The outer dimensions and material used to cast The Sink, are the same as used in the HPL lamp.

Due to its compact Bi-Plane filament construction, the Compact Source lamp, when used in modern ellipsoidal fittings, has a superior performance to the HPL. So, with the Philips Compact Source lamp and The Sink, there will be more light in the beam!

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Smaller and more compact to suit lightweight digital camera formats, the new Lowel GO Kits combine compact GO cases and the newly-designed Uni-Stand with a choice of Tota and Omni light fixtures.

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Show Technology have a range of balls including Half Mirror balls great for low ceilings, or just for a unique effect. These compact units include the mirror ball motor and are available in 8, 12 and 16 inch. Also there are Coloured Mirror balls which not only look great but reflect colour as well. Great for any home/bedroom set up. And Battery operated mirror ball motors so there are no more ugly cords and trying to find an electricity output in the ceiling! Ideal for a home/bedroom set up all you have to do is insert two D size batteries and find a place to hang the mirror ball.

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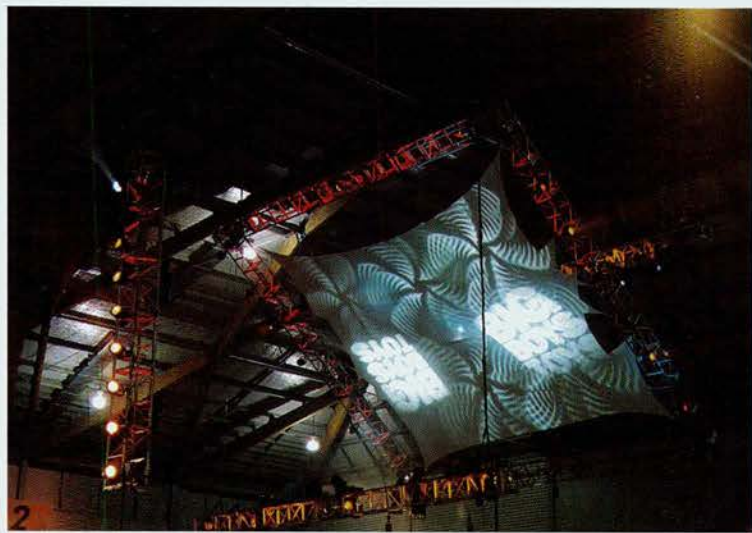
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BIG BOYS TOYS



Lighting designer Toby Harding has a background in dance, he was lighting designer for the Australian Dance Theatre, before making a move into the corporate world. A lot of his corporate work has been with Gearhouse Lighting as well as last years *Moomba Festival* and *Cinderella On Ice*.

"I do other corporate gigs such as the *Work Cover Awards* each year which is not just lighting but the whole audio visual package," Toby said.

Townsville-based Gary Kendle and David Richardson are the people behind *Big Boys Toys* which is now in its fourth year. Basically it's an exhibition of anything that might appeal to the, dare I say, stereotyped male. Fast cars, boats, bikes, computer games, electronic wizardry - you can guess the type of thing. Not many SNAG's to be seen but plenty of Jasons and Waynes. Penis size doubttable.

For the first time the exhibition was staged at The Dome, Homebush and on a wet Sunday, despite parking difficulties, it was packed by lunchtime. The exhibition travelled to Brisbane later in June and it goes to Melbourne later in the year.

"*Big Boys Toys* started talking to Gearhouse in December 1997 about doing something extra to give the exhibition area an edge, something to make it a bit more of a theatrical experience. It just gives the whole place a bit more of an atmosphere otherwise it could be just like a big barn. The Dome is 42 metres high at the very top and the adjacent halls are about 22 metres high. With the average stand being 2.4 metres high, unless you put something up in the air there's a lot of unused space.

"The whole idea of this design is not just the lights but that you've got something to look at. That's why the truss designs were



basically what it's all about. I did the truss designs first and it was a few weeks later before I even put the lights on them. The comments we got during the set-up for this were great and we hadn't even turned the lights on yet!"

Toby found that the only way to successfully rig in a reasonable amount of time in the Dome was to base his design around the where the rigging points are situated. Kendle Richardson told Toby where the three areas were they wanted something to happen and that was his basic guideline. Pollards did an excellent job with the rigging.

"They really liked the fact that they had a groovy truss design for a change," said Toby. "Logistically it has been interesting trying to solve the problem. I did the designs and Bill Surtees from Gearhouse did the system design. We brought a second Whole Hog II in so we could both program and then merge the two shows together. Dealing with an exhibition space of this scale was new to

both of us. We've put up three quite large lighting rigs.

"We've actually put the dimmer racks and the distribution up in the truss so we just have to run three phase down to the floor. The jury might be out on whether or not it's the most effective way to do it. I think I would probably move it back down to the floor because it's difficult to access and you're really relying on the equipment. The worst I've lost over three days is one channel of 56's and one channel of ETC Source Four Pars which I'm not too fussed about. All the High End gear has hummed along nicely."

Lighting gear from High End included 16 Cyberlights, 32 Stucco Colors (24 M Series and 8 S Series), and 30 Technobearns. Added to that were 56 VN5P Par cans, 32 ETC Source Four Pars and 72 PAR 56's plus 36 pinspcts for truss toners. Twenty sticks of Total Fabr-



Lighting::CORPORATE

BY::Cat Forcer

cations concert box truss were used as well as forty pieces of the 3m lengths and twenty pieces of the 2m. A few cubes and 1m sections plus motors make up the trussing.

"Originally I was going to try do a lot more of it with low voltage using ACL's but we didn't simply because we left the run a bit late to get 120 ACL kits happening," said Toby. "We managed to get it happening with other stuff out of the inventory so it wasn't a big deal. The whole thing is running off the Whole Hog II and there's nothing too fancy with the programming. There's movement, colour and ten of the BIG Boys Toys logos. Kendle Richardson plan to make it bigger and better each time.

"We have a few DF-50's in the truss, with one on the floor, and they're going the whole time. They take about an hour to work effectively and I get some sort of beam from the lights although the biggest battle is the fact that you've got all the high bays on. But it works, you can see some beams."



new products::

WYSILAB

WYSIWYG, the award winning lighting design and visualisation software package has expanded its product line by creating WYSILAB.

The three component software parts of WYSIPAPER, the paperwork manager, WYSICAD, the 2D and 3D design tool, and WYSIWYG, the DMX / Ethernet visualisation interface have been packaged especially for educational users with a price tag that is the same as a conventional WYSIWYG 2000 system.

Running on an existing computer network, the WYSILAB system allows up to 23 WYSICAD, and 2 WYSIWYG programs to be run simultaneously from the connected workstations. A DMX lighting controller can be added to the network, via DMX to ethernet adaptors, if necessary, allowing the real time programming of any designs drawn in WYSICAD.

Students using the system are able to quickly learn computer aided lighting design and gain full advantage of the many features that WYSIWYG has to offer, such as photo realistic rendering, drag & drop patching and customizable data windows.

The WYSILAB system is only available to recognised educational and training establishments.

Demo CD's of the full WYSIWYG range of programs, and further information, are available by contacting A.C. Lighting via telephone on +44 (0) 1494 446000.



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What can you measure with a Multimeter?

What exactly can you do with that multimeter that you lavished your hard-earned cash on? The multimeter used to be known as a VOM (Volt, Ohm and milliamp meter) which pretty much describes its basic capabilities, although even the cheapest (\$20) digital multimeters on the market today include diode test and transistor gain functions. Perhaps we should start by considering those things that you can't measure like the resistance of a lamp, the current flowing through it or the output of a thyristor dimmer.

A multimeter can measure the continuity of an incandescent lamp (ie. whether or not the filament, base and internal connections form one continuous electrical path) by using any of its resistance ranges and looking for a low value. This will certainly tell you whether or not you should expect the lamp to work, but little else can be inferred from the measurement. The problem is that the Tungsten wire of the filament has unusual,

but very important, resistance characteristics: unlike most materials which become more conductive as they become hotter due to increased electron mobility, Tungsten actually becomes *less* conductive as it heats up. If this weren't the case a lamp would draw a current that increased as it heated up until either the filament evaporated or the mains fuse gave way. Typically a lamp has a cold resistance between one tenth and one seventeenth of its operational value. The only workable way to establish the power of an unknown lamp is to calculate it from its operational current and voltage ($P=IV$).

Measuring the current flowing through a lamp (or any other load for that matter) is also somewhat problematic. Don't forget, that whilst you can measure the potential difference (voltage) across a circuit element by connecting your multimeter in parallel to it, you must be in *series* with the element to measure the current flowing through it. To measure the current in this way you would have to break one side of the circuit (ie. the active or neutral line) and connect your multimeter securely across the break so that all current can flow safely through it. These are serious currents we're dealing with here, a 1kW lamp draws 4+ amps at 240v or 8+ amps at 120v, more AC current than many multimeters are capable of handling safely.

The simpler, safer (and sorry to say, more expensive) alternative is to use a clamp or induction meter or clamp attachment which measures the current flowing in a conductor by the magnetic field it produces. In essence, the coil embedded in the clamp tester is the secondary winding of a transformer which has the current-carrying conductor as its primary. The only trap with clamp-type meters is that you must only clamp one conductor at a time unless you wish to read the sum of the currents in multiple conductors. If you place the clamp around a three-core mains cable the sum of the currents really ought to be zero as the Active and Neutral conductors should be carrying identical currents flowing in opposite directions, if they aren't: you're in deep trouble. (This current cancellation is the principle behind Residual Current / Earth Leakage/ Ground Current De-

tectors, the subject of a future Tech Talk).

Measuring the voltage from a dimmer *should* be simple; requiring only that you place a probe on both the Active and the Neutral of the output. It is, but only for ancient resistance dimmers or the sine wave dimmers of the near future. A standard multimeter is designed to give RMS measurements (Root Mean Square: a mathematical method of deriving the average of a varying value) for all AC ranges, but the values displayed are based on the assumption that the AC waveform is a sine wave, which is generally a reasonable thing to do. Most dimming technologies, especially our present Thyristor (SCR and Triac) dimmers, do fairly hideous things to the shape of the output waveform in order to limit the energy being dissipated in the filament of a lamp. These distorted and fragmented waveforms produce distorted voltage readings. Some multimeters (yes, usually the more expensive ones) that offer "True RMS" functions, have circuitry which takes into account any distortions in the waveform being measured. You should definitely try to get your hands on a True RMS meter for your regular dimmer alignment.

With all of the discussion of what can't be measured with the multimeter that up until ten minutes ago you thought of as the pride and joy of your toolkit, let's look at what you can actually do with it, aside from impressing your mum: Cable, fuse and lamp continuity, the presence, phasing and voltage of mains and the voltage of power supplies and batteries under load. If that's not enough, you can always use it to show the audio guys that the braid on the lead to that buzzing mike is broken when they tell you that you can't dim the lights because they're causing interference.

Responses, suggestions or personal abuse to TechTalk@kilowatt.com.au

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

STUDIO BASICS \$34

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

LIGHTING THE STAGE \$40

By Francis Reid. This book contains tips and pointers which will stimulate all those concerned with using designed light on stage. Ideal for directors, choreographers, set designers, costume designers, stage managers and specialist technicians. 114 pgs, 1995.

PROJECTION FOR THE PERFORMING ARTS \$80

By Graham Walne. Gives a brief historical overview of early projection attempts, then looks at equipment and the planning and design of every kind of indoor and outdoor live performance. 139 pgs, 1995.

MIDI SYSTEMS & CONTROL \$55

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

SOUND ENGINEER'S POCKET BOOK \$50

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

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By John Vasey. Provides basic information needed to manage the production of a touring concert from start to finish. Discusses different types of venues, who's who on the road, crew management, riders, contracts, and even electrical formulae! 165 pgs, 1998.

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

PROFESSIONAL LX HANDBOOK \$105

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

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

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By James Moody. 2nd Edition covers every aspect of rock & roll concert lighting equipment and techniques, including CAD, moving lights, hi-bred consoles, rigging safety and special effects. 275 pgs, 1998. WAS \$94

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OTHER BOOK TITLES:

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compared::

TALKBACK SYSTEMS

Whether you're running 300 robotics from a bank of Whole Hog II's, 6 patt 123's from an SP 40, mixing FOH on a Cam Mac musical, or calling your school's production of JC Superstar; unless you're an accomplished telepath¹, you're probably going to need talkback. To assist you in selecting an appropriate talkback system, this month we have examined a range of systems varying from the build-it-yourself kit through to commercially built systems that can support twelve independent talkback loops. As there are a bewildering array of models and options available from a range of manufacturers, we only tested the fairly basic versions of each system in order that a reasonably direct comparison be possible.

A BIT OF TALKBACK HISTORY

Production communications have progressed substantially over the last few decades, cue lights, the one-way Tannoy² stage call system, and various forms of in-house custom systems have essentially been replaced by the off-the-shelf, modular, full-duplex³ talkback systems; generally consisting of a master station and a bunch of substations, usually in the form of belt-packs. One of the first of these systems was developed in the late sixties by US company Clear-Com for live performance work. A major attraction of the Clear-Com system was that by employing a phantom powering system similar to those used in sound desks, it could offer full-duplex, active substations with call signalling over standard XLR-terminated microphone cables⁴. Despite the fact that Clear-Com didn't set up an overseas sales operation until the early eighties, as productions using Clear-Com talkbacks toured the world, many people saw them and purchased them. Even though they were highly priced these new systems offered an excellent facility for those who could afford them.

Murphy's Law⁵ has a number of corollaries relating specifically to talkback systems, aside from the more general ones which document such phenomena as the fact that all cables are either 100mm too short or 25m too long. Murphy clearly states: "All productions require a minimum of $n+1$ talkback substations." Where n is the sum of the number of substations that you own, have hired or can borrow. It comes as no surprise then, that productions using Clear-Com talkback systems always seemed to need more substations than were available, and that such a need always seemed to arise in a timeframe which didn't permit an additional unit to be imported from the US. Thus arose the local design and production of "Clear-Com compatible" systems which were initially designed to extend existing systems, but which eventually developed into complete, fully-featured, and often less expensive, systems in their own right.

ABOUT THIS COMPARISON

Whilst there is no documented industry standard for talkback; the voltages, line levels, pin assignment, connector and cable types and signalling methods which were used by the first Clear-Com systems thirty years ago are still generally regarded as the benchmark for interoperability. As talkback loops are always being extended by the addition of substations, compatibility of the substations that were tested with the de facto Clear-Com standard is a feature of this comparison. Substations were not only tested with their own mas-



ter station, but were also connected to a Clear-Com MS-232 master station for compatibility testing and then daisy-chained on a loop with all other substations for interoperability testing.

In this comparison we look at a kit system from Altronics, the current offerings from Clear-Com in the USA, two levels of system from Technical Projects, also of the USA, Australian made systems from Jands Electronics, DLC and Creative Audio, and a wireless system from Telex in the USA. Unfortunately systems which were promised from EVI Audio and Sound Developments failed to materialise for our test.

The task of testing these systems was shared with Guillaume Laurent, Alan Francis and Aaron Sturk, lighting students at the WA Academy of Performing Arts and trainee exponents of the shaggy-dog story as traditionally told over talkback systems between cues.

Jeff McKenzie from Jands Technical Resource Group provided some useful insight into testing for Clear-Com compatibility, John Galbraith from Studio Engineering Services provided abusive phone calls and some dusty test gear and Pro Design Lighting supplied enough headsets and audio cables to set up the various talkback loops.



SUBSTATIONS

As the business end of a talkback system, and the part of the system you are most likely to be buying in the near future, the substation was a major focus

for this comparison. Substations have to be able to take a beating; they're always being kicked, dropped from great heights by truss-spot operators, stored in a roadcase with 200 scaffold c-amps or run over by pieces of scenery. We looked for solid construction, useable belt clips and protection for the knobs, switches and indicators. They also need to be compact and preferably light in weight to make them easy to wear whilst working. Much production work is carried out in dark corners of busy places, requiring talkback systems to have mic-on indicators, bright call-lights and switches for call and talk which are easily distinguishable from each other in the dark or when the unit is not in direct sight.

The proliferation of technical operations in the production environment often requires that groups of crew in one technical or geographic area may need to communicate with each other independently but also be able to talk to stage management or another area as necessary. The result of this trend is the multi-channel

continued over

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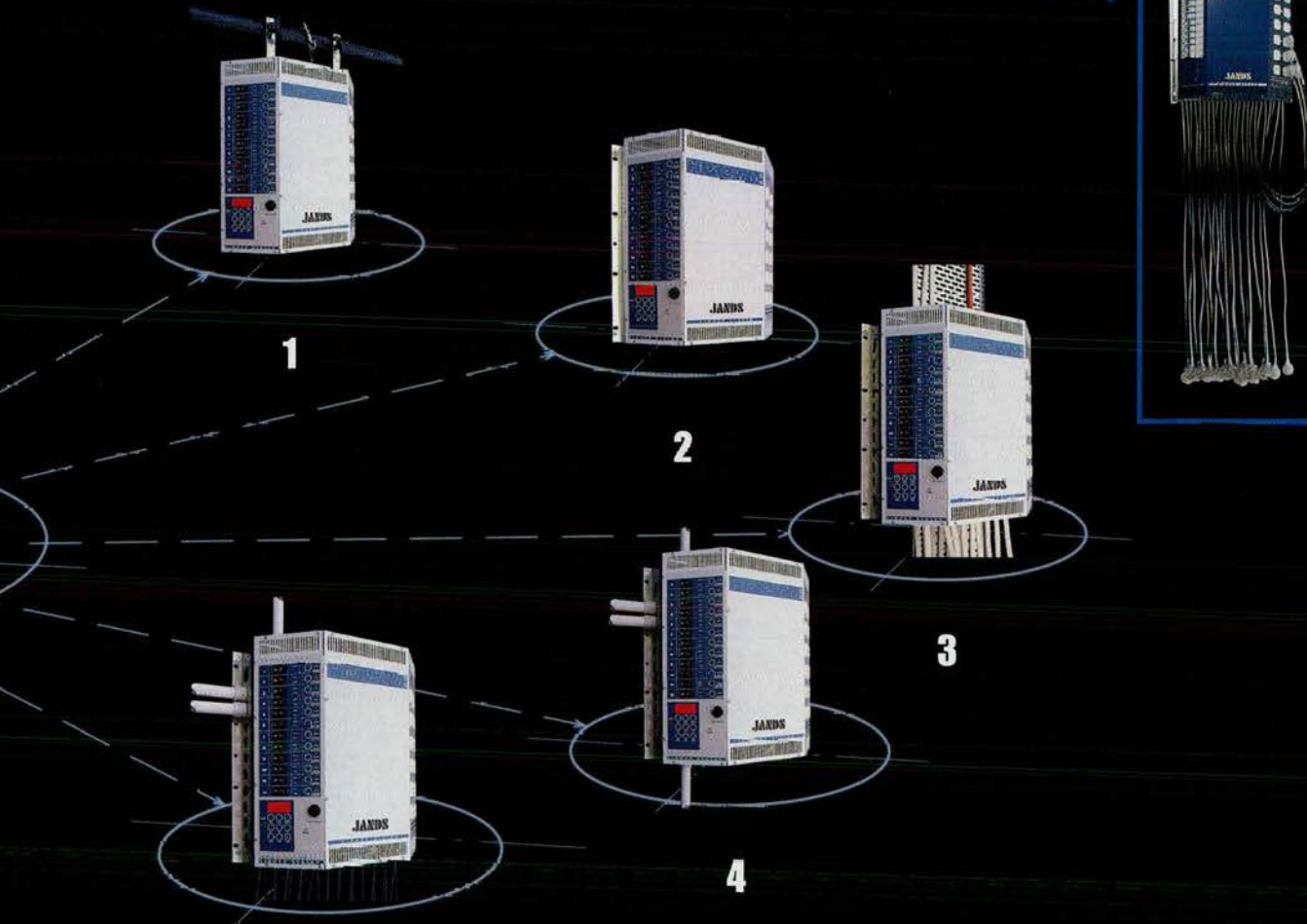


GP12-WM

HP12-WMSC



KEY FEATURES	HP12-WMTR	HP12SC-WMSC	GP12-WM
Number of channels / Power rating	12 / 2.5 kVA	12 / 2.5 kVA	12 / 2.4 kVA
Output risetime	240µs	500µs	130µs
DMX 512 digital control protocol	✓	✓	✓
Opto fired triac output devices	✓	-	✓
Hard fired SCR output devices	-	✓	-
Internal DC speed-controlled fan(s)	1	2	-
Multi-function keypad with display	✓	✓	-
Neutral failure and over-voltage detect with override facility	✓	✓	-
Automatic mains input fluctuation compensation	±15%	±15%	✓
Built-in test facilities	✓	✓	✓
Soft turn on characteristic	✓	✓	✓
Low acoustic / electrical noise	✓	✓	✓
CE & C tick approved	✓	✓	✓



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www.jands.com.au

Lighting::PRODUCT COMPARISON

BY::Andy Ciddor *continued from previous page*

master station and two variant forms of substation: the dual channel and the binaural. Both versions have two separate talkback loops as input and allow reply to either loop, the dual channel unit gives a mix of the two loops in the headphone feed, allowing the use of a single sided headset, whilst the binaural version feeds each ear of a stereo headset with a different loop.

To enable the total integration of existing communications systems into a single talkback system some manufacturers have produced special purpose substations: speaker-only units to replace the dressing room Tannoy, flash and/or buzzer units for signalling, hands-free speaker and mic units for control rooms and various interfaces to connect to Evac systems and even an interface for hand-held two-way radios. There is still a venue (which for the usual reasons shall remain un-named) that has (a) a standard single talkback loop (b) one of those little TOA 12 station telephone-style intercoms (c) a PABX telephone switchboard (d) a set of hand-held two-way radios (e) a dressing room Tannoy. Many of these systems

are redundant in that they connect to the same points, but the remaining systems could be neatly integrated using the interface units that are available. This would overcome the bizarre situation which sees FOH able to contact Prompt Corner via no less than four separate communications systems. Just how many ways do you need to be told that the house is seated?

MASTER STATIONS

The master station is generally a slave station with additional inputs and/or outputs that allow for interconnection between the talkback loop and other systems such as a program feed or stage overhead mics. They also provide the power supply to drive all of the substations on the loop, although in some basic systems the power supply is a separate box that powers the loop without any of the frills available from a fully-fledged master. Many master stations also offer a hands-free (mic and speaker) option. As there are such vast differences in the master stations offered by the various

Product	Altronic	Clear-Com	Concertcom	DLC	Ezicom	Production Intercom	RadioCom
Manufacturer	Altronic & You	Clear-Com	Creative Audio	Pro Design Lighting	Jands Electronics	Technical Projects	Telex Communications
Distributor	Altronic	Jands Electronics	Audio Telex Communications	Pro Design Lighting	Jands Electronics	Ashton Admor	Audio Telex Communications
Telephone	1 800 999 007	02 9582 0909	02 9647 1411	08 9409 8964	02 9582 0909	08 9478 3800	02 9647 1411
Single Channel Substation RRP	\$74 (Kit)	\$795	\$477.28	\$305	\$495	\$346.48	\$3,531.94
Basic Master Station RRP	\$69(power supply)	\$3,395	\$1,900.02	\$790	\$995	\$1,932.48	\$4,334.36
Sub station format	Molded plastic case	Extruded metal and molded plastic case. Very compact	Extruded metal box	Heavy-Duty Folded metal box (large)	Folded metal box.	Extruded metal case (quite large)	Lightweight alloy case.
Function labelling	Acceptable	Acceptable	Small characters & low contrast	Acceptable	Clear	Clear	Clear
Vol Control access	Good	Excellent	Good	Good	Good	Acequate	Excellent
Buttons/Knobs protrude beyond casing	Call button & Volume knob	None	All	Volume Knob	None	Ncne	Talk switch
Mic & Call buttons different	Yes	Yes but confusing	Yes	No	Yes	Yes	N/A
Mic on indicator	No	LED	No	LED	LED	Mechanical indicator. Very hard to see.	LED
Call system compatible	Bad splat on call, doesn't show Clear-Com master call.	Yes (by definition)	Yes	Bad splat on call, doesn't show Clear-Com master call.	Yes	Yes	no
Call Indicator	Illuminated button	LED Array	2 x VERY bright LEDs	LED	LED	LED Array	N/A
Send & Receive levels compatible	Yes	Yes (by definition)	yes	Yes	Yes	Yes	
Belt clip	No	Yes	Yes, but feet get in the way	Yes	Yes	Yes	Yes
Subs only system	Yes	No	Yes	Yes	No	Yes	Yes
Master Prog In	No Master	Yes	Yes	Yes	Not on 2Ch	Yes	Yes
Master Chann	No Master	2 & 4 & 8&12	2 & 4	2 > 6	2 & 4	2 & 4 & 6	2

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Lighting::PRODUCT COMPARISON

BY::Andy Ciddor *continued from previous page*

companies, the comments and observations about them are in the paragraphs below rather than in the comparison chart.

ALTRONICS/SILICON CHIP

Originally designed as a kit project for Silicon Chip magazine, this system represents excellent value for money if you can build and test the system yourself. The facilities are very basic, although there



is an auxiliary line input capability in the PC board design which allows for the inclusion of a program feed into the loop. The limit of 12 substations per loop may present a problem for some applications. The substations are too delicate to be used as wheelchocks

for a roadcase and the call system causes much ear-thumping on the line (30v rather than 11v used in Clear-Com) but the call light is not very bright. The recommended Altronics aviation headset was quite heavy and the sound isolation so complete that, as one of the WAAPA crew insisted "it feels like your brain is being sucked out through your ears".

There is no master station in this system, simply from 2 to 12 substations and a power supply unit.

CLEAR-COM

While they may have been one of the original companies in the business, Clear-Com have continued to refine and develop their systems to offer a wide range of systems and options. The "mic-clear" facility built in to Clear-Com systems is a very useful bonus, giving the master station operator the opportunity to turn off all mics especially those cans that the mechs left open when they went to do the set change. The belt packs are very compact and the four-chip LED array used as a call light is very cute.



Master stations range from two channel to four, eight and twelve channel systems with 20 substations being possible on each loop, but the arrangement of the channel select but-

BOXHILL INSTITUTE TEACHER WINS AWARD

Box Hill Institute teacher Jamie Ivarsen, who is currently working on the hit stagershow Rent, was recently awarded the Melbourne DIVA (Drag Industry Variety Awards) for Best Lighting.



This is the second consecutive year Jamie has won the award for his lighting at the nightclub 3Faces.

The Melbourne DIVAs are based on the Sydney DIVAs and are the gay community's recognition of achievement in the arts. Lighting and the theatre are a passion for Jamie. He never wanted to do anything else.

As well as working at Box Hill Institute teaching stage lighting in the Associate Diploma of Arts (Theatre Technology), Jamie is the resident lighting designer for the numerous shows at 3Faces. (Other training available at Box Hill Institute includes stage audio, set and prop construction, scenic painting and stage management.)

Details on the Associate Diploma of Arts (Theatre Technology) are available on (02) 9286 9659.

tons and call lights on the master stations caused a great deal of confusion. There are speaker stations, a flashing/buzzing substation, wireless talkback and two-way radio interfaces, broadcast commentary stations and a whole slew of other interfaces to all kinds of communications systems.

CONCERTCOM

Creative Audio have produced a well thought through range of systems which go toe-to-toe with the quality and design of the Clear-Com products. The super-bright LED's on the substations are actually too bright to comfortably look at under some conditions. The talk keys are sometimes literally a pain to operate, and the function labelling is small and lower in contrast than most other units.



Master stations range from two to four channel and offer a full range of inputs and outputs to allow for interfacing to wide range of external systems and for daisy chaining of master stations. The speaker stations are well designed and provide a surprising clear signal.

DLC

Developed originally to be used in the hire and production operations at Pro Design Lighting, these basic but very robust systems have been taken up by the WA market because of their construction, price and availability. The substations are heavy but strong enough to use as wheel chocks for a road-train. The identical talk and call switches are a pain and require too much force to work comfortably in a desktop situation.

The master stations are available from two to six channels with line in and line out capabilities and a socket for a desk lamp. There is also an "Executive Substation" which sits on a desk and features a built in "Littlelight" desk lamp.

EZICOM

Developed by Jands long ago for use in their own production and hire operations the Ezicom systems have carved themselves a niche in the Australian market as the bread and butter talkback unit for all occasions. You couldn't fit all of the Jands substations sold in the last couple of decades into the road-train whose wheels you could chock with their robust substations. The substation mic switch is difficult to switch off.

Master stations come in two channel and four channel versions, but the two channel version disappointingly lacks a line input for program or stage overhead feeds.



PRODUCTION INTERCOM

Technical Projects Production Intercom systems cover the entire range of talkback possibilities offering substations in single channel, dual channel, binaural and switched single channel versions, speaker substations, a radio transceiver interface, a flasher/buzzer substation, signal splitter/isolators, battery supply interfaces, a wall-plate sized substation and a line-level input substation. The substations are somewhat bulkier in shape than most and use a switch with a hard-

Lighting::PRODUCT COMPARISON

BY::Andy Ciddor

to-see mechanical indicator rather than a mic on indicator light.

There is a power supply unit which can be used to form a low budget no-master system and a system of master stations which can be extended from two to six channels via an extender module. The master stations and their separate power supply modules, although very solidly built, have a very seventies feel with their plain black boxes and incandescent-lit buttons.

RADIOCOM

The Telex RadioCom system that was tested was a demonstration model that had long-since had its manual pilfered by a previous tyre-kicker, which unfortunately meant that we were unable to interface it completely into our reference Clear-Com system before it was whipped out of our hands, blindfolded and taken to a secret military destination. We later established that we needed was a simple line-balancing interface to solve our problem.

The full-duplex radio communications worked flawlessly until the substation was over half a block away, with the only weirdness being the lack of sidetone⁶ in the headsets which we later discovered was adjustable (if only we could RTFM). If only they weren't around \$8K for a single unit.



CHOICES

You can pretty much pay as little or as much as you want for a production talkback system. At each level of quality and functionality there are alternatives which give you, the buyer the opportunity to shop around. As always, if a company really believes that their products can do the job for you, then they will be willing to arrange a for a trial of the system to prove its value and suitability to your needs.

1 It is of course well known that all Stage Managers, in addition to being infallible, are usually telepathic.

2 Loudspeakers manufactured by Tannoy have lent their name to announce-only type backstage call systems.

3 Full-duplex systems allow continuous bi-directional communications (like telephones). Half-duplex systems allow bi-directional one-speaker-at-a-time communications (like a two-way radio).

4 As a comparison : the in-house developed lighting talkback system at GTV9 at this time provided similar capabilities over multicore cable with 9 pin F&E connectors.

5 Murphy's Law also known as Sod's Law states quite simply "Anything that can go wrong, will go wrong."

6 Hearing your own voice in your headset.

SELECON APPOINTS AUSTRALIAN MARKET MANAGER

Selecon is delighted to advise that David Ferguson has joined the team as our Australian Market Manager. Working together with their established dealer network, David will be responsible for the management and development of the Selecon entertainment lighting market.

David began his professional career in theatre working for Bruce Harvey in Brisbane, that well known industry identity who was stage lighting in Queensland for many years. David left Brisbane for Sydney where he became Head Electrician on *Cats* and then *Les Miserables* at the Theatre Royal. Joining Herkes Electrical in the mid eighties, David had his first introduction to Selecon. Establishing his own company LDF Productions David has subsequently built a career in corporate theatre working primarily for the Lend Lease Corporation. Along side this work David has found time to be an occasional lecturer and mentor at NIDA, serves as a member of the REM Theatre Company's Board and lighting design for the NSW Education Departments Performing Arts Unit amongst much more.

Jeremy Collins, Selecon's Managing Director, says "I am delighted that David has decided to join the Selecon team. I am confident that he will prove to be an asset bringing with him a renewed focus, energy and impetus for Selecon in the Australian entertainment market".

Contact David on 0412 413-863.



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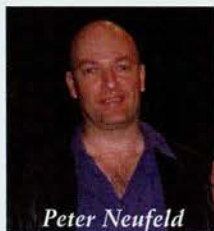
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Write in Reader Service Number: 199



Merchant of Venice

The Bell Shakespeare Company is Australia's only national touring Shakespeare theatre company. This year's biggest tour is for *The Merchant of Venice* which opened at the Playhouse in the Sydney Opera House in May. It is directed by Richard Wherrett with sets by Michael Scott Mitchell and lighting by Peter Neufeld.

Peter has worked with both before on various projects but never together as a team. This is his first production for Bell. "I love that first moment you finally see the model," says Peter. "Knowing that love or hate it you're going to be getting to know it intimately very soon. The immediate rush of the possibilities tempered perhaps by any obvious challenges!"

The set is ingenious with large curved walls and old, distressed mirror type finish. "We wanted there to be reflections but not blinding ones. The scenic art is superb and the floor is a work of art in itself. I think the result is better than what we had hoped for".

Peter was very conscious of the fact that the show will tour for 4 months and go to 8 theatres including some regional ones. "What I love about lighting is how the creative and the technical go hand-in-hand. Because of the ring structure in the air that also flies, there was limited space above the floor."

"With the curved mirror walls I decided the emphasis should be in cross lighting". The show tours 30 Shakespeare 40° & 50° profiles. These all have half top hats fitted. "By touring these booms I could ensure that there will be continuity in each theatre. We will also tour some scrollers and animation disks and the lamps that go with them."

The cross lighting not only lights the actors in their mixture of modern day and renaissance costumes but the opposing walls as well. There are some washes from scrollers onto the set and floor and they both take colour beautifully. Peter is using Lee 248, 63, 2C2

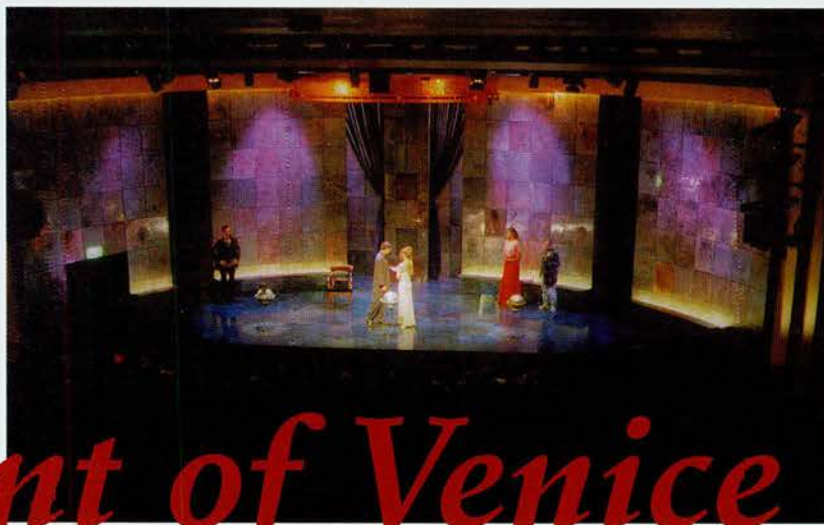
and 245 primarily for the actors with richer colours elsewhere. "This is not a naturalistic production so I had a lot of freedom. I had a lot of fun with the colour choice".

"Every LD is conscious of time & budget during a fit up. The management more so. It has to be practical especially when on the road. The right approach took a bit of working out and Brett Graham who is in charge of the electrics for Bell and who will be putting it into each venue was very supportive. I drew upon his 10 years of touring and lighting for The Company and I think we have evolved a good touring concept. That is the other collaborative process that people tend to forget. It's not just in the creative team- or rather it's just another extension of it".

Chameleon were the suppliers. "They have a long history with Bell and Tony Davies was very helpful. When I asked for more half top hats during the bump in week Chameleon immediately just cut their full ones in half. That's what I call service!"

"The Front of House booms are so close to the edge of the set I really didn't want there to be any distraction from the lights themselves." Peter gets a great variety in the lighting states without compromising the actors. "Call me old fashioned but if I can't see the actors I can't hear them. That's especially true of Shakespeare". Susie Bayliss plotted the Galaxy and Simon Jenkins supervised the fit up for the Opera House. "It's a credit to all the crew that the lighting was ahead of schedule all the way through". Peter also managed a notable first for the Playhouse- to get an orchestra bar rigged. "A real triumph and hopefully one that other people will benefit from" says Peter.

The director has described this as "an unromantic tragi-comedy". The critics have noted this modern dress production for its clarity and beauty. The audiences seem to agree because the houses are full. The Merchant is touring the country until August.



new products::

NEW FROM SPACE CANNON

The Millennium 4000 is an outdoor lighting fixture designed to be used in the worst climatic conditions and controllable through DMX protocol. It is equipped with a 4000w Xenon lamp and is fitted with an on-board computer which can generate programmes enabling the unit to run stand-alone. The tracking mode is a high resolution 18 bit system provide precise movement and positioning. A built-in time clock allows the programming of lighting scenarios (up to 10,000 scenes) to operate at particular times throughout the day/night or even weekly or monthly. Price (incl. lamp) \$19,398.36 ex tax. The XS 1200 is a short arc lamp (1200w HSR/MSR) with built-in power supply unit. It projects a white beam of light and with the fitted filter frame can have coloured gels, coloured glass and rich dichroic glass filters added. Made of non-corrosive aluminium with outdoor polyester finishing the unit is CE certified for use in wet locations and is supplied with a set of two

lenses - a 90C and a light frost lens. Price (incl. lamp) \$ 4,488.52 ex tax. Call Ccemar De Sisti Australia +61 3 9467 8666.

FLAT-STACK STANDS SOLVE SPACE PROBLEM

The Stacker series is yet another ingenious creation from Avenger/Manfrotto that solves the age-old problems of stands taking up too much storage space and stands that roll around in the grip truck.

Sturdy, but lightweight, Stacker Stands have legs which cleverly fold flat, so you can pack seven stands in a lighting kit in the space of four regular lighting stands. In another innovative design idea, an in-built catch lets you clip 2, 3 or 4 stands together. You can also add a shoulder strap for easy carrying - the limit is merely what weight you can manage.

There are three Stacker models (305, 306 & 307) ranging from a minimum stand height of 66cm to a maximum stand height of 385cm, with weight handling capacity from 4kg (on the 305) up to 9kg on the larger 307 Stacker Stand. All Stacker stands are available in anodised silver or black finish and include a top fixing 5/8" pin with 3/8" male thread.

Call Miller Professional +61 2 9439 6377

JEM AFI DMX FAN

The new "A - Force One" fan is ideal for wind effects, converts smoke into haze and can be used for cooling performers and equipment. The AF1 Fan features DMX input, analogue timer remote, analogue link for interfacing with smoke and haze machines and runs at 2500rpm.

JEM Smoke Machine Co., a division of Martin Professional, has recently received the ISO 9001 rating, an internationally recognised standard of quality in manufacturing and administrative procedure and documentation.

Call Show Technology +61 2 9898 1111.

TECHNOBEAM IRIS

High End System's Technobeam is now available with an iris. Dubbed "Technobeam-i", the new fixture has a remodelled chassis to accommodate the iris which wouldn't fit into existing Technobeams. From now on all models in production from High End will be Technobeam-i. Both Technobeam units are the same size, use the same stock patterns and are compatible. Technobeam-i, however, runs on new software which is available for the Status Cue console, Whole Hog and the Technobeam LCD Controller. For quick access, visit High End Systems' web site at www.highend.com and click on the Downloads button.

Call Bytecraft +61 3 9587 2555.

AD* BALL

Designed as a point of sale medium, the Ad* Ball is a smoked perspex ball with text, logo or graphics rotating inside. The moving message can rotate at different speeds, including blinking and rotating through 360°. The LED display is available in red, yellow and green and one message can be 1200 characters long. Control is via PC or control panel and any language can be displayed. Price is \$1495.

Call Show Technology +61 2 9898 1111.

NEWS

ETC SENSORS AT MACKAY

The Mackay Entertainment Centre has become the first Australian venue to house ETC's new Sensor CE dimmer racks. The system was supplied by Dale Kennedy Amplifier Hire Services and commissioned by Jands. It comprises two 36 module racks providing 144 25 amp dimmer channels, a serious upgrade from the 96 analogue Bytecraft dimmers they replaced. The low maintenance Sensor system carries CE approval and features plug-in dimmer and control modules with a diagnostic feedback system.

CHAMELEON NEWS

Chameleon Touring Systems has been awarded the contract to supply Strong Super Trouper II followspots for the new Sydney SuperDome.

Chameleon will supply eight of the Strong model 24000 Super Trouper II complete with model 62-80100 compact switching ballasts to the soon to be opened SuperDome - part of the new Sydney Olympics Complex at Homebush.

Chameleon's 4kW Given search-

lights have been very busy over the past few weeks, with productions the length and breadth of Sydney.

HIGH END SYSTEMS & FLYING PIG COMPLETE MERGER

Nils Thorjussen of Flying Pig commented that "We are very excited to be joining forces with the High End Systems team, and believe that the combined resources of Flying Pig and High End will greatly benefit users of both company's products."

Flying Pig Systems Ltd. will continue to operate as an independent business and remain focused on manufacturing high quality, universal control. The Wholehog II consoles will continue to be available to users through existing channels and from select High End dealers. Technical support and training will be handled by Flying Pig.

Nils Thorjussen has relocated to Austin to coordinate efforts between the two companies. David Caterall has joined Nick Archdale, Tom Thorre and rest of Flying Pig's staff in London to manage Flying Pig's marketing and sales efforts.

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LIGHTING CONTROL

UNDER 10K

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AMDJ Australia (02) 9568 2100
Show Designer User friendly and controls up to 512 channels DMX, on board library of fixtures. Features 8 sliders and 4 directly accessible pages, controls 16 large fixtures or 16 groups of smaller fixtures, 1024 scenes, 512 presets, 256 shows, 32 character LCD display, PC controllable, MINI interface. New software and programmes can be downloaded from the web. \$1638.

ANYTRONICS

GUET 1800 773 187

MiniDesk a range of single preset analog output desks in 4, 6, or 12 channel configurations. Each desk has fader and positive feel flash button for each channel plus master blackout switch. Requires power supply of +18v to +25v DC. From \$299.
Aurora 6 a 6 channel 2 preset analog output desk in 19" rack mount format. Two master level faders, 12 individual channel faders, manual or automatic crossfade up to 6 minutes. Display mode allows automatic switching between presets. Requires power supply of 18+v to +25v DC. \$749.
Aurora 12 a 12 channel 2 preset analog output desk in 19" rack mounting or desk free-standing. Same features as Aurora 6 with addition of flash level fader, slaving facilities and gooseneck light facility. Requires power supply of 18+v to +25v DC. \$1149.
Super Aurora 12 a 12 channel 2 preset analog output desk with same features as Aurora 12 with addition of pre-programmed sequences controlled by speed control or audio activation including freeze switch. Requires power supply of 18+v to +25v

DC. \$1639.39.

AXON DIGITAL DESIGN

Coemar De Sisti Australia (03) 9467 8666
ShowCAD PC-based lighting control software and propriety DMX card for 1024 control channels. Fixture specific templates for moving lights, auto generate scene and patch creation, offsite editing, comprehensive soft patching, SMPTE, MIDI, DMX in/out, Analogue, & audio input. Fully featured controller suitable for all applications in particular multimedia &

Jands Echelon



theme park attractions. Hardware options available. \$5,308.88.

CRESCIT SOFTWARE

Coemar De Sisti Australia (03) 9467 8666
SoftPlay DMX user-friendly PC-based (Windows) lighting/motor controller. 96 control channels and 12 moving lights (8 parameter) plus 4 motor controllers. Infinite scene creation, soft patch, joystick control, offsite editing, programmable effects macros, timed cross fades. MIDI input capability. Suits smaller theatres, schools, etc. \$970.

FAL

ELSTA (02) 9568 2100

Easy 2 12 inbuilt pre programmed

sequences, controls any FAL scanner in sets of 4 or 6, manual control for each one or the whole group, 3RU rack mountable, splash proof covering. \$1638.52.

Lightmasters controller 512 DMX channels, large memory, hundreds of scenes and chases and shows can be created, touch sensitive touch pads, 12 sliders allow direct access to any scene, chase or show stored in the memory, external back up facility, direct manual control achievable during playback, LCD display, cross-faders. \$8195.90.

HSL

Coemar De Sisti Australia (03) 9467 8666

WinCommander Windows 95 - based lighting control software and propriety DMX card for 512 control channels (expandable 1024). A variety of timesaving scene and patch creation functions, offsite editing, comprehensive soft patching, SMPTE, MIDI, DMX in/out, Analogue, & audio input. Fully featured controller utilising full Win95 compatibility and suitable for all applications. A variety of accessories including front end hardware and "lite" version for portable PC usage. \$3,360.33.

JANDS

Jands (02) 9582 0909

Stage 12 or 24 12 or 24 channel dual preset, 24 or 48 channel single preset console. Flash buttons, add or solo, two independent "grab" masters, preset masters, chaser, audio trigger, DMX-512. Stage 12 \$979, Stage 24 \$1471.

ESP II 24 or 48 or 60 24/48, 48/96 or 60/120 channels, 498 scenes, simple scene record, blind & live editing, chase effects, 10 crossfade stacks, 100 cues per stack, fade time zero seconds to 100 minutes, DMX-512. ESP II 24 \$3274, ESP II 48 \$4913, ESP II 60 \$7372.

Event 24 or 36 or 48 24/48/120, 36/72/120 or 48/96/120 channel console, assign masters, scene masters 490+ memories, 99 step chase, moving light control with build function. Event 24 \$4094, Event 36 \$4913 or Event 48 \$733.

Event 48 Plus or 60 Plus 48/96/252 or 60/150/252 channel console, macro capability, additional cross faders, assign masters, scene masters 490+ memories, 99 step chase, mov-

FUTURELIGHT

Coemar De Sisti Australia (03) 9467 8666

CP192 19" rack mount controller for 12 fixtures of up to 16 DMX per fixture. Ideal for small club and band operation. Joystick control of Pan/Tilt, direct access buttons for fixture selection, plus gobo, colour, and effects access Memory Card for downloading shows, with up to 500 scenes per show. Personality libraries for most leading brands available. Ideal for controlling the new Futurelight MH-660 and MH-640 moving yoke wash and profile spots that everybody is raving about. \$1,521.31.



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Write in Reader Service Number: 178

Theatrelight Cuemaster



ing light control with build function. Event 48 Plus \$6,553, Event 60 Plus \$8,192..

LIGHTPROCESSOR

GUET 1800 773 187

Q Commander DMX console to control intelligent and generic DMX devices. 256 channels DMX, 512 scenes, 64 chases of 64 steps, 16 groups, 16 intelligent fixtures, 8 pre-programmed chases, 8 shows of 500 events, 64 playback keys, 16 ch analogue input. RAM card slot, extensive 100+ internal library. \$6768.24.

Q Extender add on extension for Q Commander provides 16 faders and associated flash buttons which may be assigned for use in programming or playback. Assign faders as preset scene master, chase master or individual level control. \$1244.87.

Q Commander with Fitted Input Extender same features as Q Commander but with factory fitted extender fader panel. \$7764.20.

Q Store incorporate in DMX chain to allow 64 presets of all 512 channels. Operate manually or by a simple binary input trigger. Scenes can be recalled in any order and switched or faded. Can operate stand alone or desk replacement. Has RAM card slot. \$1995.

LITE PUTER

ELSTA (02) 9568 2100

CX-5 DMX Desk Fully programmable, 12 sliders for rapid access to features, 300 scenes, 50 chases, 50 macro memories, built in templates for common scanners, 168 DMX channels, controls up to 12 scanners,

LCD display panel, memories are nameable, Midi in/out. \$1064.75.

CX-3 DMX Desk Fully programmable, 48 scenes, 128 DMX channels, 12 group sliders, programmable chaser functions, LCD display, A/B cross faders. \$1146.72.

CX-12 DMX Desk Fully Programmable, 96 DMX channels, 24 chases, 2 independent dipless cross faders, LCD display, 64 steps per chase, 24 sliders, easy to follow ergonomic design. \$2458.20 ex tax

C-1202 Analogue Desk - Features 12 sliders, 12 channels, 2 scenes, on board chaser and sound activation, master slicers. Output 0-10v DC. \$594.

LSC

LSC (03) 9561 5255

ATOM 12/24 Entry level desk, 24 Fader Channels, 99 Output Channels, User selectable Softpatch, Quick access programming, 9 pages 12 Masters, Separate fade in/out times, VGA video and analog output option. \$1420

ATOM 24.48 Entry level desk, 48 Fader Channels, 99 Output Channels, User selectable Softpatch, Quick access programming, 12 pages 24 Masters, Separate fade in/

out times, VGA video and analog output option. \$2300.

AXIOM 24/48 Mid level console, 48 Fader Channels, 240 Output Channels, HTP/LTP on any channel, 4 Proportional Softpatches, 9 pages of 24 Masters, Disk drive & Analog options, DMX512 output n Standard. \$3450.

AXIOM 36/72 Mid level console, 72 Fader Channels, 240 Output Channels, HTP/LTP on any channel, 4 Proportional Softpatches 12 pages of 36 Masters, Disk drive & Analog options, DMX512 output n Standard. \$4850.

MARTIN

Show Technology (02) 9898 1111

Proscenium Controller Full featured windows 95 based DMX Lighting Controller. It offers full 512 Channels DMX control-expandable to 1026 Channels and is available in either Laptop or Monitor versions. Ideal for small theatre and multimedia shows, where time coding is important. \$2950. Laptop Version: \$3442.62

3032 Controller offers easy programming and complex show control by connecting to an existing Control Board. This is achieved Via the 2532 Direct Access Board or by using the SMPTE/CD-ROM Time Control Features. The 3032 is a P.C based con-

trol which can accommodate any Martin fixture. \$2458.19.

2518 Controller This portable DMX Controller gives you fast access to the DMX Controlled features. The layout is made so any fixture using up to 6 DMX Channels can be controlled easily, but in general and DMX fixture can be controlled offering Pre- Programmed sequences, the 2518 controller can be either Automatically or manually controlled. Eg Midi. \$815.57.

NSI

Universal Lighting & Audio 1800 648 111

MLC16 controls up to 16 individual devices and provides four memory pages for a total of 96 programmable patterns with up to 800 pattern steps. 24 show sequences can be programmed to allow patterns to be linked and looped. The 2x40-character, menu-driven LCD, along with four individual encoders, enhances the ease of control and operation for any size show. Supports DMX 512 with both output control and input for control from other consoles. \$4666.28.

ROSCO

Rosco Australia (02) 9906 6262

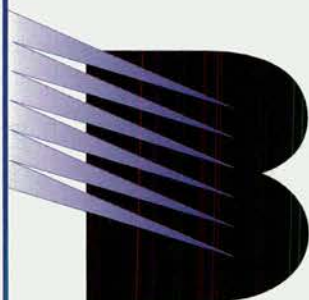
Horizon CD ROM program to use a Pentium Windows 98 PC or laptop as a desk with 3072 channels of DMX control. To drive dimmers, the Horizon interface (\$2000) is required. A submaster wing panel is available, upgrades can be downloaded free from the Web site. \$Free.

continued over

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buyers guide:: LIGHTING CONTROL

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LX 2-scene preset manual analogue control console with slider per dimmer operation. Basic lighting control for small venue, drama studio, clubs etc. 12 and 24 channel versions. Split dipless manual or timed crossfades, individual flash buttons per channel. From \$1600.

MX 2-scene preset manual control console with memory. Ideal for small venues which require basic memory capabilities and special effects. 12, 24, or 48 channel versions. 4 "pages" of memories, 24 programmable effects, two proportional channel/dimmer patches, optional memory storage card. From \$3900.

GSX Compact lighting hardware platform with a choice of software packages allowing channel number and feature upgrade paths. Command panel, two playbacks, wheel, LCD display and 24 submasters. Can control up to 512 DMX dimmers or scrollers using 25, 50, 75, 100, or 125 channels. From \$6500.

LBX Compact memory + manual lighting console platform with a choice of software. Designed for concert lighting, multipurpose venues and touring, it is user configurable allowing the 96 channel manual faders to be used as a single or two preset desk with or without submasters. From \$9900.

THEATRELIGHT

Lightmoves Technologies (02) 9560 0000

Starlet 6 or **12** 6 or 12 channels, DMX512 output, single preset, master fader, park fader, flash buttons. 6ch - \$345, 12ch - \$445.

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Scenemaster 3F 12/24 or **24/48** 12/24 or 24/48 channel preset desks, DMX512, manual mode, scene



Strand 500 Series

mode, whole show mode, 500 scene capacity, 4 pages of 12 or 24 scenemasters, memory card backup, monitor. 12/24 - \$1695, 24/48 - \$2195.

Cuemaster 48+ or **120+** 48 or 120 channels includes a DMX-Link panel enabling DMX mixing of two external DMX inputs. Display option, 100 back-up scenes, 10 pages, 10 backup masters, soft patching. 48+ - \$4995, 120+ - \$6595.

OVER \$10,000

AVOLITES

Universal Lighting & Audio 1800 648 111

Azure2000 primarily targeted at nightclubs, time-coded industrial shows and architectural applications as well as theatre and television. Offers simultaneous control of 200 mixed intelligent fixtures and 200 dimmer control channels. Can run 20 separate Sequences or Environments at the same time. 50 Direct Access memories and chases per page with 10 labelled pages. 2,048 DMX channels - 4 full-speed DMX lines. 500 memories or sequences. 10 Playback Submasters. \$16392.62.

Pearl2000 Touring offers full moving light control for up to 120 intelligent fixtures. Preset Focus Palettes provide fast building blocks for functions such as pan, tilt, colour, gobo, etc. All memories and chases built from preset focuses are automatically updated once the preset focus is edited. Preset Focuses allow you to create and save your own custom palette of colours. 2048 channels, Shape Generator for instant creation of pat-

terns and effects, 240 Dimmer Control Channels, 15 Playback masters to control 450 memories, chases or cue stacks. \$32069.

Sapphire2000 NEW offering 2,048 channels and 100 pages of 20 playback's. Sapphire 2000 now offers electronic legending showing page contents and preset focus palette on both desk and VGA monitor. Comes with a hundred pre-programmed moving light effects via the Avolites Shape Generator. Also has an integral Graphic Tablet, neatly tucked away in an internal drawer, enabling all the benefits of the Avolites Tracking System. The 120 fixture select groups allows the programmer to instantly select moving light fixture groups, eg. 'Front truss scans', 'back truss', 'all odd', 'all even', etc. One hundred preset faders offer instant dimmer and fixture access, each with its own Add and Swap buttons. \$50518.

ETC

Jands (02) 9582 0909

Express 24/48 or **48/96** Popular theatre console, 1024 dimmers, 600 cues, 500 groups, 2000 macros, trackpad for moving lights. 24/48/96 or 48/96/192 channels, 24 submasters, ETC Net support. Express 24/48 \$13,766, Express 48/96 \$18,028.

Express 72/144 Popular theatre console, 1024 dimmers, 600 cues, 500 groups, 2000 macros, trackpad for moving lights. 72/144/240 channels, 24 submasters, ETC Net support. \$27,045.

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for moving lights. 125 or 250 channels, 24 submasters, ETC Net support. Express 125 \$17,209, Express 250 \$27,454.

Expression 3/400 Advanced moving light control, 1536 dimmers/attributes, 400/800/1200 channels, five encoders, two wheels, 16 bit resolution, ETC Net support. \$36,881.

HIGH END SYSTEMS/LIGHTWAVE RESEARCH

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JANDS

Jands (02) 9582 0909

Hog 500 500 channel moving light desk with Wholehog II operating system, LCD button menus, simple setup, fixture libraries. \$13,930.

Echelon 1K 100 channel moving light console with Wholehog II operating system, LCD button menus, simple setup, fixture libraries. \$23,766.

MARTIN

Show Technology (02) 9898 1111

Case Pro 1 Design as the Touring Desk to guarantee the lighting professional gets the ultimate performance out of the lighting array. The case Pro 1 offers Full DMX control, 512/1536 Standard channels, 10 Playback features plus 5-3 Pin Converter. \$14753.28.

Case Pro 2 Used Internationally for Touring, Rental and Musical Applications, Multi-Media Shows, large clubs and theatre installations. Offering colour library for any CMY fixtures, fast direct access to most fixtures, offers perfect programming and playback

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STRAND LIGHTING

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Strand 510i Rack Mount Control able to control up to 5000 channels. In 19" rack mount form designed for fixed installation. From \$20,000.

Strand 520/520i portable professional control console (780 W x 525 D x 150 H) with flexibility of user selectable channel capacity, operating style and application programs. Featuring a Pentium II processor and powerful integrated moving light capability. Equipped with 24 sub/supermasters the console is available in standard 520 model or high capacity 520i version. From \$20,000.

Strand 530i transportable or installed professional memory lighting console featuring a Pentium II processor; (1220 W x 610 D x 150 H) with 24 submasters and 6 supermasters for use with GeniusPro or Lightpalette operating software. Other features include 2 Grandmasters, 2 multi-function wheels, 3 graphics LCD displays and outputs for up to 4 monitors. The 530i can control up to 2000 intensity channels and 2000 attributes and has powerful integrated moving light capability. From \$40,000.

Strand 550i the largest in the range. This high capability console has all the features of the 530i but with 48 submasters and 6 supermasters. (1485 W x 610 D x 150 H) Each console is provided with a range of interface connections including 4 DMX ports; 2 VGA monitor outputs; Ethernet port; Parallel printer, serial remote and hand-held remote ports; Midi in/thru/out; Analogue out. From \$50,000.

next month::

DIMMERS

email:

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With 160 staff and strong exports to Europe, the USA and Asia, Melbourne based Bytecraft defy conventional descriptions. Are they a manufacturer? Distributor? Contractor?

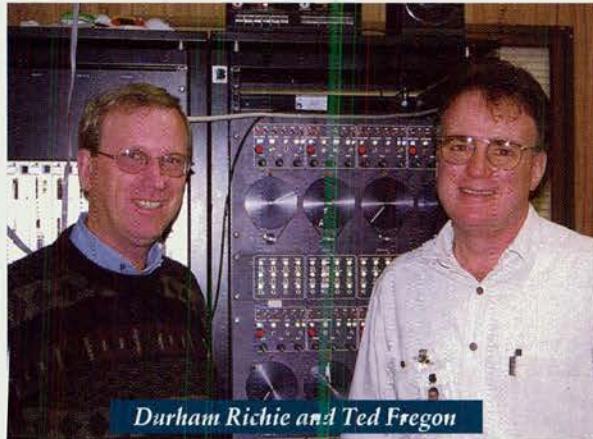
The Bytecraft of 1999 isn't terribly different to the firm that started in 1984, except that there is

much more of everything, especially technology. Co-founder Ted Fregon explained that the business is roughly split into thirds, and this is evident at their sprawling headquarters complex in Mordialloc. Internal security requires everyone at Bytecraft wear ID, especially visitors. The complex is full of people and technology, but has a friendly feel.

Stage automation is the hot export item, and Bytecraft are in a continual development cycle, releasing hardware and software control for automated winch and scenery control. Recent sales in The Netherlands have come about as traditional counterweight systems are outlawed there, while strong alliances in France, Asia and Japan have produced major contracts currently underway.

The business is run from Melbourne, so logistics and travel are staggeringly complex. Ted had two trips to Germany last month, and was off again just after Connections came calling. Partner Stephen Foun and CEO Bob Gawne were both overseas, along with long serving specialists Patrick Bravard and John Drummond Montgomery.

As if this isn't enough, Bytecraft have a sizeable contract servicing gaming equipment across the Eastern half of Melbourne. It entails continual dispatch of a team of service vans, all centrally controlled and co-ordinated from a control room within



Durham Richie and Ted Fregon

Bytecraft. This division is a natural extension of what the firm does, says Ted - reasoning that they always have serviced their own dimmers, automation, and Strand Lighting control consoles.

Another interesting and slightly confidential project is the entire lighting, audio and

automation fitout of the new Fox Studios theme park at the old Showground in Sydney. This entails four large 'experience' attractions, details of which are secret.

Many readers best know Bytecraft for their Lighting activities and on this front manager Durham Richie has driven the company forward into the major league. They have provisioned two of the largest music tours in recent times, Janet Jackson and the Bee Gees. The ability to stage a major tour is assisted by an alliance with LSD - Light and Sound Design of London and Los Angeles - whose Icon moving light system is available in the region from Bytecraft.

Bytecraft have traditionally run a lighting hire business, which today is significant in scale and offers almost every kind of stage lighting device. The recent acquisition of distribution of High End Systems will also see rapid expansion of hire stock to include Studio Spot and Studio Color moving head fixtures and their new smaller derivatives.

Ted sums up the strengths of Bytecraft: "We are characterised by a different mixture of work, customers, margins and cashflows. If one area is quiet, the others aren't. We are a technology company."

Bytecraft are an entertainment industry success story



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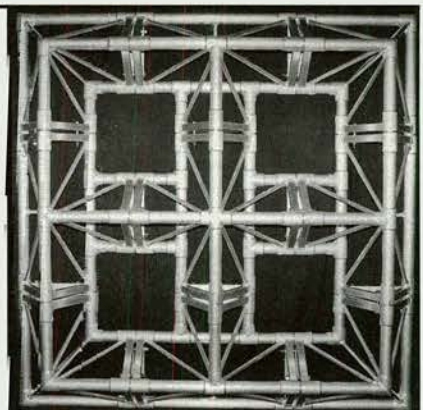
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ADVERTISER INDEX

Acoustic Technologies	29
Altronic Distributors	31
Amber Technology	33,37
AON Risk Services	56
ARX	38
Audio Telex	19
Australian Audio Supplies	23
AWA	21
Birkart Concert Cargo	59
Brown's Precision Welding	81
Bytecraft	79
Chameleon Touring Systems	75
Clearlight Shows	78
CMI	13,35,39
Coda Audio	38
Connections Shop	69
Connections Trader	49-51
dB Sound	45
EAW	6
Epson	42
EVI Audio	8,9
Group Technologies	41
GUET	39,67
Jands	2,31,60,71
Kayye Consulting	46
Lots Of Watts	55
Magna	15
Martin Prof. Lighting Aust.	65
Meyer Sound Australia	4,5
NSCA	32
Panasonic	43
Penn Fabrication	28
PLASA	73
Production Audio Services	25
Rosco	68
Show Lighting Australia	84
Stage & Screen	12
Studio Supplies	45
Technical Audio Group	17
The Show Factory	80
T-PAC	41
TRC	41,77
Yamaha	27

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THE PA PAGE

With Michael Orland

KEEPING UP APPEARANCES (PART 1)

During the 80s, my mate Fred and I ran similar sound hire businesses focused primarily on live pub type rock and roll. Most of the time, in those days, there was more than enough work to go around, so we had no problem remaining good friends, despite occasionally bidding against each other for work.

The general feeling among our clients was that although I had the better sounding, more powerful system, Fred's always looked better. General maintenance to me, primarily, meant repairing cables, cleaning amplifiers and installing upgrades. To Fred it primarily meant giving all speaker boxes yet another coat of paint. As long as he could get enough of his system working to do each gig, what really mattered for him was presentation.

Fred used to ring me, asking for advice and information. And, as little as I knew, it used to flabber me just how much less he knew. What a surprise to hear he eventually ended up teaching live audio in a government-accredited course! Fred the sound guru! What a joke! Get to the point, Michael.

OK, the point is, basing his business on appearances, Fred earned double what I did during that decade.

If anything, as we approach the next millennium, cosmetics mean more than ever. Not that the science of audio means less. In a slick, competitive world, both are important. Anyway, here are some random tips which may be useful in sprucing up your system and achieving "the look".

Carpeted cabinets have both advantages and disadvantages. They look quite smart indeed when new, but are susceptible to nicks and tears from rough handling and transporting. Sometimes these can be repaired by peeling back each loose flap, carefully working contact adhesive under it and the surrounding area and then stapling the flap in place. Thicker, non runny adhesives such as Selley's Gel grip are best for this sort of job. Once the glue has fully cured, remove the staples and trace around the outline of the tear with a pencil thin brush dipped in acrylic paint.

With larger, truck sized sound systems, consider casing your wedges. For the van set, fitting raised plastic Re-an type plastic corners not only stop the corners from getting grazed but also space cabinets apart just enough while transporting to prevent wear from scraping.

A few months ago, I had a set of wedges re-carpeted. Very pleased with the look. I didn't really want to use them for pub gigs, but was keen to try them out. Would you believe, the first wedge I load in and place on its side on the stage goes splot onto a fresh wad of chewing gum.

When I calmed down, someone suggested the following remedy: Remove as much of the gum as you can without removing carpet fibers. Saturate the remaining gum with kerosene. Then cover the area with a paper towel and apply heat from a warm iron. The remaining gum simply lifts away with the towel. Obviously, if the iron is on too high a temperature, you risk melting the nylon carpet and re-

ally making a mess, so be careful.

Acoustically transparent foam, or "Miracell", in front of speaker cabinets is a nice look. In Sydney, the stuff is available in sheets from "Gardiner's" at Silverwater. Once cut to size, these can be fitted to either the inside or outside of your cabinet's metal grills. If fitting the foam inside the punched hole type of grill, the best way to attach the foam is with a spray adhesive. Apply only to the grill, not the foam. Weight the foam down while the glue dries. You can then use mating press studs, sparsely but evenly, to keep the foam in place.

When Miracell is fitted to the outside of a cabinet's grill, it becomes vulnerable. To wear and tear while transporting, perishing when repeatedly used for outdoor gigs, and general abuse from boots, ciggys, etc, when used on rock band monitors. So my preferred way to fit Miracell to the outside of a cabinet's grill is with Velcro. That way I can easily apply the appropriate look for the jobs that warrant it, and peel it off for those that don't. (TPAC customers please note! -Editor)

Velcro, available from fabric stores, comes in two parts, the hard spiny part and the soft fuzzy part. For this application, you only need the spiny part. Cut it into strips which will form a frame around the outside of the grill. Peel off the backing tape and stick on to the grill. Use countersunk head self-tapping screws with flat washers to pierce the velcro while fastening the grill to the cabinet. (Self adhesive rubber type foam strips should also be used under the grill to minimise rattle). Additional Velcro strips or even coin sized stick on dots, available separately, can also be used to stop the foam from sagging in the center once applied.

An alternative to Miracell over metal for dressing the front of your cabinets is black shade cloth. This was used on many "off the rack" designs, such as the original JBL Soundpower series, a few years back, and in many ways is more suitable for the pub/concert environment. It doesn't rattle or perish.

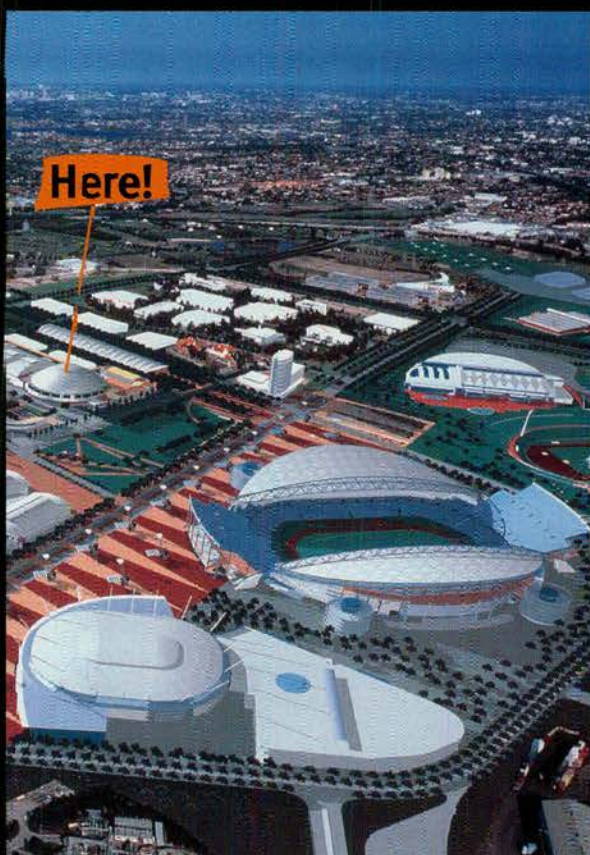
When used with a front loaded design, it's a good idea to first protect any exposed speaker cones with metal Penn type grills, available from Jaycar (or Penn). A wooden frame can then be made to fit within the front of the box. Over this the shade cloth is stretched, stapled and trimmed to size. The frame is then screwed to the cabinet using countersunk head self tappers. Screwing through the sides of the cabinet into the frame, rather than from the front gives a slightly neater finish. Although shade cloth is easily damaged by ciggy burns and deteriorates (frays) when pierced, it's cheap and easy to replace (when you get around to it). Forget about purchasing it from your local hardware store. Even larger nurseries rarely stock it in black. The best place to get it in Sydney is from Discount Shade at Punchbowl, located right next door to the manufacturer.

Michael Orland runs T-PAC, ph./fax (02) 9799 7219. Email: T.PAC@bigpond.com.au

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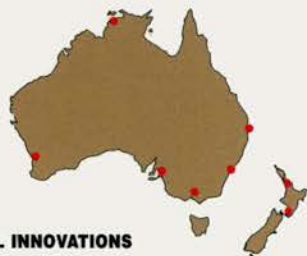
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