

# Connections



**Ethernet in the venue**  
proposed new wiring standard detailed

## **Studio Monitors & Acoustics**

What happens when you add nearfield monitors into your studio?

- ALSO- Studio Monitors: Buyers Guide

## **DVD: The Report**

Digital Versatile Disk is coming, but confusion runs rampant! We detail the latest news on this exciting new format

## **Contracting:**

News and reviews of current projects, products & techniques

# EnTech

**TRADE SHOW & CONFERENCE**

MELBOURNE  
EXHIBITION CENTRE  
APRIL 23, 24, 25.

1997 program  
announced inside!

## **Rolling Stones designer signs up for ENTECH**

Patrick Woodroffe to host master seminar

## **Cost of ownership**

What does it REALLY cost to run a lighting system?  
You'd be surprised....

## **Rigging**

Buyers Guide Feature. Hang this....

## **Industry News**

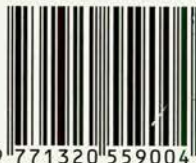
Our unsurpassed and unbiased and sometimes famous coverage of who's where, doing what to whom, moving, passed on, new products released last month, MIDI - GM and GS- explained, shows, tours, safety and training issues, events, .... and the minutiae of life!

February '97

**Australia \$4.50**  
**NZ \$6.00**

Malaysia 1€ ring  
Indonesia 16,000Rp  
Thailand 150 baht  
Hong Kong \$48.00  
Philippines 160 p  
Singapore \$9.00

ISSN 1320-5595

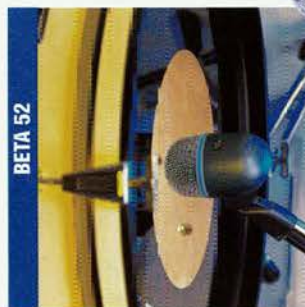
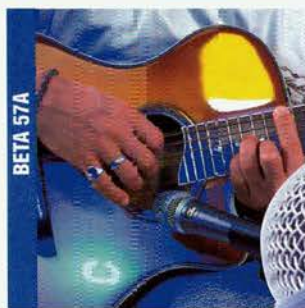
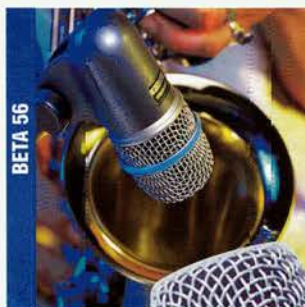
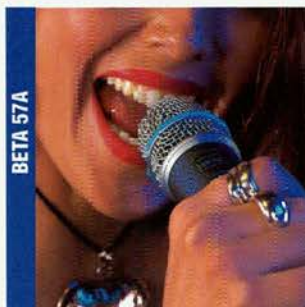
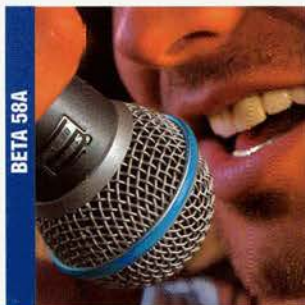
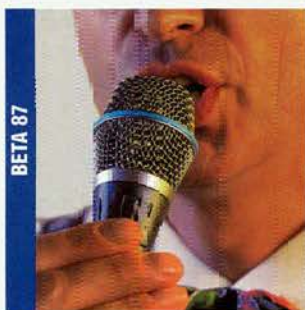


02

9 771320 559004

**5th year of independent publication!**

# SHURE INTRODUCES THE SUCCESSOR TO THE BETA RANGE...



**J**ust what is it that makes Beta microphones the world's most respected for live performance? Ask a professional performer, and you'll hear about Beta's remarkable response to both vocals and instruments. While an engineer will talk about their tight, uniform supercardioid pickup patterns and how Beta's technical precision turns every live performance into a studio-quality sound experience.

If you're miking an entire stage, you'll want the full Shure Beta Line. It includes the improved Beta 57A and 58A with smoother response and lower handling noise. The premier Beta 87 brings accuracy and detail to vocals. And to drive it all home, complete your stage with the exciting new Beta 52 for your kick drum and the unique Beta 56 for drums and other instruments.

It wasn't easy improving upon the Beta range, but once you audition these new microphones you'll agree it was well worth it.

## THE NEW SHURE BETA RANGE.

# SHURE®

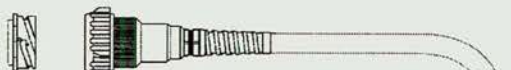
## 5th year of publication

### index

|                      |    |                       |    |
|----------------------|----|-----------------------|----|
| Industry News        | 5  | Rough Riders          | 56 |
| New Technology       | 16 | On tour: UK attitude  | 56 |
| Business             | 26 | Sting                 | 59 |
| Contracting          | 28 | Patrick Woodroffe     | 60 |
| Around the Venues    | 31 | Ethernet in the venue | 62 |
| Duncan Fry           | 36 | la vida breve         | 66 |
| DVD: the report      | 38 | LX Buyers Guide       | 70 |
| Film Sound           | 41 | Cost of ownership     | 74 |
| Minimalist recording | 43 | Eternal nutcracker    | 75 |
| Studio Monitors:     |    | Clubs/ venues         | 80 |
| About acoustics      | 46 | The PA Page           | 82 |
| Buyers guide         | 44 | .... and much more!   |    |
| Tracking Guide       | 52 |                       |    |

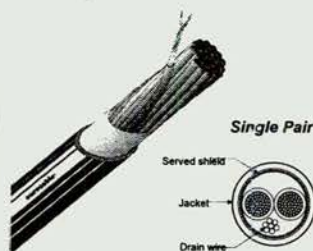


### Link Multipin Connectors



- ✓ Available in versions from 19 pin to 150 pin
- ✓ Easy and positive coupling and uncoupling
- ✓ Audible "snap in" lock indicates full coupling
- ✓ Waterproof to 10 metres for 12 hours
- ✓ Highly resistant black finish
- ✓ Guaranteed for over 2000 applications

### eurocable Multipair Cables



- ✓ Available in 2 pair to 48 pair
- ✓ Extreme flexibility to -20°C
- ✓ Excellent resistance to damp
- ✓ Numbered and colour-coded cores
- ✓ XLPE insulant, high heat resistance
- ✓ Drain wire for screen link-up



The Resource Corporation 6 King Street Blackburn VIC 3103  
Tel (03) 9877 8233 Fax (03) 9877 8244

Write in Reader Service Number: 132



**NOT JUST ANOTHER AMPLIFIER.**

Just as our mixers combine high performance, great value and extra features, our new Fast Recovery Series M•1400 sets a new benchmark for amplifier value. It can help your speaker cabinets put out tighter bass and enhanced high-end audibility. It can play all day into big, ugly reactive loudspeaker loads. And it can survive sizzling ambient temperatures and brown-out voltage drops that croak other amps. The M•1400 was created by a talented design team, many of whose members have over 20 years of power amplifier circuit experience. And it's made in a state-of-the-art, automated manufacturing facility that lets us keep quality up and prices down.

**THE FAST RECOVERY DESIGN STORY.**

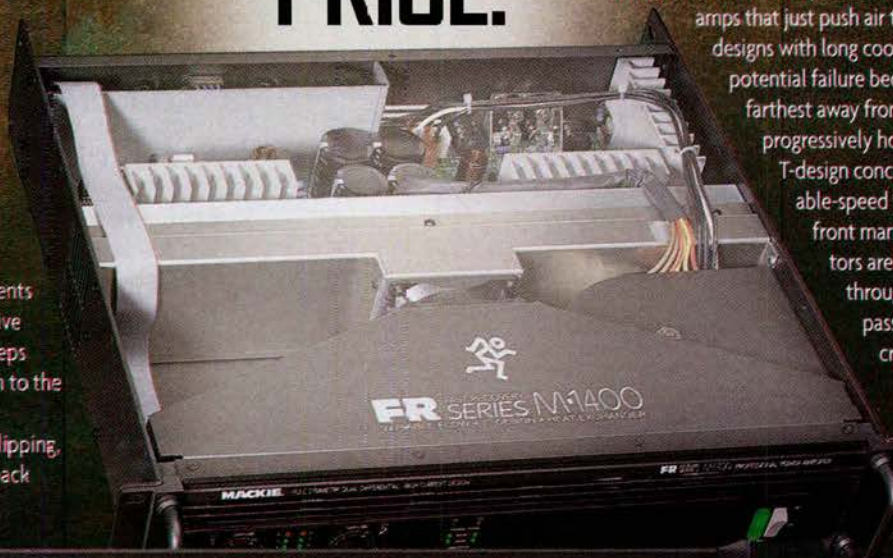
Thanks to exotic technology borrowed from high-speed digital components — and sparing use of negative feedback — the M•1400 keeps sounding good when driven to the max. If most conventional amplifiers are driven into clipping, “corrective” negative feedback

# HIGH WATTS. LOW PRICE.

actually causes internal saturation that keeps them “latched” in a prolonged — and audible — state of clipping. The M•1400 uses a high-speed, latch-proof design with extremely low negative feedback that eliminates high-frequency sticking and gives the amp enhanced stability. Until now, this solid, proven circuit principle has only been found on very expensive designs. The M•1400 achieves efficiency just 3.5% under the theoretical maximum possible, with an output stage that delivers in excess of 60 amps of current. It is capable of 4000 watts of power dissipation.

**T-DESIGN CONSTANT GRADIENT COOLING**

Amplifier output transistors generate intense heat. If it isn't conducted away, reliability drops. Cheaply-built amps that just push air through the chassis or amp designs with long cooling tunnels court potential failure because the transistors farthest away from the fan get bathed in progressively hotter air. The M•1400's T-design concentrates air for the variable-speed fan through an oversize front manifold. All output transistors are flooded with cool air through the short, dual air passages (see drawing below), creating a constant temperature gradient and vastly increased reliability that lets the M•1400 run all day at ambient temperatures as high as 113° F!



**BUILT-IN FEATURES INSTEAD OF OUT-BOARD BOXES & PLUG-IN CARDS**

A low pass subwoofer crossover eliminates the need for an external electronic crossover or plug-in amp modules. Variable low cut filters let you dial in the tuned bass cut-off point of your speaker cabinets or stage monitors for dramatically tighter low end. Variable high frequency compensation eliminates the need for hard-to-adjust crossover modules or graphic EQ tweaking to achieve the treble compensation required by compression drivers mounted on Constant Directivity horns. Subsonic stabilization stops visible, random woofer cone movement that robs amp power and causes intermodulation distortion.

**M•1400**

- 1400 WATTS INTO 4 OHMS, BRIDGED
- 700-700 WATTS INTO 2 OHMS, STEREO
- BUILT-IN SWITCHABLE 63Hz/120Hz ELECTRONIC SUBWOOFER CROSSOVER
- SWEEPABLE 5Hz-170Hz LOW CUT FILTERS
- SWEEPABLE 2kHz-3kHz CONSTANT DIRECTIVITY HORN COMPENSATION & “AIR” EQUALIZATION
- SUBSONIC STABILIZER

**LOADED WITH EXTRAS FRONT, BACK & INSIDE.**

Such as full LED instrumentation including Temperature & Short Circuit indicators, multi-step detented Level controls calibrated in dB and volts, three inputs per channel to make signal pass-through & signal splitting easy, elaborate short circuit/overload/thermal protection & automatic turn-on delay. Visit your Mackie Dealer today for more information on the M•1400!

**MACKIE™**

Australian Audio Supplies ☎ 043/291-711 ☎ 043/291-747  
E-mail ✉ [ausaudio@acay.com.au](mailto:ausaudio@acay.com.au)

Write in Reader Service Number: 119

# Connections

FEBRUARY 1997. Number 40

■ ENTECH Melbourne program launched

## APRIL DEAL DAYS

*An estimated \$18 million worth of new sound, lighting and audio visual equipment in one place makes an obvious attraction, say the organisers of ENTECH 1997*

The April trade show is being presented as an obvious venue for deals, with most of the 100+ exhibitors planning show specials. "We believe that being positioned just weeks before the end of the financial year gives visitors the chance to spend existing budget, and to plan the new year" says show director Caroline Grafton.

This year's show program has been announced. It includes 24 one hour Seminars, broken down into 8 audio topics, 8 lighting, 6 audio visual and 2 staging topics. Each runs for up to an hour.

Two Conferences will run the day before the exhibits open. Bill Foster will be keynote speaker at the **Digital Versatile Disk (DVD)** technology conference. Foster is editor of One to One magazine in London.

The other Conference topic is **Performance Industry Technical Training**, which will deal with the issue from the perspective of employers and trainers.

Seminar highlights include a master session with leading lighting designer Patrick Woodroffe, famous for his work with the Rolling Stones.

This year the pro-audio stream has been strengthened with the assistance of digital audio consultant Andrew Scott. Included is a non linear audio shootout,

Patrick Woodroffe, LD



with systems by DigiDesign, Sonic Solutions and Fairlight compared. A seminar on audio integration will detail some recent complex audio contracting work done by The PA People.

Apogee Sound are hosting a seminar "Designing and Specifying a PA system for a venue".

Audio Visual topics are being presented this year by industry association FOCUS. These include "Computer Graphics", "ISDN Video Conferencing", and "Automated AV Control for Installations and Live Events".

Seminars cost \$12 each, while ENTECH admission is free to the trade after registration.

**Program: call 1-800-635-514 or [www.conpub.com.au](http://www.conpub.com.au)**



Bill Foster, DVD expert

## Covert Surveillance Springs Inside Job

RETAIL ISSUE

**H**ow do you measure trust? The music equipment retailer was devastated when a long serving staff member was caught on video pocketing half the Saturday take. Installing covert video surveillance in the family owned music store in Sydney's inner west caused friction between the owners, but now that was forgotten.

Over the next week the staffer regularly rifled the till, but this time every move was examined. A private detective was called in, who basically sat and made notes from the video, presenting a 'report' afterwards. By weeks end the owners were so incensed they confronted the staffer with the video. He was fired.

The local police came and viewed the video with some reluctance, after telling the retailer that in their view she was simply seeking to avoid an unfair dismissal action from the staffer, who they were certain would take legal action against the store!

No police action was taken, because the video wasn't considered evidence as it had been taken without the staffers knowledge. The Police claimed that the retailer should have called before confronting the staffer, as they could then have planted marked currency in the till and caught the guy red handed.

Putting the experience down to one of life's travails, the retailer moved onwards. Today it

is six months since the event and the gross profit at the store has increased by 16%, indicating the theft had cost better than \$30,000 per year, possibly right throughout the three years the staffer was employed at the shop.

Connections has viewed the video and understands the ex-staffer is still working in the music industry. The retailer now has obvious video surveillance of the whole store. A retail colleague also adopted the covert surveillance shortly after this incident and discovered his friendliest staff member was also raking the cash. This guy was caught buying his lunch with a marked \$20 bill from the store till and faced court action.

Luckily he didn't take action against the store for unfair dismissal, until recently courts considered theft wasn't a valid reason for getting fired!

At presstime legislation banning covert video was pending.



ENTECH hosts a **RETAILER forum** this April, dealing with a variety of issues including theft, to be held during the first day of the trade show. 'Retail in a high-tech world' starts at 9.30am on Wednesday April 23rd at the Melbourne Exhibition Centre. Cost is \$63 including lunch.

• Book on 1-800-635-514.

*This slot is intended for your views, I'm just here to get the ball rolling. Send me your editorial and a picture now!*



My favourite issue is the relentless march of technology. When I started this journalistic phase six years ago, I had been a roadie, sound engineer, operated psychedelic lightshows, a hire company owner, retailer, manufacturer, importer, and distributor. I've always been somewhere in the Sound and Lighting business since Mr Harris at Vaucluse Boys High booted me out at 14, and I'm 40 this year.

I'd have thought by now we would have some more elegant technological solutions to old problems. Take PA for example. We still have cardboard coned loudspeakers, analogue microphones, and increasingly more cable than I've thought possible.

DMX (the digital control protocol) was the revolution in lighting for the 90's that MIDI was to music in the 80's, opening up rototic moving light technology. Lighting as an art form has added more to the palate. Less fixed luminaires perhaps, but the capital cost of a lighting system to do a given job (fashion parade, theatre season, rock tour) is way out of sight compared to just a few years ago. DMX did that!

Perhaps the most serious impact of technology has been in the Recording Studio and Post Suite. The recording industry

isn't dead, despite what some street papers say. I don't need to tell you how non linear recording and waveform editing has revolutionised things, but how can there be over 150 different hard-disk-work-station permutations out there?

Little wonder the real hard nosed professional recording studio community hold dearly to their 2" analog recorders! After all, you don't need to boot up a reel of magnetic tape, do you?

**KNOCKER TIME**

There are plenty of tall poppies to knock down in 1997. People who've worked long and hard to build their businesses and are obviously doing well.

We salute local firms and individuals who are moving ahead. Two of them, with big news in this issue, are fashionable with the knockers. From our perspective Tom Misner (SAE, Mirage) and the directors of Jands all deserve admiration. Instead we sometimes still hear that dumb knocking noise. **-Julius Grafton**

Send us your guest editorial! Fax 02 9876-5715 or email mail@conpub.com.au

~ John Halliday ~  
an obituary

John Halliday IALD passed away on the evening of 28th November 1996 after a battle with cancer. He died at home, surrounded by his family and friends.

John was a director of the consulting engineering company Lincolne Scott, and his vision for architectural lighting first saw the light of day in 1987 when he employed Lincolne Scott's first lighting designer in Melbourne, Australia.

In 1990, John decided that an engineering practice was not the most appropriate vehicle to market lighting design, and with support of the Lincolne Scott board, he founded Vision Design Studio with two colleagues on 21st July 1990.

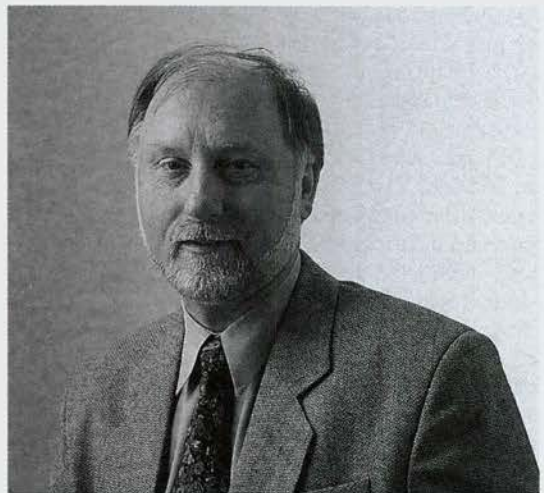
Vision was one of the first serious attempts by an Australian organisation to professionally

market and undertake architectural lighting design to the exclusion of all other activities. There are now a number of similar practices in Australia, a great compliment to John's foresight.

One of John's talents was his ability to blend an extraordinary mix of personalities to produce a balanced team of designers. Vision now employs some 20 people and they are spread through offices in Melbourne, Sydney and Brisbane (Australia), Singapore and Bangkok (Thailand).

We think one of the best ways of remembering John is from a quotation of Carl Jung;

*"As far as we can discern, the sole purpose of human existence is to kindle a light in the darkness of mere being"*



**Connections**

**Connections Publishing Pty Ltd** ACN 058443182. All Mail to: P.O. Box 439, Epping NSW 2121 Australia

**Our Office is at:** Century Plaza, Level 2, 41 Rawson St, Epping, NSW. (Mon-Fri 8.30-5.30)

**Phone:** (02) 9876-3530 **Fax:** (02) 9876-5715 **E-Mail:** Mail@conpub.com.au **Website:** www.conpub.com.au

|  |   |   |  |
|--|---|---|--|
| <p><b>Editor:</b> Julius Grafton<br/>Email: julius@conpub.com.au<br/><b>Assistant Editor:</b><br/>Catriona Forcer<br/>Email: catriona@conpub.com.au<br/><b>Journalist:</b> Daniel Cole<br/><b>Writers in this issue:</b><br/>Madeleine Murray, Duncan Fry,<br/>Howard Jones, Michael Orland, Felix,<br/>Jacqueline Molloy, Mandy Jones,<br/>Caroline Grafton<br/><b>FROM USA:</b> Buck Freeman</p> | <p><b>Circulation:</b> Nicole Morris<br/><b>Finances:</b> Jenny Royal<br/><b>Artwork:</b> Sharon Miceli<br/><b>Advertising:</b><br/><b>DIAL 1-800 635-514</b><br/><b>Caroline Grafton.</b><br/><b>Publisher:</b> Julius Grafton.<br/>(Unrelated to 'Graftons<br/>Sound &amp; Lighting')<br/><b>Printed by:</b> Superfine Printing,<br/>Arncliffe, Sydney.<br/><b>Film:</b> Omnicron, Dulwich Hill</p> | <p><b>Newsagents Distribution:</b><br/>Newsagent's Direct Distribution<br/><b>Music Store, Direct Outlet Distribution: 50% disc. (Aust)</b><br/>Call us direct: (02) 9876-3530<br/><br/><b>SCHEDULE/DEADLINES:</b><br/>Published early each month, 11 months a year- except January.<br/><b>Deadline 15th, month prior. ie: Feb.15 for March.</b> We run tight deadlines to bring you the news!</p> | <p><b>SUBSCRIPTIONS</b><br/>Free call: 1-800 635-514<br/>or +61-2-9876-3530 from O/S or fax us on +61 2 9876-5715<br/><b>AUSTRALIA: \$39.90, (12 months) or \$58 (2 years)</b><br/><b>NZ: NZ\$65,</b><br/><b>Asia \$70,</b><br/><b>USA \$95,</b><br/><b>Europe/UK \$110.</b><br/><b>International airmail,</b><br/><b>all AUD \$, all 12 mths.</b></p> |
|--|---|---|--|

Legal stuff: All contents © Connections Publishing Pty Ltd, 1997. Nothing herein to be reproduced in any way or transmitted by any means without the express written consent of the Publisher. No Warranty is extended in respect to any information herein. Opinions expressed in Connections are not necessarily those of the Publisher. Materials herein reproduced in good faith. Corrections made wherever material errors occur. It is a condition of purchase that the Publisher does not assume liability or responsibility for loss or damage that may result from any inaccuracy or omission in this publication. Opinions expressed herein are not necessarily the publishers. Please do not sue us. 100% produced in Australia.

**How to make a Submission:**  
We WELCOME well written articles and stories for consideration. Send hard copy, preferably WITH a PC or Mac word processing RTF file and NORMAL file together. RTF means Rich Text File, also known as 'Interchange format'. Most word processors will SAVE a file (in the 'Save To...' field) as an RTF file. Photograph prints, B&W or colour, & 35mm transparencies (preferred) also welcomed. A stamped self addressed envelope is required if return desired. No responsibility for loss accepted, sorry. If unsure feel free to call the editorial team.

■ Dual Jands firms move into one purpose built complex in Mascot

## Two Jands married again

Boasting turnover approaching \$40 million, the two Jands firms have joined together for the first time in 12 years.

In 1987 Jands Production Services expanded into a building at Mascot, close to Sydney Airport, leaving Jands Electronics to wholly occupy a building in nearby St. Peters. JPS was later sold to a UK firm but repur-

chased by the original shareholders in '90, remaining at Mascot.

Last year the Mascot premises were partially demolished, with new building works occupying the rear of the large site. This was occupied when completed by Jands Production Services, headed by Eric Robinson.

The front of the old building was then demolished with the exception of the facade. This allowed the complex to remain close to the street alignment as it was technically a renovation.

A race against time ensued as the St. Peters site was sold with vacant possession required on December 16th. Jands Electronics moved into their half of the new 80,000 square feet facility as the builders finished.

In addition to the building, a large dual level car park of 20,000 square feet was constructed at the rear of the site.

Jands directors project managed the \$3.5 million construction themselves.

The two firms share common directors based on a long standing partnership between Eric Robinson - who heads JPS- and Paul Mulholland, CEO of Jands Electronics.

Located at different sites the firms worked different markets, with JPS market leaders in the concert and corporate production markets. Jands Electronics are importers of leading brands such as JBL, Shure and Soundcraft.

Although closely linked most of the staff of each firm (more than 120 people together) were removed from the other firms activities. JPS purchases brands other than those sold by Jands Electronics at times, while Electronics utilise JPS to prototype test products which it manufactures and imports. A JPS staffer applauded the move, saying "We are the crash test dummies. Now we can get results!"

• **The new address for Jands Electronics is:** 40 Kent Road (Locked Bag 15), Mascot 2020. Phone (02) 9582-0909, fax (02) 9582-0999.



## Power Mac rules the non-linear roost

Professionals working in multimedia and post production are more married to their Mackintosh CPU's than ever before, despite the recent announcement of a new and different operating system for 1998. In the audio niche the Apple Mac rules, with a clear challenge on the horizon.

The Mac rules because of its RISC processor, which unlike the ASIC processor in a PC, is more suited to realtime audio processing. The Power Mac also handles audio input and output without an optional card, making it ready to go once software is added. Input and output jacks are standard.

### DIGITAL AUDIO

By Julius Grafton

At the high end Sonic Solutions and Digidesign products with additional input and output cards and hardware are used on Macs by post production and video suites, with a growing market in multimedia developers who usually make customised commercial presentations for customers.

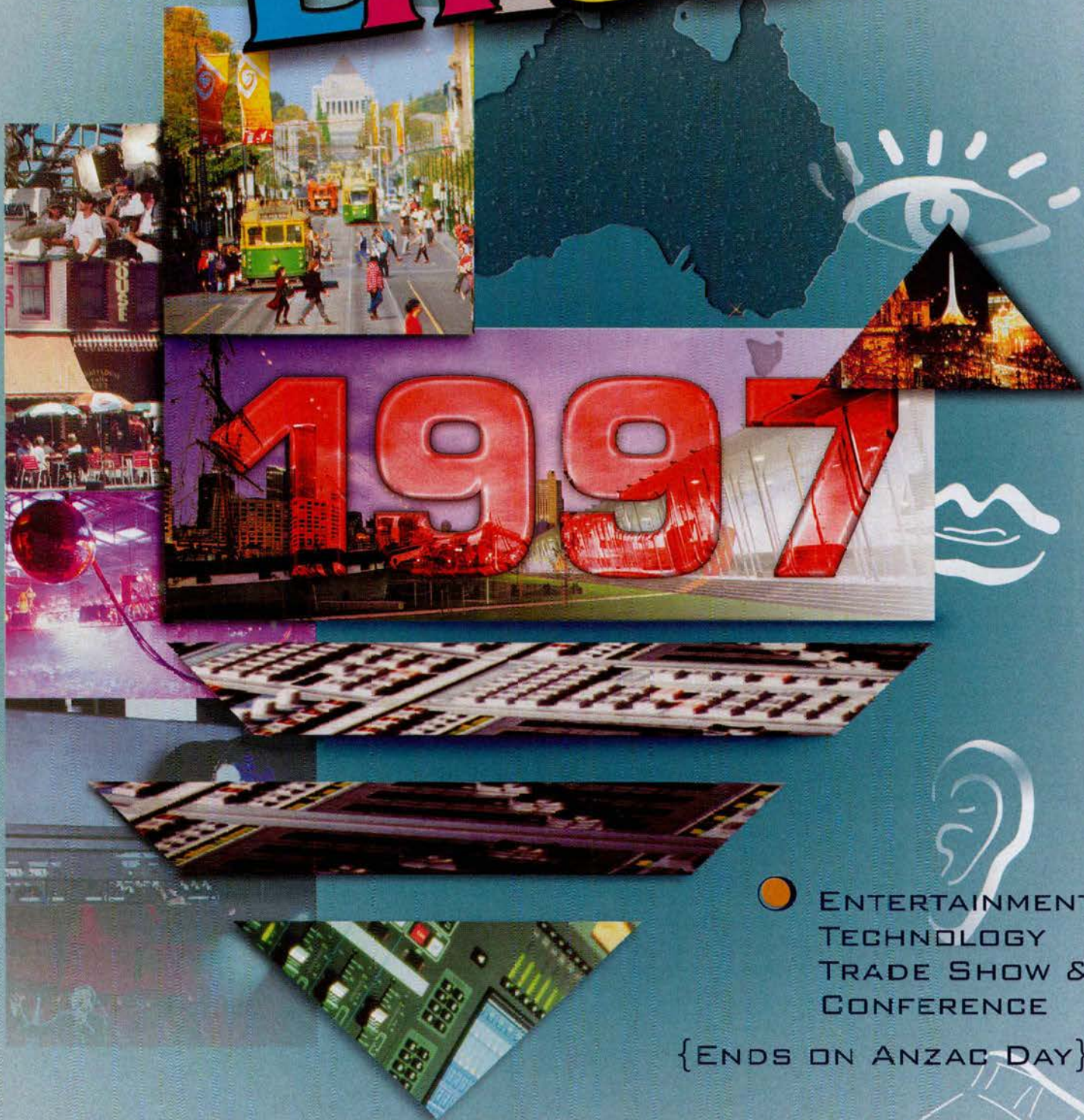
Audio Visual suites often grow out of using a simple application like Power Point or Director. These allow you to create a slide show or a more sophisticated automated presentation

which is typically run on a video projector. Director comes bundled with Deck, an audio editing module that was originally sold separately by its developers, OSC. It is rudimentary but can produce professional results.

Users sitting at their Mac seeking audio input can face a dilemma - a reasonable microphone costs hundreds of dollars. Hooking a standard mic up to Director is a fiddle and the gain control within the software doesn't cater to the widely different gain structure of some microphones. A preamp and a compressor limiter are a very good idea. Once audio is used it

(continues on page 10)

# Entech



● ENTERTAINMENT  
TECHNOLOGY  
TRADE SHOW &  
CONFERENCE

{ ENDS ON ANZAC DAY }

Melbourne Exhibition Centre April 23, 24, 25 (Conference starts April 22nd)

Information: call 1-800-635-514 or browse ~ [www.conpub.com.au](http://www.conpub.com.au)



**QANTAS**

● TRAVEL DEALS from Stage & Screen  
For ENTECH travel and accommodation call  
+61 (0) 2 9237-2905 or 1-800-670-534

INFO LINE: 1-800-635-514  
Netsite: [www.conpub.com.au](http://www.conpub.com.au)  
ORGANISERS: +61 (0) 2 9876-3530  
Fax: +61 (0) 2 9876-5715

## THE LEARNING TRIP

You don't come to ENTECH for devices and deals alone. The show is now **FAMOUS FOR EDUCATION** by way of Seminars, Workshops, Forums, Conferences, Clinics and Training Sessions.

1997 delivers, with 2 conferences - **DVD TECHNOLOGY** and **TECHNICAL TRAINING** along with a **HI TECH RETAILER FORUM**.

Topics vary at the **24 SEMINARS** held across the the show days, while **PRODUCT CLINICS** will be run hourly on the tradeshow floor. And there's more!

## THE FREE THINGS!

People in the Trade **ENTER FREE** after Registration. For non trade the Public Day is Anzac Day, **FRIDAY 25th April** and public (non trade) pay \$10 to get in then.

Once inside, browse over 100 **ENTECH EXHIBITORS** displays, plus over 40 exhibits in the **VMA** trade show next door. See, compare, get spec's and buy!

Then look at the **MOVING LIGHT SHOOTOUT** in our Interactive Zone, run all day. See the Video screens for what's on next at our **HOURLY PRODUCT CLINICS** held on the tradeshow floor.

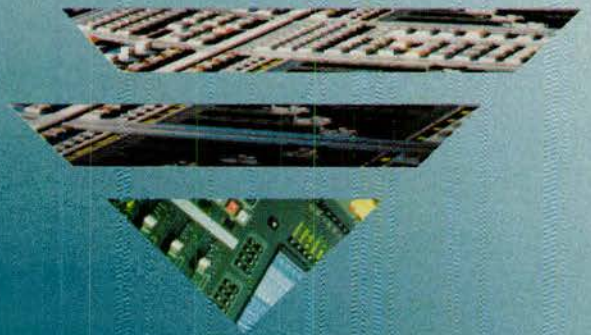
Then at 6pm when the show ends, gather for the **PA CRESCENDO** where the major brands are compared - **LIVE!**

## Seminar Program 1997

Briefly: ENTECH has always hosted Seminars, each is of up to one hours duration, and costs \$12. The imperative is to educate, not sell products. Mostly the Seminars are generic, although occasionally a company will present a Seminar on a unique technology. For 1997 we have improved the Seminars -

- Papers / notes supplied with each Seminar
- Seminar Theatres acoustically isolated from tradeshow
- All A/V equipment courtesy of Intercity Gearhouse
- Stream managers on the job for better quality
- 24 Seminars - 8 lighting, 6 audio visual (presented by FOCUS in the Focus Theatre); 8 pro audio; 2 staging.

Full program available NOW - call 1-800-635-514, fax (02) 9876-5715 or log on to website at [www.conpub.com.au](http://www.conpub.com.au)



## THE BUYING TRIP

ENTECH presents the ultimate buying experience. Trade Shows are all about **THE DEAL**. The deal is \$18 million worth of goods at ENTECH~ on show and on sale. Get around 100 exhibitors with 3,000 products and devices from the **WORLDS LEADING MANUFACTURERS** in one place and go for it.

**You can SAVE more than the cost of attending. It's already a proven fact!**

Ideally positioned just weeks from the **NEW FINANCIAL YEAR**, ENTECH gives every buyer an ideal venue to negotiate new technology purchases.

- Hundreds of **SHOW SPECIALS** (the best are sometimes NOT advertised!)
- Buy **SHOW DEMO** stock and take it away or have it freighted to you direct at the close of the show.
- Special show **GIVE-AWAYS** to be had on many stands. An ENTECH tradition!

## THE SOCIAL TRIP

Aside from the **NETWORKING OPPORTUNITIES**, ENTECH puts Melbourne on show for you. Discover what all Melburnians have always known ~ it's a party town! ENTECH deploys the fun with social gatherings and our peak event, the **ENTECH AWARDS DINNER** at the **PLAZA Ballroom** on Thursday 24th April. John Blackman is the MC, who will introduce Peter Cupples and his band. It's a huge night!

## Technical Crew Shortages Loom

- Crew once came pre trained. Now technical sophistication requires specialists. Where do they come from?

Technical training is an issue as virtually all venues, broadcasters and production companies would prefer to employ ready-trained staff who are productive from the first time they walk in the door. In the 1980's and early 1990's a considerable pool of technical staff were available with rudimentary skills honed on tour with rock bands. Today that pool is all but exhausted, as the touring industry is a fraction of its peak size.

In the 1980's theatre and venue technology was considerably simpler than today. Audio was generally simple reinforcement without need for automation or midi control of anything. Automation hadn't made an impact on stage machinery. Skills like that of the mechanist were rooted in tradition. Many lighting control systems had been in place for some time, and the variety of types was limited. Safety was not an issue like it is today.

Technical crew made a reasonably simple transition from the road to the venue. Older technicians didn't much like the influx of 'hairy types' but the other routes for training were ex-

tremely limited by proportion - and still are today. This is because until recently adequate numbers of semi-experienced crew existed, and skills required were less demanding.

### SKILLS ACCELERATE

With the inrush of technology the general sophistication of stage technology has multiplied along with the capital cost of equipment. Today specialist skills are required to program lighting control equipment, rig DMX controlled equipment, set up robotics, allocate dimmers and balance loads, monitor and use wireless microphone systems, mix on automated consoles, and fly computerised scenery to name just a few things. Few, if any, employers are equipped to train their staff in these new skills.

But there are many problems. The industry has no formal skills recognition process for people already inside and working. Training institutions are frequently seen as providing long courses, often with unwanted topics bundled together. Accreditation is a misunderstood term.

Education institutions complain that on the job secondment to production firms and venues is difficult to arrange.

### CULTURAL PROBLEMS

Employers are not yet prepared to recognise many training institutions and programs already in place, often because accreditation isn't understood or acceptable in the eyes of the existing crews.

Employer organisations such as performing arts centres have conducted working groups and compiled lists of competencies which are regionally applied. Educational institutions and trainers complain they are often not consulted in this process, and so are unable to provide specific training.

The educational institutions themselves provide courses which are often considered unsuitable by employers, who sometimes need short course modules which the institutions cannot provide. For example, a conference venue needs to re-skill two audio savvy technicians to operate a new desktop video suite. Software training can be

bought by the day, but who will train them on video projector and data integration? Knowing how to run software doesn't help when the venue has video monitors, retro units and hirers turning up with laptops needing connection at five minutes notice!

### INDUSTRY CONFERENCE TO EXAMINE ISSUES

ENTECH hosts the first industry-wide Training Issues conference to be held in Australasia this April. A one day event held the day before the trade show opens, it seeks to draw out all the issues and provide a broad view of the options open to employers. Trainers will also find the Conference useful to identify topic and technology openings.

The first ENTECH industry conference in 1996 was on Safety, and resulted in the formation of Showsafe - the industry association.

The training conference is on Tuesday April 22nd, 9am -5pm. The cost is \$175 which includes lunch and conference notes. Bookings or enquiries to Connections, call 1-800-635-514.

## Power Mac Rules

(continued from page 7)

needs to be monitored through something half decent too, or handling noise and low frequency hum can slip past into the project.

The irony of digital audio is that users at the bleeding edge who are learning to cludge together a presentation are often sitting in front of the same CPU as a post production engineer mixing a major release movie.

Digidesign's Pro Tools is becoming very prevalent in post production, with internal track laying capability allowing in excess of 50 tracks - usually mixed down to 16 actual tracks. The advent of a Dolby plug-in for ProTools makes surround sound

easy.

But as all users will fast realise, large scale data transport is an issue. Sydney specialist outlet Sound Devices recommend the 1Gb (1,000 megabyte) JAZ drive - but with reservations. According to Lewis Mallia the JAZ has an annoying habit in turning itself off after a half hour of no use, requiring the Mac be rebooted. Lewis suspects the JAZ drive could be prone to overheating. He reports no problem with the actual JAZ Cart however, which has proven reliable in the field. "We recommend customers buy a second JAZ drive as insurance", he says.



## MOVED

New addresses & expansions!

• **F PAYTON & SON** are now at 37-39 Whiting street Artarmon. Numbers the same.

• **STUDIO CONNECTIONS** have relocated to newer and larger premises at: 11/41-49 Norcal Rd, Nunawading 3131. Phone (03) 9874-7222, fax (03) 9874-7666.

• **JANDS** (see story, page 7)

• **MARK IV AUDIO** (see p.15)

## BIRTHS, WEDDINGS

• **Nick Nonas**, director of Nomis Topstage in Canberra has tied the knot with the lovely **Elene Sandas**.

• **Gino & Julie Lombardi** of AVLA in Perth are delighted to announce the arrival of their new baby boy, Christian James.

• **Anne Topp** of Active Lighting in Melbourne gave birth to a daughter, Katherine Anne in December.

## NEW AGENCIES

• **Syncom's** Multivision multi-image processor is now represented by **Trace Pacific**. Call (03) 9646-5833.

• **Z Systems** of the UK is now distributed by **Studio Connections Australia**. They make EQ and switching devices. Call (03) 9874-7222.

Fax your news to: (02) 9876-5715 or email: mail@conpub.com.au

## PEOPLE & POSITIONS!

- **Michael Wickow** has joined McLean Audio Services as Production Manager.
- **Jamie Stahl** has been promoted to Technical Manager at Geelong Perf. Arts Centre.
- **Matt Robinson** is now General Manager, and **Shane Wedesweiler** hire manager at Graftons Sound.
- **Jeff Street** is now Technical Manager, while **Ian Perkins** from RANS Management has moved in at Redcliffe Entertainment Centre.
- **Prue Fletcher** is now Post Production Manager at Digital Pictures. Also **Clinton Jones** is the new Chief Engineer there.
- Jands have appointed **Catherine Moriarty** as Marketing Co-ordinator. Jenn Temm has departed for babydom.
- **Elaine Auld** has departed Connections after many faithful years service.
- **Intercity Gearhouse** (Canberra) introduces staff- **Michael Hewitt** (Manager); **Tim Daly** (Ops Manager); **Abby Chrispin** (Ops Co-Ord/Marketing); **Peter Floyd** (AV manager/Rydges); **Simon Hawke** (Ops) and **Harry Salmela** (Ops).



## ~Andrew Bentley~ obituary

By Steve 'Pineapple' Alberts

Andy was one of Australia's leading Lighting Designers and operators. Some of his

clients included Tina Arena, Jack Jones, Rick Price and Southern Sons. He also had a list of concept bands a mile long. He worked at the Brisbane Convention Centre and from United Crewing during the past three years.

Anybody who came into contact with Andy was touched by his infectious smile and his easygoing attitude. To this day I have yet to meet a person that didn't like him.

He was always hard working and very creative, caring, and always willing to give a hand. Andy will be missed by all those who worked and socialised with him.

He leaves behind Karen, his partner in life, and two beautiful children, Zoe and Zac. He also leaves behind a lot of sad friends and co-workers, who have joined together to stage a benefit concert this month.

The production and venue have been donated and several Brisbane bands have agreed to play free.

Venue: Roxy. Date: Thurs. 20 February.

All money raised will be put into a trust fund set up for the kids. Donations of money or items for auction at the concert would be appreciated. **Call Steve Alberts on 0412 763-386.**

# PHONIC

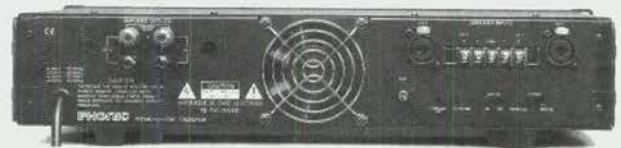
**MAR**  
SERIES  
POWER AMPLIFICATION

## ADVANCED DESIGN

Phonic introduce their state of the art MAR Power Amplifier range.

Featuring:

- ✓ Neutrik "Combo"™ input connectors accommodate both 1/4" TRS and XLR.
- ✓ Strong toroidal transformer, which eliminates the hum and audio problems found with less expensive transformers.
- ✓ Two dual-speed cooling fans:- this advanced design offers better control, more efficient cooling and minimises disturbing fan noise in quiet applications, such as churches.
- ✓ MAR2/MAR4 only 2 rack units, MAR6 only 3 rack units.
- ✓ Stereo, bridged mono or PARALLEL operation.
- ✓ Limiter on/off MAR4/MAR6.



| MODEL       | 1 KHZ<br>4 ohms | 1% THD<br>8 ohms | STEREO | RRP               |
|-------------|-----------------|------------------|--------|-------------------|
| <b>MAR2</b> | 230             | 150              |        | <b>\$995.00</b>   |
| <b>MAR4</b> | 425             | 270              |        | <b>\$1,250.00</b> |
| <b>MAR6</b> | 650             | 400              |        | <b>\$1,550.00</b> |

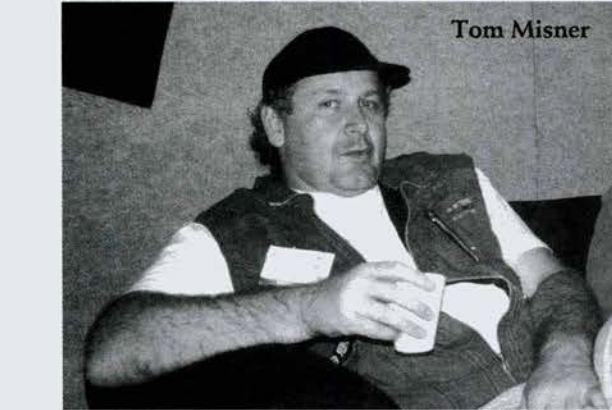
**From C.M.C. Music Call (02) 9905 2511 Fax (02) 9905 0189**

# Mirage Studio Expands

SAE buy new Sydney CBD HQ for \$3.5m

SYDNEY: **Tom Misner** is establishing a new recording studio complex which will feature a room large enough to record an orchestra. The complex is opposite Misner's existing SAE and Mirage Studio downtown, and

will fill a building which Misner has purchased for \$3.5 million. The move is a resounding vote of confidence in the recording industry, which has finally seen some expansion in recent times with a renovation at 301 and establishment of Kiss in Melbourne. The new Mirage complex will comprise three studios, while SAE will be expanded to four studios.



The Wentworth street building will be wholly occupied by Misner interests, with Mirage on the ground floor and the main recording area featuring a 7.5m ceiling, breaking into the first floor as a void.

Studio one will boast a 48/48 Neve Legend console with two Studer 820 analogue 24 track

surround mixdown - film - music recording and mixdown capabilities. The Dolby consultant is Steve Murphy, while acoustics are being designed by Chris Morton and Graham Thirkell.

Other studios will include a 48 track studio and a voiceover studio, with a full dubbing room. Tom Misner points out it is the first studio designed from the ground up with 1990's acoustics incorporated.

SAE will feature four studios including one 24 track, a 16 track and a 16 track digital room. 3 ProTools rooms, 2 MIDI rooms and a new multimedia workroom with 30 Power Macs will expand SAE's utilisation to allow up to 80 students on the roster.

5 classrooms and additional office space will complete the complex, which is under construction for opening progressively from late April. A second stage for 1998 is under consideration, which would add an additional level to the three level building, for student accommodation units.

• **Professor Clive Pascoe** formerly of Southern Cross University has joined SAE as director of education, Professor Pascoe founded the Australian Contemporary Music Institute (ACMI).

## WIDGET WATCH

### SPEAKER ZONE SWITCHER

Did your high school principal ever get to use this one right? A basic 100v line distributed PA system needs one of these unless every speaker is going to get the message from above.

**Altronic Distributors** offer the Redback A2080, for individual or combination selection of up to 10 speaker zones.



Each zone can be up to 50 watts. An 'all call' button does what it suggests. An engravable strip is included for descriptions. Other A2080's may be strapped on for more zones. Connections are via screw terminals. R: \$229.

WRITE IN READER SERVICE # 301

## Perth AV Show Grows

By Rod Henderson, AV Communications, Malaga.

Some years ago many professional businesses in Perth had been running small shows or product releases each year with only small attendances.

I decided to front the opposition and asked if they would like to be a part of something that would get the numbers in. The answer was a reserved yes!

PRO-AV 95 sold out in two weeks with latecomers begging for space. Attendance was great and all exhibitors were of the opinion that PRO AV was well positioned for the future. PRO AV 96 moved to the Royal Show Grounds. More than 600 qualified customers came through the gate by invitation only. This was unprecedented in WA!

An imperative for the show's success was the low cost of space for exhibitors. The Perth market is too small to be able to handle over \$2000 for a 3x3 stall. We did it for only \$675.

At this price the local companies could afford to bring in some wise men from the east, spend a bit on handouts and in general, get products in front of their customers. The cost has risen slightly for this years show and is yet to be finalised.

The Perth PRO AV 97 will run for two days May 20 and 21, 1997 at the Perth Royal Show Grounds. Exhibitors are invited to contact the organising committee for space.

• Contact **Jerrold Lim** on Ph. (09) 377 3988 Fax. (09) 377 1836.

**EAW**  
**EASTERN ACOUSTIC WORKS**

**The Laws of Physics - The Art of Listening**

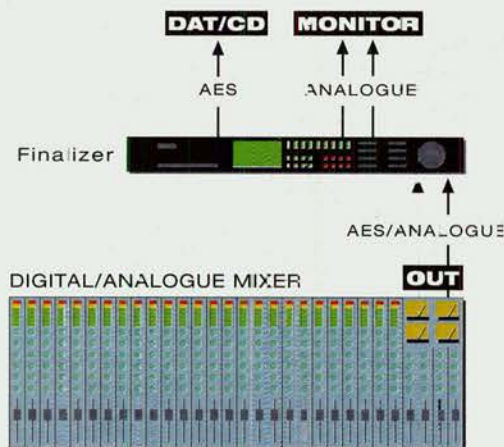
Sydney: Suite 406, 220 Pacific Highway, Crows Nest NSW 2065 Phone: (02) 9954 5100 Fax: (02) 9954 4927  
Melbourne: 6-8 Elizabeth St, Richmond Vic. 3121 Phone: (03) 9415 1585 Fax: (03) 9415 1595

Write in Reader Service No.123

# KNOCKOUT Punch



Want your mixes to deliver the punch and clarity of the industry heavyweights? Now you can... thanks to the *Finalizer™*. TC's revolutionary new concept in dynamics signal processing. Inserted between the stereo output of your mixer and your master recorder, the Finalizer can dramatically increase volume levels without sacrificing fidelity or stereo imaging.



The Finalizer creates that extra energy boost that would normally only be possible from a professional mastering facility. With its powerful multiband processing, it will make your mixes sound **punchier, louder, crisper, warmer, spectrally balanced, more "in your face"**... it's your choice!

The Finalizer's **'Wizard'** function easily finds the optimum setting for your mix: Simply enter the type of music you are mixing and to what extent you want it processed... and you are done! You can also "tweak" the signal path extensively with over 75 parameters to choose from. In addition, you will find

advanced signal analysis tools such as a Phase Correlation Meter, Peak-Hold Meter, Level Flow Meters, and a Digital Format Analyzer. We've even thrown in a Calibrating Tone Generator. All of the Finalizer's functions are easily monitored on the graphic LCD and on the seven precision LED meters.

Now even demo tapes can sound like a CD. With the Finalizer you can simultaneously:

- Convert It: 20 Bit precision A/D and D/A Convertors
- Shape It: Five band 24 Bit Parametric Equalizer
- Enhance It: Choose between De-Essing, Stereo Adjust or the Digital Radiance Generator™
- Normalize It: Real-time Gain Maximizer
- Expand It: Variable Slope Multiband Expander
- Squeeze It: Multi-band Compressor
- Trim It: Variable Ceiling Limiter prevents overloads
- Fade It: Manual or Auto Fade Tool
- Dither It: To maintain the highest resolutions on the digital AES/EBU and S/PDIF outputs

Naturally, the Finalizer fully lives up to TC's twenty year reputation for sound quality, specifications and construction.

Try it - you'll be knocked out: by what the Finalizer will do for your mix!

## Wizard | Finalizer

**t.c. electronic**  
ULTIMATE SOUND MACHINES

For information on the complete TC Electronic range please contact:

**Amber Technology Pty. Limited** ACN 003 231 187

Sydney  
Tel: 02 9675 1211  
Fax: 02 9675 1368

Melbourne  
Tel: 03 9699 1955  
Fax: 03 9699 1944

Brisbane  
Tel: 07 3831 8444  
Fax: 07 3831 8455



# SAFETY ASSOCIATION UP AND RUNNING

By Bruce Brown; Secretary; Showsafe.

ShowSafe was formed as a result of the ENTECH Conference Safety in the Performance Space held in Sydney in April 1996.

At the conference there was a wide consensus of opinion that the Entertainment Industry in Australia would benefit from uniform health and safety guidelines across all states and territories.

At meetings of interested parties following the ENTECH Conference it was also agreed that, for the broadest possible acceptance, national guidelines had to be formed with representation from and the involvement of all sectors of the industry.

Since April last year those meetings have continued and individuals have worked towards the formation of an Association.

The Australian Entertainment

Industry Health and Safety Association is now registered and is known as ShowSafe.

The interim objectives of ShowSafe are;

- To investigate and/or establish health and safety management systems including standards, codes of practice, and other information for the benefit of OH&S in the entertainment industry.
- To disseminate information so as to raise awareness and promote a culture of "Best Safe Working Practice" through education, training and the attainment of recognised standards of competency.
- To promote the interests of health and safety in the entertainment industry through;
- Involving the broadest consultation and representation in-

cluding, but not limited to, employee and employer bodies.

- Networking with other organisations in Australia and abroad in order to encourage improvements in OH&S in the industry.

- Creating, where necessary, working parties to foster national conformity in health and safety practices in the industry.

Membership of ShowSafe is tripartite in nature so as to represent employees, employers and industry associations. The Associations business is conducted by the Committee of Management comprising elected appointees that include balanced representation of major organisations in the entertainment industry.

We are concerned that ShowSafe be representative of the Entertainment Industries di-

versity, we welcome the participation of any industry player interested in advancing the cause and we welcome submissions from interested parties who believe they have worthwhile contributions advancing Health and Safety issues in the Australian Entertainment Industry.

For more information please contact Bruce Brown Ph: (02) 9439-3427 Fax: (02) 9439-2680 Email: avtech@s054.aone.net.au



**Showsafe will hold a meeting at ENTECH 1997, on Thursday April 24th at 4pm.**

Go to meeting room 4 at the front of Melbourne Exhibition Centre.

## Hot Items-even Hotter Prices!

**Afterburner™** Rocketing its way through post production suites and live sound systems around the world, the unique ARX AFTERBURNER is the compressor/limiter of choice for demanding engineers everywhere. Single and Dual channel modes, great metering, Balanced in and Out. If you haven't tried one yet, now's the time.



RRP \$875!

**DDP-1** One ARX with the lot - two channels of Gate, Compressor and Limiter for critical applications everywhere. User friendly interface, metering that will keep the fussiest punter happy! Massive headroom, superb sound, Balanced In and Out. Ideal for Broadcast, Live or Studio. Put some real quality into your rack.



RRP \$999!

**Quadcomp®** The one that launched a thousand imitations! ARX's trailblazing Quadcomp® has been a mainstay of Live systems for years! Four State of the Art compressor/Limiters can handle anything you can throw at them. Great on Subgroups, channel inserts, anywhere you need to keep multiple signals under control.



RRP \$999!

**Sixgate™** More ARX innovation - Six full function gates in one rack unit! The SIXGATE can handle anything from a drum kit to a conference, and everything in between. Fast and silent optocoupler circuitry for transparent sound. Balanced In and Out with Sidechain/Key inputs. Use it once and you'll use it always!



RRP \$899!

Over the last 12 years, ARX has brought you a swag of original products that fill real needs in pro audio. All designed and manufactured right here in Australia, and sold in 45 countries around the world.

So if you're looking for Quality signal processing, designed to do its job properly, then check out the ARX range. It's never been better value than now. For your nearest dealer, call us. We'll be happy to help.



Vic/Tas: Tony Hosking 03 9877 8233; NSW/Qld: Iain Everington 041 118 3158; WA: Ian Ross 09 354 3185  
ARX Systems, 33 Advantage Road, Highett, Victoria 3190, Australia. Phone 03 9555 7859 Fax 03 9555 6747

Write in Reader Service Number: 124

## New Owners for Mark IV Audio

Mark IV Industries Inc has announced it has entered into an agreement to sell its ten-company professional audio division to an affiliate of Greenwich Street Capital Partners, a New York based private equity fund.

The professional audio division is one of several non-core businesses within Mark IV Industries, who plan to concentrate on core technologies.

The first thing to change will be the name of the audio firm, which incorporates a variety of leading name manufacturers. These include; Klark Teknik, Electro Voice, Midas, DDA, Altec, Dynacord and Vega.

The mood at Mark IV Audio is upbeat, with the Australian managing director Colin Formston very excited about the future. "I have met personally with the new owners and be-



*Colin Formston, Managing Director, Mark IV Audio, Australia.*

lieve that the next five years will be the most exciting our company has experienced".

Bob Papst, president of Mark IV Audio said: "We expect that having Greenwich as a parent company will produce very positive results for customers and employees".

The company operates direct in 9 countries and has an extensive worldwide distribution network, with over 50% of sales outside the USA.

Discussions between Mark IV Audio and Greenwich have included plans for major investment in improved manufacturing capability, increased expenditure for new product development and the introduction of new marketing programs.

Papst comments; "Beyond a new name for our company, which will be announced soon, the most notable change will come in how we do marketing."

"Greenwich has a keen interest in the audio business and it is clear that the interest is in dynamic growth and expansion", Papst concludes.

Watch this space for the new name of Mark IV Audio.

## Mark IV moves, + new VIC office

Mark IV Audio Australia is moving into dramatically larger premises, next to the former HQ in Sydney's Silverwater.

The new warehouse is considerably larger, offering 5 times the current pallet space. A new education and demonstration facility will be available as well as a dedicated Dealer Computer Design Room.

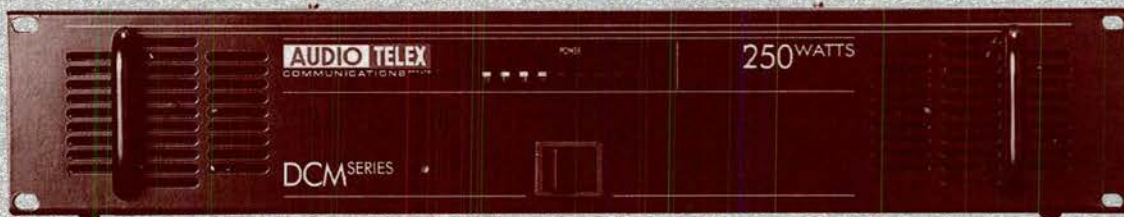
Office space is expanded 250%. The phone numbers are the same, the address is **Unit 23, Block C, Slough Business Estate, Slough Avenue, Silverwater NSW 2128.**

• Mark IV Audio Victoria has opened its doors, headed by well known audio guy Alan Mcilvide.

**Mark IV Audio Victoria,**  
63-67 Whiteman street,  
Southbank VIC 3006  
Ph (03) 9686-2469, f 9682-7001

### WHEN RELIABILITY UNDER TOUGH CONDITIONS IS MORE IMPORTANT THAN \$50. CHECK OUT OUR DCM AMPLIFIERS

(Price comparison based on our DCM120 power amplifier)



- |   |  |
|---|--|
| <input checked="" type="checkbox"/> OVERLOAD & OVERDRIVE PROTECTION | <input checked="" type="checkbox"/> TRANSFORMER BALANCED INPUT (XLR)       |
| <input checked="" type="checkbox"/> 100/70 VOLT & 4 OHMS OUTPUT     | <input checked="" type="checkbox"/> AC MAINS & 24V DC OPERATION            |
| <input checked="" type="checkbox"/> AUTOMATIC FAN COOLED            | <input checked="" type="checkbox"/> RACK MOUNTING WITH SOLID STEEL CHASSIS |

If your requirement is for continuous operation at maximum power, or emergency evacuation signalling from a battery back up supply, the new DCM series power amplifiers are an excellent choice at an affordable price. Their low profile 2RU height makes them cost effective and easy to mount.

Featuring efficient toroidal power and output transformers, fan cooled with very generous heat sinks to ensure reliable and robust performance within their specified load range, the DCM power amplifiers are already widely used in major sound installations in Australia & New Zealand as well as Singapore and Malaysia. AVAILABLE IN 120, 250 & 500 WATT RMS POWER RATING. Call us for a specification sheet and pricing

SYDNEY Tel: (02) 9647 1411 Fax: (02) 9648 3698 • MELBOURNE Tel: (03) 9562 8556 Fax: (03) 9562 8781  
BRISBANE Tel: (07) 3852 1312 Fax: (07) 3252 1237 PERTH Tel: (09) 356 2761 Fax: (09) 356 2762  
ADELAIDE Tel: (08) 234 9444 Fax: (08) 234 9441 • HOBART Tel: (002) 28 6373 Fax: (002) 78 1063  
NEW ZEALAND Tel: (09) 415 9426 Fax: (09) 415 9864

**AUDIO TELEX**  
COMMUNICATIONS PTY LTD

Write in Reader Service Number: 165

# Technology

## A simple explanation

*MIDI, GM and GS? Roland seek to ease your confusion....*

13 years ago the MIDI specification was developed. MIDI literally stands for Musical Instrument Digital Interface. The MIDI specification was put together by Roland and is as valid today as it was at the outset.

Then came the Standard MIDI File format (SMF)

Now, there was only one further are which needed refining to complete the set of standards and that was the way sounds were laid out.

General MIDI (GM) was agreed to and introduced by industry manufacturers. With General MIDI, core sounds would now be in the same place on different GM standard instruments (be they Yamaha, Casio, or any instrument provided they display the GM logo).

For example, sound #1 on all GM instruments would be an acoustic piano, and sound #49, strings etc. This holds true for all of the 128 sounds on a Gen-

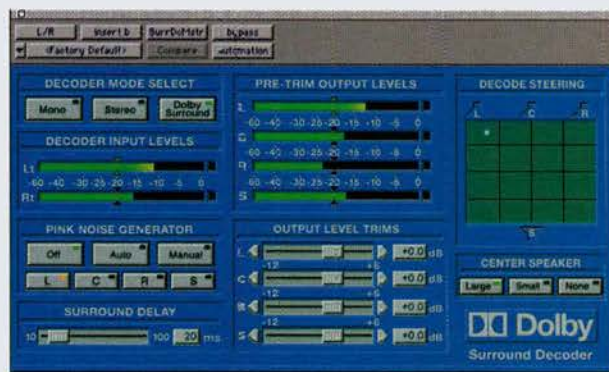
eral MIDI tone map.

Now, the difference between GM and the new GS standard is that for each of those sound families- let's say bass, GS adds a whole series of extra parameters such as panning, chorus and other parameters to enhance the quality and sound even further. So if you play two pieces on music data, one GM standard, and one GS standard, the GS standard will sound far more superior because sounds have been 'tweaked' a little bit more.

Consequently quite a lot of software developers have 'jumped' onto a GS standard and have written software to support the GS standard.

The purpose of tone mapping, the GS and GM standards is to facilitate the interchange of data to enable publishers to produce Standard MIDI Files that can be played on anyone's equipment that supports the standard. GS standard is the way to go.

## Dolby Surround Tools expand workstation productivity



In response to the growing demand for surround sound with everything from TV shows to video games, Dolby Laboratories has developed Dolby Surround Tools for DigiDesign ProTools workstations. The new TDM Plug-Ins provide Pro Tools users with Dolby Surround encoding and Dolby Pro Logic decoding without the need separate hardware. (A plug-in is like a software extension on your Mac. -Ed)

Running on the DigiDesign DSP Farm™ and operating en-

tirely within the Pro Tools environment, the new Plug-In allow mixing Dolby Surround videos, TV shows, ads, multimedia, music videos, and video games digitally.

They also make it possible to preview the effects of surround encoding on discrete four-channel material destined for use on film soundtracks ("4-2-4" monitoring).

"With rapidly growing base of more than 25 million home theatre and music systems worldwide equipped for Dolby Surround payback, producers are well aware of the need for surround-encoded programming," reports Nancy Byers-Teague, from DigiDesign.

"Producing Dolby Surround encoding and decoding within the workstation eliminates generations of digital signal conversions, and makes it more efficient for Pro Tool users to provide effective surround-sound mixes."

Separately-packaged Dolby Surround encoder and Dolby Surround Decoder TDM Plug-Ins are supplied on 3.5" Mac floppy disks. Among the encoder's features are built-in surround panners, and game mode encoder and positioner functions for use by video game and multimedia developers.

Decoder features include selectable mono, stereo, and surround monitoring modes; a set-up calibration system and surround delay controls; and centre speaker monitoring options.

## Road Shot



*Jimmy Buffett's US Banana Wind tour used 18 Aphex 661 tube compressor/limiters to enhance live sound. The mixing console is a Midas XL-4, quickly becoming de-classe (is that how you say it?) for Concert PA*

## Absolutely Monitored



Spirit has added two new compact earfield monitors to its popular Absolute range: Absolute 4P and Absolute Zero.

The Absolute 4Ps are professional active (amplifier inbuilt) nearfield monitors incorporating built-in amplification with individual power amps delivering 100W RMS to the woofers and 50W to the tweeters. The amps feature full thermal protection and what Spirit call an 'intelligent driver system' to provide maximum undistorted acoustic output.

A constant voltage crossover incorporates time compensation to align the drivers, while also improving tweeter power handling. The models also incorporate a balanced line level input with a stepped level control for

accurate setup.

The Absolute Zero (pictured above) is a compact nearfield system. Rated at 95 watts RMS into 8 ohms, the Absolute Zeros feature binding posts which will accept bare wires or banana plugs.

Available this month, the new Absolute models are designed for any studio monitoring application, including video edit and post-production suites - and in sound reinforcement. Distributed by Jands Electronics, the Absolute 4Ps are available for \$2495.00 per pair and the Absolute Zeros for \$695.00 per pair (recommended).

**Write in 302 on Reader Service Card for more info.**

## Next Generation EV Deltamax

Electro-Voice have announced the next generation of electronically controlled Deltamax loudspeaker systems. The first of the new series is the DMS 1185 active three way system, to debut

at ENTECH 1997

The unit utilises an EVX 180 18" speaker manifold loaded into the bottom of the box. This is an elegant solution to the problem of getting <enough> low frequency projection from a full range, reasonably compact box.

The mids are handled by a horn loaded DL12X 12" speaker. A neodymium top end compression driver and horn then sit in front of the 12" speaker. This mid/high assembly can then be rotated for horizontal use.

Aeroquip flying hardware top and bottom allows flying either way. The frontal dimensions are the same as the EV MT2, with which it can be flown.

**Write in 303 on Reader Service Card**



**AKG**  
acoustics

FREE T-SHIRT WITH EVERY WMS51 SET LIMITED OFFER

## WIRELESS MICROPHONES



**Simply wireless**  
**WMS 51**

**PLUG & PLAY**

**Handheld Transmitter**  
**HT 51**

**Bodypack Transmitter**  
**PT 51**



**Receiver**  
**SR 51**



**Top performance at a moderate price.**

- Powerful AKG-Sound.
- Plug & Play. Easy handling enables immediate use without any complicated set-up. Anywhere, anytime.
- Clear labelling and simple to use.
- High efficiency at an excellent price.
- 12 different channel frequencies available acc. to PTT regulations. Different frequencies are easily detectable by means of different colour codes.

**AWA** Distributed by AWA Distribution  
Phone: (02) 9898 7666  
Toll Free: 1800 252 391

Write in Reader Service Number: 137

Connections FEB '97 P17 (website www.compjob.com.au)



## ESP dual CD DJ Player

ESP Technology is an Australian brand, distributed by ELSTA of Sydney. Components and equipment sold under the ESP diamond shaped logo are sourced from various places around the world and here.

ESP products are to be exported to various countries.

The new CDD025 is a pro dual DJ CD player which retails at \$1295. According to ELSTA chief Rick Chisholm, ESP Technology is a hip and trendy brand".

Jog dials for searching and Shuttle dials for scanning have a major advantage over buttons. Single frame increments on the Shuttle make cueing a breeze.

The pitch range is a handy +/- 16% with a joystick to control pitch bend. It has looping, 2 cue points, onscreen pitch LED and illuminated play/pause button. 16 tracks can be programmed.

**Write in 304 on Reader Service Card for more info.**

## Earthworks Mic's for AAS

Australian Audio Supplies is pleased to announce the addition to its product range of the 'intriguingly-styled' and highly accurate Earthworks range of microphones.

The Earthworks TC30K and TC40K are both small-diaphragm, omnidirectional condenser mics that require 48-volt phantom power. These are sleek, tapered, brushed, stainless steel instruments that more closely resemble futuristic laser weapons than mics. They are normally supplied as a matched pair in a solid cherry wooden case, but they can be sold individually.

The TC30K retails for \$995 each or \$1995 for a matched pair; and the TC40K is \$1495 and \$2995.

Earthworks was formed by David Blackmer who was the founder of dbx.



**What they say about their TC40K:**

"Earthworks TC40K utilises a very small, very accurate omnidirectional element, a carefully crafted stainless steel body and innovative design to deliver time coherent response from 9Hz to 40kHz+. We contend that this time coherency and extended frequency response is essential for capturing sonic events accurately. The TC40K's response is within ±0.5dB from 20Hz to 20kHz."

**Write in 305 on Reader Service Card for more info.**

# JANDS THEATRE PROJECTS

Jands is Australia's largest supplier of fabric, drapes, screens, tracking systems and stage machinery to the theatre and cinema industry.

- Theatrical fabric
- Cinema masking systems
- Curtains and drapes
- Scenic and cyclorama cloths
- Projection screens
- Curtain tracking systems
- Stage machinery & parts
- Fire doors
- Audio/lighting design
- Consultations
- Quotations
- Installation

**JANDS**

001 187 882

Jands Electronics Pty LTD 40 Kent Road Mascot NSW 2020

Sydney: Phone (02) 9852 0909 Fax (02) 9852 0999 Melbourne: Phone/fax (03) 5829 2300 Mobile 019 185 186

Write in Reader Service Number: 115

# EASY SOLUTIONS

## *The Job*

High Flyers is a multi purpose venue with bar, restaurant and disco area. Management wanted a sound system versatile enough to provide each of the areas with high quality sound by day at moderate SPLs yet be capable of achieving up to 115dB on the disco floor. The system also needed to accept a variety of source inputs, have local zone volume controls and be easy to operate by their staff. The music mix was chosen to appeal to a wide but discerning audience and a full frequency response system with extended bass response was requested. As always, space and decor constraints were factors and the design had to fit in with the overall theme.

## *The Bidding Process*

Whilst the owners were familiar with Bose® 802's the challenge was to prove that a Bose design would meet their perceptions of how a system should sound. Scott Bulloch from Manawatu TV & Sound visited the site, originally a very substantial Post Office, and in conjunction with Bose elected to use Modeler® to test a design. Results were very encouraging and a decision was made to 'demo' the system to the owners. In spite of the venue not being complete the results as predicted by Modeler were easily achieved and the decision was made to run with Bose. Modeler engineering notes were later used by the installation team for placement and airing of all the speakers.

## *Selling Bose*

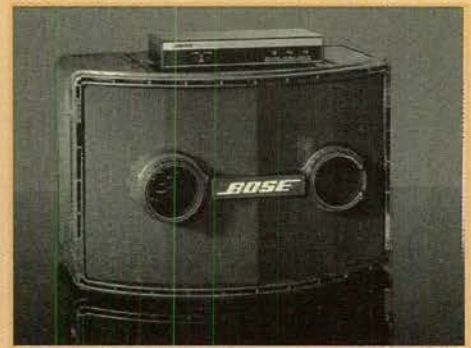
Manawatu TV & Sound offer a variety of professional speaker products but Scott says it is easy to sell the benefits of Bose. Most venue owners are familiar with the brand and many already own Bose Hi Fi components in their homes. In addition Modeler, by taking the guesswork out, gives us the ability to offer a Bose design which we know will work thus protecting ours and the client's investment. Finally, the aesthetics and small size of the product wins business. And for Manawatu TV & Sound, the reliability of a properly designed Bose system is an added bonus.

## *About The Dealer*



High Flyers owner: Chris Azey

Manawatu TV & Sound was formed in 1962 and concentrated on developing the local markets for TV, PA sound systems, radio communications and electronic service. Today, with five store fronts and a service division, the company has expanded to be a dominant force in the area. Apart from the well established core business, additional lines now include home appliances, whiteware, home audio (including Bose), musical instruments, computers, business communications and AV systems. They even have a recording and media studio.



The Classic BOSE 802 Speaker Cabinet

## *The System*

The disco, bar and café are all in the same acoustic environment but are split into three zones. The challenge of providing a logical and simple to use control system was met by a custom built Manawatu TV & Sound mixer/pre-amp which allows system source selection, (CD, video, TV or disco), and level control for each zone—the disco has its own sub mixer.

Manawatu TV & Sound has a considerable number of these units in sites around the area and they are well proven. The adjacent restaurant also gets its feed from the mixer/pre-amp and has its own local level control.

The disco uses 802s running in stereo for mid/high frequencies with a 502®B and a pair of Acoustic Wave® Cannors™ flown in the ceiling

locking after the bottom end. The bar also uses 802s with 5.2B bass reinforcement and the café uses a third pair of 802s running in full range. The restaurant uses a Freespace® One. All signals after the Manawatu TV & Sound pre-amp are processed via 1/3 octave EQs and appropriate Bose controllers before going to the Crown® MA2400 and 200 amplifiers fitted with PIF CLP cards.

# **BOSE**®

# **crown**

Distributed locally by Bose Australia 1 Sorrell Street, Parramatta, NSW 2150 Tel: (02) 9204 5111 Fax: (02) 9204 6122

## BBE add SonMax & D.I.'s

BBE announces the release of the dual channel 262 Sonic Maximizer. Housed in a stamped frame, 16 gauge steel box, this new Sonic Maximizer is built to withstand the rigours of the road. Its compact size (6.29"x1.33"x5.25") means that the event on the smallest stages, there is always room.

With independent PROCESS and LO CONTOUR controls on both channels, the 262 adds clarity, definition and unique tone shaping expressions to your music. The process is both front panel and remote switchable, and gives a "clarity" and "fullness" to acoustic and electric guitars, basses, keyboards, drums and any other

instrument or line level source you plug into it.

• BBE are also proud to announce the release of their first active direct boxes, the DI-10 and the DI-100.

The DI-10 accepts both line and speaker level signals via 1/4" jacks. Its speaker simulating FILTER, when engaged via a front



{Excuse me}

*Connections can be sent to you early, for \$3.95 per copy. Not only cheaper than at the newsagent but also delivered by a person in a uniform, often RIDING A BIKE!*

*Call now, 1-800-635-514.*

panel switch, effectively mimics the frequency response characteristics of a loudspeaker.

• The DI-100 goes one better, combining a single channel BBE Sonic Maximizer with a fully featured direct box all in the one compact unit. It can also be used as a stand-alone instrument pre-amp or as a single-channel BBE Sonic Maximizer for live sound and recording.

## tripleDAT - now with CDR

Digital Audio workstation developers Creamw@re, have released the latest update for their tripleDAT product

As well as offering superior digital audio editing and REALTIME effects, tripleDAT v2.3 now includes a CDR function - allowing your to write CD's directly from your tripleDAT audio arrangement.

The digital output is 100% Red Book compatible and PQ editing is included, allowing both TAO and DAO functions.

tripleDAT is catering for a broad range of applications from broadcast and production work to studio multitracking and mastering. Recent broadcast installations include 2MC, Rox Fm, 2MBS, 2CC, CSPR, TTT, 7TAB, SA Fm, 2EC, and 2GF.

• Details from Major Music Wholesale, Ph. 02 9525 4447

**Write in 306 on Reader Service Card for more info.**

.....The amazing NEW  
1029A & 1091A from Genelec - the  
multiple TEC AWARD winning active monitor  
manufacturers. Used stand-alone or with the matching  
subwoofer, these RF & magnetically shielded speaker  
systems represent a price breakthrough in professional  
monitoring. For less money than many conventional  
passive speakers, these new Genelec find  
applications wherever audio matters.  
Call for an audition today.

**ACTIVATE  
YOUR SPACE**

### STUDIO CONNECTIONS AUSTRALIA

**GENELEC**  
ACTIVE MONITORING

11/41-49 Norcal Road, Nunawading VIC 3131  
Phone: (03) 9874 7222 Fax: (03) 9874 7666  
Mobile: 0418 321 910

61 Honiton Avenue, Carlingford NSW 2118  
Phone: (02) 9873 3994 Fax: (02) 9873 3995  
Mobile: 015 201 537



Write in Reader Service Number: 182

## Allen & Heath Introduce GL4000 - flagship live mixing console

Allen & Heath have introduced the GL4000 - their new flag-ship mixing console. Like the GL3000 and GL2000, the GL4000 is a Front of House mixer which is also designed to be a dedicated On-Stage Monitor Mixer or it can double up to perform both roles simultaneously.

In its Dual Functional role the GL4000 can provide 8 sub-groups for FOH and up to 10 busses for On-Stage-Monitor, all on faders.

In Monitor Board Mode, the GL4000's 10 dedicated monitor sends can be supplemented with two separate side-fill or in-ear monitor sends bringing the total outputs to 12. The Engineers' Wedge facility enables the engineer to monitor and talkback to each send separately.

Frequency control on the GL4000 is via a 4 band full sweep EQ and 'Q' control. The 8 instant access Mute Groups are supplemented by 128 Mute

Patches with MIDI Interface, allowing automation to cues.

Full input metering is provided by 4 segment Prefade LEDs on Inputs, Groups, Left, Right and Mono Outputs and Auxilliary Masters.



Postfade metering is switchable between Main Outputs and Auxes and is displayed on 12 segment LEDs.

An optional illuminated VU meter bridge is available for further monitoring, VU's being pre-

ferred by Allen & Heath for their security of display in bright light conditions.

Four stereo inputs are supplied as standard each having the same mic preamp as the

balanced for elimination of external noise.

All the Auxiliary sends have inserts and in addition to the Matrix and Aux connectors can be reversed to provide Matrix Outs on balanced XLR's with balanced inserts.

The GL4000 is available in 24, 32, 40 and 48 channel frames all optionally available with Allen & Heath's proprietary SYS-LINK™ which allows other Allen & Heath console to be linked together to provide additional inputs to the mix.

GL4000/24, 32, 40 and 48 have retail prices of \$16,950, \$21,950, \$25,950 and \$29,950 respectively.

Allen & Heath is distributed in Australia by A.R.Audio Engineering.

**Write in 307 on Reader Service Card for more info.**



### interM by INKEL

#### PC - 1635 STEREO POWERED MIXER

- Rated Power: 350 Watt x 2/4 Ohms
- 12 Mono Input & 2 Stereo Input
- Amp THD: Less than 0.01%
- 3 Band EQ per Mono Input (MID-Sweepable), 3 Band EQ per ST Input
- XLR Jack for Mic Balanced Input
- Insert Jack each Input
- 2 EFX Send, 2 Stereo EFX Return, 2 Monitor Output
- Trim Control, Clip LEDs
- +48V Phantom Power
- 7 Band Stereo Graphic Equaliser (63, 160, 400, 1K, 2.5K, 6.4K, 15kHz)
- Amp Output (Speakon, 1/4" Jack)
- DSP Feature: 16 Program x 16 Parameter (256 Preset Effects), 16 Bit Digital Signal Processor, 44.1 kHz Sampling Frequency
- Program Function: 1. Hall, 2. Room, 3. Plate, 4. Vocal, 5. Ambience, 6. Orche, 7. Session, 8. Studio, 9. Percus, 10. Drum, 11. Solo, 12. Gate, 13. Power, 14. Reverse, 15. Delay, 16. Echo
- RRP \$3000.00

**MAGNA**  
SYSTEMS AND  
ENGINEERING

Australia:  
Magna Systems & Engineering  
4-5/500 Waverley Rd, WILMORE P.O. ACN 004 004 997  
7 Gibbes Street, Chatswood, NSW 2067.  
Phone: (02) 9417 1111 Fax: (02) 9417 2394

New Zealand:  
Magna Techtronics (NZ) Ltd.  
Level 4, 210 Khyber Pass,  
Newmarket, Auckland.  
Phone: (09) 307 3901 Fax: (09) 307 3832

## DLP: new technology



Anders+Kern announce the new AstroBeam 330, a Data and video projector using the new DLP-System developed by Texas Instruments.

The projector displays a bright and contrast rich image with 16.7 mil. colours and up to SVGA, 800 x 600 pixel, resolution. The brightness is 500 ANSI lumen. A unique colour management system guarantees always optimal colour reproduction, according to A + K.

Features include a newly developed Stereo-Soundsystem with two powerful speakers and multiplex input for Video and

Audio. A simple "point and click" procedure allows for easy operation via the menu system.

Included is a powerzoom for fast image size and focus correction and an interactive Mouse-Control which works with PC and Macintosh computer via the Slide Works software package.

Despite all the features, A + K claim the AstroBeam 330 is currently the smallest DLP projector available, and is supplied with a hard-shell carry-on case.

**Write in 308 on Reader Service Card for more info.**

## ConferenceLink: the performance telephone

The conference industry is dwarfed by the number of people in business who simply need to communicate as a group. Gathering around a PABX handset for a conference call is like shouting into a pipe.

Enter products like the ConferenceLink CS1000 (pictured below). It's a full duplex speakerphone, duplex meaning simultaneous two-way. No clipped words or sentences.

Three inbuilt microphones and auto gain control provide room coverage. If you seek to

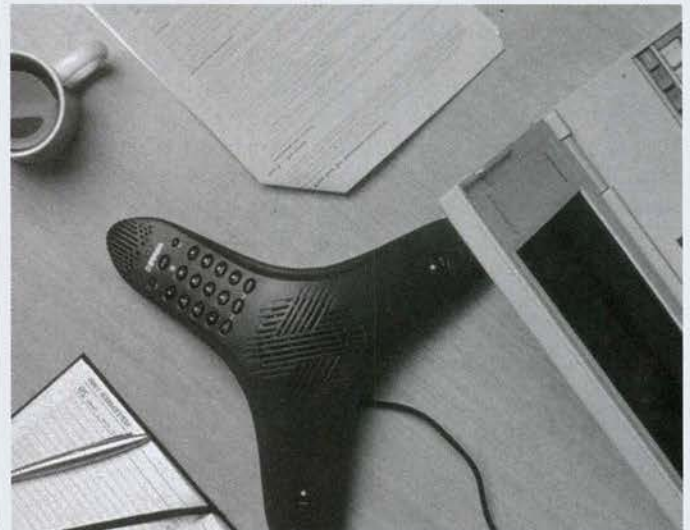
use it on a large conference table then you can get optional extension microphones.

Telephone line connection is standard analogue tone/pulse compatible, and optional digital interfaces are available for your PABX or digital system.

There is a mute button on each of the three arms with a mute LED.

Made by US Robotics, and distributed by Production Audio Services.

**Write in 310 on Reader Service Card for more info.**



## Auto Scan Projector by Mitsubishi

Mitsubishi Electric introduces a new Auto-Scan projector. The VS1281E accepts horizontal scan frequencies from 15 to 103kHz, and vertical frequencies between 40 and 15Hz.

The VS1281E incorporates a newly developed 7" CRT with impregnated cathode and an electro-magnetic focusing system. This feature allows a high level of brightness and improved cathode life.

The Flexible Optical Coupling (FOC) lens allows the use of a wide range of screen sizes from

70 to 300" (diag), whilst maintaining contrast performance.

Mitsubishi has developed a special IC to implement Full Dig-

automatically calculate a further 200,000 points, for each of the red, green and blue channels resulting in a clear picture, free of colour misalignment.

These features make the Mitsubishi VS1281E suitable for a wide range of display applications such as video, personal computer graphics, CAD/CAM, corporate presentations, educational institutions, clubs, industrial control, entertainment and theme parks.

List price is \$23,500.00 ex tax.

**Write in 309 on Reader Service Card for more info.**



ital Convergence Control, allowing simpler picture adjustment.

The Easy Adjust function uses 25 points on a five by five grid to

## Internet audio & video done easy!

WEBCASTdotCOM is Internet server software that can be used to integrate audio and video broadcasting into your Web site or server.

Once installed it'll broadcast a continual stream of video and audio program material down normal phone lines at the rate of 100 Kb per second. An audience can view this in realtime without downloading delays.

The technology is not Internet or intranet specific. It is stated that it will work on modems as slow as 14.4.

**• Details- MegaVision, (02) 9966-1488.**

# All under the same roof!



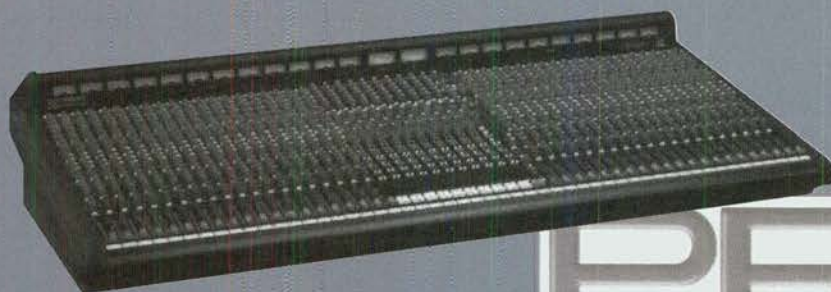
**CKS**  
**CKV**  
**SERIES**

**CA**  
**SERIES**



**LMx**

**TC**



**PRO**  
**SERIES**



**Vs**  
**SERIES**

The entire range of Crest Audio power amplifiers and mixing consoles is now available from Production Audio Services. The Crest name has well established itself at the pinnacle of the audio market, first with power amplifiers and now with consoles. Crest has amplifiers ranging from the affordable Vs Series to the top of the line Pro Series. The range of Crest Consoles is expanding rapidly and now includes the LMx, the ultimate in monitor consoles.


All your Crest needs now available under the one roof...Production Audio Services.



PRODUCTION AUDIO SERVICES PTY LTD

MELBOURNE: 6-8 Elizabeth St., Richmond, VIC 3121 Ph: (03) 9415 1585 Fax: (03) 9415 1595

SYDNEY: Suite 406, 220 Pacific Hwy., Crows Nest, NSW 2065 Ph: (02) 9954 5100 Fax: (02) 9954 4927

**CREST**  **CREST**  
**AUDIO** **CONSOLES**

Write in Reader Service Number: 122

It's 100% obvious what this is. If you can't work it out, then you have a problem. And no, I'm not talking about the truck tyre! The product is called CHECKERS, it has lineal and corner sections, is polyurethane, lightweight, and comes in standard (for cables up to 1.25" dia) or HD (3.25" dia).



Write in 312 on Reader Service Card for more info.

## Harry to take AT onwards out of QLD

Acoustic Technologies are one of those companies many know of but few south of Queensland really know of. Founder Harry Lloyd Williams has been at it for over 20 years, and his products have always sold incredibly well in the North.

As Harry tells it, AT is now poised and keen to establish a tight but workable dealer network nationally. Until 1996 the firm was too diverse to consider this. They were active in installations, built diverse products, and operated a rental division.

In 1996 they realised the way forward was to specialise, and so they stopped installation work and pared back the product lines they manufacture.

The Brisbane based firm is now concentrating on manufacture of speaker systems and power amplifiers alone. They also still retain driveway hire.

The product range runs upwards from a soon to be released ultra compact installation box to the Tomcat PA system.

The **FRO-1** (below) is a compact trapezoidal box with inbuilt (passive) crossover. It has a 12"



bass/mid transducer, with a 1" high frequency compression driver. The drivers are all proprietary designed and are from the USA, with AT having forged long term supplier relationships over the past decade.

There are two kinds of speaker systems like this. Anyone can make a box and screw in the drivers. We see these 'anyone' designs everywhere.

To do it properly you must analyse the components and tune the enclosure. AT definitely do this, there is science and physics in the design and the result is in the listening and in the durability. They have many user testimonials and have already sold hundreds of FRO-1's.

Harry is looking for dealers, call (07) 3376-4122.

Write in 313 on Reader Service Card for more info.



*a touch of excellence*



**M.I. 8**

|                     |               |
|---------------------|---------------|
| Frequency Response  | 50Hz - 20kHz  |
| Power Handling RMS  | 150W          |
| Enclosure Material  | Polypropylene |
| Sensitivity (1W/1M) | 93dB Nominal  |
| Impedance           | 8Ω SPL        |
| Programme Power     | 300W          |

**M.I. 8 \$490 rrp**  
**M.I. 12 \$999 rrp**  
**SUB 18 \$1300 rrp**



**M.I. 12**

|                     |               |
|---------------------|---------------|
| Frequency Response  | 45Hz - 20kHz  |
| Power Handling RMS  | 300W          |
| Programme Power     | 600W          |
| Sensitivity (1W/1M) | 98dB SPL      |
| Nominal Impedance   | 8Ω            |
| Enclosure Material  | Polypropylene |



**SUB 18**

|                     |              |
|---------------------|--------------|
| Frequency response  | 35Hz - 500Hz |
| Power Handling RMS  | 500W         |
| Programme Power     | 1000W        |
| Sensitivity (1W/1M) | 100dB SPL    |
| Nominal Impedance   | 8Ω           |

**Blamp System**

*The SUB 18 combined with the M.I. 12 enclosure makes for an **EXPLOSIVE 800 W (RMS) SYSTEM COMBINATION***

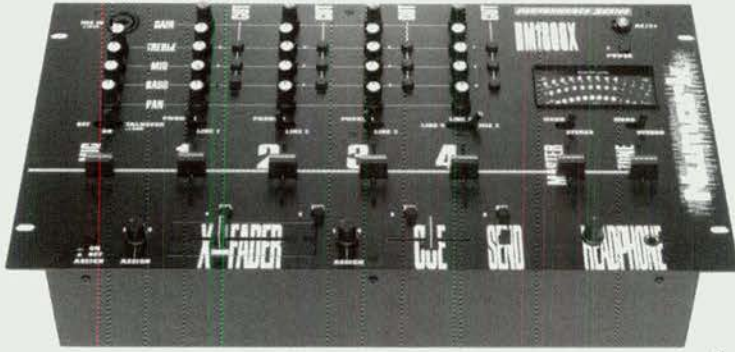
**M.I. 8 and M.I. 12**  
Stand alone systems which stand very nicely against any international competitor - audition and be surprised.



**MAGNA SYSTEMS AND ENGINEERING**

**Magna Systems & Engineering**  
 A trading division of Silklore P/L. ACN 004 004 997  
 7 Gibbes Street, Chatswood, NSW 2067.  
 Phone: (02) 417 1111 Fax: (02) 417 2394

Write in Reader Service Number: 144



## NuMark DM1800X

DJ needs. Typical of this is the DM1800X mixer, pictured at left.

Each input has an input gain control and a PFL (pre fade listen) button. These are NOT typical of DJ mixers, although mandatory on live PA mixers. Now a DJ can match input gain before putting the signal out. Individual bass, middle and treble controls are also on each input, WITH an on/off switch and indicator lamp.

This is to enable the mixing of different tracks together and the deletion of part of one. Like the bass track. It also allows the DJ to 'phase' the bass track,

which basically involves turning it on and off on the back beat.

The crossfader can be replaced by a user too. This is because DJs like to try to snap the fader by vigorous action. The DJ / fader relationship is likened to a big fight, every night.

An effects send can be punched on or off too. Master output gain is independent of a second zone, which also has a gain control. Output is balanced.

NuMark say a popular DJ CD called 'Journeys by DJ' was actually mixed on the 1800X.

Priced at \$999. From ULA.

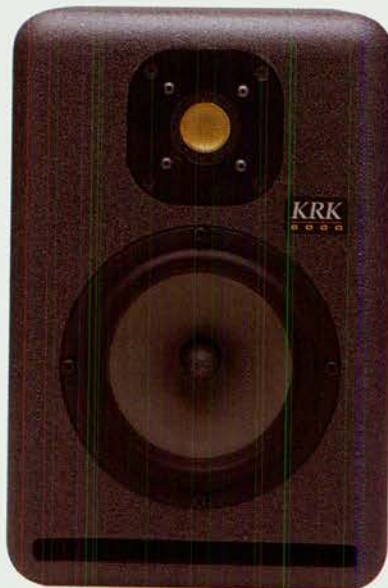
There's something of a music revolution happening out there, unseen by many traditional music practitioners. It's DJ culture, which funny enough is the name of a new trade gathering in London this May. We saw first hand what this means when 1,300+ DJ enthusiasts burst our infrastructure last ENTECH for the DJ World Championships. An-

other 1500+ were outside trying to get in!

Essentially there are two kinds of DJ's out there. The old kind (weddings, suburban club on Friday night) and the performance DJ. This person creates sounds.

NuMark have created a new line of disco mixers which are original, and not copies of the generic model everyone thinks a

## Simply Perfect



### KRK 6000

CLOSE-FIELDS

#### Syncrotech Systems Design Pty Ltd

9c Gibbes St. Chatswood, NSW 2067

Tel: (02) 9417 5088

Fax: (02) 9417 8360



#### KRK Monitoring Systems

16462 Gothard Street • Unit D

Huntington Beach, CA 92647

Tel: 714.841.1600 • Fax: 714.375.6496

Write in Reader Service Number: 180

## BUYERS GUIDES

Each month we list available representative equipment from all distributors. Distributors: to get listed CALL US on (02) 9876-3530.

Deadline: 1st of the month prior. (ie: March 1st for April)

**Feb** Studio Monitors. Truss, Flying systems, rigging

**March** Wireless Microphones, Video Projectors, Moving Lights

**April** EQ's, Crossovers, Limiters, Signal Processors, Film & TV Studio lighting

**May** Effectors, Reverbs, delays. Effects Lighting

**June** Live Mixing Consoles. Profile, PC Spots

**July** Lighting control, **NEW:** Video splitters, interfaces & 'black boxes'. **NEW:** DJ mixers and samplers.

**August** Studio Mixing Consoles. Dimmers

**September** Microphones. Fresnel spots, Floodlights

**October** Amplifiers, Samplers. Followspots

**November** Loudspeaker systems. Fog Machines

**Dec/Jan** Recorders & Recording software, DAWs. The MONSTER recording buyers guide!

Also: Scrollers, colour changers.

**\* TO GET A BACK COPY OF ANY ONE CATEGORY:** Send \$5 to BG, PO Box 439, Epping NSW 2121. Or call (02) 9876-3530- we fax or mail it to you.

## MAJOR TRADE SHOWS

• **Suddenly**, in the mail comes news of yet another trade show! And surprise surprise, it's on NOW. TV Australia 'The film & TV Production Show' will be held at Sydney Exhibition Centre, Feb 24>26th.

• **MusikMesse Frankfurt:** Feb 26 - Mar 2nd. Call +49 69 7575-6662

• **REPLItech Europe:** March 13-15. Spain. Fax +1 914 328-2020

• **NAB '97:** April 7 - 10, Las Vegas. Call +1 202-775-4988.

• **NCSA 1997:** April 16 - 20. New Charlotte Conv. Centre, USA.

• **ENTECH '97:** Melbourne Exhibition Centre, April 23 - 25, 1997.

The entertainment technology trade show and convention- ENTECH Conference: DVD and Pro Audio - April 22nd.

ENTECH Conference: Industry Technical Training- April 22nd

ENTECH Conference: Hi-Tech Retail & Issues - April 23rd.

THE ENTECH AWARDS: Plaza Ballroom, April 24th.

ENTECH is held annually, appearing in Sydney in 1998. Promoted by Connections Magazine, call +61 (0) 2 9876-3530.

• **Venue Management Association Conference.** Melbourne Exhibition Centre, April 23 - 25, 1997. Call (02) 9876-3530 for details.

• **SHOWLIGHT '97,** Ghent, April 28 - 30. Call +44 1 323 642-639.

• **PALM CHINA '96,** 25 - 28 May, Beijing. Call +65 227-0688.

• **REPLItech Int,** 3-5 June, San Jose, USA. Fax +1 914-328-2020

• **INFOCOMM,** June 5 - 7, LA Convention Centre. +1 703 273-7200

• **NIGHTWAVE '97.** June 7 - 10, Rimini, Italy. +39 541 711-249.

• **SMPTE,** Sydney Exhibition Centre. July 1 - 4. Call (02) 9977-0888

• **PALA '97.** July 14-16, Singapore WTC. +65 227-0688

• **PLASA 1997.** Sept 7-10th, London. Call +44 323 410-335

• **AES 103rd.** Sept 26-29, New York. Fax +1 212 682-0477.

• **AIMS '97.** The Australian International Music Show. Early October.

• **REPLItech Asia, new dates:** Hong Kong, Nov 5-7 Fax +1 914-328-2020

• **Vision & Audio '97,** Nov. 4-6, Earls Court, London.

### Cultural Festivals: Australia:

**Sydney Gay and Lesbian Mardi Gras** 1 Feb-1 Mar. **Perth** 14 Feb-9 March. **Adelaide** 27 Feb-15 March. **WOMAD** 27 Feb- 2 March. **Canberra** 8-17 March. **Australian Festival for Young People** 21 Mar- 6 Apr. **Darwin** 15-31 Aug. **Brisbane** September 1997.

## CASH!

### AIRPLANES

By Julius Grafton

**C**harming. A letter to the Sydney Herald details a flight the reader experienced last August to San Francisco. The airline was United, the aircraft a 747-400. The problem: the toilets stopped flushing.

The aircrew declared them unservicable, then relented 2 hours from landing (after 11 in the air) and allowed the pax to (kind of) use them. The writer complained his three letters to United drew no response.

I had a United flight leave LAX 40 minutes late because the cabin lights wouldn't turn off. So no movie and a long, bright night.

• Problems do occur .... a Qantas flight 2 hours out from London ran out of water last year. Try brushing your teeth in beer!

• Doctors apparently are good at demanding upgrades upon checkin with the threat that unless upgraded they will not answer medical emergency calls when airborne. Sounds fair enough to me!

• How about landing after a long flight then sitting belted into your seat for one hour because the airport hasn't got a gate free? Happened to me in Kuala Lumpur.

• Send us your airline surprise stories!

## DOLLAR HISTORY

HOW the A\$ has fared over time.

One Australian dollar would buy:

|             | \$US        | Yen       | £           | DM          | \$\$in      |
|-------------|-------------|-----------|-------------|-------------|-------------|
| 1965        | 1.14        | 403       | 0.39        | 4.46        | 3.25        |
| 1970        | 1.12        | 400       | 0.46        | 4.05        | 3.22        |
| 1975        | 1.33        | 392       | 0.59        | 3.11        | 3.15        |
| 1980        | 1.16        | 251       | 0.49        | 2.03        | 2.52        |
| 1985        | 0.66        | 165       | 0.51        | 2.02        | 2.10        |
| 1990        | 0.77        | 98        | 0.39        | 1.18        | 1.45        |
| <b>NOW*</b> | <b>0.78</b> | <b>92</b> | <b>0.46</b> | <b>1.26</b> | <b>1.10</b> |

30 day trend ▼ ▲ ▼ ▲ ▼  
Trendline: fall means A\$ weakens, imports cost MORE, while exports earn less. And vice-versa. It takes TIME to take effect.

**NZ\$ at publication: \$1.10 ▼**

\*At 21/1/97. All rates indicative only. Check with your bank.



## World Weather trend, FEBRUARY

| Where?        | Temp °C | Rain mm |               |       |     |
|---------------|---------|---------|---------------|-------|-----|
| Auckland      | 23/16   | 94      | Manila        | 31/21 | 11  |
| Bangkok       | 33/22   | 29      | New York      | 4/-2  | 74  |
| Beijing       | 5/-7    | 5       | Paris         | 7/1   | 46  |
| Chicago       | 2/-6    | 41      | Perth         | 29/17 | 12  |
| Dubai         | 24/14   | 23      | Rome          | 13/5  | 62  |
| Frankfurt     | 5/-1    | 44      | San Francisco | 15/6  | 89  |
| HoChiMinhCity | 33/22   | 3       | Seoul         | 3/-7  | 21  |
| Hong Kong     | 19/14   | 42      | Shanghai      | 8/1   | 92  |
| Jakarta       | 29/23   | 300     | Singapore     | 31/23 | 175 |
| Kuala Lumpur  | 33/22   | 169     | Sydney        | 26/18 | 102 |
| London        | 7/2     | 40      | Taipei        | 13/12 | 147 |
| Los Angeles   | 18/7    | 74      | Tokyo         | 9/-1  | 73  |
|               |         |         | Toronto       | 0/-7  | 58  |

## GOING to:

**MusikMesse Frankfurt: Feb 26 - March 2nd.**

**ENTECH Melbourne: April 23 - 25.**

**Just call Rhonda: SYDNEY 9237-2905 for travel!**

# STAGE & SCREEN

TRAVEL & FREIGHT SERVICES PTY LTD





## QUICK JOB DONE WELL

*Noisebox deliver the goods for Xmas. Club installation profiled*

Sydney installation firm Noisebox Entertainment Systems refit nightclubs on a regular basis, one recent job came with less than a weeks notice. Connections observed activity beneath the company watering hole, the salubrious Epping Hotel and walked in on hell.

Tracks Nightclub is fifteen years old, and management were motivated by a sudden refit of the nearest competitive venue. They decided to give Tracks the once over, Noisebox had quoted some time previously and won the job on the strength of their previous service work.

John McCauley owns Noisebox, which comprises a staff of six who install and service technology from video to lighting, audio to neon and beyond. Expertise is the currency they trade - and continual service contracts lead to work such as Tracks.

### TURBO PUT TO PASTURE

The Tracks job entailed all new audio, with the old Turbosound TMS3 speakers put to pasture. These were wrong for the room with the horn loaded design needing a longer room for the sound to properly propagate. EV Deltamax was chosen as the replacement, Noisebox quote several major brands but seem to end up installing Deltamax most often.

Martin moving lights and the usual complement of things bright were also part of this installation. John McCauley says Martin is easy to use, the PC control system is very friendly.

Getting back to the audio system, the Deltamax speakers chosen were the 1152 boxes, which feature one 15" woofer with a 2" throat (4" diaphragm) DH1-A compression driver mounted on a constant beamwidth horn. This trapezoidal box handles full range signal with industrial strength. Four were used, a pair of EV Deltamax

DML2181 sub woofers did the ultra-low duties, each is loaded with 2 x 18" woofers in a manifold layout.

The amp choice was EV too, with one P3000 amp driving the two subwoofers for 1200 watts per channel into 4 ohms. The 15" speakers in the 1152's were driven by a P2000 amp, for 800 watts into 4 ohms, while the 1152's horns were fired by a P600 amp for 180 watts per channel.

While the combination looks pretty straightforward, Deltamax features signal processing which takes the place of active crossovers. Briefly for the uninitiated, every speaker system needs a crossover top split signal between woofer and horn. This is often done within the box, using a 'passive' crossover made up of coils and capacitors which is has an efficiency cost.

When crossover functions are done outside the box, the crossover is active, meaning it splits a fullrange signal before amplification. Thus the amp layout referred to above has different amps amplifying different components.

Deltamax goes further, with the crossover functions joined by equalisation and system protection functions in a Deltamax controller. This one rack unit box sits with the amps in the amp rack, and is tweaked (calibrated) to the point where the amplifier clip's (distorts). Noisebox align the controller in the workshop, matching the protection function to the clipping point of each amp. This is done behind a



*Chaos rules. EV boxes in the foreground, frazzled tech looks up....*

## Earthworks Microphones...Awesomely Accurate!



Earthworks was formed by David Blackmer, founder of dbx™. "Our goal is to capture and truly reproduce the experience of live sound, upgrading the audio chain from mics to speakers".

Earthworks TC30K & TC40K microphones are optimised to deliver clean impulse

response. They utilise a very small, very accurate omni directional capsule, a carefully crafted stainless steel body & innovative circuit design...they come about as close to the ideal as physics will allow it to. SOUND ON SOUND (UK). They are normally supplied as a matched

pair in a solid-cherry wooden case. The TC30K retails for \$995 or \$1995 for a matched pair, the TC40K retails for \$1495 and \$2995.

For more information and the location of your nearest Earthworks Reseller, contact: Australian Audio Supplies • Tel (043) 291 711 • Fax (043) 291 747 • [ausaudio@acay.com.au](mailto:ausaudio@acay.com.au)

**Australian Audio**  
S U P P L I E S

Write in Reader Service Number: 167

# NETWORKING IS THE KEY TO SUCCESS AND ONLY SAE HAS A NETWORK OF COLLEGES.

**MORE PRACTICAL  
EQUIPMENT THAN ANY  
OTHER PRIVATE COLLEGE OR  
UNIVERSITY IN AUSTRALIA.**

**ALL OUR AUDIO STUDENTS  
ARE GUARANTEED  
INDIVIDUAL STUDIO TIME.**

**ALL OUR MULTIMEDIA  
STUDENTS ARE GUARANTEED  
THEIR OWN MULTIMEDIA  
COMPUTER WORKSTATION.**

Accredited in Australia by:



VETAB  
(NSW)



Nationally  
Recognised  
Training



VETAB  
Victoria



MEMBER  
ACPET  
National



(QLD)



Southern  
Cross  
University



DEET  
National



ARC  
South  
Australia



Approved  
Training  
Provider

University  
Western  
Sydney  
Macarthur

**AUSTUDY  
APPLICABLE**

## FULLY ACCREDITED CERTIFICATE - DIPLOMA - UNIVERSITY DEGREE IN AUDIO ENGINEERING, MUSIC AND MULTIMEDIA.



Call any of our colleges to obtain a free brochure and organise a full inspection of our facilities:

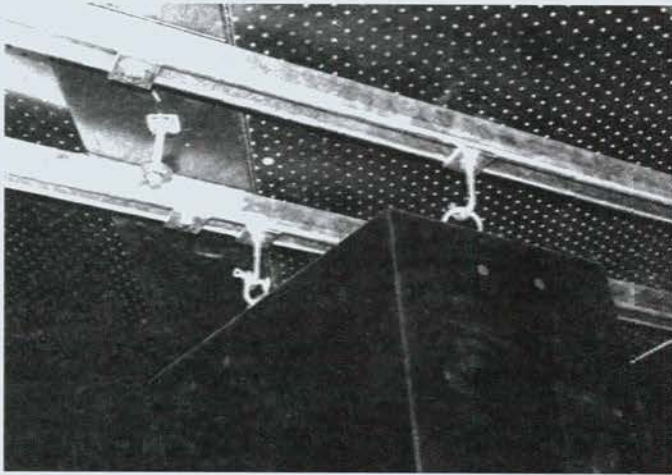
**SYDNEY**  
**MELBOURNE**  
**BRISBANE**  
**ADELAIDE**  
**PERTH**  
**HOBART**

68 Wentworth Ave. Surry Hills NSW 2010 Tel. (02) 9211 3711  
14-16 Fitzroy St. St.Kilda VIC 3182 Tel. (03) 9534 4403  
22 Heussler Tce. Milton QLD 4064 Tel (07) 3367 0143  
18-20 Deeds Rd. Camden Park SA 5038 Tel. (08) 8376 0991  
231 Adelaide Tce. Perth WA 6000 Tel. (09) 325 4533  
164 Elizabeth St. Hobart TAS 7000 Tel. (03)6231 5446

<http://www.saecollege.edu.au>

LONDON PARIS MUNICH MILANO AMS-TERDAM STOCKHOLM BERLIN GLASGOW SINGAPORE KUALA LUMPUR VIENNA ZURICH

Write in Reader Service Number: 141



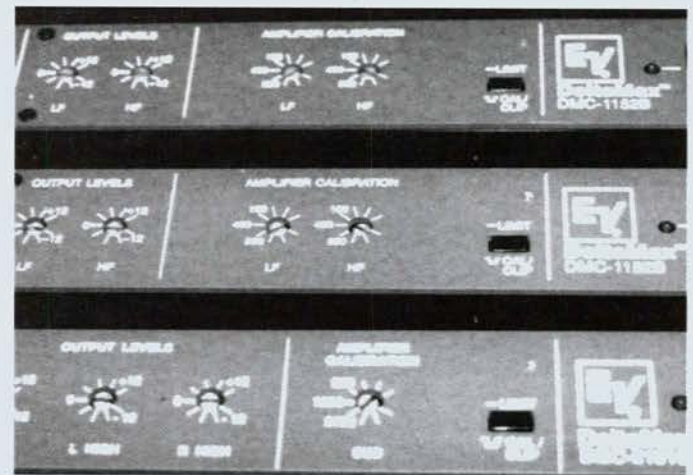
Unistrut speaker mounting technique

security panel so pesky DJ fingers cannot alter.

The protection function is called 'voltage clamp' by EV who are keen to avoid misunderstanding. This comes from the marketing activities of Renkus Heinz who flooded the market here with 'Smart System' processor controlled PA products in the mid 1980's. The Smart System featured a diabolical form of sys-

tem protection within the system controller based on a floating crossover point. At normal levels the Smart System utilised an 800hz crossover point to the horn. As the gain wound up the crossover point shifted upwards. It started to sound awful. Needless to say, EV don't use this method.

Noisebox hung the boxes and lights, wired the equipment back



Delimax controllers, dual mono at top for main system, sub at bottom

to a new DJ position, and debugged and commissioned everything for the opening. As installations go it ranks as semi-major, given the time frame it was amazing.

Connections saw the job in progress, examined the final work and has experienced the thing in action since. Our observation: a well executed installation. The venue is 1997 trendy

with mirror everywhere and no carpet. It's got the oh so groovy painted floor, so the acoustics are trash. The sound of the install is big and loud, which is what a room full of clubbers likes.

For Noisebox the long term service obligations are well known, because the spec is similar to what they have been installing for quite some time.

## Soccer System

Soccer is fast becoming a mainstream sport in Australia with growing attendance's at games in every state. One team who are doing well this year is Sydney United based at Edensor Park in Sydney's west. To cope with increased attendance's, the stadium management decided a sound system update was needed. After discussing their application with a number of companies they chose an Audio Telex/Peavey AA solution which was purchased from, and installed by TCP in Sydney. The system needed to be full range as both high level voice and music reproduction was required. It also needed to project evenly across stadium as well as to the crowd areas at each side of the grandstand. The stadium has a capacity of 11,000 and all viewing positions needed to be covered by the system. A central cluster was deemed to be the best solution.

The main cluster consists of five Peavey AA640-2 Constant Directivity Flares with AA4000T2" compression drivers

complimented by ER1500 sub-woofers. Three full range PR1580's were also used to provide the grandstand fill. The complete cluster is driven by three Peavey IP1-3K amplifiers. All input signals are fed into an Audio Telex TX8000-1 pre-amp which in turn is connected to an Oxmoor MDA-26 Distribution Amplifier. From the Oxmoor DA, signal is sent to a CEX4La digital cross over which is run in a dual channel, two-way configuration. Other feeds from the DA are sent to the grandstand fill amplifiers, as well as to an Audio Telex DCM250 power amplifier which drives a quantity of ceiling speakers installed in the corporate boxes. Each private box also has it's own wall attenuator. The Oxymoor DA provides level con-



portant role providing output EQ (including CD horn equalisation), time alignment and limiting in addition to its cross-over functions.

The installation also includes a Telex FMR70/HT200 wireless microphone system with RA10 remote antenna's. This combination Allows the mic to be used from anywhere in the stadium, for both side-line commentating and after game interviews.

Thew system was put to test during a recent full capacity game. And what did it sound like? To quote Sydney United Committee man, Doug I v a n e k : "Well.....it's fantastic mate."

controls for all 6 outputs (1 spare) allowing easy adjustment of audio levels for thew top, side, bottom and rear of the cluster. The CEX4La cross-over played an im-

**Peavey Architectural Acoustics is distributed in Australia and NZ by Audio Telex. Ph (02) 9647 1411 for details.**

# Burswood Island Resort

By Jacqueline Molloy

Everyone remembers their first real job in the industry, mine was in the then unfinished Burswood Showroom, Perth. Our first day required us to wear hard hats and steel capped boots as the venue was still officially a building site. We had to unpack about 150 brand new CCT profiles fresh from Jands. The fun part was carrying them up several flights of stairs to the Front of House slots as the builders had commandeered the lifts. I'm happy to report that conditions for the technical crew have improved somewhat since then.

Opened in 1987, the showroom is part of a resort that includes a 24 hour casino with Cabaret Lounge, 5 star hotel and a domed arena that can seat up to 21,000. Within the Convention centre which houses the showroom, there are also sev-

eral ballrooms and meeting rooms. The crew at Burswood certainly don't suffer from lack of variety.

**Ainslie McClurg - Lighting**

McClurg is one of three full-time staff in the lighting department and has the title of Head Technical Operator - Lx, he used to be called the Head Electrician but the technical positions have all recently been renamed as part of a multi-skilling and streamlining initiative. McClurg graduated from the lighting course at TAFE in 1982 before the course became part of the WA Academy of Performing Arts. He worked casually at venues around Perth before spending a year as the board operator on the Galaxy desk at His Majesty's Theatre. He was then offered the position as board op-

erator in the newly opened showroom which runs an Avab Viking desk.

"It's a bit different working here now than it was 10 years ago, it's much more structured and proper work practices have been established. There are clearer guidelines for health and safety, we're basically not as gung-ho as we used to be. We look out for one another when we're working which is good."

McClurg is probably one of only a handful of techs who are familiar with the Viking desk since Burswood has the only one in operation in Australia. (Their Viking originally came out here for the tour of La Cage aux Folles) They also have an LSC Focal desk with 60 channels and 2 presets which can expand to 120 channels. "Most operators who come in with a show won't

even bother with the Viking as it is so different to operate compared with anything they're used to. There is always time pressure since we mainly do one night stands rather than long runs. Some shows bring their own desks and we use a Bytecraft Sage to link them into our system which gives them access to our patching and dimmers."

The Showroom also has an MA Lighting Scan Commander to control their 8 Samurai robotics purchased six years ago. "I've never really been happy with their performance in terms of reliability and we probably won't buy any more robotics. I think we would get better support by hiring or leasing in what we need."

**Terry Wouters - Staging**  
Burswood is in the throes of



# APHEX

**Aphex Price Deals at these stockists:**

**Victoria**  
Warehouse Sound 03 9417 4866. Caldwell's 03 9429 8122.  
Allans 03 9654 8444. Manny's Music 03 9416 1564.

**New South Wales/ACT**  
Turrumurra Music 02 9449 8487. Sound Devices 02 9283 2077.  
Brash's 02 9261 2555. The PA People 02 9642 5344.  
Better Music 06 282 3199.

**South Australia**  
Future Music 08 8373 0644. Adelaide Rock 08 8212 7933.

**Queensland**  
Australian Academy of Music 07 3831 0283.  
Palings 07 3229 2155. MIDIlink 07 3368 3366.

|  |  |              |
|--|--|--------------|
| <b>Model 104</b><br><b>Big Bottom™</b>   |  | <b>\$475</b> |
| <b>Model 105</b><br><b>Logic-Assisted</b><br><b>Four Channel Gate</b>                |  | <b>\$723</b> |
| <b>Model 106 Easyrider™</b><br><b>Four-Channel</b><br><b>Compressor</b>              |  | <b>\$723</b> |
| <b>Model 107</b><br><b>Dual-Channel Thermionic</b><br><b>Microphone Preamplifier</b> |  | <b>\$833</b> |
| <b>Model 108 Easy Rider™</b><br><b>Two-Channel</b><br><b>Automatic Compressor</b>    |  | <b>\$436</b> |
| <b>Model 109</b><br><b>Parametric Equaliser</b><br><b>with Tubessence®</b>           |  | <b>\$792</b> |

For further information look at our **website** at:  
<http://www.eastcoastsw.com.au>  
or **Email** us at:  
[infotec@eastcoastsw.com.au](mailto:infotec@eastcoastsw.com.au)  
or **talk to us on**:  
**phone** 03 9428 9797 or 0418 381 481  
or **fax** 03 9427 9898

Write in Reader Service Number: 134

Broadcast Technology Pty Ltd  
ACN 005 689 752

# Fostex®

PROFESSIONAL HEADPHONES



## T20RP & T40RP

A FAVOURITE AMONG TOP MUSICIANS AND STUDIOS, FOSTEX RP HEADPHONES ARE A STANDARD IN THE PROFESSIONAL RECORDING WORLD.

### FEATURES:

The T20RP/T40RP are professional stereo headphones with RP technology, (regular phase), originally developed by FOSTEX. The T20RP/T40RP are the standard headphones for all recording applications.



## T-5 & T-7

RETAINING REGULAR PHASE TECHNOLOGY THE T-5 & T-7 ARE DESIGNED TO COMPLEMENT THE T20RP/T40RP RANGE WHILE OFFERING AN ECONOMICAL ALTERNATIVE FOR THE HOME STUDIO.

### FEATURES

The T-5/T-7 employ regular phase technology as in the T20RP/T40RP range and retain the excellent tone balance and natural reproduction that Fostex have become famous for. The T-5/T-7 range retain strong yet lightweight materials enabling extensive use with low fatigue.

## M-SERIES MICROPHONES

Featuring an affordable range of dynamic hand held and gooseneck microphones. Fostex, with extensive experience in professional microphone design, has developed the M-SERIES for both studio and live use.



Call your nearest professional stockist or:

**TECHNICAL**  
WORKSHOPS

109 Commercial Rd, Sth Yarra VIC 3141  
PH (03) 9866 6655 FAX (03) 9866 6991

Write in Reader Service Number: 198



spending one and a half million dollars to upgrade their electric flying system from the current 22 lines that it offers. 12 of the lines are variable speed motors and 10 are fixed. Head Technical Operator - Staging, Terry Wouters, is looking forward to life being a lot easier with the additional lines.

"We're still discussing what type of system we want, whether to stick with the current electric one or go to counterweight. With six of the lines currently being used for lx bars it really doesn't leave a lot for scenery. All our masking is dead hung from the grid so to change anything is a fairly major effort".

The stage in the Showroom is dominated by a 12m x 6m lift that has a capacity of 18 tonne and is powered by a single electrical motor driving four gearboxes. It goes from the loading dock 5.5m beneath the stage to a metre above stage level. "The lift is useful but at times it can slow down a bump-in because we have to wait until everything is up from the loading dock before we can start work on stage. The good side of it is that we have done some spectacular reveals

during performances."

Wouters has worked at Burswood for 7 years, starting out working as a casual mechanist in the Dome on the Hopman Cup tennis tournament. "I'd never worked in theatre before that and I find I just learn stuff all the time. Every new show that comes in teaches me something and that's great. I don't have a problem admitting I don't know something because I'm very keen to learn as much as I can. I like the environment and the conditions here and have no desire to work elsewhere."

## Keith Powell - Audio

Powell, the Head Technical Operator - Audio, has only worked at Burswood for two and a half years. Prior to that he was with Purvisonic Sound for 7 years and was freelance for 13 years before that. In his freelance days Powell worked in many roles including, systems engineer, monitor operator and FOH mixer and has worked with such acts as BB King, Meatloaf and The Divinyls.

"I worked as a musician for six years before getting into this side of the business.



Keith Powell, head technical operator (audio) at his beloved Midas desk

# AUCTION

Professional Audio, Video & Lighting Equipment

## AUDIO

E.V.  
Aust. Monitor  
Perreaux,  
LEM, Onkyo,  
Yamaha, Delta  
Max. CD  
PLAYERS,  
Disco Mixers

## VIDEO

NEC,  
Sony,  
Panasonic.  
Mixers,  
Cameras,  
Barco Video  
Wall

## LIGHTING

Martin,  
Clay Paky,  
Coemar.  
Disco  
Lighting FX,  
Pinspots, Par  
Cans

◆ **LOW RESERVES** ◆

ALL STOCK MUST BE SOLD

**TUE 4th MARCH - 10AM**

Inspection Mon 3rd Mar 10am - 6pm

A Buyers Premium of 10% will be added to the Knockdown Price of each Lot Sold.

PAYMENT BY CASH OR BANK CHEQUE. COMPANY CHEQUE BY PRIOR  
ARRANGEMENT

**NOISEBOX ENTERTAINMENT SYSTEMS**

Ph. 9890 1709

**BALMAIN LEAGUES CLUB Victoria Rd. ROZELLE**

# SKB CORPORATION

## ATA RACKMOUNT CASES



Available in 2RU, 4RU, 6RU, 8RU, 10RU, & 12RU Models.

**CARRIED WITH PRIDE  
WORLDWIDE.**

**3 UNIT RACK  
COMING SOON**



SKB-19-03U



Stacks perfectly with the SKB Rack Series.

For your nearest retailer, please

Phone: (07) 3369 8144

Fax: (07) 3369 2008

**PRO  
MUSIC**  
AUSTRALIA  
Fine Music Distributors  
AGN 210 141 965

PRO Music Australia Pty Ltd  
19 Railway Tce., Milton QLD 4064

Write in Reader Service Number: 162



Burswood crew: (left to right) Keith Powell, Terry Wouters, Barry Brody, Martyin Todd, and Ainslie Mc Clurg

I'm from the old school, where everything was learned on the job. When I first started out, which would have been in the mid 70's, I bought a book for \$11.95 called A Practical Guide to Concert Systems by Bob Heil. By the time I'd finished reading it he'd taught me the whole process and I referred to it many many times. Unfortunately I lent it to a friend and never got it back. Some years later I discovered that Bob Heil had been apprenticed to Bob Meyer so I thought well I did start on the right foot. I learned from the masters".

Powell has just finished reconfiguring the speaker layout in the showroom and has great hopes for the end result. "I have 12 boxes (JBL Arrays) hanging across the front of the proscenium on a 14m truss. Each one hangs angled in a different direction which takes care of the whole room. The six on either half of the truss are a mirror-image of each other. This wasn't my original idea but when I'd hung the boxes where I wanted them, I discovered they were in the path of some of the FOH lights which are in a fixed position. But I'm happy with this result".

Powell is also pleased with his new mixing console, a Midas XL3, which was purchased late last year. He had told me earlier that when he first discovered sound gear and started playing with it, it was just like having a Meccano set. When Powell turned on his new desk his face lit up like he'd just been given the Deluxe Meccano set for Christmas.

### Barry Brody - Production

Brody's job encompasses many roles, he ei-

ther works as stage manager in the Showroom when needed, or hires in casuals. He books acts for the Cabaret Room and corporate functions and is responsible for coordinating prize draws in the Casino. He has been at Burswood for two and a half years; full-time for the last six months. Brody previously toured out of Sydney for 12 years, working the backline for such acts as Shirley Bassey, Leo Sayer and Mental as Anything. "Basically I was a prostitute to the industry".

### Multi-tasking Crew

A decision has been taken at Burswood to encourage multi-skilling within the crew. Martin Todd who worked in the audio department for many years has been recently given a full-time mech position. One of the two full-timers in the AV department was previously employed in lighting. McClurg thinks this is working out well, "It means we have more flexibility within the crew and if we're short staffed in one department we can steal someone from another area to fill in".

The crew at Burswood work on an immense variety of productions, everything from a huge spectacle like the recent Michael Jackson concert in the Dome, to Karaoke nights in the Cabaret Lounge. If you don't like one style of entertainment it's a sure bet that something different will come along soon. From Body-building to Sydney Dance Company, and from Val Doonican to Tennis these guys get to do it



# PAINABLE. ARRAYABLE. WEATHER-RESISTANT. AND EASIER TO INSTALL THAN EVER BEFORE.

## INTRODUCING THE NEW JBL CONTROL® CONTRACTOR SERIES

With the introduction of the acclaimed 4310 Control Monitor, and its successor, the 4311, two decades ago, JBL introduced audio engineers to the most critical element in recording and mixing: control. Control to reproduce distortion-free nuances in clarity, vividness and full stereo imaging. That legacy of performance is the heart and soul of the new JBL Control Contractor Series. A versatile new line of compact, high-performance speakers engineered for the rigors of commercial sound reinforcement. With innovative installation and materials technologies, they're designed to make every project easier, less time consuming and considerably more profitable.

The Control Contractor Series. Quite possibly the most significant advance in sound contractor's tools since the fishtape.



Lightly textured exterior surfaces and HIPS material provide excellent paintability, to adapt speakers to any decor.



Newly designed brackets allow speakers to be arrayed up to 360° with no high frequency overlap, thanks to precise 90° x 90° dispersion horns.



Weather resistance is maximized with features like screened port tubes and WeatherEdge™, our seamless weatherproof woofer surround.



JBL's patent-pending Invisible™ mounting system revolutionizes ease-of-installation, greatly reducing installation time.



### CONTROL 23

Delivers crisp, articulate sonic quality in a compact model; ideal for limited spaces; 50W; 225Hz-20kHz frequency range.



### CONTROL 25

Features mid-range size, power and performance; 150W; two-way; 5.25" low frequency transducer with a horn-loaded 3/4" titanium-coated tweeter; 150Hz-20kHz frequency range.



### CONTROL 28

Offers the highest power, performance, bandwidth and sensitivity available; 175W; two-way; 8-inch low frequency transducer; 1" titanium-coated tweeter; 100Hz-20kHz frequency range.



### CONTROL S6-2

Slot loading vented bandpass subwoofer with dual voice-coil 10" bass transducer; tuned to complement all full-range Control Contractor Series systems.



H A Harman International Company

Jands Electronics Pty Ltd  
ACN 001 187 837  
40 Kent Road  
Mascot NSW 2020  
Phone: (02) 9582 0909  
Fax: (02) 9582 0999



## Duncan Fry

**We'll fix it in the mix.**  
*Monitoring on the ultra cheap*

I think I've mentioned in a previous article that when I was young and foolish I had a rehearsal studio. Business was very good, but it occurred to me that I could get much more money per hour if I had demo facilities.

So I put myself into debt to acquire an 8 track tape deck. Not a compact little DA 88 or Adat like you would get today, but a venerable Tascam 80-8. It was a great machine, strong, super reliable, and what it lacked in flexibility it sure made up for in weight, because it was a real hernia provoker! It never missed a beat as long as I had it, but it did have one interesting little quirk; if it did a lot of rewinding it would start to creep its way to the edge of the shelf it was sitting on, with disastrous consequences for anyone sitting underneath!

With the help of Colin Park I put together a rudimentary (*transl. Cheap. Ed*) mixing console, the semi legendary Gigmaster Mk 1 (the front panel of which still hangs on my wall), with 12 channels and 2 way EQ

('More' and 'Less'). I bought a box of TDK SA cassettes, cleaned the head on the cassette deck, and I was all set to go.

The I realised I'd forgotten something - studio monitors. Something big and impressive to look at, and so efficient that they would deliver ear bleeding volume when driven hard by my 20 watt (on a good day with the wind in the right direction) old hi fi amp.

I looked at the price of some big JBL monitors, and promptly forgot about that idea! Something just a **little** more economical, perhaps? Then I remembered that in the garage I had a pair of big old Jensen speaker boxes. I had bought them in a previous lifetime when bigger was better, and more bass was better still. They were a four way design, with a 15" low, and both 6" and 4" midranges that you could blend together (it didn't matter which one you chose, they both sounded like crap!), and a little tweeter on top. But they were big, and what's more I already owned them!

I dragged them out of the garage, blew the dust and the cobwebs off them, and plugged them in to have a listen. Well, something came out but it wasn't terribly musical. Every bass note sounded like Grandpa farting in the bath. Prising off the grille cloth I soon saw why - mice had eaten all the soft foam surrounds from the 15s, and they were just flapping away in the frames like a freshly landed snapper.

Crikey, what could I do? I had a band of reggae plumbers (Jason Dreadlock and the Stopcocks) coming in on Saturday to take advantage of the new demo facilities, and I had no money to buy some new 15s. The two heavy duty RCFs that I had were doing stage monitor wedge duty in the rehearsal studio, so I couldn't take them.

And then I thought of Norm Edge. Good old Norm. I think he's shuffled off this mortal coil now, but back then he had a speaker repair shop on Nepean Highway in Gardenvale, Melbourne, next to Lucky Burgers.

# Panasonic®

## SV-3800

Professional Digital Audio Tape Deck



### Main Features

- Exceptional sound quality 20 bit equivalent DAC system
- High performance A-D one-bit converters
- Multiple digital interfaces AES/EBU, IEC958, Optical
- Front panel selection of all I/O formats
- L/R independent volume control
- Single program play
- Includes infrared remote and 8 pin parallel remote terminal

STUDIO  
SUPPLIES  
PTY LTD

5 Myrtle Street,  
Crows Nest,  
NSW 2065  
Tel 02 9957-5389  
Fax 02 9922-2043  
Email: 100405.1103  
@CompuServe.COM

ACN 003184503

Write in Reader Service Number: 171

## EVENTS ☆ MUSICAL EQUIPMENT STUDIOS ☆ PUBLIC LIABILITY ☆ RETAILERS

# AIBA

A DIVISION OF THE ALEXANDER & ALEXANDER GROUP

are the market leaders in Equipment Insurance  
and Public Liability Insurance.

Contact Ken Killen or Ian Stack for a NO OBLIGATION  
Consultation and Quotation.

Phone: (02) 9923 1066 Fax: (02) 9929 4584

Interstate callers TOLL FREE: 1800 806 584

Level 9, 52 Alfred Street, Milsons Point NSW 2061  
PO Box 1809, North Sydney, 2059

## LIGHTING ☆ TOURS ☆ PRO EQUIPMENT AUDIO ☆ WHOLESALEERS ☆ PROPS

Write in Reader Service Number: 100

What was lucky about them I never knew. Lucky to eat there once and live to eat another day, probably.

Just a small digression: As I tap this out on my lap with one eye on the keyboard and the other on the TV, a commercial comes on for Woman's Daze magazine, with the headline on the cover: "Princess Di falls for rich Count" or some such drivel. And I'm instantly reminded of the classic story about the Australian farmer who sends his son off to a very upper class private school in England so he can mingle with the sons of aristocrats and get the benefits of a good education. So, when the kid has been there for a while, he sends his parents a photo of himself dressed up in the bizarre school uniform that is peculiar to these places, and he writes on the back. "Dear Mum and Dad. Here I am at school. Don't I look just like a real Count. Love Cedric"

The farmer takes one look at it, sighs, and hands it to his wife. "I dunno, dear," he says, "All that money we're spending on his

education and he **still** can't spell!"

Anyway, back to the tenuous thread of my story. Norm was a little eccentric. Whether it was the fumes from the speaker glue, or just nature's way of making sure that not everyone becomes a brain surgeon I don't know. But he certainly was cheap! And that was my primary concern.

So I unscrewed the drivers from the boxes, threw them in the Mini, and whizzed down to Norm's 'World o' Speakers'.

"Can you fix these for me, Norm?" I asked.

He took one look at them, sniffed, and rolled his eyes to heaven.

"Huh, Jensens," he grunted. "Probably not the world's most shithouse speaker, but then again not far off!" Well, that really filled me with confidence.

Then he launched into a diatribe on what was wrong with them, how poorly they worked, how little power they handled, how anyone could put them into a box and still sleep at night, that sort of thing. When he

started to go red in the face and dribble, I put my hands up to stop him.

"Yes, yes, I know, but can you fix them?" I interrupted.

"Fix 'em? Course I can," he said, hurt that his professional abilities had been challenged, and calming down somewhat now that he had got his complaints off his chest. "You can pick them up on Friday."

Now for the big question. "And, er, Norm, er, how much do you think they might cost?" I braced myself for the shock.

"Well, it's a lot of work. New foam, take 'em apart, umm, let's say \$15 the pair. That sound fair?"

Fair? I shook his hand, said I'd see him Friday, and got out of there quick before he changed his mind. Thank heavens for speaker glue fumes, was all I could say!

When I picked them up, he'd done a really good job. I stuck them back in the boxes, mounted them on the walls of the control room, and got ready for the session.

I think the tweeters died about half an hour into the mixdown, when a burst of rewind 'monkey talk' blew the diaphragms across the room. The midranges hung together until the end of the session, but they were D.O.A. in the morning. The 15s, though, for all of Norm's protestations, worked for ever and a day!

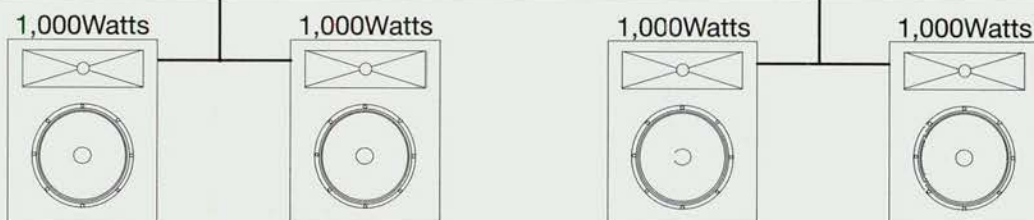
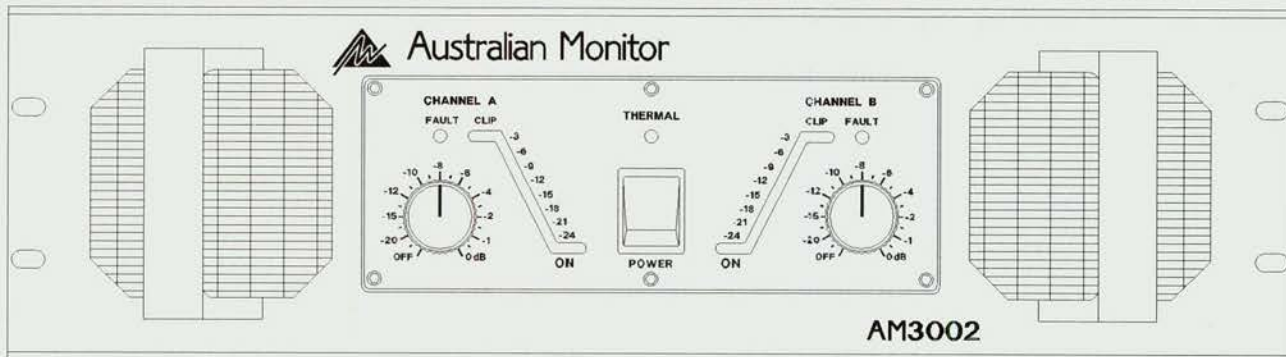
During the next week Dave Park helped me redesign the layout of the boxes. We made new baffles and nailed them over the old ones, replaced the two midranges with one that actually worked, and popped a piezo in as top end!

The piezo was a little bit **too** bright sounding, but a piece of foam rubber across the front fixed that. I never had a complaint about them (about lots of other things, but never the monitors!) and after the EPA closed down the studio (perhaps more on this at another time) I sold them to someone else for \$400, who's used them ever since!

*See you next month with tales from the USA NAMM show*

## 'BIG BROTHER' IS HERE!!!

4,000 WATTS TO IHF-202 @ 2 OHMS, BOTH CHANNELS DRIVEN



VALUE FOR MONEY @ a little over \$1.00 PER WATT. (RRP INC TAX)

LIGHTER @ 8KG PER 1,000 WATTS.

GUARANTEED RELIABILITY = 5 YEAR WARRANTY.



**Australian Monitor**

ACN 002 314 712

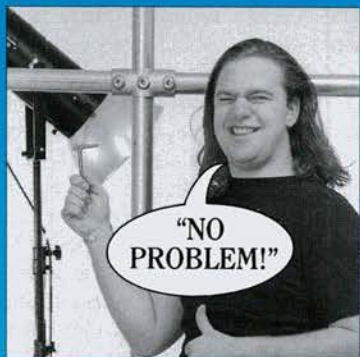
29 Hope St Ermington NSW 2115 Australia.

Tel: 02-9874-9355 Fax: 02-9874-9366

Email: ausmon@mypostbox.com

Write in Reader Service Number: 127

**"They're on in five minutes!"**



**If you're on the road with KEE KLAMP you can build almost anything in no time.**

- Fastest, simplest, easiest to erect and dismantle - one hexagonal key and you can do-it-yourself.
- No sharp edges, no welding, no bolting, no threading. 100% re-useable.
- Cuts labour costs by up to 70%.
- Conforms to ISO 5922 with TUV approvals.
- Unlimited applications in stage production, foyer display, sound, lighting and studio workplaces, entertainment and music industries and crowd control etc.



**FREE!**

Detailed colour ideas and technical brochures.

Just phone or fax this ad with your business card. New distributors welcome.



Melbourne:  
Tel: +613 9583 2368. Fax: +613 9585 0218  
Sydney:  
Tel: +612 9708 4557. Fax: +612 9709 5698  
Freecall 1800 333 119

TELFORD 0818

Write in Reader Service Number: 192

## Howard Jones checks the AES re DVD

**LOS ANGELES:** The AES show, besides hosting a large and varied exhibition, also saw many workshop and lecture sessions. One of the most interesting of these was the Audio for DVD workshop, which sought to draw out some of the salient issues in preparing audio for use on DVD. If you're not familiar with DVD, it is the format which will replace audio CDs, VHS tapes and CD-ROM.

There seems to be some confusion over just exactly what the acronym DVD stands for: my understanding was that the consortium behind DVD had announced that it meant Digital Versatile Disk. However, around the industry the original term Digital Video Disk seems to be making a comeback. Tomlinson Holman, who chaired this workshop, felt that all DVD formats would simply become known as DVD-Video, DVD-Audio etc. In this case, DVD would become a handle for describing the generic format, rather than anything else.

The panel of experts assembled for this workshop comprised people all of whom were heavily involved in movie production, or in producing audio soundtracks for films and video. This reflects the fact that the trend towards the adoption of DVD is being strongly driven at this stage by major movie houses. The first speaker was Jerry Pierce, a major mover from MCA Universal Studios, who gave a very good overview of the technical issues surrounding DVD.

The new format is the same diameter (120mm) and thickness (1.2mm) as CD, although DVD achieves this by bonding 2 x 0.6mm disks together. By glueing 2 substrates together like this, DVD achieves

7 times the data capacity of CD, i.e. 4.7GB. The data rates possible are awesome: the transfer rates can vary from 1.0MB/s to a maximum of 9.6MB/s. One piece of news which caught me off-guard was that DVD hardware has already been released: both Matsushita and Toshiba released players on



November 1, with Mitsubishi, Sony, JVC & Philips all predicted to have players released within the next 6 months. The 2 models released so far apparently also play CDs without any problems. Early research

figures prepared by Jerry Pierce indicated that whilst DVD-Video was making the early running, DVD-ROM would soon take the lion's share of the market. This left DVD-Audio running a poor third.

All the speakers at the workshop were at pains to stress that the new format should not be thought of in terms of a maximum run time, such as 120 minutes for video or 74 minutes for audio (or whatever). Because most DVD encoding schemes use variable bit-rate compression, it is inappropriate to think in terms of maximum run times: we have to instead think of DVD as having a maximum memory capacity. How quickly this memory capacity gets used up will depend on the bit-rate used to encode the audio and video data. Computer and consumer DVD software will use the same computer file structure. As far as audio for video goes, NTSC systems use the Dolby AC-3 compression algorithm, whilst PAL uses MPEG-2. So much for standards, eh?

It turns out that DVD is such a flexible format there are huge possibilities available. DVD can be used to hold a full length movie (say, 133 minutes) or more than 60 minutes

## Bill Foster for Australian DVD Conference

The Keynote address at Australia's first DVD Technology Conference will be delivered by BILL FOSTER. He set up Tape One Studios in 1975 in London. Tape One grew to be the world's largest independent mastering facility. It was first to offer an all-digital signal chain on a commercial basis in 1984, and was again the first with a hard disk-based audio editing system in 1987.



Tape One also introduced DAT and recordable audio CD to Europe - in '87 and '89. He is now editor of One to One magazine.

The DVD Technology Conference is a one day ENTECH event on April 22 at the Melbourne Exhibition Centre, Cost is \$175. Bookings or info, call 1-800-635-514 or fax (02) 9876-5715.

worth of 2 PCM audio channels sampled at 96kHz at 24 bit sample word length together with video stills (the equivalent of vinyl LP photo jackets and liner notes). Other audio options include better than 60 minutes worth of 6 channels of PCM audio sampled at 48 kHz at 20 bit word length, including video stills as before or 8 hours of conventional stereo audio etc.

Studios preparing material for release on DVD will have control over a wide range of parameters: the bit-rate at which the data is encoded, the video aspect ratio, the chance to include captions and subtitles (these were film people speaking, right?), bit mapped graphics (meaning accurate on-screen rendering of ideographic languages such as Japanese), closed captions and copy-protection schemes. As far as the latter go, all the speakers - who represented major film studios or post-production houses - seemed ready to jump in with both feet and appeared relaxed that the question of illegal copying was being dealt with satisfactorily. Whether the record industry will feel the same way remains to be seen.

The buzz word in relation to DVD is "authoring": this is the process which in pro audio terms we currently think of as mastering. Authoring means mastering the audio/video material in the usual way, adding any required menus, user interfaces and flow control devices, doing a dummy run on the encoding process and then proceeding to the actual encoding. The dummy run is necessary to ensure that the encoded data will be a good representation of the source material. The final necessary step is to play back the encoded data to make sure that it actually looks and sounds okay.

Steve Thompson from Pacific Ocean Post spoke at length about the detail involved in preparing audio for release on DVD. Prior to joining POP, Steve was known around Hollywood as the Dolby AC-3 man, so came to the DVD encoding position at POP with solid credentials. Another surprise during this semi-

nar was when Thompson pointed out that POP had already done the audio for 12 titles due for release on DVD. The critical element in the authoring process is that, once the audio has been encoded, it cannot be altered without redoing the whole lot. If you listen back to the encoded material and decide that you don't like some aspect of the sound, or there are glitches which must be addressed, you have to go back to your source material, correct the problem, and re-encode the lot. Naturally, he stressed the importance of ensuring that you're completely happy with all aspects of the audio *before* you commit to encoding.

He enumerated the critical steps in authoring as follows:-

1. Prepare the audio source material in the usual way.

2. Pseudo-encode the audio to determine the coding parameters required - mainly the best bit-rate possible for compressing the audio source. In this context, "best" means achieving the maximum possible bit-rate reduction without introducing audible artefacts.

3. Run the encoding process.

4. Do a QC check and pass the audio along to be multiplexed with the encoded video signal.

## Interestingly,

the AC-3 encoder outputs an AES/EBU format bit-stream which is subsequently converted to a SCSI format signal and recorded to disk. In terms of delivering the finished product, Steve has used both the Internet and DLT (digital linear tape), the second of which he states is becoming a de facto standard for this kind of interchange.

It was fascinating to hear the opinions and experiences of people actually working at the coal-face of implementing audio for DVD-Video. Unfortunately, it seems that DVD-Audio is still bogged down in protocol and copy protect issues, leaving it as the last cab off the rank. Still, if we find ourselves listening to 24 bit 96kHz audio, it should put the icing on the audiophile cake!

## Len Wallis on DVD

*Connections is hosting the DVD TECHNOLOGY CONFERENCE as part of ENTECH in April. We sought the opinion of a leading Sydney consumer audio dealer on the industry view. Len Wallis went to the CES show in Vegas in January and was kind enough to report back ....*

I must have spoken to three dozen people at length on the subject while away, I even attended a lecture/seminar on the subject. I have since spoken to a number of my colleagues who also attend the CES show to gauge their interpretation.

Frankly, no-one seems to know what is going on. The product is now due for release March-April in the US. However it was announced that there have been further complications in setting an anti-piracy standard at this late stage.

There were a number of companies doing demo's of DVD, although this number was far smaller than I would have expected. Most agreed that DVD presence was very low key at the show.

All the demos consisted of demo discs, ie., short video clips edited together onto a sampler disc. There was general talk that these discs did not use full compression (they were not pushed for space) I was unable to have concrete confirmation or denial by any company demonstrating DVD.


While it is accepted that the surround sound format will follow HDTV, ie. Dolby Digital, it was also announced at the show that the HDTV position was to be re-thought, following a strong push from DTS. In fact the DTS was the surprise of the show, with a total of 55 exhibitors displaying DTS decoders or associated technology. While most of this was via Laser Disc, there were in fact a couple of DVD/

DTS demos.

There is also a little scepticism surrounding the quantity of available discs. All companies agree that the success of DVD will be software dependant. However the initial projections of 2-3,000 available titles at the time of the release appear to be very wide of the mark. Columbia Tri-Star, one of the main supporters of the format, have announced that they hope to have 20 titles available by the end of the year. Warner Brothers announced the release of twenty five titles in the second quarter of the year.

Talk to any of these companies about Australia, and you are presented with rampant confusion. No-one is willing to give any commitment for a release date, no-one knows which surround format we will use, and there is even some uncertainty about our 'zoning' (currently zone 4.)

I have for some time been feeding our staff with as much information on DVD as I can. We all agree that DVD will be the format of the future. We still do not know how good the picture quality will be (the demo's in Vegas were impressive), and while we are still hoping that the surround format of choice will be Dolby Digital, this is very unsure (and currently not proposed).

I am sorry that I cannot give you an official stance on the future. Like many of the company luminaries I have spoken to, I really still do not know. 

**Next Month:  
DVD Authoring**

## Gethin Creagh Sound Mixer

By Madeleine Murray

Apart from being a sound, a bit like a wind blowing through an Welsh fireplace, Gethin Creagh is a person.

Gethin Creagh is a sound mixer on films, like *The Piano*, and the forthcoming *Portrait of a Lady*, also directed by Jane Campion, and starring Nicole Kidman. The lead role was fervently sought by some of the world's top actresses, including Glenn Close.

### Deadline, Sundance

Creagh is in a Soundfirm dubbing theatre, doing the dialogue pre-mix for *Blackrock*, the film based on Nick Enright's play about the rape and murder of a high school girl.

Next door, the effects and music are being pre-mixed. Their final mix deadline is ten days away, because the film has been accepted at the Sundance Festival. But no one seems tense, Creagh and director Steven Vidler are relaxed and affable.

Creagh is working on a scene shot by the sea, when the cops come looking for someone. Three teens are hiding in the bushes. The dialogue for the scene was

re-recorded in a sound studio, because the surf made the location sound unusable. Creagh is equalising the dialogue, and giving it perspective.

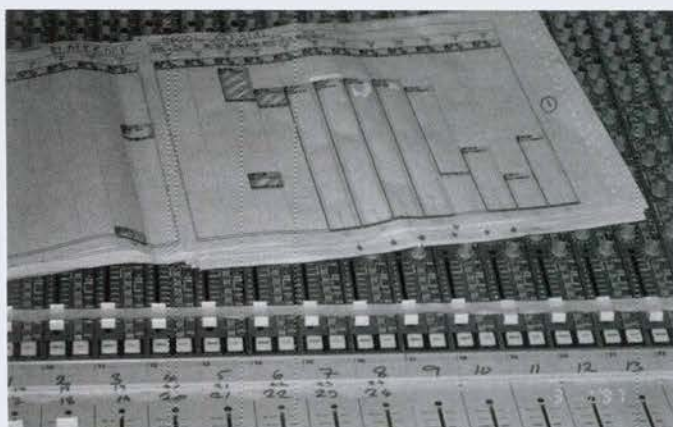
Next scene is a schoolyard, where the girls are planting a tree for their murdered friend, and arguing with the boys. This is all location sound.

Creagh spends ten minutes processing out extraneous sound, such as a plane in the background. He identifies the frequency, then nulls it. Planes, wind, cars, or air conditioning make a sound track murky.

At this point, Creagh mentions, modestly, that he almost worked on Luhrmann's *Romeo and Juliet*, and that the sound supervisor is disappointed he didn't. I thought it was me, but I realise now that the dialogue in this hot new film is actually quite hard to understand. Creagh has an outstanding reputation for dialogue and music mixing. The glamour side of the industry is effects, where 'sound design' is more flamboyant. Dialogue mixing is painstaking, tedious to some, but as Creagh says, "it's the essence of any

film."

Back in the school yard, an actor has the line, "Get over it, Jason, this isn't about you." Creagh raises the level to make the line more intelligible. He listens to every line several



times, making subtle adjustments.

Next scene is shot in a lawyer's office. Creagh feels the sound is "a bit thin," and works to make it more powerful, and louder.

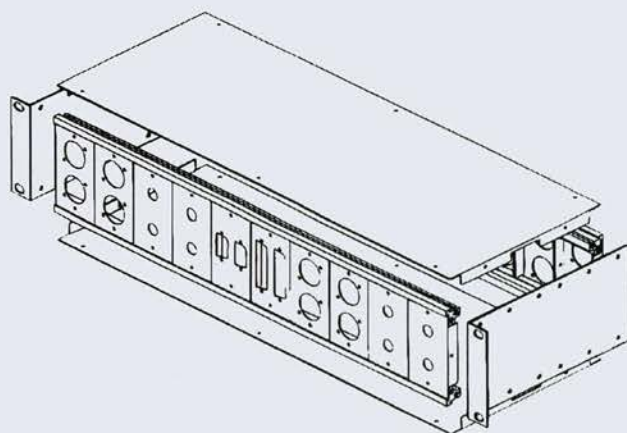
The dialogue has some reverb, which is hard to lose, and ADR (additional dialogue replacement) lines sound different. He puts reverb back into an actor's line, and it matches beautifully. Another adjustment doesn't sat-

## MODULAR STAGE BOXES

Need a custom stage box, rack panel, patch panel or distribution box, but just can't find one?

Then look no further than MSB, the modular system that allows the assembly of the most complex panels in minutes.

Oh, and you can leave the tool box at home as this is the only assembly tool you'll need.



For a free catalogue, please call...

**Penn Fabrication Pty Ltd**  
Ph: (03)9646-7222  
Fax: (03)9646-8222

Write in Reader Service Number: 142

isfy him. "I took too much bottom end out of that line."

An actor leans over, and says, "Rachel." Creagh reckons it's a 'bit low,' so he replaces the sync sound with an ADR line. Then he adds 'bounce on the reverb.'

#### Life as a mixer

Creagh deals with dialogue, effects, and music, all pre recorded, pre edited and brought to him in sync with the image. The job is to balance it all together, to put some dynamics into the sound track, making it loud and soft in the right spots, and mix it so it is dramatic.

A sound mixing studio simulates the cinema setup, with left, centre, and right speakers, and surround sound. "The levels we have the monitoring at are strictly adhered to," Creagh explains. "Unfortunately cinemas don't adhere to the same strict standards. They tend to play at whatever level they like."

Creagh is consulted towards the end of the picture cut, before the sound editor is put on. They discuss the whole mix, and sound edit. Will it be on sprockets, or digital? What facilities will be used? How long have they got? Who was the sound recordist? Has he/she recorded wild lines? How much ADR will they

need?

With the picture cut complete, they often do a basic track run with the sync tracks, and see what dialogue is usable, and what need to be replaced.

#### The Piano

*The Piano* was shot in difficult locations, lots of strong surf, and wind. The sound team decided what needed to be redone for technical reasons. Campion also wanted some lines redone, for performance, and to add some lines offscreen.

A period film has to be completely clear of plane or traffic noise, or even hum. "You try and go with the sync, because it's usually better in terms of drama," Creagh says. "Getting an actor back into an ADR theatre is quite difficult for them. It's dry, there's not a lot of motivation. You find that they warm to it after a few hours, but by then it's over. It takes a lot of time for them to warm up, to get all that passion. Some are very good, some are not. Some kick up an awful fuss, like one famous Australian actor."

When you need Harvey Keitel to post sync lines, six months after the shoot, the ADR editor goes to wherever Keitel is, with the director. They book an ADR

studio, and work there. "It's a month world trip for the ADR editor, and the director," Creagh says. "You'd think that would be good fun, but usually it's not. They go to ADR places in London, New York, San Francisco, LA. They all vary. Some places are brilliant, and some are awful."

The sync dialogue recorded on location is kept, and the ADR is laid up, and fiddled around with the picture. Some words are stretched, or compressed, to match the picture.

At the same time, the effects editor is gathering all the effects, and the music is being composed. Creagh starts off with a dialogue premix. He uses the sync sound first, even though it might be bad. Then he does the ADR alternates. He uses these alternatives to show the director during the premix.

Martin Oswin was the effects mixer on *The Piano*. In the effects premix, he tries to keep the crickets separate from the wind, so that they can fade, and shift, and not lock too tightly into a given balance.

Oswin did all the spot effects, like a door closing, panned left and right, horse carriage up a path, the sound of the axe chopping off Holly Hunter's finger,

the chilling climax of the film. This was done in several composite tracks to build it up, to make it sound really huge. Any big noises are often composite sounds. They spent a lot of time with the finger chop, recreated in the studio with several noises blended together.

Atmos premix is 2x four tracks, spot effects are mixed down to 2x four tracks, and Foley premix down to four tracks. That is four pan tracks, left, right, centre, surround. The music is given to the mixer on 8 track digital, fully mixed, and in sync.

When Creagh starts the final mix, he will usually rehearse, going through a 10 minute reel once, to see what he's got. He'll do a very rough run, with alternates. Then run through stop start, looking at alternates, then back to the top, and press record. He and the director inch their way through it, trying to get as long a run as possible. They've got the ability to punch in and out of record, and they do about 10-20 minutes a day.

Creagh is an admirer of Jane Campion, and of *The Piano*. "It was a great sound track," he says. "I think other ones could sound like that, if only the atmospheres were kept up, and rich like that,

## YAMAHA REVERB BOUNCES BACK!

The new sound of Yamaha's DSP3 chip has already proven itself in our 02R Digital Recording Console. Now you can have it in two exceptional reverb units.

The Pro R3 Digital Reverberator features 20-bit AD/DA converters and 32-bit processing for superior resolution and dynamics. The high quality analog input and output circuitry also contributes to providing a 110dB dynamic range. A complete reverb system consisting of pre EQ (3-band semi-parametric with knobs), the reverb section (11 reverb/modulation effect types) with dynamic filter (low, high or band-pass) and a full-function compressor, post EQ (fully parametric) and a programmable noise gate. Balanced XLR ins/outs, 90 Presets and 90 User memories and MIDI control.



The REV500 features the same converters and DSP as the ProR3, and features true stereo processing, 100 Preset and 100 User programs categorised for ease of selection, large custom LCD and dedicated rotary controls for critical parameters, balanced XLR and jack ins/outs with switchable levels and real-time parameter control via MIDI.

The ProR3 and REV500 are ideal for music, sound design or speech.

YAMAHA

HEAR HOW FAR WE'VE COME AT YOUR NEAREST YAMAHA DEALER OR CALL 1800 805 413

Yamaha Music Australia 17-33 Market Street, South Melbourne 3205 A.C.N. 004 259 527

Write in Reader Service Number: 191

# PALA '97

PRO AUDIO & LIGHT ASIA '97

## 9TH PRESENTATION

The PALA series, now bigger and more exciting, is set to promote an even larger industry gathering to attract more buyers and heighten convenience for buyers to source the latest products and see new innovations in a one-stop event!

**14 - 16 JULY 1997**

**WORLD TRADE CENTRE · SINGAPORE**

### INCORPORATING:



PRO AUDIO



PRO LIGHT



AUDIO BROADCAST



VISUAL COMM



SOUND COMM

### HELD IN CONJUNCTION WITH:



**MUSIC '97 ASIA**

### Why exhibit?

- 7% growth rate in Asia Pacific according to World Bank projections
- Bigger show: 15,000 sqm of exhibit space (35% larger than PALA '96)
- Asia's Largest and Leading Exhibition for the industry
- More Visitors: 8,500 (projected)
- More Exhibits
- More Business Opportunities

Make a solid investment in Asia's growing Entertainment and Presentation industries through PALA '97.

**ACT NOW!** Fax the Business Reply Coupon for more information!

Organised by:

TEL: (65) 227 0688  
FAX: (65) 227 0913



IIR Exhibitions Pte Ltd  
101 Cecil Street  
#09-05 Tong Eng Building  
Singapore 069533

### PALA 97 - BUSINESS REPLY COUPON

For Enquiries, contact:

Ms Cecilia Ng-Seah  
IIR Exhibitions Pte Ltd  
Tel: (65) 227 0688  
Fax: (65) 227 0913



CONNECTIONS

We wish to EXHIBIT at PALA '97  
Our initial space requirement is \_\_\_\_\_ sq.m.

We would prefer:

- Quiet Hall  
 Noisy Hall

#### Product Profile:

- Audio Equipment  
 Lighting Equipment  
 Musical Instrument  
 Audio Broadcast  
 Visual Comm  
 Sound Comm

We wish to VISIT  
PALA '97

Name \_\_\_\_\_

Job Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Country \_\_\_\_\_

Tel \_\_\_\_\_

Fax \_\_\_\_\_

Product/Service \_\_\_\_\_

# CONNECTIONS SHOP

## SUMMER CATALOGUE

### Theatrical

#### Stagecraft

**\$39**



*By Trevor K. Griffiths.*  
A complete guide to theatrical practice covering all aspects from choosing a play to backstage and FOH management. Now, even the most inexperienced amateur group can attain professional standards. Experts have formulated their own hard-won experiences into a set of guidelines and show how to achieve the best possible production with the least number of pitfalls. 192 pages.

#### Stage Management & Theatre Administration

**\$29**



A clear and concise guide for both stage managers and theatre administrators. Areas covered include rehearsals, production week, effects, stage fights & weapons, financial control, marketing, venue and FOH. A most practical guide for anyone involved in theatre management. 128 pages, 1993.

#### Stage Design and Properties

**\$29**



*By Michael Holt.*  
A comprehensive guide for those involved in theatre design, set construction, workshop techniques, models, props, painting etc. Simple and clear ideas presented with illustrations make this book a must, especially for anyone keen to learn the many facets of theatre production or who need new ideas. 123 pages, 1993.

#### Projection for the Performing Arts

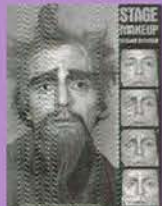
**\$69**



*By Graham Walne.*  
Written in non-technical language and lavishly illustrated, this book gives a brief historical overview of early projection attempts, then goes on to look at equipment and the planning and design of every kind of live performance, both inside and outdoors. Will be of interest to anyone in the field of theatre and other forms of live performance. 139 pages, 1995.

#### Stage Makeup

**\$34**



An invaluable guide providing the fundamentals of stage makeup for the performer. Herman Buchman has worked on the Broadway stage, in opera, television and film and presents clear, step by step colour illustrations to demonstrate the effects correct stage make-up can achieve. 191 pages.

### NEW STOCK

#### Lighting and Sound

**\$29**

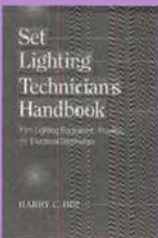


*By Neil Fraser.*  
An introduction to the art of theatre lighting and sound. Can be used by both the novice and the experienced technician when a quick and easy reference is required to improve working methods, provide new ideas or solve problems. Clear diagrams and easy to read explanations make this a very handy guide for anybody involved in theatre production. 132 pages, 1993.

### Lighting

#### Set Lighting Technician's Handbook

**\$75**



*By Harry C. Box.*  
This book provides students and budding professionals with practical hands-on information about standard practices, equipment and tricks of the trade essential to the motion picture set lighting technician. Covers electrical distribution and regulations, HMI and arc light operation plus set protocol. Includes more than 150 illustrations and 100 tables. 377 pages, 1995.

#### Basics of Video Lighting

**\$25**



This book is for the beginner and aims to give a rapid understanding of the complex process without going into too much technical detail. Details of equipment are included with a guide to planning, selecting and positioning of lights to make your own production look very professional. Covers studio and on-location lighting; practical examples; hints and tips for choosing equipment; exercises for students and a comprehensive glossary. 133 pages, 1995.

#### Professional Lighting Handbook

**\$95**

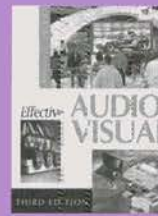


*By Verne & Sylvia E. Carlson.*  
A concise guide providing the vital working knowledge professionals need to create effective visual images. Details technical foundations, equipment and methods of lighting for film and video productions. This book is packed with practical insights, tips and troubleshooting techniques useful on the set. 224 pages, 1991.

### Audio Visual

#### Effective Audio-Visual

**\$65**



*By Robert Simpson.*  
An audio-visual user's handbook detailing equipment and techniques. This third edition demonstrates how the computer's fast becoming an effective show delivery platform in its own right. Applications covered are business presentations, conferences, training sessions, museum exhibits, visitor centre displays and multimedia applications. A useful asset to anyone with an interest in the audio-visual world. 255 pgs, 1996.

### Audio

#### Music & Technology

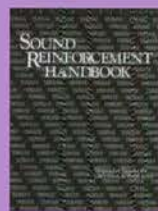
**\$29**



*By H.P. Newquist.*  
An excellent introduction to new music technology for today's active musician affected by the digital revolution. Includes simple guidelines on how to use the technology and provides explanations on MIDI, computers & music software, digital keyboards, drums, guitars and winds; sequencers and samplers; technology and live performance plus new techniques in home and studio recording. 198 pages, 1989.

#### Sound Reinforcement Handbook

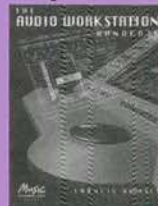
**\$69**



Written for Yamaha by Gary Davis & Ralph Jones, this handbook provides a useful reference for those wishing to learn about the basics of sound reinforcement. Presented in an easy-to-read format with clear diagrams and an index, this manual is a must for anyone working to bring better sound and music to the world. 412 pages, 1989.

#### The Audio Workstation Handbook

**\$55**



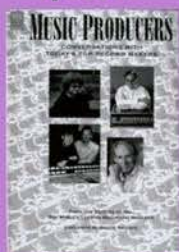
*By Francis Rumsey.*  
A complete guide for students, operators and engineers on digital audio and associated technologies. Contains vital information on MIDI control and computer soundcards, audio workstation principles, mass storage devices, files transfer and networking, audio interfaces and digital video. Similarly, those involved in the computer industry needing a greater understanding of high quality audio. 284 pages, 1996.

# CONNECTIONS SHOP

## Music Producers

*Edited by MIX Magazine.*

**\$39**

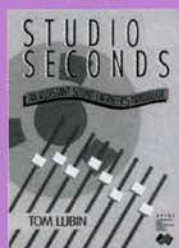


Popular recording techniques have changed dramatically in recent times effectively bringing the outside world into the realm of music. This has resulted in a marked transition in the role of the record producer. Music Producers contains 24 interviews with today's top record makers giving a broad view of the ways in which they create their audio images. 128 pages, 1992.

## Studio Seconds

**\$19**

*By Tom Lubin.*



A detailed handbook designed for those interested in music and sound recording. Covers basic principles for the beginner and advanced methods for the audio professional. Also includes techniques for the smooth running of recording sessions and features a humorous look at the development of magnetic recording. 154 pages, 1991.

## Making the Ultimate Demo

**\$49**

*By Michael Molenda.*

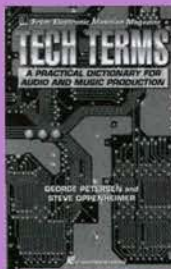


Outlines the process involved in the successful recording and marketing of your demo tape. Packed with tips from industry professionals on vocal and instrumental tracks, signal processing, mixdown and budgeting. Also advice on how to market your demo to the record labels without wasting your time. 128 pages, 1993.

## Tech Terms

*By George Petersen & Steve Oppenheimer.*

**\$19**



A practical dictionary of audio & music production terminology, written for the musician of the 90s. It provides a quick, accurate definition on 300 of the most commonly misunderstood words and phrases in the field of studio recording, digital audio & electronic music. 50 pgs, 1993.

## Practical Studio Techniques

**\$40 WITH CD**

*By Tom Misner.*

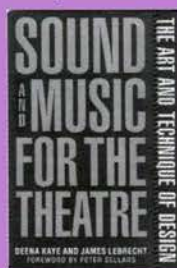


A book full of practical recording information for anyone interested in studio audio. Includes CD, a practical demonstration of a complete studio mixdown session including setting up effects; uses of the compressor; gating of sound; various types of equalisation; selecting reverb settings and much more. 102 pages, 1994.

## Sound & Music for Theatre

**\$44**

*By Kaye & LeBrecht.*

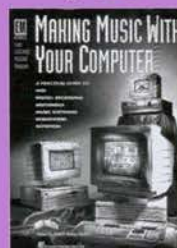


This book is for anyone interested in creative sound and traces the complete process of sound design from the original concept through to the finished plan. It covers development, research, cues, recording and various techniques. Also included is a director's and playwright's forum where they express their views on sound, design and its impact in today's theatre. 196 pgs, 1992.

## Making Music with your Computer

**\$39**

*Edited by David (Rudy) Trubitt.*



Explores the high-tech world of computers, synthesizers & digital audio. Covers MIDI sequencing, music notation & printing, hard-disk recording and multimedia. Special features to help you discover the many ways computers can contribute to the creative process with tips on selecting the right programs & gear for your needs. 128 pgs, 1993.

## Live Sound Mixing

**\$35**

*By Duncan Fry.*



A 'hands on' manual in its second edition, Live Sound Mixing is for anyone wanting information on the basic principles of how a PA system works and details on trouble shooting when it doesn't. Covers EQ, processing, mixing, soundchecks, effects, monitors, plus what each knob does, why and when to turn it. 176 pages, 1992.

## Concert Sound

**\$48**

*By David (Rudy) Trubitt.*



For all those interested in the sound reinforcement field. Full of useful information on specific live sound topics and profiles of individual tours including U2, Stones, Van Halen etc. Covers monitor mixing, drum & guitar miking, noise regulations, computers in live sound and career development. 166 pgs, 1993.

## MIDI Systems & Control

**\$55**

*By Francis Rumsey.*



2nd Edition. Provides a comprehensive coverage of the principles of MIDI control and how it can be implemented in practical systems. Useful for those interested in design devices with numerous diagrams and illustrations. Deals with MIDI in studio, musical and lighting equipment, mixer automation plus information on the latest additions to the MIDI spec. 202 pgs, 1994.

## Project Studio

**Blueprint**

**\$53**

*By Greg Gallucio.*



A practical D.I.Y. guide on project studios for home or business use, with information on the latest audio technology advancements. Contains practical business advice and expert recommendations on equipment. Areas covered include ideas, budgets, studio acoustics, an installation guide to audio connections and patch bays, troubleshooting, sound proofing and multimedia. 236 pages, 1992.

## Sound for Picture

**\$39**

*Edited by MIX Magazine.*



Takes you behind the scenes as top sound professionals reveal how dialogue, sound effects and musical scores are recorded, edited and assembled. Case studies include Terminator, The Simpsons, The Doors and Northern Exposure. Ideal for audio engineers, recording students, aspiring sound operators plus film and video enthusiasts. 134 pages, 1993.

## Modular Digital Multitracks

**\$49**

*By George Petersen.*



A personal guide to new recording industry technology with analysis of systems such as Alesis ADAT, Tascam DA-88, Fostex RD-8, Akai A-DAM and Yamaha DMR8. Explores features that aren't mentioned in the manufacturers' literature, reveals secret button pushes and explains maintenance and auto-diagnostic procedures. 120 pages, 1994.

## Hums & Buzzes Explained

**\$9**

*By Laurie Nethercote.*



A small handbook written in plain English for sound engineers and musicians. Explains earth loops and magnetically induced noises. No maths, no formulas, just down to earth trouble shooting tips! Includes : Project - build your own transformer isolation unit. 30 pages, 1993.

## Electronic Projects for Musicians

**\$39**

*By Craig Anderton.*

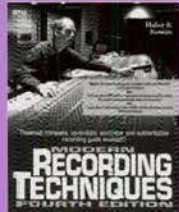


A comprehensive guide on how to build your own Preamp, Compressor/Limiter, Ring Modulator, Phase Shifter and Talk Box along with 22 other inexpensive electronic accessories. Written in clear language with hundreds of helpful diagrams & simple step-by-step instructions. Includes free demonstration record of electronic effects. 220 pgs.

# Subscribers save 10%

## Modern Recording Techniques

**\$49.50**

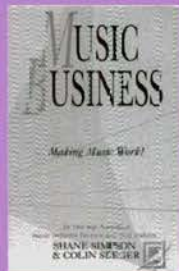


By *Hulber & Runstein.*

A comprehensive recording guide which addresses the area of project studio recording - the new base of home music production using multitrack, hard-disk and MIDI technologies. Perfect for the student of professional recording with easy-to-understand descriptions of the toys, tools and day-to-day practices of music recording and production. 4th edition. 500 pages, 1995.

## Music Business

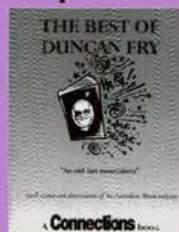
**\$49**



By *Shane Simpson & Colin Seeger.* A book about the business side of the Australian music industry by two top industry lawyers and deal makers. Shows how and why things are done as they are in the industry & what to watch out for in negotiating deals. A comprehensive guide for both the novice and the industry professional. 496 pgs, 1994.

## The Best of Duncan Fry

**\$15**



Connections Magazine popular columnist Duncan Fry chronicles his road stories, including some XXX rated, never before published! Dunk writes about life at the gig, after gig, and nowhere near the gig - it is sometimes a chronicle of the world through his eyes. Duncan ran his own PA and Lighting rigs through the 'golden era' of the Australian Rock Industry. Today he is co-owner of ARX, the Australian PA equipment manufacturer's. 100 pgs, 1995.

## Concert Lighting

**\$94**



By *James Moody.*

This hardcover informative book places special emphasis on rock and roll concert lighting equipment and techniques. Of particular interest for the touring professional lighting technician and designer it covers every aspect including the design stage, cuing the music, road safety, equipment designed to travel and practical examples of techniques. 191 pgs, 1989.

## Test CD

**\$29**

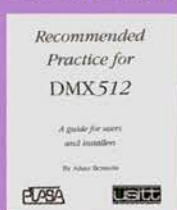


Very handy for audio people, this test CD has: Tape deck alignment tones, sine waves, 10kHz through 20kHz; 1/3 octave tones, (30 seconds of each); Square waves, (30 seconds of each); Frequency sweeps, 20Hz to 20kHz, sweeps down and up; Phase test at 250Hz, in phase and out of phase; Digital 'black', 1 minute of pure silence to find faults with;

Digital instrumental performances, without ambience or reverb; and SMPTE/EBU time code. Produced by MIX Magazine.

## Recommended Practice For DMX 512

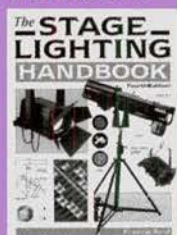
**\$19**



By *Adam Bennette.* A guide for users and installers. Explains the DMX512 specification & offers professional advice on how to set up a successful DMX512 system. An authoritative illustrated study of standard Lighting Control protocol. Endorsed by PLASA and USITT. 80 pgs, 1994.

## Stage Lighting Handbook

**\$39**



By *Francis Reid.* Fourth Edition. This standard illustrated guide incorporates recent advances in technology in areas such as light sources and instruments, including remotely-focused spotlights and computer aided design. In 1974, Connections editor Julius Grafon read the first version of this book and went out to successfully light a professional stage play. It can be done! 208 pages, 1992.

## Control Systems For Live Entertainment

**\$86**



By *John Huntington.* Demonstrates the use and integration of computers in the control and coordination of lighting and sound equipment. Includes the basics of control systems, data communication concepts and networking; case studies of problems and solutions; in-depth discussions of important topics like SMPTE Time Code, MIDI, MIDI Show Control, MIDI Machine Control, DMX512, MediaLink and many others. 292 pages, 1994.

## Effects for the Theatre

**\$34.50**

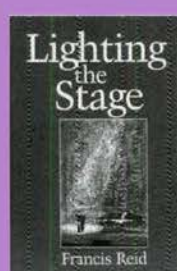


Edited by *Graham Walne.*

This practical handbook divides effects into four sections; scenic, sound, lighting and special written by internationally experienced experts in each field. An exciting range of techniques are explained with consideration given to budget. Also covers areas of safety, plotting and cuing. 150 pgs, 1995.

## Lighting The Stage

**\$36**



Written in an informal style, Francis Reid draws on his many years experience as a world renowned lighting designer and teacher to pass on tips and pointers which will interest and stimulate all those concerned with using designed light on stage. Ideal for directors, choreographers, set designers, costume designers, stage managers and specialist technicians. 114 pages, 1995.

## Lighting by Design

**\$55**



By *Fitt & Thornley.*

A full technical guide to the basic theory and practice of lighting for practitioners of lighting in the entertainment industry, including stage, film, television and still photography. Included is a thorough coverage of equipment and a look at design requirements, writing specifications, awarding contracts and purchasing of equipment. Emphasis has been placed on safety and its current legislation. 321 pgs, 1992.

## Basic Stage Lighting

**\$17**



By *Mark Carpenter.* Written in 1982 primarily as a first text, Basic Stage Lighting provides answers to many of the lighting problems which occur in drama productions. Teachers, amateur lighting and production managers together with

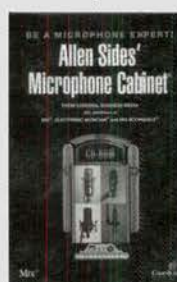
students of drama will appreciate the detailed and informative diagrams which reflect the author's wide experience in stage lighting. DMX and moving lights not included. 113 pages.

# EXTRA essentials

## Allen Sides' Microphone Cabinet

MIC AUDITIONING TOOL AND MUCH MORE!  
CD-ROM

**ONLY \$99**



Revolutionary fully interactive CD-Rom Disc featuring tests of 66 popular & classical mics with 33 different instruments. Includes: Specs with frequency response diagrams and polar patterns; audio samples of selected mics and instruments; directory of mic manufacturing and list of current models. Works on Mac or PC including Win 95. An excellent tool for students and professionals.

## Lighting Stencils

**\$95**



SET OF 2 STENCILS from the Kilowatt Company- Aussie Made. a precision drafting aid, outlines in both scales, 1:25 and 1:50. Chamfered edges prevent ink under-run. Incl. outlines from Altman, CCT, Selecon, Strand, Kliegl, Janiro, Teatro -with most commonly used lanterns.

# ORDER FORM

**ALL YOUR DETAILS KEPT CONFIDENTIAL!  
WE SHIP QUICK OR CALL YOU ... and:  
CREDITCARD DETAILS PROMPTLY DESTROYED**

YOU ARE ORDERING FROM **CONNECTIONS PUBLISHING PTY LTD** (ACN 058-443182),  
our office address is: Level 2, 41 Rawson Street Epping NSW 2121. Open 8.45- 5.15pm.

| Description of item | QTY | Price |
|---------------------|-----|-------|
|                     |     |       |
|                     |     |       |
|                     |     |       |
|                     |     |       |
|                     |     |       |

- **TOTAL GOODS** AU\$ \_\_\_\_\_
- **LESS 10%** (Subscribers Only) \_\_\_\_\_
- **BALANCE** \_\_\_\_\_

**SAVE 10%** **SUBSCRIBE TO CONNECTIONS,**  
and save 10% on all goods I order anytime!

- 12 mths subscription @ A\$39.90 (AUST) \_\_\_\_\_
- 24 mths subscription @ A\$58 (AUST) \_\_\_\_\_
- 12 mths subscription @ A\$65 (NZ, air) \_\_\_\_\_
- 12 mths subscription @ A\$70 (ASIA, air) \_\_\_\_\_

- FREIGHT** (Usually despatched within 48 hours!)
- WITHIN AUSTRALIA, any sized order**  
\$5.00 Flat Charge, A/Post overnight air bag \$5.00
  - TO NEW ZEALAND, any sized order**  
A\$10.00 Flat Charge, Air parcel post \$10.00
  - TO ANYWHERE ELSE:** We will ship Air Parcel,  
and charge the cost to your credit card.
- **TOTAL:** \$ \_\_\_\_\_

● We **WILL invoice** educational establishments if order supplied  
**Payment:**  Cheque/Moneyorder enclosed  
(in favour of Connections Publishing Pty Ltd, Australian dollars only)

- Bankcard  Visa  Mastercard  AmExpress

Card Number: \_\_\_\_\_ Expiry date

Cardholders name \_\_\_\_\_

**X** Sign here \_\_\_\_\_

**SHIP THESE GOODS TO:** Write in **BLOCK LETTERS** please!

Name \_\_\_\_\_

Address \_\_\_\_\_

Suburb \_\_\_\_\_

State \_\_\_\_\_ Postcode/zip \_\_\_\_\_

COUNTRY \_\_\_\_\_

My phone number is \_\_\_\_\_

Now fax this form to **(+61-2) 9876-5715**; or – Mail to:  
**CONNECTIONS PUBLISHING PTY LTD,**  
**PO Box 439, Epping 2121 NSW Australia**

Or: Phone orders, **1-800-635-514** by Creditcard only.

## Black cotton t-shirts, short or long sleeve

Printed with the Connections Logo on the rear, on nice cotton shirts from the Bongo Print Works. All XL size, one size fits all.



**Sensitive  
LIGHTNING  
Person\***  
\*Oxymoron?

**SHORT SLEEVE  
\$14**



**NOTHING you  
DO will get you  
BACKSTAGE.  
( BUT TRY ANYWAY! )**



**Equipment  
Relocation  
ENGINEER**

**LONG SLEEVE  
\$19**



**I am  
NOT the  
DRUMMER**

## Tom's Studio Videos \$59.50 each (Discounts for extra titles)

HOW can you make your recordings sound more like a record? How can you get your sound the way you want it? SHAPING YOUR SOUND, hosted by producer and engineer Tom Lubin, is a series of videos that bring pro recording studio techniques to muso's, engineers and home recordists. Each tape is packed with demonstrations, computer graphics and live musical examples. SHAPING YOUR SOUND provides a complete course as well as an ongoing reference tool. Each tape comes with a reference foldout and index.



\*At least 1 hour each  
• \$59.50 each  
(5 different titles available),  
• BUY ANY 3 for \$168 (save \$10)  
• BUY ALL 5 for \$269 (save \$28)

All with our 7 day money back guarantee.

### 5 TITLES:

- SHAPE YOUR SOUND WITH: MIXERS & MIXING
- SHAPE YOUR SOUND WITH: MULTITRACK RECORDING
- SHAPE YOUR SOUND WITH: MICROPHONES
- SHAPE YOUR SOUND WITH: REVERB & DELAY
- SHAPE YOUR SOUND WITH: EQUALISERS, COMPRESSORS & GATES

# Sorry no wholesale!

## MINIMALIST RECORDING

By Andrew Broadhead

*There is a lot to be said for simplicity. From an audio engineer's point of view it usually translates into "less things to stuff the sound up!" Although I wouldn't say no to working on a 72-channel SSL, I admit to having an interest in making recordings in a basic way.*

almost overemphasised. So often the mixes we do get lost in the cinema. It gets really disappointing. Everything gets a bit lost in a cinema, but *The Piano* stood up.

"The other great thing was the music, which worked strongly on an emotional level. But it was difficult music to mix in. Not much of that music had a natural end to it. It sort of went on and on, and was written to go further. In a lot of cases, we actually did end the music earlier. And because of the way it's written, and the key it's written in, I had to have lots of goes to try and get it out. Music in a film has to be seamless."

Who can forget the overwhelming opening of *The Piano*? The gargantuan waves, the tiny boat, the searing wind, and the haunting score?

The music for *Portrait of a Lady*, is written by Wojciech Kilar who did *Dracula*. "It's a haunting, understated score, which we play very softly. It's a subtle, lush score, which would be a bit saccharine, if it were too loud. Actors love working with Jane Campion, and they're all fabulous. She's gets great performances. She gets the best out of all the crew. It's quite a painful process sometimes."

### Equipment

Creagh usually works at a Harrison 10, or 12 sound desk, with up to 64 faders. It's a digitally controlled analogue desk, which comes with a lot of its onboard compressors, and noise gates. "It's one of the finest you can buy," Creagh said. He brings in his own Lexicon 300 reverb units, and \$5000 Focusrite compressor, for dialogue. The dubbing theatres have 'rock and roll' projectors which run high speed both ways, Sony PCM800 and Otari MTR90 24 track recorder.

"The equipment is changing enormously at the moment. The big argument is fully digital, or digital control of analogue signals. I'm for the latter. Total digital has a lot of inherent problems. If you want to use ancillary equipment, you've got to convert it to analogue again, come out of the desk, and then

I had the opportunity to do just that on a recent project involving a jazz quartet. The recording was actually done at the TAFE college studio in Wangaratta (anybody heard of the place?). Rather than waste time with overdubs the band, consisting of drums, bass, guitar and a sax player/vocalist, decided to record all at once, direct to DAT. Even the vocals were to be done live.

The "studio area was actually just a standard classroom with a multicore running underground to a separate room that served as the control room. The band set up in a rough semi-circle facing the centre of the room. In keeping with the concept of simplicity and the fact that we were on a tight budget, I had just an SM-57 on the kick and snare and a Rode NT-2 condenser mic for an overhead.

There was an SM-57 on the guitar amp, the bass was DI'd and there were two Shure SM-58's set up for the vocalist, one to sing through and the other for the saxophone. The console used was a Spirit Folio Lite 12 into 2. Like so many other small mixers of its class the Spirit has a short signal path and a very clean sound which suited the project perfectly. One added advantage of the Folio was its sweepable mid EQ on all mono channels.

convert it back to digital. You don't always have a choice of the way you route equipment through the desk. Sometimes it's in a fixed order. Also total digital is enormously expensive, although they're coming down in price. I don't trust them quite yet, they're not flexible enough for me."

Americans are known to spend more time and money on sound

This was hardy for removing the flappiness of the kick drum, the honk of the snare and the wooliness of the bass etc. (Please excuse the highly technical jargon)

As for outboard gear, again, we kept it pretty simple. There was a Midiverb III used to add a touch of ambience that the recording area was lacking, an Alesis 3630 stereo compressor over the whole mix and an ART valve mic pre-amp used for the vocal mic. We recorded onto a Tascam DA-30 Mk.II DAT which is a very nice piece of gear with a great sound. The Folio Lite has a globally switchable aux 1 for pre/post fade sends, this was used to set up a headphone mix for all the musicians. Once this was done and all the gains set using the desks PFL feature the band started jamming while I set the recording levels, compression and FX up. This was all done whilst monitoring post-DAT. The 3630 compressor was switched to stereo mode and set to give up to 4/5 dB of gain reduction on the loudest passages. Any more than this and the sound lost its openness. This was where a really top line compressor would have come in handy, but you can't have everything (where would you put it?)

than Australians "In the mid '80s we were nearly caught up," says Creagh, "but since digital we've fallen way behind. The dubbing theatres just aren't well enough equipped."

One of Creagh's jobs is to reduce the sibilant T's and S's. "When we mix dialogue, you tend to play it louder, and push it through effects and atmos. A special compressor detects that

After a few test runs and playbacks it was just a matter of pressing record. The band enjoyed playing together even though the singer had to do some fast jumping between vocal and sax mic. More importantly the sound was great. No doubt the dynamic range of the DAT (as opposed to a cassette MTR) helped to give the recording a lot of air and clarity. The band didn't attempt to "fill the room" with sound either, their levels were kept low and this prevented spill between the mics. Six tracks were laid down in a little over four hours. There was no waiting around for mixdown, the band just picked their best takes and these were edited onto a master DAT using Sound Designer.

Everyone involved was happy with the result. For me it reinforced the fact that good quality recordings can be made with a minimum of time, money and equipment plus careful planning, mic. placement and listening. So for those of you who want to get rid of their SSL my number is.....

*Andrew Broadhead is a Sound Production Lecturer at Collingwood/Wangaratta TAFE - and also an Audio Engineer, for 24 track recordings at \$25 per hour. Call him on (03) 9525 3890*

frequency, and knocks it back down. We use that a lot, otherwise you have it spitting in your ear, and it gets very uncomfortable.

"Most people think that the sound is all recorded on location, and just magically appears."

# BUYERS GUIDE

# studio monitors

A note about Nearfield, Midfield and Main Monitors. Last time we did this we had howls of approbation. So this time we loosely group these monitors by woofer size! Price includes sales tax. All prices as advised by Distributors, in Australian Dollars, and current at 01 February 1997. All care taken, no responsibility for any error. Each distributor was allowed to nominate four representative models, they often have more models to choose from.

## STUDIO MONITORS - SMALL

### (1 x woofer 8" or less)

#### ATC

A.R. Audio Engineering (02) 9810 5300

**SCM10 Pro** nearfield 5" Mid/Bass 1" HF 2-way featuring soft dome Mid and HF technology. Recommended 250w amplifier. 80dB @ 1W @ 1m. 10Kg. Extreme accuracy and soundstage reproduction. \$3,200.

**SCM20 Pro** nearfield 7" Mid/Bass 1" HF 2-way featuring soft dome Mid and HF technology. Recommended 250w amplifier. 83dB @ 1W @ 1m. 23Kg. Extreme accuracy and soundstage reproduction. \$5,500.

**SCM20A Pro** nearfield 7" Mid/Bass 1" HF 2-way active featuring soft dome Mid and HF technology. All aluminium construction with built-in 250w Bass and 50w HF amplifiers. 30Kg. Extreme accuracy and soundstage reproduction. \$7,500.

#### SONY

Sony Australia (02) 9887 6666

**SMS-3** 20cm Woofer, 3cm dome tweeter, sealed timber cabinet, magnetically shielded, 100w (nominal) 300w (peak) 90dB/W/M, 50Hz to 38kHz. \$3775.

**SMS-1P** powered monitor, 10cm speaker, vented timber cabinet, 15w RMS power amp, 2 inputs (1 balanced, 1 unbalanced), separate volume controls, bass and treble controls. \$580 each.

#### TANNOY

Syntec International (02) 9417 4700

**PMB6.5** has sensitivity of 90dB and power handling of 100w peak - a solid studio monitor. \$749.

**PMB8** strong medite construction built to last. Peak power handling of 125w and sensitivity of 92dB coming in a case (401x277x274). \$1349.

**System 600** new Tannoy System 600 is a

dual concentric speaker with high sensitivity (90dB) and power handling 160w. \$1099.

**System 800** big brother to the 600, has a peak power handling of 180w and high sensitivity of 92dB. \$1549.

#### D.A.S.

Magna Systems & Engineering (02) 9417 1111

**Factor-5** 5" 2-way 70Hz - 20KHz, 80w (RMS), 90dB SPL, 40 ohms. Dimensions: 23 x 16 x 15 cm. \$200.

**Factor-8** 8" 2-way 45Hz - 20KHz, 100w (RMS), 91dB SPL, 80 ohms. Dimensions: 44 x 27 x 23 cm. \$490.

#### HAYES

Australian Audio Supplies (043) 291 711

**Hayes F80** features fractal spatial system (FSS) which achieves true spatial imaging, 2-way, time aligned, radiates sound waves naturally eliminating phase cancellation and standing waves. \$995.

#### MACKIE

Australian Audio Supplies (043) 291 711

**Mackie HR824** active 8.75", 2-way near field monitors, features 150w bass, 100w top end, 6.4 x 12" ob-round passive radiator. \$2995 a pair.

#### MEYER SOUND LABORATORIES

System Sales Pty Ltd (03) 9529 2633

**HD-1** self-powered, high definition, near field monitor. Applications: psychoacoustics research, CD mastering, music recording, video and film dubbing, foley mixing and sound effects spotting. \$4231.

#### AUDIX

Production Audio Services (03) 9415 1585

**Nile V** features a 7" Kevlar woofer (dual 7" available) and a 1" cloth dome. Max power 350w, 89dB (1W/1M). Handmade. \$3995.

**Studio 1A** features a 6 1/2" polycarbonate woofer and a 1" cloth dome tweeter producing 87dB (1W/1M) and a max power of 250w. Dual woofer version available. \$1795.

**MM15** mini monitor series features a 5 1/4" woofer and a 1" dome tweeter producing 86dB (1W/1M) and handling 100w. Perfect for small home studios. \$895.

**MM25** largest in mini monitor series, features dual 5 1/4" woofer and a 1" dome tweeter with



MACKIE  
HR824

sensitivity of 89dB (1W/1M) and max power of 100w. \$1195.

#### EAW

Production Audio Services (03) 9415 1585

**MS20** entry level monitor features a 6 1/2" vented woofer and a 1" soft dome tweeter with sensitivity of 89dB (1W/1M), handling 100w (peak) in a small case. \$1695.

**MS30C** nearfield monitor features an 8" woofer and a 1" cloth dome. Sensitivity is 90dB SPL (1W/1M), handling up to 200w. \$1995.

## Want to hear some great news???

# Sound Devices



Authorised  
Apple Reseller

265 Sussex St Sydney  
Ph 02 9283 2077 Fax 02 9283 1337  
Email:- soundev@ozemail.com.au  
Web:- www.ozemail.com.au/~soundev



# JBL

Be the first to hear the JBL range in our new isolated listening room. Bring in your favourite CD, relax back in our comfortable lounge & listen to the difference JBL monitors make.

Write in Reader Service Number: 139

# BUYERS GUIDE

## SPENDOR

AWA Distribution (02) 9898 7666

**SA200** near field active 2-way, 160mm woofer (6") 25mm soft dome tweeter, bi-amped - 130w bass amp, 60w tweeter amp, max SPL 106dB at 1m, accurate response and low fatigue. \$3335.

**SA300** near field active 2-way, 200mm woofer (8") 25mm soft dome tweeter, bi-amped - 130w bass amp, 60w tweeter amp, max SPL 110dB at 1m, accurate response and low fatigue. \$4385.

**SP1/2** near/mid field 200mm woofer (8") 3-way passive, 38mm soft dome mid and 19mm soft dome tweeter, 45Hz - 20KHz +- 3dB, pair matched within 1dB, 100w, accurate, low fatigue. \$2995.

**LS3/5A** near field 2-way, 100mm woofer (4"), BBC design, dome tweeter, 90Hz - 20KHz +- 3dB, 50w, XLR 1/P, max SPL 93dB at 1m, sensitivity 82.5dB/1w/1m. \$1599.

## DYNAUDIO ACOUSTICS

Amber Technology (02) 9975 1211

**BM5** 2-way near field, 175mm woofer (75mm voice coil) + 28mm soft dome tweeter, 100w RMS, 88dB sensitivity, 50Hz - 20KHz freq. response, all cabinets matched to within +/- 1.5dB. \$1350.

**BM10** 2-way near field, 175mm woofer + 28mm soft dome tweeter, 100w RMS (1000w peak), 82dB sensitivity, 114dB max SPL, 50Hz - 20KHz freq. response, adjustable rear-facing port. \$1950.

**C2** 2-way near field for mastering applications, 150w RMS (1000w peak), 120dB max SPL at 1.25m, 40Hz - 25KHz freq. response (+/- 3dB) and all cabinets matched to +/- 0.5dB. \$5995.

## ORPHEUS

Audio Sound Centre (02) 9901 4455

**Nexus 1** medium field, 10mm tweeter, 123mm woofer, for small to medium rooms. \$500.

**CS18** compact reference monitor used in television, radio and recording studios, 25mm dome tweeter, 113mm bass/mid driver.

## WRIGHT

Audio Sound Centre (02) 9901 4455

**WFM III** wave front monitors (TM) near field, concentric 2-way, 200mm woofer, low fatigue. \$1900.

## YAMAHA

Yamaha Music Australia (03) 9699 2388

**NS10MST** compact professional 2-way nearfield monitor with 18cm woofer and 3.5cm dome tweeter. \$949 per pair.

**NS40M** 'NS' sound in a mid-sized studio monitor with 2 x 18cm woofers, 6cm soft dome mid and 3cm soft dome tweeter. \$899 each.

## ALESIS

The Electric Factory (03) 94805988

**Monitor Point seven** Shielded Studio Reference Near Field Monitors, 5.25" woofer, 1" silk dome tweeter, Freq Response 85 hz - 27 khz, +- 3 db. Power handling 50 watts RMS

program, 100 watts Peak, Nominal Impedance : 4 ohms. \$649.00.

**Monitor** Studio Reference Monitors, 5.5 " woofer, 1" silk dome tweeter. Freq Response 45 hz - 18 khz , +-3db. Power handling 120 watts RMS Program, 200 watts Peak, Nominal Impedance: 4 ohms. \$899.00.

## CELESTION

The Electric Factory (03) 94805988

**KR1** Near Field Monitors, 5.25" Mid Bass Driver, Polymer Diaphragm Tweeter, (coaxially arranged) Freq Response 90 hz - 20 khz. Power handling 75 watts RMS program, Nominal Impedance: 4 ohms. \$399 .

**KR 2** Studio Reference Monitors, 8" Mid Bass Driver, 2 Polymer Diaphragm Tweeters arrayed for optimum performance, Freq Response 65 hz - 20 khz, Power handling 150 watts RMS Program, Nominal Impedance: 8 ohms. \$749 inc tax.



SONY SMS-3

## GENELEC

Studio Connections Australia (03) 9874 7222

**1029A** nearfield monitors, bass driver 130mm - treble 19mm. Bi-amplified, amplifier output with an 8 ohm load is 40 watts on the bass and 40 watts on the treble. \$1995.

**1030A** nearfield bi-amplified monitors, bass driver 6 1/2 inches with a 3/4" metal dome. Bass amplifier output is 80 watts and 50 watts on the treble. \$3995.

**1031A** nearfield monitors bi-amped, bass driver is 210mm and the treble metal dome is 25mm. Bass output is 120 watts and 120 watts on the treble. \$4995.

**1032A** near to midfield bi-amplified monitors, bass driver is 250mm and the treble is 25mm metal dome. Bass output is 180 watts and 120 watts on the treble. \$6555.

## STUDIO MONITORS - MEDIUM (woofer 10"/12")

### ATC

A.R.Audio Engineering (02) 9810 5300

**SCM50A Pro** near/Midfield/Main 9" Bass, 3" soft-dome Mid, 1" HF 3-way active. Built-in 250w Bass/100w Mid/50w HF amplifiers. Vertical or horizontal configuration. 49Kg. Extreme accuracy and soundstage reproduction. \$16,500.

**SCM100A Pro** near/Midfield/Main 12" Bass, 3" soft-dome Mid, 1" HF 3-way active. Built-in 250w Bass/100w Mid/50w HF amplifiers. Vertical or horizontal configuration. 65Kg. Extreme accuracy and soundstage reproduction. \$19,250.

continued page 51

# DO YOU HAVE A WIND PROBLEM?

Many people have a problem with wind but don't know who to talk about it. Some people try their local GP but the successful ones ask Audio Sound Centre.

Rycote are the UK professional windscreens people who manufacture a huge range of solutions for your microphone wind noise problems. ASC stocks Rycote.

Typically Rycote windscreens provide up to 8 to 10 dB improvement over foam windscreens and the addition of Hi Wind Covers and Windjammers can add an additional 10-12dB of protection. The systems are lightweight, extremely effective and built to handle the rigours of our industry. Additional to the full blimp style range of Windscreens are the cost effective Softies and Windjammers to suit almost any microphone available. There are two types. Mini Windjammers are made of synthetic fur type fabric with fibres 1cm long and are designed to improve the sound quality of on camera microphones. The Special range has fibres 3cm long the same as the professional range. There is virtually no adverse effect on sound quality or level yet the wind noise problem is virtually eliminated. Studio style mics can also benefit from a Special Mini Windjammer fitted over your existing foam mic shield. The following ready reckoner should help you select the correct size.

| Model           | Diameter | Length |
|-----------------|----------|--------|
| Small MWJ       | 25mm     | 30mm   |
| Small Extended  | 25mm     | 50mm   |
| Medium MWJ      | 40mm     | 50mm   |
| Medium Extended | 40mm     | 70mm   |
| Large MWJ       | 40mm     | 90mm   |
| Special 80 MWJ  | 50mm     | 80mm   |
| Special 90 MWJ  | 50mm     | 90mm   |
| Special 130 MWJ | 50mm     | 130mm  |
| Special 160 MWJ | 50mm     | 160mm  |
| Special 190 MWJ | 50mm     | 190mm  |

ASC is happy to supply a Rycote windjammer product for your evaluation so call and arrange a free trial and solve your wind problem forever.

If you would like our help, call  
Alex or Geoff on  
(02) 9901 4455.



# ASC

AUDIO SOUND CENTRE

# Studio Monitors: FACE THE MUSIC!

By Chris W Morton

**T**here is no question about the popularity of home recording studios in Australia, where they appear to be multiplying faster than rabbits did before calicivirus. This has largely come about since the introduction of comparatively low cost, high performance digital audio equipment, enabling many of these small studios to produce good quality material with low overheads. This equation is:

GOOD JOB + LOW PRICE  
= HAPPY CUSTOMER

Hence the popularity. But is there more to it than this? Or is it true that the full size commercial studios are all but finished?

Quite apart from the technicalities of recording techniques, and performance/quality variations between different pieces of audio equipment (digital or analogue), one of the most important links in the quest for accuracy, and a big variable, is the space between the recording engineer's ears (No, this is serious!) and the monitors.

We have been asked to do the acoustical design of a number of home studios recently as more people become aware of the importance of this aspect. Generally these studios have changed from hobby status to being the main source of income for the owner as demand increases. The briefs vary considerably, from those who want to do all the constructional work themselves on a \$500 budget through to those who treat it very seriously, in fact more so than some commercial studios do. So how do big and small studios compare in this area?

To avoid filling the magazine, it is necessary to keep the discussion simple and look at a few areas concerning the monitoring and acoustics, and the interaction between the two.

### Monitoring

Due to space limitations, in most home studios monitoring is typically done with small speakers positioned 1000-1400 mm from the listener, mounted on or just behind the console, universally known as "nearfield monitoring." A popular fallacy is that the listener is insulated from the room's acoustics, and simply hears accurate sound direct from the speakers. Unfortunately, this is not so.

Another common misconception is that any variations caused by room acoustics can

be corrected by equalisation or digital filters in the audio equipment. Nearfield monitoring in a small studio has a number of limitations compared to full size monitors in a commercial control room, of which the studio engineer should be aware.

### The Nearfield Position

In acoustics there is a transition area defining "nearfield" and "farfield" with respect to a sound source and receiver (e.g. speaker and ear). Resisting the temptation to throw in a mathematical formula, this can be loosely described as a function of the radiating element's (e.g. speaker) diameter, distance from the source, and the wave length (frequency) of the sound in question.

With a typical 6" driver operating at 100 Hz, the transition point would be around 800 mm, and at 1 kHz 80 mm. Therefore, technically, we are not listening in the speaker's nearfield, except perhaps in the very low frequencies-headphones are true nearfield devices. So what does this mean in practice?

**There is a shift in spectral (bass/treble) balance with distance variation from the speaker as we move from the near to the farfields, irrespective of the room's acoustics and speaker type.**

Essentially, this means that the listener must keep his distance or at least establish an exact reference position of the known spectral accuracy. Main monitors in a full size control room are generally positioned 3.2 m to 3.8 m from the listening position, eliminating this problem. Many engineers like the detail that they can hear on nearfield monitors, and, ideally, both types of monitoring should be available.

### Console Reflections and Interference

Sound reflections off the mixing console/desk face continue to be one of the biggest problems in achieving accuracy in studios of all sizes. The reflection is often quite strong with nearfield monitors, due to their proximity to the console, and causes deep notching or comb filtering of the frequency response at the listening position. These cancellations are worst from the lower to upper mid range frequencies, and vary considerably with listening position changes. The

console reflections also cause image distortions, although not as severe as early lateral (e.g. side wall) reflections do.

Treatment can be difficult with large bulky consoles, but, essentially, the desk and nearby equipment should be as small and low as possible, and nearfield monitors should be positioned behind the desk, on separate stands. Absorptive treatment on top of the meter bridge can help; however, some wide dispersion speakers-which generate the strongest reflections-can be very sensitive to nearby surfaces, and this approach may cause a deep notch or "suck out" in the direct response. The mounting and positioning of nearfield monitors is best optimised in situ, using an acoustic analyser.

Nearfield monitors mounted on the console can tend to use the console as a sounding board at the lower frequencies, which also supports mounting them on separate stands, off the console, to avoid this colouration.

Main monitor console reflections in full size control rooms tend to be less severe; however, the consoles are generally larger, and their positions more difficult to change. A low frequency interference dip is also often found around 80-100 Hz. Acousticians love the new, smaller consoles.

### Direct to Reflected Sound Ratio and Room Treatment

Monitors positioned close to the listener give a high direct/reflected ratio, meaning that most rooms' reflections are at a much lower level than the direct sound at the listening position. This is an unnatural balance, and our auditory systems can perceive it as an increase in harshness or brightness. This often leads the studio owner into adding more sound absorptive treatment to the room, which, in turn, makes dir/ref ratio even higher; don't overdo the absorption. Most small studios work best with less absorption than what might be first thought, particularly as some are crammed full of equipment anyway.

The most pressing need in many small rooms is diffusion, which scatters the sound, and generates a lot of low level reflections. This has the effect of creating a larger room ambience, with a more linear decay rate, and less variation throughout the listening

*(continued next page)*

# EnTech

MELBOURNE EXHIBITION CENTRE,

TRADESHOW - APRIL 23, 24, 25. CONFERENCES: APRIL 22ND.

## Seminar Program 1997

Briefly: ENTECH has always hosted Seminars, each is of up to one hours duration, and costs \$12. The imperative is to educate, not sell products. Mostly the Seminars are generic although occasionally a company will present a Seminar on a unique technology. For 1997 we have improved the Seminars -

- Papers / notes supplied with each Seminar
- Seminar Theatres acoustically isolated from tradeshow
- All A/V equipment courtesy of Intercity Gearhouse
- Stream managers on the job for better quality

### PRO AUDIO

Stream manager Andrew Scott, well known digital audio consultant.

\*Managed by Julius Grafton, editor of Connections Magazine.

• **A1. Professional Record Production in Australia.** Panel discussion. **4.00pm Wed 23rd.**

• **A2. Project Studio Acoustics on a budget.** **12.30pm Thurs. 24th.**

• **A3. Music & audio production for desktop video.** **2pm Thurs. 24**

• **A4. Audio Contracting trends** **3.30pm Thursday 24th.\***

• **A5. Audio Integration in the Installation.** **5.00pm Thurs 24th.\***

• **A6. Non-Linear audio show-out! 3 systems lined up.** **10.00am Friday April 25th.**

• **A7. PA design & implementation.** Presented by Apogee Sound **11.30am Frid. April 25th.\***

• **A8. Audio on the Internet. How?** **1.00pm Fri 25th April**

### CORPORATE A/V

Presented by FOCUS (Federation of Communication Users and Suppliers) in the FOCUS THEATRE - near the show floor!

• **F1. Automated Audio Visual Controls for Installations and Live Events.** Presenter: Dataton Australia. **10am, Wed 23rd.**

• **F2. ISDN Video Conferencing.** **11.30am, Wed 23rd.**

• **F3. Live Broadcast Techniques in Corporate Events.** Presenter: Murray Tregonning. **1.00pm Wed. 23rd.**

• **F4. Venue Etiquette - minimising conflict between AV staff and Venues.** **2.30pm Wed. 23rd.**

• **F5. Computer Graphics on-screen.** **9.30am Thursday 24th.**

• **F6. Supplying Industry Services to Corporate Events.** Presenter: Alex Bialock, Encore Presentations. **11.00am Thursday 24th.**

### LIGHTING

Stream managers Catriona Forcer (Asst editor, Connections Mag) and Andy Ciddor, lecturer in performance technology, (WA)

• **L1. Famed Environments, slide show and discussion.** **4.00pm Wed 23rd.**

• **L2. Director of Photography Roger Lanser ACS discusses film lighting.** **12.00 m/d Thurs. 24th.**

• **L3. DMX and beyond.** **1.30pm Thursday 24th.**

• **L4. Patrick Woodroffe (LD: Rolling Stones, Musicals, Ballet, Industrials. Special ENTECH guest) 3.00pm Thurs. 24th**

• **L5. Meet the LD's - our famous panel session returns.** **4.30pm Thurs. 24th.\*** Coffee afterwards.

• **L6. PC based lighting control.** **10.00am Friday 25th.**

• **L7. TV Lighting today.** **11.30am Friday 25th.**

• **L8. Future directions in Dimming Technology.** **1.00pm Friday 25th.**

### BASIC STAGE LIGHTING MASTERCLASS (3 hours)

• Presented by Chris Paterson. 2.15pm - 5.15pm, Friday 25th in the Auditorium. \$25 (students \$12)

### STAGING

• **S1. Stage Machinery Control Systems and the Future.** Presented by Bytecraft. **9.00am Thursday 24th.**

• **S2. Rigging: trends and issues.** **10.30am Thursday 24th**

## RETAILER FORUM

WEDNESDAY APRIL 23RD (first day of trade show)  
9.30am to 3pm. \$63 incl flight, lunch & conference papers.

Retail can be a lonely existence. Today's ENTECH retailers sell high-tech audio, lighting, musical, computer & studio equipment.

**Yet the issues we all face are identical. We deal with ...**

- Hi Tech retail: what is this?
- Retail price vs. street price
- Role of the distributor
- Internet sales and the retailer

- Managing a retail business
- Motivating staff, retail rules
- Preventing/recognising theft
- Marketing and advertising your business
- Networking with other stores
- Sales tax, a hidden gain
- Get them in the door
- Managing Change: dealing with shorter product shelf life.

## CONFERENCES

These are ONE DAY conferences held the day prior to exhibits - Tuesday April 22nd, 9am - 5pm. Venue: the new Melbourne Exhibition Centre. Both conferences include lunch, morning and afternoon tea, and conference papers are supplied. Each conference costs \$175.

### Digital Versatile Disk Technology

DVD is the most exciting new media yet released, promising multi purpose applications from a high capacity CD sized disk. Consumer video on DVD has been released, DVD-ROM releases for computers will follow soon. The DVD Audio specification has been long coming and subject to great discussion. Our conference will fully detail the state of the technology - up to the minute.

- Mastering & authoring to DVD
- **DVD - the audio spec detailed!**
- Replicating DVD
- Vision & DVD: MPEG & AC3
- DVD-ROM: new multimedia



• Our DVD Keynote speaker: Bill Foster, editor of One to One magazine (London).

### Technical Training

Technical Training for the Performance industry is a major issue. Where DO tomorrow's technicians come from? Employers need short courses, why aren't these available? This conference is for employers and trainers from all corners of the 'entech' industry - theatres, venues, production firms, broadcasters, A/V dept's & beyond.

- Training Institutions and the Industry - the Great Divide
  - What Training is available?
  - Building & recognising skills
  - Accreditation and remuneration
  - Marketing inhouse training to others. Exporting your training.
  - Training options: in house, course or contract?
  - Skills audits: measuring skills
  - Structuring a training program
  - What skills are required for tomorrow's productions?
- Training Conference Director: Andy Ciddor.

# PUBLIC AUCTION

## LIGHTING & AUDIO AUCTION

DJ • NIGHTCLUB • THEATRE • DISCO • BAND

New, ex demo, factory seconds and ex hire  
equipment being stock surplus to requirements!!!

Tuesday February 25 11.00am at a location to be advised  
Phone Auctioneers for details

### LIGHTING EQUIPMENT

**MAJOR BRANDS including** • MARTIN • COEMAR • CLAY PAKY • CCT • TEATRO • STRAND • ZERO 88 • DYNALITE • JEM • FAL • LITEPUTER • LIGHT EMOTION & more...

Enormous range of Intelligent Moving Lights and Controllers • Motorised and Non-Motorised Effects • Disco Lighting • Dimmers, Consoles & Racks • Colour Changers • Followspots • Chasers • Smoke, Bubble, Snow & Haze Machines • Heavy Foggers • Lasers • Mirror Balls • Stands • Centrepieces • Par Cans • Space Traker • Fog Juice • Plus heaps of Mobile Disco Equipment • and more.....

### AUDIO EQUIPMENT

**MAJOR BRANDS including** • EV • JBL • JANDS • PEAVEY • TECHNICS • STANTON • LEM • SHURE • DENON • VESTAX • ESP Technologies • LORANTZ • ETONE • & more...

Huge range of Amplifiers • Speakers • Subs • CD Players including DN2000Fs, D2700Fs, ESP • Microphones • Turntables including SL1200s, 1210s, Vestax & Lineartech • Mixers including Denon SMX 2000s, Vestax, ESP • Cross Overs • Wireless Mics • Cassette Decks • CD & Turntables Consoles • Samplers • Plus heaps of Mobile Disco Equipment • and more.....

**Inspection: Monday February 24 from 8.30am to 4.30pm  
and from 8.30am day of sale**

A Buyers Premium of 10% will be Added  
to the Knockdown Price of each Lot Sold.

Payment: 25% Deposit Required on  
Purchases. All Purchases must be paid for by  
Cash or Bank Cheque Unless Prior  
Arrangements are made with the Auctioneers.



**Gray Eisdell Timms** Pty  
Ltd  
AUCTIONEERS & VALUERS

30 Legge St Lakemba NSW 2195

(02) 9740 6611

area. Diffusion is created naturally by equipment, and any surface irregularities, although many "bumpy" walls will diffuse only over a narrow frequency range. The most effective approach is to utilise proper acoustical diffusers, combined with a quantity of correctly placed absorptive material. It's really a matter of putting the right amount of the right material in the right position—well, it seems simple to me! It is difficult to generalise as each room requires individual attention; however, perhaps the most common format is diffusion on the rear wall, absorption on the side walls near the speakers, and some absorption on the front wall and overhead. Note that this format could change substantially, depending on the room geometry, construction, monitors, acoustical requirements, etc.

## Low Frequency Performance: The Room

The area of biggest acoustical difference between typical home studios and commercial sized studios is in the lower frequencies. Sound generated within any room creates standing waves or modes between the rigid room surfaces, with the room's dimensions governing the frequency and spacing of these modes.

Small rooms are characterised by low modal density, and, where two or more of the room's dimensions are similar length or one is a multiple of another, the situation is worse, with the effect of creating large variations in the low frequency response.

Most home studios utilise an existing room, and the owner does not have the option to optimise the room's dimensions, as would be done with a purpose-built facility. These low frequency variations are possibly the most significant acoustical limitation of a small studio as even small movements in the listening position can result in substantial response variation.

Using nearfield monitors does not overcome this effect, unless the listener is in the theoretically true nearfield of the speaker, as discussed earlier—this suggests sitting a speaker on each shoulder or wearing headphones. An important thing to realise with the modal related low frequency response is that it cannot be corrected with conventional electronic equalisation or filtering.

There are two basic steps to improve the situation. The first is to optimise the speaker and listening positions. Simplistically, this means keeping the monitors out from the room corners somewhat, and moving the listening position away from the centre of the room, at least along the length. In small rooms, the smoothest low frequency response will be obtained when the listener is off centre in each axis. However, to maintain correct stereo balance it is usually desirable to be centralised across the width of the room.

**The second requirement is room treatment to absorb or diffuse (scatter) the low frequency modes. In medium and larger sized rooms, a combination of the two works best, and can result in a tight, smooth low frequency response, with minimal variation throughout the listening area.**

Diffusing the low frequency modes means introducing new ones to increase the density, and therefore reduce the response variation. Absorption has a smoothing effect, and reduces the pressure differences between the peaks and troughs in the response, but it cannot fill in a large trough, for example.

Diffusing low frequencies can take a reasonable amount of real estate from the room, so this option often cannot be applied to a small studio, meaning only absorption can be used. This absorption must be efficient in the frequencies needing to be controlled, and it is essential that it is correctly positioned within the room or the response can become worse. Once again, it is difficult to generalise as each room needs to be treated differently. However, all modes peak in the room

corners so it is safe to treat them first, particularly the corners nearest to the monitors.

## The Monitors

Monitors need to be sized to the room, and therefore the majority of small studios use speakers with 6" or 8" bass drivers. The laws of physics require large volumes of air to be moved to create low frequency sound, giving many of these speakers a roll-off point around 50-80 Hz, with some as high as 100 Hz. This means that the listener has little, if any, information on the level or quality of the bottom two octaves, which are used quite a bit by modern music.

In a small room the monitors will often be quite close to the room corners, which has the effect of strengthening the bass but frequently introducing colouration also, as the room modes have a stronger influence on both the direct sound and the low frequency decay rate.

The small speakers that do extend down lower are often characterised by an increase in harmonic distortion (colouration) at these frequencies. The harmonics of a 20 Hz tone are often louder than the fundamental frequency on a small speaker, even at low volume. Well, the speaker sounds like it has lots of bass. . . .

Good quality sub-woofers with an active crossover system can be very beneficial in a small studio (use a pair, not one), but the adjustment and positioning is critical, and really needs to be done in situ with an acoustic analyser. It is important to see sub-woofers as a fill-in, not an add-on, i.e. they should not be heard until a very low frequency note is played.

A recent commercial sized control room design at Krell Records included the use of four 15" servo-controlled (active feedback), self-powered sub-woofers. These were time aligned and flush-mounted below the main Genelec monitors, and give a -3 dB point of 13 Hz at the listening position. Using servo feedback makes this system very con-

*(continued on next page)*

Since 1976  
The Public Address Co.  
The Right Equipment  
The Right People  
The Right Price  
Sound & Lighting  
Hire, Sales and  
Installation  
To Any Scale  
Ring Around

But Save The Best Number Till Last

(02) 9799 7219

# Recording: Studio Monitor Special

trolled and robust, and SPL in excess of 125 dB at 20 Hz is possible with <1% distortion.

What is interesting is that the lack of harmonic distortion tends to give the initial impression of a lack of bass until the listener realises that it is indeed correct, and that the system is capable of highly controlled (breathtaking) low frequency dynamics. Such a system also reveals just how much is missing from most small monitors, and what is being added in.

## Conclusion

We currently have an unusual situation where commercial recordings are available to consumers for playing in home listening rooms, several of which may be much larger, and with wider range speaker systems, than that of the small studio in which the material was produced. It is not possible to offer a standard cure-all here for small room acoustics

as each room is different.

It is important, however, that the small studio engineer and his clients are aware of the limitations of such a space. This is not to suggest that it is impossible for a high quality product to come from a very small studio—it can, and when it does is a tribute to the quality of the engineer.

People setting up a home studio would be well advised to use the biggest room, with the highest ceiling, available. If the room is large enough, this may enable the use of medium sized monitors at a 2-2.5 m spacing, with good results.

The serious home studio owner will address the problem of room acoustics from the start with a room acoustical design. This will not only optimise the studio's performance as a whole, but also reveal any likely problems in the room's response before a client discovers it. Ac-

oustics is a very important issue for many studios, and a proper design will cover this aspect also, to achieve an attractive, integrated appearance at a much lower price than many people would first think.

There is a lot that can be done to improve the acoustical quality of a small studio, but, at the end of the day, there is really no true substitute for room volume. A professionally designed, full-size studio will win out in accuracy.

Whether this increase in accuracy translates into quality is up to the engineer. Most small studio engineers are the studio owners, who are often willing to go that bit further than the guy on a wage—now that's an interesting point. . . .

Aro Technology specialises in room acoustics and offers a professional room design service. This can include space planning, equipment layout, acoustical treatment/noise isolation, drafting, air conditioning, colour perspective presentation drawings and material and construction specifications.

Room acoustical analysis on site is done using some of the most advanced equipment available.

Aro also manufactures a range of specialised high performance modular acoustical panels, including number theoretic Schroeder diffusers, low frequency and broadband sound absorbers.

For more information contact:

Chris Morton  
Phone: (08) 8346 4199  
Fax: (08) 8340 0069



## PROFESSIONAL INSTALLATION HARDWARE

**JANDS**

**JANDS ELECTRONICS PTY LTD**  
40 KENT ROAD MASCOT NSW 2020  
PHONE: (02) 9582 0909 FAX: (02) 9582 0999

Write in Reader Service Number: 121

## STUDIO MONITORS - MEDIUM (woofer 10"/12")

### TANNOY

Syntec International (02) 9417 4700

**10 DMT** contains the technology of a 10" dual concentric driver in an energy coupled/braced cabinet. Peak power 350w, sensitivity 94dB. \$2999.

**12 DMT** is a 12" dual concentric system with peak power 450w, sensitivity 90dB. \$3999.

### D.A.S.

Magna Systems & Engineering (02) 9417 1111

**Factor-12** 12" 2-way 36Hz - 20KHz, 200w (RMS), 94dB SPL, 80 ohms. Dimensions: 54 x 40 x 31 cm. \$999.

### MEYER SOUND LABORATORIES

System Sales Pty Ltd (03) 9529 2633

**HD-2** self-powered, high definition, mid field monitors (wide or narrow). Applications: music recording, CD mastering, project studios, sound dubbing, broadcast and control rooms. \$5461.

### EAW

Production Audio Services (03) 9415 1585

**MS63** bridges gap between studio monitors and sound reinforcement. Features a 12" LF driver, 7" carbon fibre cone and a 33mm soft dome. Sensitivity 95dB (1W/1M), power 400w. \$5995.

### SPENDOR

AWA Distribution (02) 9898 7666

**SP100** mid field passive 3-way, 300mm woofer, 160mm mid range 19mm soft dome tweeter, 200w, 110dB SPL at 1m, tri-wired, accurate response and low fatigue. \$4675.

**SA1200** mid field active 3-way, 300mm woofer, 160mm mid range 19mm tweeter, tri-amped with 3 x 100w mono block amps, 112dB at 1m, protection circuit, veneered high grade MDF cabinet, recessed handles. \$11,960.

### DYNAUDIO ACOUSTICS

Amber Technology (02) 9975 1211

**BM15** 2-way near field reference monitors, 240mm woofer (100mm voice coil) + 28mm tweeter, 40Hz - 22KHz freq. response, 250w RMS, 88dB sensitivity, 108dB SPL at 1.25m. \$2550.

**C3** 3-way mid field reference monitors for mastering applications, 12" woofer + 6" mid + 1" 'Esotar' tweeter, 35Hz - 25KHz freq. response, 250w RMS (1000w peak), 87dB sensitivity. \$10,995.

**M1.5** 2-way mid field monitor, 12" woofer + 6" mid + 1" 'Esotar' tweeter, 40Hz - 20KHz freq. response, 200w RMS, 88dB sensitivity, 120dB SPL at 1.25m. \$7100.

**M1.5** 2-way mid field/main monitor, flexible design (suitable for midfield or main monitor use as well as O/B), 400w RMS, 87dB sensitivity, 125dB SPL at 1.25m. \$11,300.

### ALESIS

The Electric Factory (03) 94805988

**Monitor Two** Shielded Studio Reference Mid Field Monitors, 10" low freq woofer, 5" mid freq, 1" silk dome tweeter, Freq Response 40 Hz - 18 kHz, +/- 3 db. Power handling 150 watts

RMS program, 200 watts Peak, Nominal Impedance: 4 ohms. \$1599.00 inc tax.

### GENELEC

Studio Connections Australia (03) 9874 7222

**530C** reference monitors - tri-amplified, bass driver is 210mm, midrange is 80mm. Ribbon tweeter is 9 x 65mm. Tri-amplified 120w, 120w and 120w. \$7550.

**1037A** Tri-amplified monitors, bass driver is 300mm, midrange is 130mm and the metal dome tweeter is 25mm. Tri-amplified 160w, 160w and 160w. \$12,170.

**1038A** Tri-amplified monitors, bass driver is 385mm, midrange is 130mm and the metal dome tweeter with proprietary DC.W. is 25mm. Power output is 400w, 120w and 20w. \$17,150.

**1039A** control room monitoring system comprising 2 x 385mm bass drivers, 1 x 130mm midrange and 1 x 25mm metal dome in each cabinet. Full output power is 1000w in each cabinet. \$36,590.

## STUDIO MONITORS - FULL SIZE

### ATC

A.R.Audio Engineering (02) 9810 5300

**SCM150A Pro** near/Midfield/Main 15" Bass, 3" soft-dome Mid, 1" HF 3-way active. Built-in 250w Bass/100w Mid/50w HF amplifiers. Vertical or horizontal configuration. 75Kg. Extreme accuracy and soundstage reproduction. \$22,000.

**SCM200A Pro** main monitor 2 x 12" Bass, 3" soft-dome Mid, 1.25" HF

3-way active. Includes external amplifier pack with 2 x 275w Bass/200w Mid/100w HF amplifiers. 116Kg. Extreme accuracy and soundstage reproduction. \$38,500.

**SCM300A Pro** main monitor 2 x 15" Bass, 3" soft-dome Mid, 1.25" HF 3-way active. Includes external amplifier pack with 2 x 275w Bass/200w Mid/100w HF amplifiers. 140Kg. Extreme accuracy and soundstage reproduction. \$42,500.

### TANNOY

Syntec International (02) 9417 4700

**15 DMT** offers a dual concentric driver giving the benefits of single point source monitoring. Peak power handling of 600w and sensitivity of 98dB. \$5999.

**215 DMT** is based around a 15" dual concentric unit supplemented by a 15" bass unit handling frequencies below 250Hz in a fully braced cabinet giving peak power handling of 750w and sensitivity of 101dB. \$9449.

### EAW

Production Audio Services (03) 9415 1585

**MS103** features vented 15" LF system, 7" carbon fibre cone and a 33mm soft dome. Sensitivity 95dB (1W/1M), power 800w. \$7235.

### DYNAUDIO ACOUSTICS

Amber Technology (02) 9975 1211

**M3-P** 3-way (passive) main studio monitors, 2 x 12" bass + 2 x 5" mids + 1" dome tweeter, bi-amp configuration, 40Hz - 20KHz freq. response, 650w RMS, 123dB SPL at 2.25m, THD + 1MD = <1%, active versions also available. \$20,800.

**M3.5** 3-way active main monitors, 4 x 12" bass + 2 x 6" mids + 1" dome tweeter, 35Hz - 20KHz freq. response, 127dB SPL at 2.25m, THD + 1MD = <1%, extensive protection circuitry, various amp/x-over configurations available. \$51,300.

**M4** 4-way active main monitors, 4 x 12" bass (fluid cooled) + 2 x 6" mids (3" voice coils) + 5.6 and 3.3cm 'Esotar' tweeters, 35Hz - 20KHz freq. response, 130dB SPL at 2.25m, extensive protection circuitry with various amp/over options available. \$66,900.

**ABES** active bass extension system with 2 x 12" bass drivers with integral 305w amplifier and x-over. Allows very flexible monitoring capability in conjunction with near or mid field monitors. 35 - 90Hz freq. response, 126dB max SPL. \$13,150.

## DYNAUDIO ACOUSTICS



### GENELEC

Studio Connections Australia (03) 9874 7222

**1033A** control room monitoring system comprising 2 x 300mm woofers, 1 x 130mm midrange and 1 x 25mm metal dome tweeter. Full output power is 1100w in each cabinet. \$P.O.A.

**1034A** control room monitoring system comprising 2 x 300mm woofers, 1 x 130mm midrange and 1 x 25mm metal dome tweeter. Full output power is 1200w in each cabinet. \$P.O.A.

**1035B** control room monitoring system comprising 2 x 385mm woofers and 1 x 25mm metal dome tweeter. Tri-amplified 2 x 1100w, 1 x 600w and 1 x 300w. \$P.O.A.

**1091A** subwoofer using 1 x 210mm driver produces 70 watts of output with very low THD and 1M distortion. \$1270.

\* Note that Genelec subwoofers are also available.

Next Months Buyers Guide:  
**Wireless**  
**Microphones**



# BASF National Tracking Guide

ARTIST PRODUCER ENGINEER PROJECT

## New South Wales

**AfSharp** Jeff Cripps (02) 9534 4440. 24 Track 1\*  
**Natalie Bartholomeusz** Jeff Cripps Christian CD  
**3rd Degree** Jeff Cripps CD  
**Sutherland Shire Band** Jeff Cripps 18 Trk. CD  
**Apex Studio** Greg Dixon (02) 9876 8170. 16 Trk. 1\* tape  
**Ceasfire** Ceasfire/Greg Dixon EP  
**Inparto** Inparto/Greg Dixon Demo  
**Greg Dixon** Greg Dixon Demo  
**Heifer** Heifer Demo  
**Greg Dixon** Greg Dixon Album  
**Aura** Greg Dixon Album  
**Pagan Cafe** Greg Dixon Album  
**Bush Tracks** Ruth Miller (066) 891 290. 24 Track Recording & Multimedia Studio  
**Spillmasters** T. Tonkin/A. Major/D. Highet CD plus album midown  
**Brian Cadd** Dave Highet Web Site Sound Production  
**Crystal Clear Studios** Dave Tozer (02) 9684 1152. 24 Trk. Dig. Adats, 32 Ch. (66input) Console  
**Massive Ferguson** Dave Tozer Demo  
**Dead Meat** Dave Tozer Demo  
**Brenda Kristen** Dave Tozer Vocal Instruction Tape  
**Hussla** Dave Tozer Demo  
**Shock** Dave Tozer Demo  
**Mike Richards** Dave Tozer Advanced Drum Techniques CD  
**Damen Gerard Studios** Contact Marshall (02) 9660-8776. 2\* 24 Trk., 1/2\* 32 Trk.  
**Radio Birdman** Rob Ashley/Chris Tracking  
**Swoop** Josti/Ashley Preproduction/Tracking  
**Gadflys** Russel B Sides  
**Louis Tillet** Russel Demos  
**Asteroid B612** Jordan Tour EP  
**Eric Studios** Steve Newton (02) 9858 2686. 1+8 Track & Hard Drive Multitrack & MIDI  
**John Williamson** Phil Matthews 0055 Tour/Promo Album  
**Festival Studios** Catherine Knappman (02) 9395 8070. 2 x Analogue Multi-Tracks or Digital Multi-Track  
**Winter Wanderer** Peter Casey TV Commercial  
**TV2, NZ** Glen Phinister Orchestral Tracking (Korea)  
**Pollyanna** Paul McKercher Paul McKercher Album Tracking  
**JMF Sound Studio** Fran Eshter (02) 9790 4097  
**Wicked Choice** Ralf Eshter CD  
**Corrosive** Rob Gandiaga Demo  
**Hashed Denim** Simon Melli Demo  
**Black Label** Rob Gandiaga CD  
**Lucinda Street Recording** Rick Mostyn (042) 291 169 Double CD  
**Opera By The Sea** Rick Mostyn  
**Main St Studio** Robert Specogna (042) 834 515  
**Finn Castle Mill** R. Specogna CD Album  
**Jules Honey** R. Specogna CD Album  
**Razor Back** R. Specogna/Band CD Album  
**Warwick Marsh** R. Specogna/D. Hodges CD Album  
**Unusual Addition** R. Specogna/D. Hodges Demos  
**Deliberate Strangers** R. Specogna/D. Hodges CD Album  
**Megephon & Airmotion Studios** Guy Dickerson (02) 9650 6576. 24 Track Analogue, Lock To Picture  
**Serious Hit Music** Raiala May  
**Tumbleweed** Spencer Lee  
**Renaissance Players** Winsome Evans Commercial  
**Andy 500** Tony Hystek Mix 3 Albums  
**Steve Clark** Brett Lunney Mix Album  
**Dave Bullock** Shane Fahey EP  
**Paradise Studios** Jason Lea (02) 9357 1599. Custom Mixer, 24 Track Studer A800, Valve Outboard  
**John Mulkins** John Mulkins/Mike Stavrou Mixing  
**Suzie MacKenzie** Brian White Album-Rec./Mix  
**Michael Garland** Band/Jason Lea Album Tracking-Rec./Mix  
**Birdseed** Cameron McCauley Album Tracking  
**Paul Bryant Mastering** Paul Bryant (02) 9748 0222. Mastering Suite  
**Strings & Percussion**  
**Third Degree** Jeff Cripps CD Album  
**Dave Warner** Martin Cilia Re-Mastered For CD  
**Buddy Holly Tribute** Paul McCann CD Album  
**John Broomhall** Rob Specogna CD Album  
**Steve Owen** Tony Taunton CD Album  
**St. Andrews School** 2MBS-FM Double CD  
**Powerhouse Studios** Doug Henderson (02) 9318 1220. 32 Input Neve Console 24 Trk. Studer A800  
**Jade** Band/J. Darwish CD Album  
**John Rowles** Leon Berger/Doug Henderson CD Album  
**Citrus** Band CD Single  
**Promenade** Band CD Album  
**Karma Zoo** James Kadsy CD EP  
**Shada Tree** Russell Pilling CD EP  
**R & R Recordings** Robert Zmola (02) 9672 4494. 16 Track 1\* Format.  
**Rockinghorse Studio** Grant Hilton (066) 884 131. 48 Trk. Analogue, 24 Trk. Analogue  
**Jimmy Willing** Keith Williams CD Album  
**Grispsoon** Greg Courtney CD EP  
**Pangaea** Leigh Ivan CD EP  
**Freaks of Nature** Greg L. Album  
**Courneys** Leigh Ivan Demos  
**Soundwarp** Meredith Brooks (02) 9905 7144. Mastering  
**Misama** Tom Demos  
**Ray Vanderby** Ray Vanderby Album  
**Jeff Sewell** Jeff Sewell Album  
**Premansali** Kristin Darre Album  
**Bob Barnard** Bob/David Seidel Album  
**Grant Allan** Grant Allan EP

ARTIST PRODUCER ENGINEER PROJECT

**Studios 301** Fiona Simpson (02) 9211 7301. X880, Studer A800, SSL 64 Ch. G-Series  
**Pollyanna** Paul McKercher Paul McKercher Album Mixes  
**Skunkhour** Skunkhour/Magoo Album Mixes  
**Trackdown Digital** Marcus Leadley (02) 9550 6890. 3x16 Trk Protocols - 24 Track ADAT  
**Robyne Dunn** Herself  
**Big Bang Theory** Don Miller Robertson Album  
**Yoram Gross Films** Yoram Gross Advertising Spots  
**Aboriginal Nations** Keith Saunart Post Audio  
**ABC Music** Playschool/Max Lambert Album  
**Juniper Films** Colin Wright Documentary Sound  
**Troy Horse Studios** Colin Wright (02) 9319 1799. 48 Tracks  
**Peter Baxter** Dave Steel Album  
**Penny Dredful** Edwin Collins EP  
**Quoit** Ariel Ellis EP  
**Goulash** Alan Anojic Album  
**Kelly Republic** Peter Kennard Performing Tape  
**Crimson Crowbars** Henry Pearce Album  
**Velvet Sound Rec. Studios** Dave McCum (02) 9264 3420. 24 Trk. 2\* Analogue  
**Skunkhour** Magoo Album  
**Acoustica EP** Paul Gussen Album  
**Montana** Band/Scott/Tony Wall Album  
**Street Ruffians** Band/Adrian Grigoriess Album  
**The Keneimys** Tony Wall/Band Demos  
**Eureka** Band Adrian Grigoriess Tracking  
**Wirra Willa Studios** Will Rout (02) 9605 1203 24 Track Automated, @ 2 x 8 Track Digital  
**Fab Manzini** Fab Manzini Album Mastering  
**Leaves & Fishes Orchestra** Steve Gorrage Album Mastering  
**Tony Martin** Tony Martin/Will Rout/ian Cooper Album  
**Campbellown Performing Arts** Vocal Ensemble Mini Album  
**CLC Youth** Simon Refalo Album  
**Cinema Cinema** Marry Will Rout Album  
**Film Documentary**

## Queensland

**Burbank Productions** John Ryan (07) 3245 4314. 16 Track  
**Dean Daniels** John Ryan Album  
**Mik Gillis** John Ryan EP  
**Karen Thompson** John Ryan Demos  
**Late Edition** Patrick Burke Demos  
**Peter Uppman** John Ryan Mastering  
**Digital Paradise Studios** Ian Peters (07) 5527 0722. 32 Track Digital  
**Various** Ian Peters Commercials  
**Waggie Britton** Ian Peters Demo Tracks  
**Michael White** Michael White/ian Peters Single CD  
**Various** Rob Kipney Album Tracks  
**Studio 19** Allen Castleton (077) 757 375. 16 Track  
**TAPE/ATSI** Delphine Gela Demo  
**Terry Ash** Terry Ash CD Single  
**Danielle Jabronsky** A. Castleton University Demo/Audition  
**Schmickity Schmo** A. Castleton Recording Prize  
**Ben Hammer** A. Castleton Album Tracks  
**Taramalin Sound** Allan Lahey (07) 3208 9736  
**The Country Boys** Band Album  
**The Hot Shots** Band Album  
**Lance Birrell** Lance Birrell Album  
**Charles Bey** Charles Bey Album  
**David Thompson** David Thompson Funeral Song  
**Lopsided Dog** Alan McGrath EP  
**Vandersound Studios** Eric Vandersande (07) 5546 8100. 24 Trk. ADAT/XT, HDR, 02R, CD-R  
**Brused Fruit** Eric Vandersande Album Tracking  
**Placebo Effect** Eric Vandersande Album Tracking  
**CC's** Eric Vandersande Album Track  
**Ron Peters** Eric Vandersande Restoration & Remaster  
**Scott Martin** Scott Martin Demo  
**Scott Patterson** Scott Patterson Album Tracking

## South Australia

**John Reynolds Recording** Nick Love (08) 8410 3044. 16/24 Adat Digital, 16 Trk. Analogue 1\*  
**Adult Toys (Zep Boys** R.Absa/N.Love CD Album  
**Get Back** N.Love/Band CD Album  
**The Streamliners** N.Love/Band CD Album  
**G.T. Stringer** Band/N.Love CD Album  
**The Tell Tails** Nick Love Prod. CD Album  
**Spiral Dance** Band/N.Love Prod.

## Victoria

**Big Beat/Equinox Studios** John Toth (03) 9899 5815. 24 Trk. Analogy/Dig. 32 Ch. Auto Allen & Heath  
**Amanda** Ben Williams/Dave Borgeest CD Tracking  
**Julian Dahl/Toth/Williams** Julian Dahl/Toth/Williams Film Soundtrack  
**Geek** Toth/Williams Demo  
**Mobius** Toth/Borgeest Demo  
**Itchy Fingers** Toth/Borgeest Demo  
**Dogsday** Dogsday CD Mastering



# BASF

YOUR MUSIC IS SAFE WITH US



# Connections TRADER

Your **NATIONAL** selling machine!

## EMPLOYMENT

DJ Available: Beatmixing, MCing, operating and programming intelligent lights, full technical backup Call George 02 9713 9420 or 0414 606065

Experienced Lighting operator with design experience seeks Permanent/Casual Position Australia wide Call Lloyd 015 312 418

JMC Academy is seeking Part time and Full time Audio trainers with extensive experience in the Music industry and strong communication skills. Please reply in writing. JMC Academy, Level 3, 25 Cooper St, Surry Hills 2010 or Fax resume to 02 9212 4801

Sound Engineer graduate (A.E. Centre, Sydney) seeks employment in any capacity. Is keen- Extremely keen!! Have degree- will travel. (Even interstate). Phone Nigel (02) 9953 1890 or leave message.

## LOST

Lost, Silver Microphone Brooch with lighting flash inscribed "Radio RSR" with diamond-reward offered.

## FOR SALE

24 Track recording studio premises comprising offices, lounge, foyer, workshops, storage, live, dead, voiceover, and control rooms. Established 17 years in Central Melbourne. We are relocating to larger premises. Will also consider let for extremely low rental. Some equipment can also be negotiated if desired. Ph. 0417 334 820

AKG K222 R Infra Red Headphones, Built-In Battery Charger, New & Shrink-wrapped RRP \$ 349.00 Our Price \$99.00 Limited Stock! Plus P&H. Sound Advice (06) 280 8777

AMEK: Big console by Langley. 88 Inputs. Supertrue automation with total recall. Includes computer and balanced

patchbay. \$49,000 ONO. Phone: (08) 8340 1160, (08) 8346 5812 or A/Hours (08) 8346 1697

Audio Technica AT815 shotgun microphones \$200ea (02) 9799 7219

CLEARANCE SALE AT RIDICULOUS PRICES. Steel rear projection floor mount for Sony VPH-12XX projector: \$200. Inline IN2000 universal interface \$300. live RS485 adaptor for matrix mixers: \$150. Dynalite Netmon/DLight interface & software: \$100. Rane RA-27 realtime

analyser c/w microphone & stand: \$500. Drawing table with precision machine arm: \$250. Delux mobile plan holder: \$250. Lots of cable/connectors, eg Belden, mic, multicore: \$1600. Lots of 1U rack boxes, cage strip, vents & blanks: \$400. Phone Mike Dodds or Graham Barrett at (02) 9418 6388

DBX 163A overeasy compressor/limiter \$200 (02) 9799 7219 Denon DN950FA CD Cart Machines. Recently traded and Serviced. All OK. \$350.00 each Sound

Advice (06) 280 8777 Dimmers, Jands 12 channel analogue \$650 each, Desk Jands Instinct 60 way \$4000, Par 64 cans wired and ready \$25 each, Tri-

truss aluminium \$150 per section. Revolver Sound and Light (02) 9698 3288 Dynalite dimmer racks, analogue slim "touring" type \$900 each (02) 9799 7219

## Audio Visual Technician



- Operation and setup of audio visual equipment
- Exp in Theatre, Television or Conventions Facilities
- Appropriate Trade Qualifications

The Sydney Organising Committee for the Olympic Games (SOCOG) is responsible for the staging of the Olympic Games in the year 2000.

This position is responsible for managing and maintaining all office AV equipment. The successful applicant will assist Technology staff with the installation and relocation of equipment as well as provide administrative support particularly with regards to the procurement of equipment and servicing.

A commitment to teamwork, strong interpersonal and communication skills are essential to this role. Please send your résumé quoting Ref 13159 to the address below. Enquiries to (02) 9242 6000. Closing date 24 January 1997.

Sydney 2000 Olympic Recruitment  
Locked Bag H2000, Australia Square NSW 2000

Adecco  
The Employment People

LYNCROFT  
CONSULTING GROUP

Sydney 2000  
TM © SOCOG 1996



## Australian Monitor

Australian Monitor, a Sydney based audio design & manufacturing entity, requires the service of an electrical draftsman to aid in the documentation through various facets of design & manufacturing, to ISO & related standards. The applicants should have experience in the use of Autocad (v12 & up), PCB & schematic type packages, spreadsheet & word processing programs. A negotiable salary will be commensurate with experience & ability.

Interested candidates should contact Stuart McLean on (02) 9874 9355 to arrange an interview. All applicants will be treated in the strictest confidence.

## Student Free Library Copy

# INITIATIVE

Connections Magazine is available free to School and Further Education Libraries. Students should show this advertisement to their Librarian, who can then write or fax us a request to receive this magazine for free for one year in NZ or Australia.

This is a small part of our commitment to training the bright stars of tomorrow, today.

**Connections Publishing,**  
Fax (02) 9876-5715.

Etone 1507 Cabinets, black carpeted, as new 2 x 15 + Emilar horn \$1700 each (02) 9799 7219  
Flightcase to suit Ampeg 8 x 10 cab at similar \$250 (02) 9799 7219

Gemini CD 8000 single CD with pitch control \$500.00  
ONO Sound Advice (06) 280 8777

Hino Pantec 21' x 8' x 8' mechanically perfect, alloy bull bar, new 2 pak paint \$17,750 NWE362 (02) 9799 7219

Jands 920 amplifiers \$800 each (02) 9799 9219

Jands Event 24 \$2,750; 36 \$3,500,

48 \$4,000, 60 \$4,250 (02) 9799 7219

Jands JM-9 series 1 32-4-2 Mixing Console with P.S.V. session roadcased. Copy of Soundcraft 400 series. Live or recording V.G.C. Freight paid Eastern States \$2,500. (077) 490 208

Jands SR3000 amplifiers \$1900 each (02) 9799 7219

JBL Soundpower 4755A trapezoidal cabinets (6) each fitted with 2 x 2206 600w 12" + 2445 horn. \$3,000 pair (02) 9799 7219

Large touring standard effects/amp rack

22RU with floating sleeve within fibreglass on ply flightcase. Front and rear lids, on wheels \$400 (02) 9799 7219

Microphones, Sennheiser MD421 \$250 each, Shure SM57 \$110 each, Eleco SM58 radio mike \$550. Revolver Sound & Light (02) 9698 3288

PA Speakers, PEAVERY SP4 Full range Trapezoidal 2x15" & Horn 4ohm 300wRMS ea, Absolute Mint Condition ex. Install, \$1500 PAIR ONO. Phone: (02) 9623 2860

### LaserTrix

Award Winning Laser Light Shows & Systems

(03) 5229 6030

### Paul Bryant Mastering

**AFFORDABLE CD MASTERING**

Ph: (02) 9748 0222

Fax: (02) 9748 6152

### IN ~ EAR MONITOR SYSTEMS

THE RADIO STATION (Stereo UHF System)

THE M-PACK (Stereo Hard-Wired System)

- High quality audio regardless of acoustic environment
- Reduces excessive stage volumes
- Eliminates possibility of feedback
- Reduces risk of hearing loss & vocal fatigue
- Allows better vocal pitching & freedom of movement
- Integrates into any monitor system
- Easily transported - 3RU Case & 22kg.



FOR HIRE RATES & INFORMATION

PH: 02 360 2200

OR: 019 929 700

## PRO AV 97 PERTH

The PRO AV organising committee advise that the 3rd PRO AV will be held at the Royal Show Grounds 21st and 22 May 1997.

Space for this successful professional event is now available. This industry organised show is low in cost and attracts Perth's premium buyers.

Contact Jerrod Lim for more details on

Ph: (09) 377 3988

Fax: (09) 377 1836

### B.S. Sound PA Hire

Big and Small Systems

Melbourne Metro & Country Victoria

Delivered and Operated with Crew

Ring Mark Barry for free quote

(03) 9531 1403 or 015 328 049



PH: (08) 83464199

**ARO TECHNOLOGY**

Manufacturers of high performance modular acoustic panels • Room design • Acoustic analysis

### THE AUDIO DEPT.

Wireless Microphone Specialists. 20 years experience. Large inventory of Sony 800 and 900MHz UHF systems, New Shure 800MHz UHF systems as well as VHF systems.

Short or long term hire for all applications, sales and full service.

Authorised Sony Wireless Service Centre.

Call for a quote.  
(03) 9415 1868.

Soundcraft 200B 24/4/2 Console. Excellent Condition. Just Traded from Installation. Never been on the road. \$3500.00 ONO (06) 280 8777  
 Soundcraft Spirit Studio 24, new \$3,500 (02) 9799 7219  
 Soundcraft Venue 40/8/2 flightcased \$12,000 (02) 9799 7219  
 Soundtracs M Series 32/8/2, flightcased \$4,000 (02) 9799 7219  
 Tascam M520 Recording Console 20-8-2/ Three-way

Parametric EQ-Y Aux separate 16T monitor section. Must sell \$2000 ONO Phone: (042) 834 515  
 Wireless Microphone, Shure 58 insert \$450 (02) 9799 7219  
 Yamaha 2408 monitor console \$3000, Excellent condition with Road case and rack lights, Melbourne 018 036 349  
 Yamaha P2200 Amplifier with bi-amp card \$800, Melbourne 018 036 349  
 Yamaha PC2602M

Twin 400w Amp, Mint!!, Ex install, Looks and sound

fantastic, Illegal at \$620!! Crazy!! Phone (02) 9623 2860



**BURKINSHAW CONSULTANTS PTY LTD**  
 METAL FABRICATORS

**THE STAGING SPECIALISTS**  
 STAGING HIRE  
 SALES & SERVICE  
 DELIVERY & INSTALLATION  
 Contact PHIL BURKINSHAW

Head Office: 12 Budgeree Place Hoppers Crossing Vic 3030 Australia  
 Mobile 018 386 481  
 Pager 016 374 824  
 Office (03) 748 6864  
 Fax (03) 748 8193

# LOSER

That's what you'll be if you don't use Electric Sunshine lights.

Stop playing with it now and phone (02) 9550 6000



## Hire Point Software

**Features :-**

- Advanced reservation system for Hire stock
- Plots equip & bookings
- Prints hire contracts, quotes, estimates, confirmations
- Multi-user
- Comprehensive reporting
- Optional Accounting

*Enough said!*  
 Phone now to place your order - Tel (02) 824 1105

**The Big Box Builder is Back**  
 For speaker enclosures and custom cases, Call Ian Stewart.  
 Phone: (02) 798-6539, Fax: (02) 798-6571  
 Ramtek Industries Pty. Ltd.  
 34 Bartlett Street, Summer Hill, NSW 2130



**"YOUR COMPLETE STAGING SERVICE"**  
 (02) 9519 - 6300

**STAGING RENTALS**

- Concerts, Conferences, Catwalks.
- Productions, Exhibitions, Stages.
- Rental of Drapes, Risers, Flats.
- Delivery and Installation.

1 PYRMONT BRIDGE RD CAMPERDOWN NSW 2050  
 FAX (02) 9519 6489



**Hum Eliminator™**  
 We've all heard that buzz, that noise, that AC hum pouring through audio equipment. The Hum Eliminator breaks the groundloops safely, while leaving all signal grounds intact. No dangerous ground lifting. Works with balanced & unbalanced signals. Made in the USA. Full 2 year warranty.

**2 Channel MiniBox \$169**  
**8 Channel Single Rack Unit \$499**

**Line Level Shifter™**  
 Allows you to use equipment with different line level requirements. It converts back & forth between -10dBV and +4dBu. Contains EBTECH's Hum Eliminator technology.

**2 Channel MiniBox \$199**  
**8 Channel Single Rack Unit \$599**

**Australian Audio**  
 SUPPLIES  
 Tel (043) 291 711 • Fax (043) 291 747

**E  
B  
T  
E  
C  
H**

**EVENTS** PROFESSIONAL PRODUCTION SERVICES

**SOUND**

JBL, BOSE, EV, KLIPSCH, EAW, MACKIE, SHURE, AKG, SOUNDTRACS, AM, DBX, QSC, AMPEX TAPES, K+M, YAMAHA and more...

**SALES · HIRE · SERVICE**

**LIGHTING**

All those hard to get lamps plus...STRAND, SELECON, BYTECRAFT JANDS, KUPO, MARTIN and more...

47 Auburn St Wollongong ☎: 042 296010

# EnTech

**ENTERTAINMENT TECHNOLOGY TRADE SHOW**

**Melbourne Exhibition Centre**

## VOLUNTEERS WANTED!

We are seeking some keen people to generally help out at this major industry trade show. You could be assigned as-

- a runner • a greeter • a seminar usher • assist in the Connections store or any other useful task. We are assigning 3 hour shifts during the 3 days of ENTECH plus on setup day.

If you are keen to help out (and we don't mind how old you are as long as you're 14 or over) then get in touch now. The shifts are in 3 hour blocks from 9am onwards until 6pm, the dates are:  
 Setup - Tuesday April 22nd,  
 Show days: Wed April 23, Thursday April 24, and Friday April 25th.

WRITE to: **Amanda Garland**, ENTECH, Freepost 9, PO Box 439, Epping NSW 2121. No stamp required.  
 Please indicate when you are available and how many shifts you would like to work. No money, but we'll look after you well!

Show promoter: +61 2 9876-3530, fax +61 2 9876-5715 Website: www.conpub.com.au  
 email: mail@conpub.com.au

# ROUGH RIDERS

A smart production manager knows that decent crew food is the key to a successful tour, forget worrying about whether or not the temporary stage is going to sway, rock or collapse or how you're going to fit the 30 muscle-bound bouncers into the tiny space between the stage and the barricades. These are minor crises compared to what will happen if the crew food doesn't get served on time and isn't up to five star standard.

You may think I exaggerate and that your average tech crew survives on greasy hamburgers, coffee and cigarettes but this is a myth. These days touring techs expect an 8 day rotating menu with options and can tell the difference between English Breakfast and Earl Grey tea.

I know of a catering manager who was forced onto his hands and knees begging for forgiveness after he failed to supply "Barbara's Frosted Funnies" for the American touring crew's breakfast. It took a full hour of intense negotiations before they'd settle for "Honey Nut Cheerios cereal" flown in on an RAAF emergency flight.

Vegetarianism is a big issue on catering Riders to the point where the vegetarian crew members get their backstage passes stamped boldly with the word Vegetarian so the catering staff know they're bona fide. There is serious trouble in store for any red meat eater who fancies a change and heads for the vegi fajitas or the vegetable roulade.

The food bouncer awaits you! Capable of sniffing out a carnivore desperate for a taste of the vegetable chowder. With four words "No pass no chowder" and a serious knuckle crack, they'll send you scampering back for spare ribs or a steak. Too bad if you want to convert mid-tour after a bout of the runs.

Of course when it comes to food fetishes there are some legendary tales about artists finicky tastes. Perhaps the most famous being the apocryphal M&M story that has now earned urban myth status of the Rock artist who requested an unlimited supply of chocolate M&Ms in his dressing room and demanded that all the yellow ones be removed.

I don't think it was a good idea to give the task to a colour blind tech but I guess it was safer than having him cut gels!

**Rufus B**

Road Warrior Felix has just returned from touring England with The Australian Doors. The first of three reports examines the Great British Attitude or.....

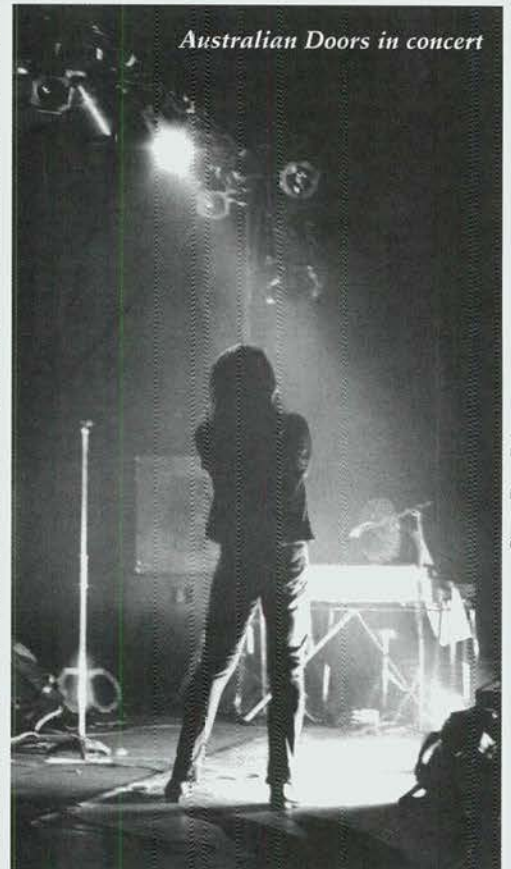
## PEOPLE ARE STRANGE WHEN YOU'RE A STRANGER

5am, Christmas morning, 1991. Driving through the eerily deserted streets of London, past Big Ben and Buckingham Palace to what was to become the band's home away from home, the Columbia Hotel. Excitement and disbelief that not only had I made it to London, England, home of spicifires, Spurs and Sex Pistols, but I'm being paid to do what I love best (I mean Sound, you silly.....).

Five years and six tours later. Head swimming from a dangerous cocktail of God-knows-what. White noise chatter from a fully-driven party film Club 214 - the Doors' by now infamous room at the Columbia. A moment to think about the band's last ever UK show earlier that night at the fabulous Forum Theatre. It was also where we played our first UK gig all those years ago. But back then it was called the Town & Country Club. Ahhh, memories.....

The Town & Country - what a gig! An impressive rock theatre with standing for 1000 downstairs and a huge seated area upstairs, all under a massive domed ceiling. A real showcase venue. Keith Richards, Squeeze and Elvis Costello were also playing there that week. It also featured a lovely showcase rig and a crew with attitude to match.

Front of house was a 20,000 watt Martin F2 system with a 10,000 watt flying system, as well as servo-drives for subs. Inside an impressive FOH cage sat a 40-channel Midas XL3 and racks of reverbs, Brooke Siren compressors, Drawmer gates and lots of Yamaha system processors. There was a 12-send 40-channel monitor rig with active Turbosound wedges and Martin active sidefill. There



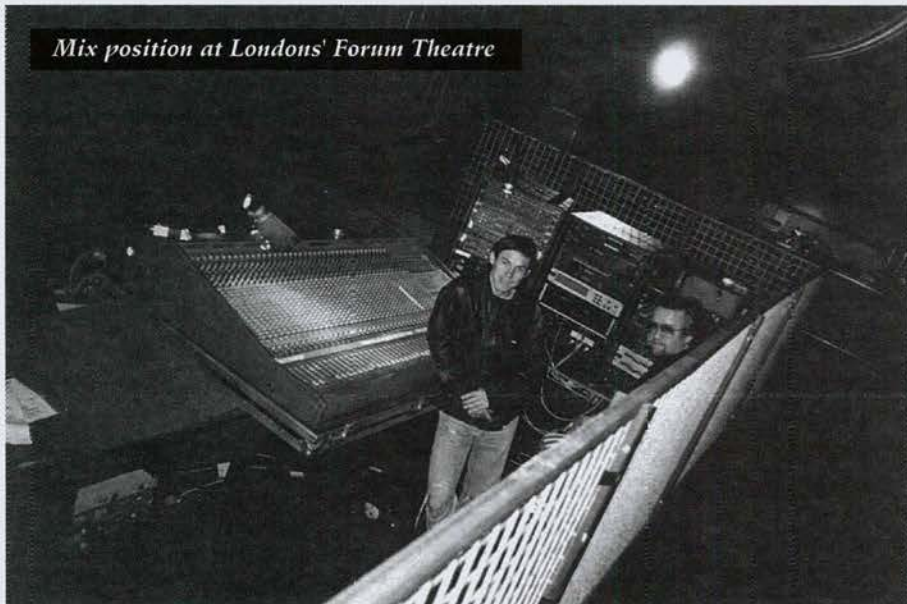
*Australian Doors in concert*

Photo: Fiona Dale

were racks of Carver amps and oodles of Klark Teknik EQ and more Brooke Siren processors. Everything was immaculately multi-pinned and set up. It was then and still is a beautiful sounding rig.

Of course, it had a lighting rig to match. An Avolite Rolacue and Avo racks controlled over 100 various polished chrome cans. Terra strobes, mega moles with plenty of Intellabeams (now VL5's) hung on motorised trussing. Sure beat the 45/60s and "W" bins at the Corner

*continued over*

*Mix position at London's Forum Theatre*

Hotel. Very nice indeed. What a pity we couldn't touch it. Well, barely.

The in-house crew - obviously wondering what the f--- this weird bunch of Aussies were doing in this sacred place where many a famous name had thrown up backstage - were making life as difficult as....well, let's just say they weren't exactly jumping around with enthusiasm to help us.

When I asked which reverbs were on sends, I got: "It's a lovely sounding room, mate, you won't need those." Right, well maybe I shouldn't bother using the PA either.

I still have a very clear memory of poor Cameron "Potato" Hipwell pulling his hair out trying to get something resembling our light show together, while

various crew amazingly just disappeared.

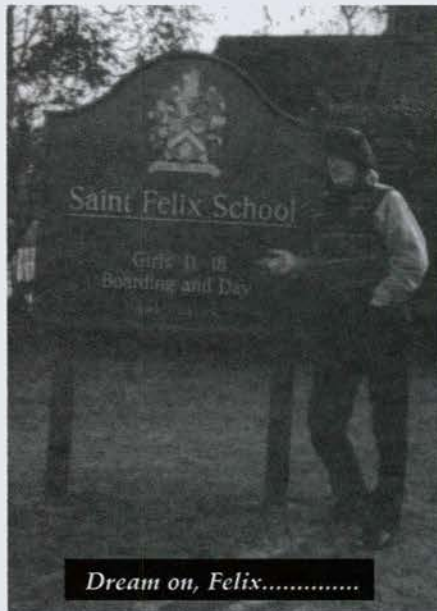
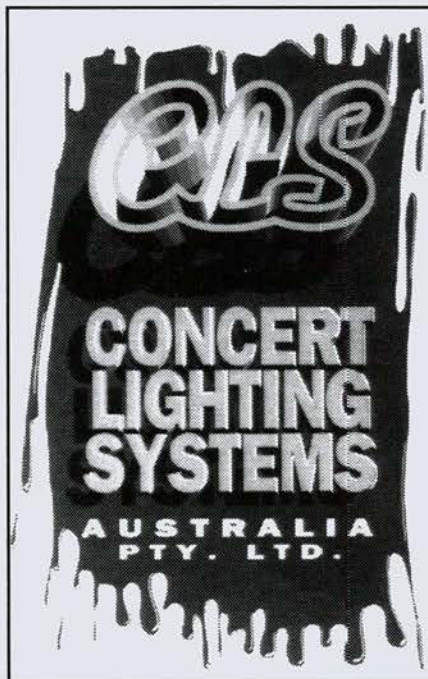
You can imagine: our first UK show, a full house, doors open, nervous manager pacing around - as you desperately try to find anyone to show you how to patch the racks or programme the desk. "Sorry, mate, that's more than my job's worth." And so the "Jobs-worth" was born. Which is funny because it's the band that pays their wages. Unlike the pubs back home, venues have to be hired by the act. In the UK, bands pay generously for the use of the room, the rig, the crew, security, ticketing, the rider and the notorious electrician who earns his \$300 (150 pounds) for metering a couple of cables then going down the pub.

Anyway.....the gig went well. The crowd went crazy. Everybody was sud-

denly much friendlier. We ended up playing more than a dozen gigs there over the years. My advice to those facing similar situations anywhere, is to always try to remain calm and professional. Be well prepared and have a clear idea of what you want to do. Over the years, I've found humour, persistence and elbow-grease gets more done than arguing and mind games.

"Job's-worths" aside, what also took a lot of getting used to was the early start and finish for gigs. 7pm to 11 is the norm, while back home it's not unusual to start a gig at 11pm.

So, with the pack-up finished before midnight and most bars already shut, we found ourselves heading back to the Columbia for the first of many a soiree. Then, it's M1 here we come.

*Dream on, Felix.....*

## Australia's Portable Stage Lighting Specialists.

*As industry leaders for the past 20 years we have specialised in providing high quality equipment for entertainment, exhibitions and displays throughout Australasia.*

*Whether you require rigging, lighting, drapes, effects, control systems, fittings, installations or a specialised team for touring, theatre or corporate events - Just call us.*

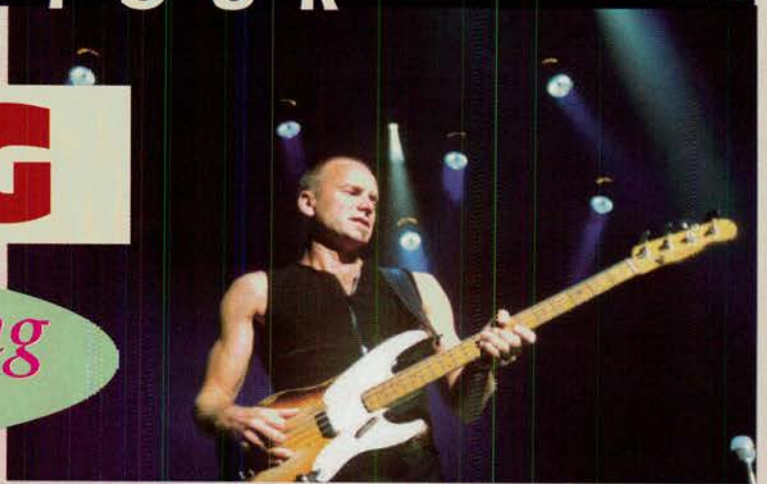
**We are distributors for:**

- Altman • Selecon • Jands • Pan Command Inc
- The Great American Market • High End • CM Loadstar • LSC Electronics
- GE Lighting • Philips • Osram • Rosco • Lee • Socapex • Camlok
- Nashua • Kupc • CLS Truss, Stands and Clamps.

**Tel: (61-3) 9646 8444 Fax: (61-3) 9646 8555**  
**282 Normanby Rd Port Melbourne Vic 3207**

# STING

## Mercury Falling Tour



Sting's *Mercury Falling World Tour* arrived in Australia after eight months on the road in Europe, USA and South East Asia.

The lighting rig for Australia was a completely new design by Sting's regular LD Nick Sholem.

"In the States we had a lot of high technology stuff including the Wybron Auto Pilot system which I found to be fantastic," he said. "I had it wired for Sting and Dominic his guitarist."

I told Nick that when I saw the Auto

slides on top. There was also a 5K scroller projector out front at the mix position and that filled in the backdrop area.

"I think the Digital Light Curtains are the best thing since sliced bread. They are wonderful. Patrick Woodroffe phoned me back in April to find out how they were and I gave him a glowing report. He then put them on *Lord of the Dance*."

For the tour of South East Asia Nick only took with him a Celco 60 channel board, an Avo softpatch and his Wholehog II. He used a par can rig, asking the various production companies to supply about 8 moving mirror lights (whatever they happen to have in their country) as well. His Crew Chief Tony Simpson would put the moving light information into the Wholehog II and 'make it up as he went along the night before'.

"Korea was very painful but the lighting company tried very hard and the equipment worked well," said Nick. "Manilla, which was a huge pain in the arse last time, turned out very well but Taipai was the worst - they're still a complete pain and the gear is crap. But you just have to deal with it without getting upset. Having Tony with me, we could fix anything."

"Because of the size of venues we were due to play in Australia and the distance away it is, the promoters and management decided they couldn't afford to bring my big show. Consequently I missed the last show of Asia, in Vietnam, to come to Perth early to programme a new show. I had Nicky Koumos, Paul Kent and Andy Mutton ready to help me two days ahead of the first show in the Entertainment Centre."

The lighting rig is basi-

cally all VL5's and VL6's, apart from a couple of groundrows. Nick had retained the rear projection screens including a VL5 with a buxom lens behind it to give a 7ft high wall of colour behind the band.

"I use the effect more often here to compensate for not having the front projection," said Nick. "I also couldn't bring my kabuki system here as it was too heavy so I just took one of the drapes from it, a light grey wavy line look, and I throw VL6 gobo patterns onto it. I've developed a show for Australia that has the exact same feel of what we've done everywhere else but with different elements."

In the State Theatre, Sydney, the back screens had to be reduced to five and the rig had to be split to keep the fire curtain free.

"It's a little bit squashed but it's no major grief," Nick said. "I run the whole show through my Wholehog II (with another supplied by Jands as a backup). I'm a great believer in the Hog desks."

Also used were two oil crackers and four FOH followspots. Gear supplied by Jands.

• **Cat Forcer**



Pilot on Neil Diamond it appeared very shaky but he assured me that since it's last software update, the 'twitching' has gone.

"For our purposes I have nothing but praise for it," he insisted. "There may be some problems, say, on a dance troupe. We also had six DHA Digital Light Curtains in an asymmetrical shape at the back. Added to that were Cyberlights, VL5's, VL6's and a whole projection set up as well. We had 7 x 7ft<sup>2</sup> panels for rear projection by 1K xenon projectors with a Kodak carcass for

Nick Sholem (LD), mid-left person, Phil Docherty (Guitar Tech) and Nicky Koumos (Lands Lighting)



### Tour Personnel

**Production Manager** Tam Fairgreive  
**Stage Manager** Jimmy Bolton  
**Lighting Designer** Nick Sholem  
**Sound Engineer** Mike Keating  
**Monitor Engineer** Vish Wadi  
**Sound Engineer** C J Paterson  
**Lighting Tech** Tony Simpson  
**Rigger** Bill Spoon  
**Carpenter** Andy Perrin

### Jands Personnel

**Lights** Nicky Koumos  
**Vari\*lites** Paul Kent, Andy Mutton  
**Sound** Mats Frankel





# LIGHTING MONTHLY

February 1997

Edited by Catriona Forcer

## ENTECH '97

## SEMINARS

BOOK EARLY TO AVOID DISAPPOINTMENT

### SEMINAR TIMETABLE

#### THEMED ENVIRONMENTS

Wednesday 23rd 4pm

Give me a blank wall and I'll give you decor! Lighting sets the mood, as designers, architects and venue owners discover new art, new techniques, and new faster ways to do a makeover. Lighting comes alive in clubs, public spaces and foyers. Theme parks use lighting to trick the eye, old theatre effects are new again as lighting comes to the party. A selection of practitioners will show and discuss their work, followed by Q & A. Get stimulated!

Hosted by Cat Forcer

#### DOP ROGER LANSER TELLS ALL!

Thursday 24th 12.00pm

See page 67

Hosted by Cat Forcer

#### DMX & BEYOND

Thursday 24th 1.30pm

What is the future of the DMX lighting control protocol? How can 16 bit information for robotic lights be carried by an aging 8 bit protocol? Can DMX incorporate error correction? Is there a simple and reliable way to distribute DMX in a rig? How is DMX related to Ethernet? What are non-zero start codes for and who uses them? When will the DMX interface for Maglites be available? These questions and more will be discussed by a panel of users, technicians and manufacturers.

Hosted by Andy Ciddor

## Patrick Woodroffe to participate in Entech '97

What is there to say? Patrick must surely be one of the top lighting designers in the world. He has designed the lighting for some of the top names in the music world including: *Abba, AC/DC, Bob Dylan, Bee Gees, Bjork, Cher, Pet Shop Boys, Bryan Ferry, Depeche Mode, Elton John, Erasure, Michael Jackson, Peter Dinklage, Phil Collins, M. Pe-*



#### Rolling Stones' 'Voodoo Lounge' Tour



*Brothers*, and the dance show *Lord Of The Dance*.

Patrick has also lit fashion shows, industrial presentations and classical music. In addition to his work in live performance he has also been responsible for some important ar-

chitectural lighting schemes including the lighting of three of the main staterooms

ple, *Rod Stewart, Seal, Simply Red, Stevie Wonder, Tina Turner* -and who can forget his mammoth designs for *The Rolling Stones*?

Patrick has been responsible for lighting many international music festivals and events including *The Hollywood Rock* and *Rock In Rio* in Brazil, *The Montreux Jazz Festival* in Switzerland, *The Brit Awards* and *The Princes Trust* concerts in the UK, *Guitar Legends* in Seville, *The Bob Dylan Tribute* in New York. He was also the lighting designer for the long-running musical, *A Tribute To The Blues*

chitectural lighting schemes including the lighting of three of the main staterooms

#### Rolling Stones' 'Voodoo Lounge' Tour





in Prague Castle for President Vaclav Havel, La Grande Cascade restaurant in Paris and Mortons restaurant in Los Angeles, the gardens of Highgrove House for HRH The Prince of Wales and the Serpentine Gallery in Hyde Park for Vanity Fair.

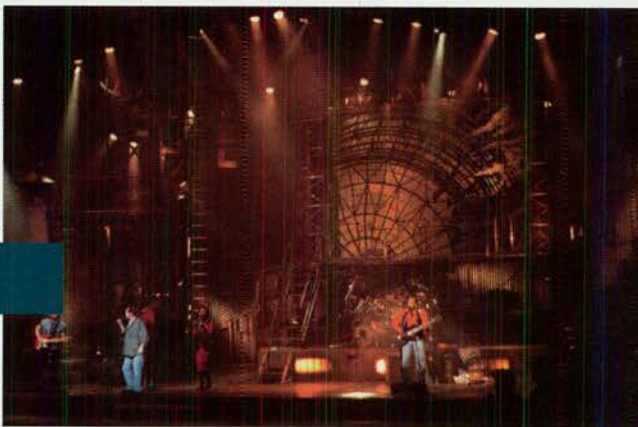
Patrick is currently working on designs for the English National Ballet's Swan Lake at the Albert Hall and Phil Collins' forthcoming World Tour.

Hear Patrick talk about his amazing career then ask him questions.

Thursday 24th April 3.00pm



Simply Red 'Stars' Tour



Phil Collins 'Both Sides' Tour

Patrick will also assist with the Entech Awards Dinner to be held April 24th at the Plaza Ballroom.

Michael Flatley 'Lord of the Dance'



AC/DCs 'Tour From Hell'



Tickets for Seminars cost \$12 and are available by calling 1800 635 514

# SEMINAR TIMETABLE

## SUPERSTAR SESSION: PATRICK WOODROFFE

Thursday 24th 3.00pm  
See opposite.  
Hosted by Cat Forcer

## MEET THE LD'S

Thursday 24th 4.30pm  
A panel of Australia's top lighting designers from a variety of fields answer your questions. Coffee afterwards. Full line up published next month.  
Hosted by Cat Forcer

## PC-BASED LIGHTING CONTROL: IS IT YOUR SOLUTION?

Friday 25th 10.00am  
PC-based lighting controllers have been around for well over a decade and yet most of us are still using dedicated lighting desks. This seminar will examine the problems solved and created by running your lights from the production manager's PC. Working demonstrations included.  
Hosted by Andy Ciddor

## TV LIGHTING TODAY

Friday 25th 11.30am  
Panel discussion about how the quantum leap in Lighting and Camera Technology has affected the practical application of Television Lighting. The panel will have representatives from all the major disciplines of Television Lighting: Drama/Sit Com; Television Commercials; Light Entertainment; Music and Special Events.  
Hosted by Rohan Thornton

## FUTURE DIRECTIONS IN DIMMING TECHNOLOGY

Friday 25th 1.00 pm  
The electronic dimmer is going through some radical changes. After years of sitting around in dimmer racks humming, they're quieting down, losing weight and popping up as parts of luminaires, built into cable ducts, attached to sets and packed into high density racks. What are the developments that have brought this about? What shape and location.  
Hosted by Andy Ciddor

## LXbizzBITS

## NEWS/CONTRACTS

## BEAM BENDER

Sydney's new Casino has been supplied with the new Altman Shakespeare ellipsoidal spots via Stage and Studio. A number of these Shakespeares have been fitted with City Theatrical's "Beam Bender" to allow for more convenient mounting.

"The Beam Bender is a terrific gadget for dance designers as it allows your "shinbusters" to skim the floor and get the maximum light onto the dancers feet" says Mike Tanner Chameleon's Sales Manager. "It's also very handy for shooting around scenery or obstructions where rigging space is at a premium."

## ON AIR

On Air production have purchased a whole van load of Selecon luminaires, an Axiom 48 and seven Tour Series Dimmers from LSC for the Country Road show room.

## ENTERTAINMENT INSTALLATIONS ADD TO HIRE

Entertainment Installations have recently purchased 2 x Martin Imagescans, 1 x Martin Magnum 2000 smoke machine, 2 x Martin Roboscan 812 + 2038 controller and assorted new sound activated lighting FX for their hire department. They are also now on the Internet and their email address is: nmace@ozemail.com.au.

## CAMERON MACKINTOSH DONATION

Cameron Mackintosh Pty Ltd have kindly donated \$500 towards the Roger Barratt Lighting Scholarship.

## ACTIVE ACTIVE

Active Lighting have purchased 30 Altman Shakespeares through Chameleon Professional Lighting Sales for us at Sweet Charity. All units will use the new GE GKV 240v 600w lamp. Chameleon have good stocks of these new 240v lamps and, according to Mike Tanner, they will cost no more than a T-29 (1200w 240v) lamp.



Wiring a venue needs forward thinking. Ethernet is a here and now cabling system for connecting networks. Now it looks like it may become the new carrier for lighting control protocol. **JULIUS GRAFTON** examines Ethernet for lighting control.

# Ethernet in the venue

**N**ow that DMX is happily established as The Lighting Control Protocol, Ethernet will carry the next new standard, looming just over the horizon. To understand why, you need to analyse how DMX is used now.

Before DMX there was analogue - you needed a pair of wires for every dimmer channel. If moving lights had been invented then, the control cables would have required a pair of wires for each function, motor, channel - the cable would be like an old telephone exchange trunk.

DMX gave us 512 different dimmer or control channels on a simple 2 core shielded cable, which could be daisy chained from device to device. This in itself can make problems when one cable early in the chain fails, the devices beyond do not respond.

DMX works outwards

from the control desk, that is - it is a one way protocol. All very nice for the era it was created.

Today many installations use more than 512 channels (moving lights can require 12 channels per fixture) and so DMX can be tricked into working double or triple that number. But as far as digital speed is concerned, it's dang slow.

What you need is a fast and versatile protocol which is two directional. You need feedback from the things you are controlling. You need to see if the dimmer rack is just having a little rest because it's too hot, or if the circuit breaker on channel 9 has tripped. You need to know why moving light #154 is not working.

Enter Ethernet, namely the same protocol and network many computers use. We have two Ethernet networks in the Connections premises - one is neatly hubbed from

## Jargon

### NODE is your THING.

By which we mean, a peripheral device, dimmer or moving light. On a computer network the PC or Mac or Printer are Nodes. • Whoever is doing the shouting is the....

### CONTROL NODE - The control board.

**HUB** is the connectivity point for individual cables from Nodes and other Hubs. A hub is a powered (active) box. Think of it as a booster amplifier. *Wrong*, but easier to imagine.



15-17 Queens Avenue Hawthorn 3122 Victoria Australia  
Telephone:(613) 9819 6912 Facsimile:(613) 9819 6008

## Production, design & hire for concerts, corporate theatre, danceparties & special events

A comprehensive range of production equipment available, including:

L.S.C. Tour Series patch rack systems  
Selecon Performer M.S.R. followspots  
Colorset colour scroller systems  
Moving light systems (large & small)

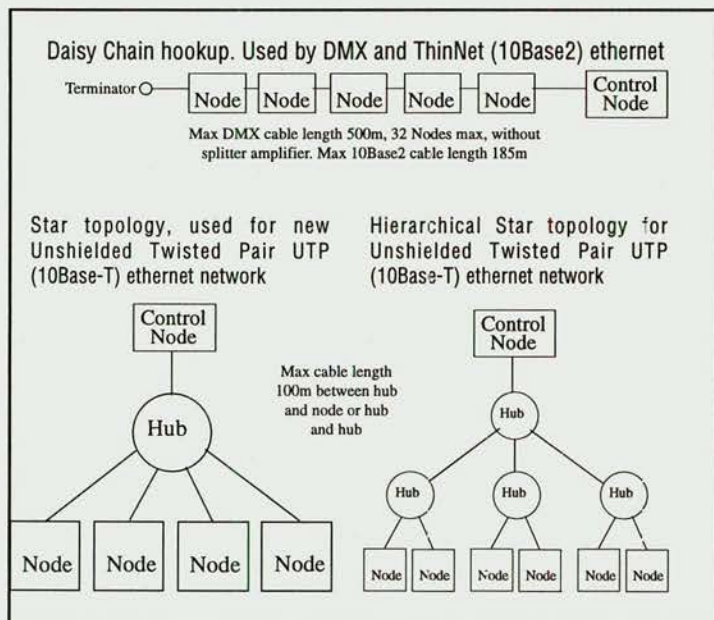


a permanently installed server, with individual cables run in wall ducts to each computer and printer. This network belongs to our neighbouring graphic art team. The other is the touring version, where the cables loop from device to device, and if they all work then the whole network works too. This network is, of course, the one this magazine is made on.

an Ethernet protocol called ShowNet, and Colourtran have ColorNet. Someday someone will standardise, then other consoles will start to be made with Ethernet outputs.

Then dimmer racks and moving lights will have Ethernet inputs. In the meantime, a rash of Ethernet-to-DMX and DMX-to-Ethernet converters will become

common. Like the dear, sweet 'demux' (DMX to Analogue converter and vice-versa) is now.



We shunt files back and fro, and they are sometimes awfully big - 40 or 50 megabytes in size. Ethernet handles this with aplomb, sometimes it's all happening in several directions at once, while Jenny is printing the invoices at the same time. There's nothing terribly NEW about Ethernet.

But it's blistering fast. Our office network can shift 10 megabytes per second (10BASE2). New Ethernet technology will move 100MB per second. 100MB is more data than most people ever need to move in one second!

Dear old DMX by comparison moves data at a sedate 250Kb per second, which allows it to refresh a dimmer about 40 times. Our internet connection moves at 24.4Kb per second like most others - and we can all see how slow that is. It's a measurable yardstick, right?

### WHEN, WHY, WHO?

Naturally a new standard doesn't happen overnight. What will happen is this. Lighting Console manufacturers will start to incorporate an Ethernet output on their consoles. ETC have just done so, and have a thing called ETCNet as a protocol.

ETC are thought to be hassling ESTA and the USITT to have ETCNet adopted as a standard protocol. Strand also have

ent manufacturers is a no-no just now. Also, connecting standard Ethernet stuff like computers and printers is also not a good idea right now.

The purpose of their Standard (for that is what this is) is to get in on the ground floor when venues and studios are built or refurbished. Because you want that cable system right, right?

The ESTA Standard should be obtained by anyone involved in installation and design. Connections has summarised some detail here, but please don't rely on this article before commencing a specification!

### WHICH ETHERNET CABLE?

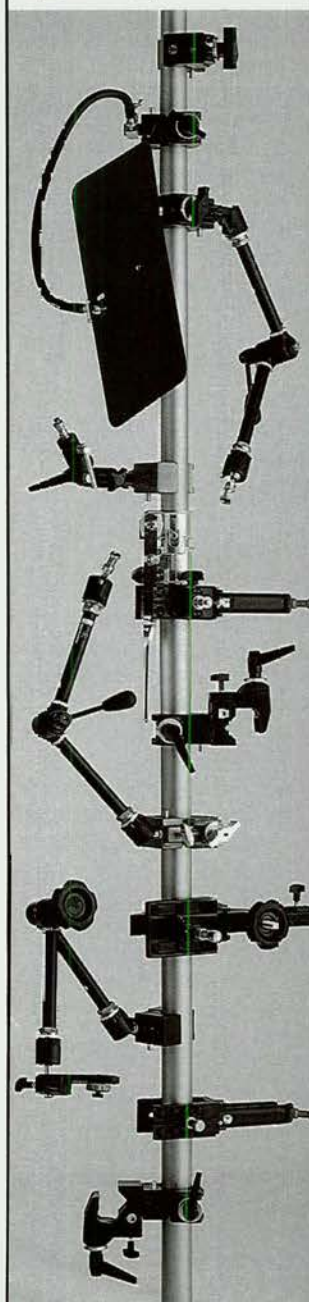
Two Ethernet standards are currently in use. ThinNet cable is a 50 ohm coaxial cable using BNC connectors, barrel connectors, "T" connectors, and terminators. We use it here. It is going out of fashion, ESTA do not recommend it.

ESTA say one should use unshielded twisted pair (UTP) cable, with four wire pairs. Connectors should be RJ45 (like a phone connector on steroids), and you must have a hub. There is a way to connect just a pair of devices alone without a hub.

The longest cable length from the hub to the thing (known in technical jargon as a 'node') is 100m. This is not ideal. The

*continued over*

# Get a grip on



**Manfrotto®**



**Miller Professional Products**

30 Hottram Parade  
Artarmon NSW 2064  
Tel: (02) 9439 6377  
Fax: (02) 9438 2319

Write in Reader Service Number: 126

# AVENGERMANFROTTO

## LXbizzBITS

## NEWS/CONTRACTS

## EI SALES

Sales for Entertainment Installations have been brisk with the following: sound activated lighting FX to the Department of Sport & Recreation facility at the Broken Bay Centre; Martin Roboscan 812's and sound activated FX to local disco/production companies; a new In-Line Skating venue purchased 4 x Martin Roboscan 812, 1 x 2308 controller, and 2 x Geni Wildblaze; the new Mingara club purchased 2 x Wildfire 400w UV fixtures and Wildfire paints. Entertainment Installations also did a large neon window tray sign, backlit fluoro sign and Deep Blue neon highlights (under the eaves) of a new medical centre built in a converted church.

## PETER PAN

After some trouble in '96, Peter Pan re-opens in this month at Melbourne's Princess Theatre. Chameleon Touring Systems have supplied an ETC Expression 2X Control System, Showcraft and Rainbow Scrollers.

## SWEET ACTIVE

Active Lighting have purchased three more LSC 48 Way touring racks, now bringing their total to five units. Four of these are being used for "Sweet Charity".

## JANDS PURCHASE AN AVOLITE DESK

Jands Production Services have purchased an Avolite "Sapphire" lighting console from LSC.

## PROPLEX

Proplex cable, the latest addition to LSC's stock line, is taking off. Some current users of Proplex cable include: Vic Arts Centre, Melbourne Casino and World Congress Centre (who also purchased five Wallpak dimmers).

## SYNERGY

Adelaide Convention Centre is being fitted out with "Synergy" lighting controllers - LSC's latest design in architectural systems.

## WET BUSINESS

Chameleon Touring Systems has used Altman Outdoor Par 64's and Rainbow Outdoor Scrollers to illuminate water cannon jets on the M.V. Shirley Smith (a fire tug based in Sydney Harbour) which was used in the '96-'97 New Year Eve fireworks spectacular produced by Ric Birch of Spectak Productions. Chameleon's crew also rigged in 8 weather proof floods to the fore-castle and poop decks and gelled up the two large search lights fitted to the fore and aft sections of the M.V. Shirley Smith's upper works.

"With something like 48,000 litres of water in the air at any given moment, it was a tough test for both gear and crew" says Scott Bason, Chameleon's moistened crew chief. "If you pardon the pun, it was pretty plain sailing" added Scott.



## ETHERNET IN THE VENUE (continued)

plastic RJ 45 connector is also not ideal, in fact it is cruising to fail after you've made X number of mating actions with the thing.

But funny enough the ESTA standard, although suggesting you should use UTP, gives all the scenarios for using ThinNet too. But they point out ThinNet is limited to 10Mb per second transmission speed, which will be limiting in the future. So one should use UTP.

## USUAL WORKING PRACTICE

With UTP, the control node (your lighting desk) can be as much as 100m from the hub. The hub is just a black box to which nodes are connected, usually in a 'star' configuration. But the hub is 'active' - meaning it needs some power. Logically, if your control node is off in the audience or control room, then the hub could well be somewhere nearer the action.

If you are driving dimmer racks then your hub will have one output for each rack. You'll need extra hubs if you've got more racks than hub outputs, hub's got anything from 6 to 32 outputs.

Using extra hubs you need a hierarchical star topology - which means that a hub feeds other hubs. These can then be up to 100m distant from each other, with the nodes another 100m away.

For further distance you can use fibre optic cable between the control node and the hub, or between hubs. Indeed many UTP hubs on the market have a single fibre port. You can thus get up to a kilometre distance using fibre optic cable. It is recommended for use between hubs only, not from hub to node.

## STANDARD REQUIREMENTS

Because there is one Ethernet cable feeding each node (dimmer rack or moving light) cable identification needs to be clear. The ESTA book details labelling and System Identification, and treatment of wall plates used in permanent installations.

The problems ahead mostly relate to the BJ45 connector being a plastic thing. This also makes the cables themselves pretty inexpensive, so maybe it's just a question of tagging any cable used in mobile/touring work and chucking it away every six months?

## CONCLUSION

UTP Ethernet is the way to wire a venue. It is not in the foreseeable future going to find use with moving lights, but when it does it means the number of channel limitations on DMX will disappear. Imagine what may happen if a design engineer can use 100 control channels for each fixture?

But the Recommended Practice makes a very big proviso, and that is that the Ethernet network for Lighting is just that - no ordinary computers and printers allowed on the same network. And also the more crucial issue of an actual control protocol standard is still outstanding, because as previously stated there are three different proprietary systems in use now.

However, it is a very safe bet that UTP cabled Ethernet is a good installation option.

And that plastic RJ45 plug? Someone can just make an unbreakable one!

• The ESTA publication 'Recommended Practice for Ethernet Cabling Systems in Entertainment Lighting Applications' is available from Connections - it is A4 in size with 38 pages including illustrations. Price: \$35.00 + \$5 pack and post, call 1-800-635-514 or fax (02) 9876-5715.

## IES International Convention and Trade Exhibition

The IES has announced its 1997 International Convention and Trade Exhibition to be held at Melbourne's Carlton Crest Hotel, 27-29 October 1997.

The Convention will examine the use of standards, whether they be technical, energy, professional, legal, ethical or aesthetic. With emphasis now on Health and Safety in the workplace, and the formulation of the Building Code of Australia, Lighting Standards have now become mandatory for most applications. Designers, manufacturers, installers and end users must have a greater understanding of the standards and their implications.

The IES97 Exhibition will play a more prominent role in this year's convention with more exhibitors and wider promotion. On show will be: architectural lighting; commercial lighting; control gear; customised luminaires; decorative luminaires; domestic lighting; emergency lighting; energy conservation; engineers and consultants; government services; industrial lighting; lamps & ballasts; lighting control systems; outdoor lighting; recessed lighting; regulatory bodies and theatrical lighting; from wholesalers and distributors.

A speaker program is currently being planned as well as accompanying social events.

For further information call: High Profile Exhibitions (03) 9428 0415.



**is coming!**

Write in Reader Service No: 195

**lightsounds**

**NEW YEARS**

**SALE**

Technics SL1210s - \$890

Helicopters - \$90

Lasers from \$100

Par 56 cans - \$39

12" Mirror balls - \$45

4515s 6v 30w lamps - \$5

Denon SMX-2000 mixers - \$1,190

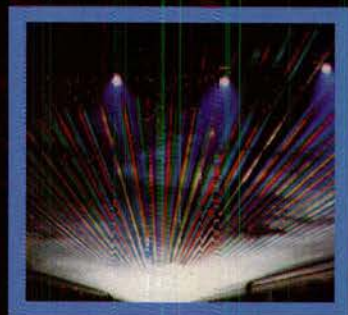
**PLUS MUCH MUCH MORE**

**1800 650 833**

While stocks last

Write In Reader Service No: 196

# A Revolution in Lasers



## STARBEAM

*The Power of Light and Creativity*

### STANDARD FEATURES

- 300 or 150 mW air cooled laser
- Lightweight rugged construction
- 5 beam positions (10 output beams)
- Dual beam outputs per position
- Dichroic colour filters

- Precision mirror mounts
- Programmable touch controller
- Master shutter fade/blackout
- Auto power down laser saver
- Quality optics
- 0 - 10V or DMX control

### OPTIONAL FEATURES

- Multi-line 180° diffraction fan
- Remote bounce mirrors
- Fiber optic effects

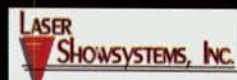
Exclusively distributed in Australia by

**ELSTA ENTERTAINMENT LIGHTING AND SOUND TECHNOLOGIES AUSTRALIA**

**FREE CALL: 1800 35 80 80 PH: (02) 9568 2100 Fax: (02) 9568 2300**



Mail: PO Box 1013 Leichhardt NSW 2040  
See a demonstration at 629 Parramatta Rd Leichhardt.



Write in Reader Service No: 197

# LXbizzBITS

## PRODUCTS

### LIGHTING BALLOONS

French company Airstar have developed a range of lighting balloons which are ideal for temporary lighting purposes. They are suited for occasion like outdoor or indoor functions, exhibitions, rescue work, road building and construction work, decorative advertising and promotion, movies and film production as well as other forms of lighting purposes.



Airstar balloons are divided into three ranges of product:

1. **Lunix** small and medium sized balloons with halogen lighting system
2. **Solarc** medium to very large balloons with metal halide lamps, igniters and ballasts.
3. **Gala** small balloons only dedicated for indoor use.

For further info call Airstar +33 4 76 62 71 85 or fax +33 4 76 25 15 77.

### SUNTRAK

Suntrak is aluminium extruded track which is lightweight, high-load bearing, quiet and durable. Being easily assembled and dismantled, the track suits most applications including travelling shows, stage scenery and fixed installation. It can be used with a range of fixings and brackets and easily adapts to either cord drawn or motorised uses. The track is ideal for unusual spaces as it bends and curves easily.

Suntrak has been used exclusively in major cinema chains throughout Australia and live theatre applications include the Australian Ballet's production of "Deep End" where performers were suspended from the Suntrak to give the illusion of being underwater.

READER SERVICE NO 400

### ELSTA INTRODUCES GECKO

ELSTA have announced their recent appointment of the office of Gecko Enterprises Inc Australia. Gecko, based in the USA, manufacture and supply lamps to all markets covering domestic, medical, specialist and professional lighting industries. ELSTA claim that Gecko can offer bulbs at cheaper prices together with genuine customer support. The managing director of Gecko, Dave Miller, will be present at Entech on the ELSTA stand to demonstrate and discuss the benefits of Gecko and its range of lamps.

READER SERVICE NO 401



## la vida breve

a Spanish celebration at the Town Hall

Part of the Sydney Festival, *La vida breve* and the piano concerto *Nights in the Garden of Spain* which proceeded it, were held in Sydney's Town Hall. The production catered for a 79-piece orchestra, 40 choir members, 3 flamenco dancers, a guitarist and principal opera singers.

The lighting, designed by John Hoenig, had to encompass both the piano concerto which was lit in a theatrical style and the opera which was fully lit as in a theatre but with the situations reversed - the orchestra behind the singers instead of in a pit and no vertical scenery.

"Consequently creating moods, times of day, location etc was left entirely to the lighting," said John. "The solution was to use the Town Hall's rig of 90 lamps with eight Trackspots added to cover the additional space, washes and gobos required. We also bought in 16 ACLs, 16 Par 46's which were especially adapted with 500w Raylight globes and a quantity of truss - a 4 1/2m circular truss to reflect a circular disc on the stage floor. So we created some extra positions for high side lighting, direct overhead lighting, specific angles for the conductor and some low side lighting positions to cut straight across the stage floor to create separation and depth between the singers and the orchestra."

Obviously the music dictated the action of the moving lights - they could only be re-positioned or moved during 'fortissimo' not 'pianissimo' moments of the score. Occasionally the moving lights swept from one part of the stage to another complimenting dramatic moments in the performance - much like a camera zooming in onto one person to focus the audience's attention.

The main factor in enabling the moving lights to be programmed in such a short space of time was that the Multiscan software control system was used. It has facilities to allow pre-programming off site which is what John and his team did the week before the event. All the focus presets, colour groups and the named cue sequence structure were pre-programmed into the Multiscan, which runs off a conventional PC laptop before they entered



the venue. The Multiscan system, developed by the late Lance Douglas, is now owned and operated by Lorin Chapman.

"The operation of the Multiscan is done by a simple one button push for each cue by the Stage Manager for each visible cue moment i.e. fade up, fade down," said John. "All re-positioning, re-colouring, re-gobo positions are all programmed in as automatic follow ons."

While the Multiscan operated the moving lights, the house desk at the Town Hall - a Jands Instinct 60 way - controlled the conventional lights through their own dimming system, a Vision softpatch and 72 dimmers only 12 of which are 5K. The rig was tilted on a 1:8 ratio which hid the organ.

"Some people shy away from using moving lights because of the extra programming time required but I think we proved, by using Multiscan and setting up everything in advance, that it can be done," said John. "We actually found ourselves ahead of schedule with focussing the rig and we could then concentrate on balancing the overall looks of the show."

Equipment and crew was supplied by Showcorp.



Danielle Batha (assistant to the Lighting Designer), John Hoenig (Lighting Designer) and Lorin Chapman (Multiscan Programmer)



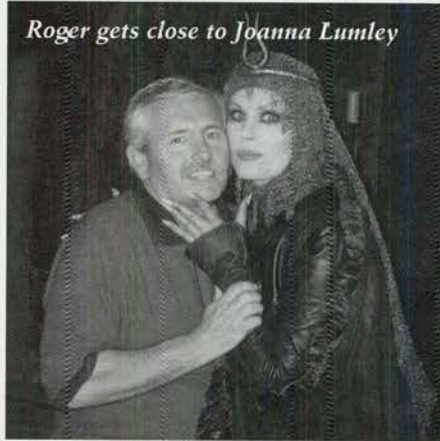
# Roger Lanser A.C.S to speak at Entech

## Top Director of Photography to give Seminar

Roger Lanser began his career in photography in 1975 and after a successful year at college started at the ABC-TV Forest Studios as a clapper loader. He stayed in film drama at the studios for 13 years going from loading to focus pulling to camera operator. During this time he had various chances to light numerous episodes of different productions as the studios ran at a high volume turnover and if the DOP got sick Roger, as camera operator, would be the next logical choice to take over and thereby giving him a break at lighting.

It was during this time at the ABC that Roger came into contact with a talented new English actor named Kenneth Branagh.

Roger left the ABC to pursue a career in the freelance world and landed a job on the hit US television series "Mission: Impossible" which was being shot in Queensland. After this he moved into doing 2nd. Unit photography on many Australian feature films and TV shows until the summer of 1992 when his old chum Kenneth



Roger gets close to Joanna Lumley

Branagh invited him to photograph his next feature film in England which was "Peter's Friends". In that same year Roger shot two other films for Branagh, "Swan Song" and "Much Ado About Nothing".

"Peter's Friends" went on to win Best Comedy at the British Film Awards, "Swan Song" was nominated for an Academy Award in 1993 in the Short Drama Cat-

egory and "Much Ado..." grossed over US\$30 million and has been recognised as the Shakespearian film that started a renewed interest in the 400 year old playwright.

The next film Roger did for Branagh was the 2nd. Unit Photography on the big budget "Mary Shelley's Frankenstein". His involvement here included working with two different directors on all the Stunt Action in the film, model work and Special Visual Effects.

Roger returned to Australia to work on a musical feature film, "Billies Holiday" then back to a European winter and yet another film for Branagh, the black and white comedy, "A Midwinters Tale".

This was swiftly followed by another comedy, this time filming in California and New York, "A Weekend in the Country", starring Jack Lemmon, Dudley Moore, Rita Rudner and Faith Ford.

1996 saw Roger commit to a big action film based on Hal Foster's comic strip, "Prince Valiant" which had him filming in

*continued over*

# projection perfection

We've been finding out alot more about Condensor profiles. Check out this photo. With fewer limitations than ellipsoidals. Selecon Condensor Profiles offer:

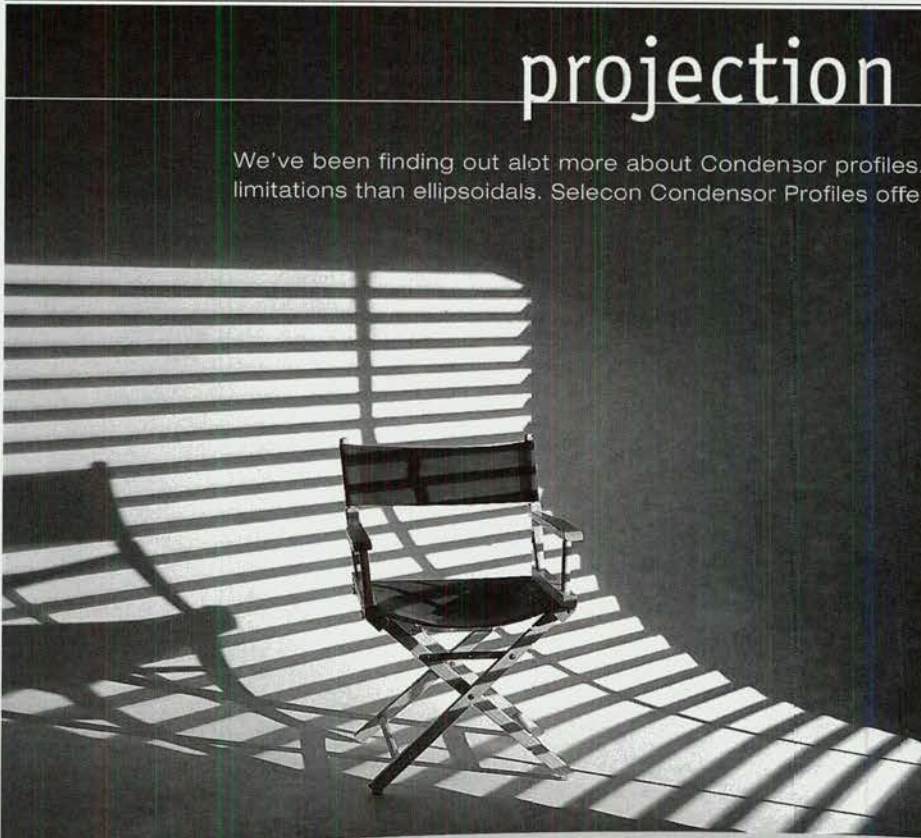
- sharp focus across the entire beam range.
- precise beam shaping with hard or soft edge.
- projected images in focus across the stage and scenery (great depth of field).
- fine tune the image focus (soft centre, hard edge etc) to suit your requirements.
- extended pattern and filter life thanks to the lower gate temperature and even light distribution.

Full 1200W output from industry standard lamp.

Robustly engineered luminaires.

The Selecon 1200 Condensor range 9 - 21° • 12 - 28° • 15 - 31° • 28 - 52°.

Try them out, contact your Selecon distributor.



For further information and sample units to test, contact your distributor

NSW Herkes 02/3193133 - Hidata 018 963963 - Lots of Watts 02 6380602 - Premier 02 5599233 5th Crest Events NSW 015 668373

VIC Three Arts 03 99180397 - LSC 03 956 5265 - CLS 03 90468444 - Clearlight 03 96531684 - Premier 03 96484522

QLD East Coast Lighting 07 2529683 - Laser 07 2362333 - Premier 07 31570443 Nth Qld Wild Gravelly 077 213540 - Kennedy Services 079 573904

SA Osmonds 08 4101111 - GLVLT 08 3401999 WA Stagecraft 09 2279000 - Ashton's 09 478 3900 - Light applications 09 2453343

TAS McCulloch Pty Hobart 002 288373 & Launceston 003 431034 ACT Sound Advice 06 2608777 NT Top End Sound 089 817744 - Integrated Media 289 411128 Or Selecon

NZ Ltd 26 Putik Street, Grey Lynn Auckland 09 2501718 fax 09 3801770

# SELECON

Write n Reader Service Number: 148



Roger Lanser continued

the rugged mountains of Wales and in the historic Babelsburg Studios of Berlin in Germany for Director Anthony Hickox. This film is due for a 1997 release.

In between feature films work Roger has photographed two US telemovies, one in Sydney and the other at the Warner Bros. Studios in Queensland.

Roger is currently in negotiation with a Los Angeles based production company to shoot a feature film in Florida called, "Miami Vikings".

Hear Roger talk about his career and ask him question at the semiannr to be held Thursday 24th 12.00pm



Roger with Kenneth Branagh and crew on the set of A Midwinters Tale.

# WIN! WIN! WIN!

Starting this month is our LX Quiz. Test your knowledge and win things if you are RIGHT! Just answer these questions correctly and you'll win a special ENTECH pass and a T-Shirt. The pass will enable you to access all three days of the show, as well as all the seminars, for FREE. The T-Shirt will dress you.

1. What is the typical variable beam of a Fresnel luminaire?
2. In television lighting land, what does CCD stand for?
3. Who wrote 'A Time To Kill'?
4. Who designed the lighting for the recent Michael Jackson HIStory tour?
5. Where can you purchase GAM Command products in Sydney?
6. Which Australian DOP won an Oscar award for 'Dances With Wolves'?
7. Which UK based lighting manufacturer was sold last year to Schroder Ventures?
8. Where are Computite lighting control desks manufactured?
9. What is the capital of Peru?
10. What is the colour name of Roscolux gel number 99?

• Send answers to **Connex Quiz**, PO Box 439 Epping 2121 NSW, fax (02) 9876-5715 or email to mail@conpub.com.au by Feb 23rd. Answers here next month!



### PRODUCTS

#### NEW TRUSS FROM TOMCAT

The newest addition to Tomcat's range of standard truss is a unique stacking truss hat was designed by Mark Fisher and is being manufactured by Tomcat for world-wide distribution under license from Brilliant Stages.

Available in standard lengths of 2, 3 and 4 metres, the unique feature of the truss is the way it 'nests' or stacks upon itself for storage and shipping. It features a maximum uniform distributed load of 2,177kg over a 40ft span.

READER SERVICE NO 402

# ONE STOP SHOPPING

GEMINI • LYTEQUEST • RYGER • SMOKE EFFECTS CO. • DYNAMITE



PAR 64 PRO

PAR 56 PRO

PAR 36 PRO

CD-9500

PAR 36 PRO

PAR 56 PRO

PAR 64 PRO



DISCOVERY SCANNER

**GUESS WHO !!!**  
Has the best product range? Imports direct from overseas? Manufactures?  
Has the best reputation in the business? Gives honest advice?



MOTORHEAD



DEFENDER COLOUR



PS-727 MIXER



PREDATOR SMOKE MACHINE



Disco World Pty, Ltd. 20 Cave Hill Rd., or P.O. Box 509  
Lilydale Vic 3140  
Ph (03) 9735 0588 Fax (03) 9739 5441



Write in Reader Service Number: 172

Check out the new

# MOVERS AND

# SHAPERS

of the lighting industry



STUDIO COLOR™



Distributed by:  
**GREATER UNION VILLAGE TECHNOLOGY**  
82 Arthur Street, Fortitude Valley  
Brisbane QLD 4006 Australia  
Tel: 07.3358.5022  
Fax: 07.3358.4969  
TOLL FREE 1-800-773-187

Write in Reader Service Number: 111



The **Studio Color™** automated wash luminaire is the ultimate color tool for today's lighting professional.



Rotatable, variable beam shaping gives full control over soft-edge

Smooth dichroic subtractive color mixing system



6 position color wheel with replaceable dichroic filters

No fans—convection cooled for quiet operation via integrated heatsink/reflector combination



High output MSR 575 discharge light source. 5600K color temperature



Auto sensing supply voltage selection (100 to 240 VAC)



Yoke movement of 380° pan and 240° tilt is user selectable for 8 or 16 bit control

Color correction filters may be fitted in the color wheel. (Full CTO fitted as standard)

Variable frost

Specifications subject to change



Catch up with High End Systems' latest innovations at this informative web site:

<http://www.highend.com>



# BUYERS GUIDE — truss, flying systems, rigging

## stands

### LIGHT EMOTION

ELSTA (02) 9568 2100

**LSHD** heavy duty steel lighting stand, extends up to 3m high, non-scratch black powdercoated, fully adjustable, comes with cross-bar, accepts standard 2 inch G clamps. \$160.

**LSPT** 3 x 3m portable trussing system, 2 steel tripod up-rights, aluminium cross piece, comes apart, fully collapsible, extends 3m high and supports up to 90kg. \$405.

### CLS

Concert Lighting Systems (03) 9646 8444

**4m Winch-Up** sturdy 4m winch-up stand features: stainless steel pulley block, chrome-plated inner, plastic coated outer suitable for 150kg S.W.L. \$528.

**3.3m Stand** indestructible 3.3m telescopic push up stand features: 4 leg base with adjustable feet, chrome inner, epoxy coated outer, suitable for 50kg S.W.L. \$200.

**Followspot Stand** folding tripod legs with chrome inner and black epoxy outer, suitable for most followspots. \$275.

**2m Stand** similar to the 3.3m telescopic push up stand but shorter to suit loud speaker applications. \$190.

### STRAND LIGHTING

Bytecraft Pty Ltd (03) 9587 2555

**81100** braced single extension followspot stand with 29mm socket and clamping collar. Max load 50kg. \$290.

**81031** tall (3800mm) double extension stand with 19mm socket. Max load 25kg. \$313.

**Hercules** single extension stand. Universal head with 29mm socket and 16mm spigot. Height max 2200mm and max load 25kg.

**Goliath** high lightweight stand - max height 3700mm. Universal head with 29mm socket and 16mm spigot. Max load 40kg. \$467.

### ALE (ADVANCED LIGHTING EQUIPMENT)

Chameleon Professional Lighting Sales (02) 9310 5222

**A2001 18' Winch Up (5.5m)** heavy duty steel construction with load brake winch to AS1418. Features folding legs; min height 1900; max height 5500; safe working load 130kg; Australian made. \$1015.

**A2002 12' Winch Up (3.65m)** heavy duty steel construction with load brake winch to AS1418. Features folding legs; min height 1400; max height 3650; safe working load 130kg; Australian made. \$870.

**A2004 Push Up 'T' Stand 9' (2.74m)** the 'T' stand is manufactured from steel with a hard chromed inner extension. A2004 accepts 1" (26mm) spigot. A2004 accepts 3/4" (20mm) spigot. \$188.50.

**A2023** tall folding leg stands ideal for school or professional use. Options include a variety of adaptors for lights, truss or loudspeakers. \$253.75.

### DOUGHTY

Coemar De Sisti Australia Pty. Ltd. (03) 9467 8666

**Bulldog & Club Stands** complete range of "Cine" and "C" stands, with full range of grip accessories. Up to 670cm/40kg lifts in Cine, up to 60" "C" stands up to 480cm lifts. Club stand range includes tripod type, followspot stands, standard winch ups, and castors to suit. Stand-

ard raw and satin black finishes. Club accessories include versatile lighting and audio heads. From \$140.

**Winch Stands** professional range of stands to suit all applications in lighting, audio, and multimedia. Up to 6.0m lift, 150kg max. Stands feature lay leg, single person operation, folding base, dolly wheels, secondary safety systems and full TUV approval ratings. The full range of Doughty accessories can be quickly mounted to suit any application. From \$912.

**Music stands** music and conductor stands for both professional and amateur use finished in scratch resistant black nylon coating. Feature up to 600mm height adjustment, spring loaded safety catches, lamp/unlamped versions, grill style music tray, and detachable base assemblies for transporting. From \$200.

### TRE-D ENGINEERING

Coemar De Sisti Australia Pty. Ltd. (03) 9467 8666

**Tre-D Stands** complete range of folding and followspot stands

available in aluminium, stainless steel, and high-resistance steel, and featuring levelling legs, steel hardware, and brass bushings. Lifts from 150cm to 412cm. All Manfrotto equivalents available. Other fixtures include telescopic telepoles and all standard grip accessories. From \$120.00 ex-tax

Strand Stands



# HAZIE

from

# ROSCO



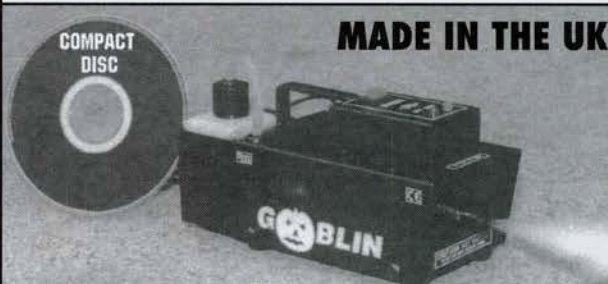
The Hazemaker produces a texture in the air where vision is clear under normal lighting and focused beams of light are accentuated. The fluid is water soluble and does not leave oily residue on equipment, filters, and technicians lungs. Self-contained in a sturdy road case the Hazemaker requires no warm up time and is very economical to operate. For further details see your Rosco dealer.

IMPORTED BY  
**ROSCO AUSTRALIA PTY LTD**  
PO BOX 873, ARTARMON, 2064

Write in Reader Service Number: 133

## SMOKE EFFECTS LTD MEET THE FUTURE...

- GREMLIN** - The smallest smoke machine in the world, run time 30 seconds
- PREDATOR** - Continuous output, variable flow and timer remote
- TERMINATOR** - Continuous output, DMX controllable, variable flow and timer remote



MADE IN THE UK

**YOU WON'T BELIEVE THE SIZE**  
.....OR THE PRICE



**DISCO WORLD PTY LTD**  
Factory 20 Cave Hill Road or P.O. Box 509  
Lilydale, VIC., 3140  
Ph: (03) 9735 0588 Fax: (03) 9739 5441

Write in Reader Service Number: 187



**MANFROTTO/AVENGER**

Miller Professional Products (02) 9439 6377

**070 Follow Spot Stand** with chrome plated centre post. Two section riser, levelling leg; max. height 1.47m; min. height 0.88m. Max. weight 40kg. \$275.

**A320 Wide Base Overhead** max. height over 5.5m with a 40kg load capacity and a wire base for extra stability. Includes a multi-function head with 115mm grip head and 28mm socket. Other models available. \$510.

**A215CB 40" C Stand** chromed black with adjustable sliding leg, includes grip head and 40" extension arm. Other models available. \$327.

**B250 Super Wind-up** max. height of over 3.5m and a payload capacity of 60kg. Includes chrome steel double riser which extend simultaneously and a lazy leg encloses grip head and 40" extension arm. Other models available. \$1500.

**PENN FABRICATION**

Penn Fabrication 61 3 9646 7222

**SYSTEM 2** lightweight, portable lighting support system that utilizes the same 50mm fluted aluminium tube as the main chords of our concert truss systems. System 2 starts as a single tripod stand with 'T' bar and can be expanded into a goalpost or 6m x 6m grid system.



**LITESTRUCTURES**

LSC Electronics (03) 9561 5255

**Quatralite** high strength, lightweight square section box truss available in black, white or silver powdercoat or raw finish. \$631.80 per 3m length.

**Astralite** high strength, lightweight tri truss available in black, white or silver powdercoat, wide range of standard components available. Raw finish also available. \$449.80

per 3m length.

**Bilite** high strength, lightweight flat truss available in black, white or silver powdercoat or raw finish. \$231.40 per 3m length.

**Astralite** high strength, lightweight tri truss with built in lighting track in one main cord of the system. Truss systems available are Eutrac or Concord. Wide range of colours available. \$951.60 per 3m length.

**CLS**

Concert Lighting Systems (03) 9646 8444

**300mm Tri Truss** industry standard structural grade alloy Tri Truss available in straight lengths, curves, corners, cubes, hinges and base plates. \$468 per 2.25m.

**450mm Folding Truss** heavy duty alloy folding truss. \$1160 per 2m.

**18 inch Box Truss** all new steel box truss manufactured from high tensile steel tubing, provides extra strength at no additional cost or weight. \$587 per 2.4m.

**200mm Box Truss** available in any colour and suitable for displays, shop fitting and disco installations. \$145.20 per 2m.

**ALE (ADVANCED LIGHTING EQUIPMENT)**

Chameleon Professional Lighting Sales (02) 9310 5222

**300 Series** range of Triangular Aluminium Trussing available in stock and custom lengths from 0.7m to 6m. A range of corners, 'T's, snap on attachments and accessories compliment this range. From \$136.

**14" Concert Truss** available in steel or aluminium this square section trussing is available in stock or custom lengths. A full range of corners and accessories are available. From \$170.

**18" Concert Truss** available in steel or aluminium this square section trussing is available in stock or custom lengths. A full range of corners and accessories are available. From \$200.

ALE also offers A custom truss manufacturing facility.

**COEMAR DE SISTI AUSTRALIA**

Coemar De Sisti Australia Pty. Ltd. (03) 9467 8666

**Multi Truss** Specialist truss and staging pieces, generally made to order, in a variety of materials. Suitable for display and fixed applications. Most items made to client specifications, and include standard items such as lightweight display truss and aluminium tri-truss pieces. From \$10.

**TOMCAT**

JKL Productions P/L (03) 9572 2303

**Folding Tri Truss** standard lengths 10', 8' and 5'. Equipped with aluminium spigot connections - Main chords are 2" OD x 1/8" aluminium Snap braces provided to lock truss in open position.

**Pre Rig Truss** Single Hung Plated and Spigoted/Double Hung Plated and Spigoted/Heavy Duty Pre Rig Spigoted - Designed for use with colour changers.

**Stacking Truss** standard lengths 10', 8' and 5'. Steel spigot connections, main chords are 1.90" OD x 200" aluminium, snap braces provided.

**PENN FABRICATION**

Penn Fabrication 61 3 9646 7222

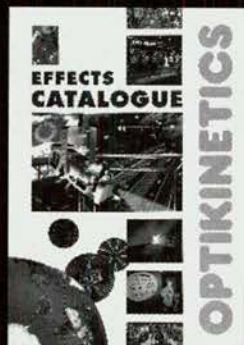
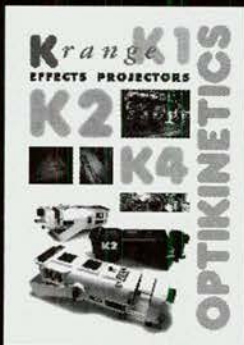
**SYSTEM 5000** a heavy duty 12m x 12m ground supported roof truss system which caters for applications where maximum UDL's are required. Upstage and downstage spans feature single or double hung drop truss and dedicated towers with integrated ladders. Winch options include electric winch or chain motors.

**SYSTEM 1500** a 12m x 5m goalpost system featuring single or double hung drop truss and our unique outrigger system. The system is supplied with standard 675kg manual winches and ladder rung towers.

**SYSTEM 800** radius trussing is available in single sided, tri and square truss formats and can be fabricated to any specified radius. Custom truss shapes can be manufactured to customer designs and specifications.

continued page 78

# Projection, logos and effects made simple



.....it's as easy as K1, K2 and K4

For the latest  
Projector and  
Effects Catalogues



631 Parramatta Rd  
Leichhardt NSW 2040

Lightmoves Technologies (NSW)  
Email [lighttec@ozemail.com.au](mailto:lighttec@ozemail.com.au)

Ph 02 9560 0000  
Fx 02 9568 2333

Stockists

Victoria Lightmoves PES

Ph 03 9813 2955

Fx 03 9813 2466

W.A.

Pro Design Lighting

Ph 09 409 8964

Fx 09 309 2541

Write in Reader Service Number: 173



# LXbizzBITS

## PRODUCTS

### MARTIN SHOWNET

The Martin ShowNet system is a unique facility that provides Martin equipped venues with perfectly timed lightshows time and time again.

How it works: Many new and recent chart



releases have been programmed by Martin Professional to coordinate with cues and prompts in a Martin 3032 PC controller. Hundreds of chart hits have been built into a lightshow library by Martin with new releases being added every week. These will be available as a CD, floppydisk or they can be downloaded straight onto the 3032 controller from the Martin ShowNet Website on the Internet.

Every new Martin 3032 controller will have built-in cues that respond to this library of songs and create a lightshow automatically. The same track played repeatedly will not create the same lightshow as Martin have programmed up to 20 options to each change in tempo, pace, volume etc., meaning every light show is an original.

Existing operators of Martin 3032 controllers will be able to have the relevant ShowNet software installed.

READER SERVICE NO 403

### MOTORHEAD

The Motorhead by LyteQuest Pro can pan 360° in 1.2 seconds as well as tilt 274° in 1 second. The Motorhead can be mounted and operated at any angle. It has 12 gobos, 12 colours plus white, digital dimming 0-100%



and strobe effect. The unit features a pre-programmed internal effects program and sound activation capability. Motorhead can be daisy chained together for synchronous operation with or without a controller.

READER SERVICE NO 404

## entech special seminar

### INTRODUCTION TO BASIC STAGE LIGHTING

Friday 25th 2.15pm - 5.15pm \$25 (students \$12)

This session will look at an introduction and structure of the Stage Lighting Industry, Basic Equipment, Safety, Colour, Design Theory and Implementation. It is aimed at students and interested parties with some amateur or tertiary experience who may wish to pursue a career in the industry or just further their personal knowledge.



Hosted by Chris Paterson

The session will be managed by Chris Paterson who over a professional career spanning sixteen years, has worked as a Lighting Designer and Production Manager in Theatre and as a Producer, Director and Production Manager in Television and Corporate Events. His clients have included The Victorian Arts Centre, ATV Channel Ten, Melbourne Theatre Company, Network Seven Australia, The Melbourne International Festival, and Active Television. Chris spent six years as Lecturer in Technical Production for the Victorian College of the Arts and now owns **Picture This! Productions** with his partner Sandy Merlino.

**Picture This! Productions** are now in their third year of operation. They supply quality Producing, Production and Project Management and Technical Services to the rapidly expanding and converging Arts and Broadcast Industry.

Keeping the management structure compact and using freelance staff on a contract basis has allowed for quality, economical service working across interrelated fields.

Utilising a broad skills base, **Picture This! Productions** have supplied services across all facets of Theatre, Video, Television, Exhibition and Event Production. This experience has seen the company develop an area of expertise in the Broadcast and Taping of live events and concerts, live theatre TVC Production, Producing and Directing of commercial promo packages for live shows, Audio Visual Production for corporate and commercial shows and events, and Producing video packages for corporate conferences.

**Recent Projects in Theatre & Events include:**

- **Sunset Boulevard**, *Really Useful Company* - Production Coordinator
- **Melbourne Festival**, *Forum Theatre* - Production Managers
- **Sing Sing**, *Vic Arts Centre* - Lighting Designer

signer

- **Charlottes Web**, *Skylark Theatre Company* - Lighting Designer

- **Nintendo Product Launch** - Lighting Designer

- **McDonalds Awards** - Lighting Designer.

**Recent Projects in Television and Multimedia include:**

- **Australia Council Awards** - Technical Producers

- **Telstra National Presentation** - Technical Producers

- **Volvo V40/S40 Car launch** - Technical Producers

- **Arteducation Promos for Vic Arts Centre** - Producer/Director

- **Melbourne Cup**, *Active TV/ATV Ten* - Segment Producers

- **Australia Remembers**, *Artist services/ABC* - Segment Producers



Romeo and Juliet



Australia Remembers Concert



The Art of Walking



# ALSO Foundation New Years Eve Party

The Also foundation provided Melbourne's largest New Years Party down on the docks. The event was enjoyed by over 4000 people with a fair few staying until 8 am.

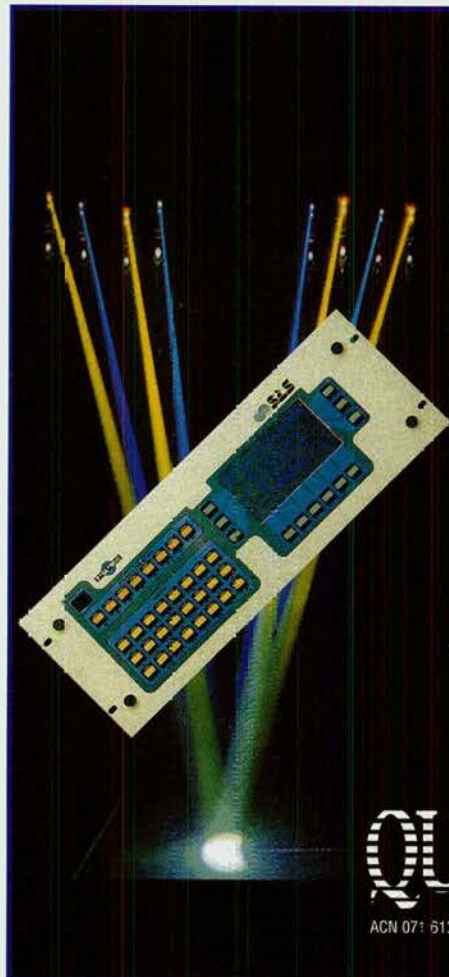
The Lighting design By Miss Terri Towelling featured 7 fingers of truss hung from a central spine truss. The design covered 120ft of the dance floor and at full stretch was 36ft wide. Lights included the new Golden Scan Stage Scan (a new model of the HPE with colour mixing and a few other features, V15's, Golden Scan 2's, par cans, beacons, molefays, strobes and colorchangers of varying shape and size. The dancefloor rig was hung with 4 x 1 ton & 7 x 250 kg chain hoists allowing many different looks throughout the evenings.

The Bar area contained 6 x 30 ft trusses (aluminium) lit with florescent tubes used as truss toners giving a neon effect. These trusses were dead hung from the roof at staggered heights down the room giving a rainbow effect when viewed from down the room. An interesting note was that these 36 florescent tubes (1440 watts) replaced the 36 Par 64's (36,000) normally used and as a result could be run from house power in case of generator failure. Additional lighting of stalls and bars was done with par 56's and pinspots.

The stage was lit with heaps of side light rigged off the existing scaffold stage, Molefay duets were used as footlights and 29 lights c/w scrollers on push up stands

were used as front wash eliminating the need for a front truss. Four Liteo Cyberlights were used for effects, 8 V15's were used for back light and 21 raylights were included for additional punch.

**Key Personnel - Lighting Designer/Operator Miss Terri Towelling Stage LX operator Dori Dragon LX Crew - Dave Wright, Kait Hall Motors Weasel Lighting Contractor Active Lighting Generator Aggreko Sound LAVA Video Tag Productions Staging Connections Production Manager Traczy Wall Production Coordinator Ton Harding Stage Manager David Triscott.**



### AGENTS FOR:

#### FOLLOW ME

*The Virtual Reality Stage Manager*

The FOLLOW ME automated tracking system is now here! Capable of running up to 24 moving lights of any manufacture via DMX, while tracking up to 8 small transmitters. Moves at speeds up to 60kph over an area as much as 1000 m<sup>2</sup>!

- Self set up in about 20 minutes
- On line help screens
- High or low resolution DMX512
- Able to trigger cues via midi from pre-recorded positions on stage



#### OMEGA 2

- 300° pan, 300° tilt
- HSR 700 lamp (1000 hrs.)
- 11 dichroic colours plus white
- 7 static gobos, 7 rotating gobos on 2 wheels
- 1 rotating prism
- Superimposition of effects
- Variable speed strobe
- 0-100% dimmer • DMX-512 control

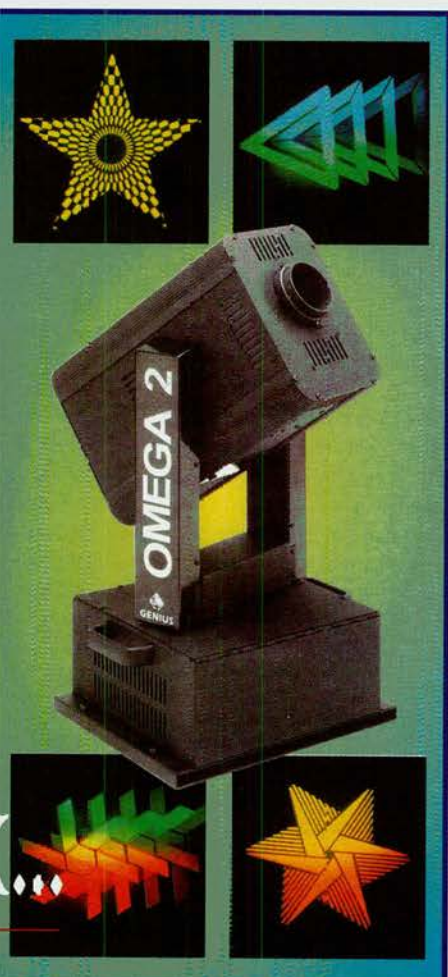


TRADE ENQUIRIES WELCOME

# QUANTUM EFEX...

ACN 071 612 109

Ph: (08) 351 9085 Fax: (08) 351 9086



Write in Reader Service Number: 179



How much does a

ANDY CIDDOR ASKS

# LUMINAIRE

## really cost?

We're not talking about Trade Price, Professional Discount, Summer Sizzler Specials or End of Model Runout Sale prices here, but what it actually costs to buy, own and run a luminaire.

Most of us are very careful when purchasing a new luminaire because it's a pretty unusual event for management, the board, the council etc to hand us real money to actually buy some new lighting gear. What criteria do we use when selecting a luminaire? Price? Manufacturer's reputation? The flashy adds in *Connections* or *Lighting Dimensions*? What we saw used on ÖÖÖ. (insert name of production with enormous budget here)? Known reliability? Definitely not the ones they have in ÖÖÖ. (insert name here of venue that really got it wrong)?

No matter how you slice or dice it we eventually come down to a decision based on price, but the purchase price of a luminaire is only a fraction of what it actually costs to own it.

### LAMP ARITHMETIC

How much do replacement lamps cost during the lifetime of a luminaire? Let's do some very rough arithmetic for a 1200 watt fresnel. Assuming that we average about thirty hours per week of lamp usage, including rehearsals, performances, plotting and focusing time, then a standard theatrical lamp with a 750 hour objective life will last for about six months. I can hear you coughing and spluttering in disagreement.

Now, before you throw the magazine in the bin, or phone/email/fax Julius about the nonsense that he publishes, (If you think this is bad have you ever had a good look at the weird stuff that the sound people talk about in their 95% of the magazine?) remember I did say that this was very rough.

The matter of actual lamp life versus what Mister Philips/GEC/Ushio/Osram promised on the spec sheet will be the subject of another article someday. If you keep the fresnel for five years, then lamp costs just about come to the cost of the luminaire, and we all know that we're going to have to use it for longer than that. There are plenty of 1960s Pattern 23s still pumping out the photons every day and what about all those fifty year-old Mole Richardson Pups and Juniors in film and television studios all over the country that are still chugging along?

If we were to think instead of the "Lekos"\* or axial profiles that use an FEP(CP/77) or FEL(a 120v FEP) that burns for a nominal 200 hours (going downhill, with a tail wind), and how they fare when touring, you can see that they burn their own cost in lamps every year.

Now where exactly is this all leading? Thermal design.

If the luminaire designers at company X take the trouble to make sure that your lamps are not run above their designed temperature, then there is some chance that the lamps may actually last as long the manufacturer promises. Unfortunately, sometimes luminaire designers get so carried away with getting a good airflow across the lamp that they forget to check if any light is leaking out of the holes that let the air through, and most of us know of certain models of profile spot which let more light out the back than they put out the front.

A luminaire with a good thermal design may cost more to buy, but an awful lot less to own and there is often the side benefit of a lower luminaire skin temperature, making the luminaire less of a trial to focus.

Another lamp related cost issue is cost per running hour for the lamp. There was a government department which continued to buy the ancient T/1 lamps for their 500 watt luminaires because the tungsten T/1 was half the price of the new Quartz Halogen T/17 which came on the market. The catch was that the T/1 has a 200 hour life and the T/17 has 750 hours, not much of a bargain really. This is by no means ancient history: compare the cost of replacing the 200 hour incandescent lamp in Brand A robotic spot with that of the much more expensive 2,000 hour metal-halide lamp in Brand B robotic spot.

One of the most widely advertised advances in luminaire technology has been the introduction of high-efficiency dichroic-reflector profiles which claim to put out as much light from a 650 watt lamp as many of our older one kilowatt luminaires. So what's the big deal? The new luminaires are actually dearer than some 1K spots and a

650w lamp of the type required is often dearer than the one kilowatt lamp used in the older luminaires. At this stage of the game it certainly isn't lamp life, it's energy efficiency. (Although vehemently denied by lamp and luminaire manufacturers alike, there is an overwhelming amount of anecdotal evidence on Internet newsgroups\*\* from disgruntled users in the US to suggest that there has been at least one production run of extremely short-lived lamps.)

### POWER: HIDDEN COSTS!

Trick question: How much power does a one kilowatt luminaire use? Answer: Two kilowatts.

One kilowatt to heat up the lamp until it glows and produces light and around another kilowatt of air conditioning and ventilation to return the air temperature of the studio/theatre/venue to what it was before we ran the lamp. A 650 watt lamp uses around 700 watts less energy than a 1 K. Our one kilowatt profile running for thirty hours per week, at twelve cents a kilowatt hour for electrical

power, will cost \$374 a year to run whilst the high efficiency 650 watt luminaire will cost \$243. An energy efficient luminaire can be cost effective even at quite high purchase prices.

Crew and venue time to rig and focus a luminaire can have a substantial impact on the real cost of a luminaire. How many hours have you wasted trying to allow for the amount of sag that occurs when you lock off some luminaires? Can anyone in the film and television industries calculate the number of extra hours required to cut out the octagonal and circular gels required to fit the frames of some very popular fresnels?

How many crew years have been wasted in gently reinserting loose IEC (kettle) plugs and then replacing the inlet socket because at three in the morning, when you finally found the problem, you weren't quite gentle enough! What about the mini-fresnel with the front opening so small that you can't change the lamp until the luminaire has cooled down completely and even then it requires a skilled eight-year-old to fit their

*continued page 77*

**Trick question:  
How much  
power does a  
one kilowatt  
luminaire use?**

**Answer: Two  
kilowatts!**

# The Eternal Nutcracker

There are two things you can count on to happen every December: we'll all overspend on the Christmas shopping and numerous productions of *The Nutcracker* spring up everywhere from Alice Springs to Dallas, Texas. Since its first performance in 1892 dance companies all over the world have been dusting off the sets and dry-cleaning the costumes for their annual performance of *The Nutcracker*.

If you're a dance lighting designer it's highly likely you've lit this particular ballet at some stage in your career and probably more than once. Kenneth Rayner, lighting designer with Western Australia Ballet has a history with *Nutcracker* that spans almost a decade. He first lit a lavish production of it for Hong Kong ballet in 1987. "The set was a very Russian design, heavy and rich but the lighting of it was reasonably straightforward," he remembers.

*Nutcracker* came back into Rayner's life in 1993 when the Western Australian Ballet arranged a deal with the Australian Ballet to hire the sets, props and costumes from their "traditional" production as the Australian Ballet had two complete *Nutcrackers* in their store resulting from the commissioning a new production from Graham Murphy. Rayner subsequently designed the lighting for this new *Nutcracker*.

The sets and props arrived and were put into storage until needed. Though they came

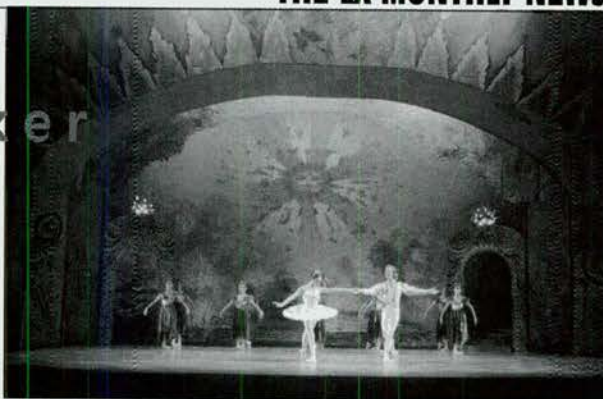
with extensive documentation there was no set model, only some photos of it. "We poked a few holes in the packaging and looked at bits of the set but it wasn't until it was up in the theatre that we could get a good look at it".

Rayner was initially disappointed with how the set looked under his lighting. "I looked at the stage from out in the auditorium and I thought the cloths in particular looked very dead. Then someone accidentally brought up the tab warmers and suddenly the set sparkled. We looked more closely at the cloth and realised it had all these beautiful shiny pieces of powdered mica in the paint, but unless you lit them from a flat angle they didn't reflect the light."

Rayner is about to light that version of *The Nutcracker* for the fourth time. "It is a bit difficult to have a completely fresh approach to something you've lit several times

but I think there are always new discoveries that you can make about productions especially one as big and as complex as this. Even if what you walked away from the last time you did it was satisfactory you are going to find new things to inspire you. It's

very tiresome to go back and just do it all over again and not find new ways of doing some things. There is however a definite limitation because it's not good to just change things for changes sake".



The San Francisco Ballet mounted the first full-length production of *Nutcracker* in the USA in 1944 and it has been an annual extravaganza for them ever since. This a ballet that has become an institution. Rayner believes that "From a marketing point of view, and I have to say this, people will come to see a production of *The Nutcracker* done by any ballet company and it will probably do well at the box office and that is the truth."

For a ballet that receives as many productions as this one there are bound to be some versions of it that are a little unusual. Jerry Ford, an American lighting designer had an interesting experience a few years back, "A new production (semi-professional) came along and wanted me as LD. It was a disaster. In production meetings they managed to cover the fact that they were evangelical fundamentalist Christians. Without recounting all the complications this created, the one scene that really stands out in my mind is the Uncle entertaining the children at the party. It was not with magic tricks - that was too close to witchcraft - but instead, he read to them from the Bible. I haven't done a nutcracker since".

• Jacqueline Molloy



Ken Rayner



## BYTECRAFT



Design and Manufacture of  
High Quality Entertainment Lighting Systems and Stage Automation Systems

### HIRE

- Stage, TV & Location Lighting
- Lighting Control Equipment
- Dimmers
- Automated Lanterns
- Searchlights
- Pani Projectors

### SALES

- Bytecraft Range of:
- Broadcast Quality Dimmers
  - Architectural Lighting Control Systems
  - Stage Automation Systems

### SERVICE

- Lighting Equipment Service & Repair
- Preventative Maintenance
- Genuine Strand & Quartzcolor Spare Parts
- Lamps
- Colour & Correction Filters
- Gaffer Tape



Exclusive Australasian Distributor of

Strand Lighting

VIC - 23 Foncca St, Mordialloc, 3195  
Phone: (03) 9587 2555 Fax: (03) 9580 7690

BYTECRAFT

NSW - 5/31 Bridge Rd, Stanmore, 2048  
Phone: (02) 550 3955 Fax: (02) 519 3977

Write in Reader Service No: 101

# ETC

## Electronic Theatre Controls

### EXPRESS

Express – five new lighting consoles from ETC. Smart. Professional.

24 to 250 channels. 1024 Dimmers. 600 Cues. 24 Submasters. Effects. Macros. Classic memory board or 2-scene/single-scene styles. Dimmer feedback. You name it, Express delivers.

The unique Express trackpad responds instantly to your touch. Use it to control level and rate, or moving light pan/tilt parameters. Call up a light, and set colours on its scroller at the same time.

Express far outperforms comparable consoles. But ETC engineering and manufacturing know-how delivers it for a surprisingly affordable price.

Check out Express. Call your authorised ETC distributor or ETC.



Express 24/48



Express 48/96



Express 72/144



Express 125



Express 250



Jands Electronics Pty Ltd ACN 001 187 837  
40 Kent Road Mascot NSW 2020  
Phone: (02) 9582 0909 Fax: (02) 9582 0999



## How Much Does a Luminaire Really Cost? *continued*

hand in to reach the lamp. (It's probably just as well that most of these were sold to schools!)

Then there are the special "compact" location luminaires which become so hot so quickly (see thermal design above) that you have to wait ten minutes to strike them at the end of every set-up. Good engineering design for usability can become an important factor in total luminaire cost. The more often you re-rig or re-focus your luminaires, the more impact this factor has.

Every luminaire, no matter how efficient or well engineered requires preventive maintenance and inevitably repairs. Some readers may recall the total disassembly required to re-tighten the tilt lock on a very popular (and personally much loved) one kilowatt fresnel. Others may still be wondering how to clean the reflectors on certain profile spots without removing at least ten screws. Whilst maintenance time may be expensive for a badly designed luminaire, the availability of spare parts may transform an expensive luminaire into a pile of junk in a moment.

### SPARTS = DUMMY SPITS

I was very disappointed to learn that a ma-

nor luminaire manufacturer had decided not to produce any more spares for one of its most popular and widely distributed range of one kilowatt luminaires. There are thousands of these luminaires throughout Australia and I'm certain I'm not the only one who knows of several luminaires in need of the same part. Maybe the intention was to force us into purchasing new luminaires rather than repairing our existing stock.

If I do replace the now un-repairable luminaires, do they think I'll be stupid enough to buy the next one from them, only to be placed in the same situation in a couple of years time?

If we are expected to keep our luminaires operational for five to ten years then we must have a guarantee of the availability of the necessary spare parts.

### HOW TO BUY A LIGHT!

Here then are of some of the questions to ask before buying:

- Does the lamp temperature exceed the manufacturer's recommended maximum temperature?
- How many companies make a replacement lamp? (If there's only one you could

be held to ransom)

- Does anyone in the country actually stock these lamps?
  - Are there any figures available for actual objective lamp life in this luminaire?
  - Who else uses this luminaire? What for? For how long? What's their phone number so that I can ask them their opinion?
  - What spare parts are available? Where are they held and how long to deliver?
  - How long after the purchase does the supplier guarantee (in writing) to hold stock of spares?
  - Can I have a couple of them to try out for our productions before purchasing? (Is the 650 as bright as you existing 1Ks?)
- And yes, finally: How much is it?

The writer may be contacted via email at [aciddor@kilowatt.com.au](mailto:aciddor@kilowatt.com.au)

\*Leko' is actually the name of the family of profiles/ellipsoidals designed for Century Lighting, now a part of Strand.

\*\*rec.arts.theatre.stagecraft, stagecraft-mail list and alt.stagecraft

**FRONTIER**  
 LIGHTING  
 BRISBANE AUSTRALIA

THE YEAR OF  
 THE STUDIO COLOR

104 NEWMARKET RD WINDSOR QLD 4030  
 PH (07) 3357 3244 FAX (07) 3357 4848



**BUYERS GUIDE** — truss, flying systems, rigging

all prices are ex tax unless stated otherwise

**next months Buyers Guide:**  
**MOVING LIGHTS**

**flying gear**

**CLS**  
*Concert Lighting Systems (03) 9646 8444*  
**Chain Hoist Controller** durable, quality chain hoist controllers in 2 way, 4 way, 8 way versions to suit socapex and weiland connectors. \$1400 (2-way).  
**C M Lodestar** industry standard chain hoists available in 2 ton, 1 ton, 0.5 ton or 0.25 ton capacity. Easy to invert. \$3000 approx. ex tax.  
**C-Series Chain Block** heavy duty chain block. 1 ton capacity. \$400 approx. ex tax.  
**Truss Rigging Bracket** heavy duty rigging bracket for Tri Truss installations where slings are not acceptable. Chrome or Epoxy finish. \$220 ex tax.

**ALE (ADVANCED LIGHTING EQUIPMENT)**  
*Chameleon Professional Lighting Sales (02) 9310 5222*  
**ALE** offers a wide range of flying gear including: chain motors from Lodestar, GIS and Pfaff; motor control; cabling; spansets; shackles; steels - in fact if it's rigging equipment, we sell it.

**DOUGHTY ENGINEERING**  
*Coemar De Sisti Australia Pty. Ltd. (03) 9467 8666*  
**Flying Gear** complete range of flying accessories including winches, pulley blocks, pipe clamps, spring hooks, scaffold fittings, safety bonds & chains, wire rope & fittings, swivel clews, stage weights, curtain fixings, and scenery fixings. From \$5.

**BYTECRAFT**  
*Bytecraft Pty Ltd (03) 9587 2555*  
**Hook Clamp** standard theatrical hook clamp to suit 48mm O.D. pipe. \$7.  
**Safety Cable** to secure accessories and lantern. \$10.

**ALE (ADVANCED LIGHTING EQUIPMENT)**  
*Chameleon Professional Lighting Sales (02) 9310 5222*  
**A1003 Theatre Hook Clamp** available in a variety of styles from A1003 Theatre Hook Clamp to suit 48-52 O.D. pipe to Mini and Maxi clamps. Over 60 styles available. \$6.  
**ASI1500 Super Clamp** secure and safe clamp for moving lights which features a unique safety cage with full clamping action on support pipe circumference. \$75.  
**A1030 2" (50mm) to 2" (50mm) Bar Hook** one of a diverse range of Hook Clamps, 'S' Hooks, pipe and pole adaptors for stage, presentation, film, TV and live entertainment applications. Custom manufacture and design. \$8.62.  
**A3071** fitted with a 1" (26mm) spigot, this bracket allows a 50mm pole to be supported from one of our stands (winch up or push up). Also available a tube pipe joiner with 1" (26mm) spigot for heavy duty applications. \$18.50.

**DOUGHTY ENGINEERING**  
*Coemar De Sisti Australia Pty. Ltd. (03) 9467 8666*  
**Doughty Supa-Clamps** complete range of clamps, couplers, joiners, and truss adaptors available in a variety of configurations in extruded aluminium, natural or silk black finish. All TUV tested to 500kg SWL. Accessories include all standard and individual grip equipment from frames to scrim and butterflies. From \$5.25.  
**Doughty Easydeck** easy to assemble staging manufactured from steel and phenol coated birch ply. Features reversible panels, compact stacking, various staging sections, and all accessories. Suitable for all applications from schools and amateur groups, to professional production companies. From \$120.

**TRE-D ENGINEERING**  
*Coemar De Sisti Australia Pty. Ltd. (03) 9467 8666*  
**Tre-D Clamps** range of clamps including multi-purpose locking clamps (V-jaws, rotating profiles, rotating cams) and standard TV clamps in brass and aluminium, as well as barrel clamps, and gaffer grips. From \$60.

**COEMAR DE SISTI AUSTRALIA**  
*Coemar De Sisti Australia Pty. Ltd. (03) 9467 8666*  
**CDA Clamps** Standard 2" Hookclamps, Mini Clamps, TV Barrel Clamps (BBC and MR styles), Dip Traps (1 & 2 way, 3 & 4 way), Safety chains, etc. Most products in extruded aluminium or steel. Special items made to order. From \$6.

**MANFROTTO/AVENGER**  
*Miller Professional Products (02) 9439 6377*  
**C100 Junior Pipe Clamp** cast pipe clamp for lighting fixtures with 26mm spigots with safety locating pin - for lighting bars and grids. \$98.  
**C350B Barrel Clamp** designed for lighting grids approx. 52mm dia. The barrel clamp tightens and accepts fixtures with 28mm spigot. Incorporates safety locating pin. \$83.  
**C150 Swivelling Clamps** adjustable "C" clamp for various diameter grips, incorporates a rotating lower section accepting 28mm spigots or 16mm socket. \$163.

**Autopole System** autopoles are an adjustable length of pole that can be rapidly and easily secured between 2 fixed surfaces to provide a support structure for lighting, backgrounds and accessories. Autopole 2 in three models up to 3.7m in height. Midi Autopole same heights with lightweight smaller diameter construction. \$POA (various models).

**PENN FABRICATION**  
*Penn Fabrication 61 3 9646 7222*  
**Penn Clamps & Couplers**- Penn manufactures a full range of lighting clamps and aluminium couplers. Couplers are designed to match our 50mm fluted tube and include half coupler, parallel and double swivel couplers. A range of aluminium snap hooks are also available to suit 50mm tube.

**A Rigging Story**

Let's be honest folks. On the road crew food chair - riggers are usually considered to be right there at the bottom. But without them - nothing would hang.

Australia has it's own rigging treasure in Andy D. Greenall. For those of you who have not had the pleasure of working with or knowing Andy - he can only be described as shortish, wears a pair of John Lennon glasses that are constantly getting pushed back up the bridge of his nose, a mane of hair pulled back in a ponytail that would make the Cowardly Lion envious - and the man himself is in a state of constant perpetual motion. Including his mouth. He was vaccinated with a phonograph needle. The doctor must have given him one hell of a slap at birth. It knocked Andy's volume level to 11 and it's been stuck there ever since.

Andy was up in the Gods at the National Tennis Centre in Melbourne pulling points. He had his guy down on the ground who was meant to be paying attention and getting Andy what he needed so we can "get this show off the ground - fella".

Andy was screaming. The whole time - he's pacing back and forth on the truss. A guy at the Sydney Entertainment Centre could have heard him.

But - Greenall handled it beautifully. He drew his mobile flip phone, dialled the guy on the ground - the guy on the ground answered his phone - GUY ON GROUND: "Hello".  
ANDY: "Hey man - what's up?"  
GUY ON GROUND: "Who's that?"  
ANDY: "Look up you dumb f\*\*\*!"

Greenall flipped his phone shut and got on with the job - verbally - with the ground fairy. If it were any other rigger besides Andy - it would have turned into a messy political situation. Andy's reaction? "I'm over it - the job got done".

Andy's next project? A rigger doll. Wind it up and it offend everybody.  
*Story courtesy of Jo-Anna Kamorin-Lloyd.*



**I.F.F.**  
*Miller Professional Products (02) 9439 6377*  
**Top Lift Motorised Hoist** self climbing hoist with 140kg payload capacity and up to 12m drop. Supplied with ceiling fixing beam, choice of power outlet type. Full microswitch end-stop safety protection and RS458 interface to manual or PC-based controllers. \$POA (options vary).  
**Manual Pantographs** pole-operated pantographs suspend and position luminaires with loads up to 40kg. For small or large studios and can be used in combination with barrel grids. \$POA (options vary).

**clamps/accessories**

**LIGHT EMOTION**  
*ELSTA (02) 9568 2100*  
**CLHD** heavy duty 2 inch G clamp with tri wheel, steel, black non-scratch powdercoated. \$5.50.

**CLS**  
*Concert Lighting Systems (03) 9646 8444*  
**Hook Clamps** to suit 19, 25, 32 and 50mm pipe, precision manufactured in phosphate coated or zinc plated steel. \$5.00 (19mm).  
**C-Hooks** are available in a range of sizes to suit 25 and 50mm pipe. \$8.50.  
**Boom Arm Bracket** zinc plated steel boom arm brackets in straight or twisted. \$20.  
**TV Clamp and Dropper** chrome plated, heavy duty dropper bars in a range of sizes to suit TV barrel clamps. \$110.

# W E I W E S

• Compiled by Caroline Grafton

## CLUBSCENE AROUND THE NATION

• By Nicole Morris

**The Paramount Nightclub** is the new hip and happening nightclub in **Melbourne**. Designed on two levels, the Paramount flaunts elegance and style combined with the latest in technology. Boasting a two hundred thousand dollar sound system, the club will be pumping out a variety of sounds Thursday, Friday and Saturday Nights. Staff have been specially trained to strut the latest in fashion and are even dressed in designer uniforms. Thursday nights start off the weekend a little early, with Disco 2000 for \$5. Friday nights make your way to Countdown, the top forty hits of the 70s, 80s and 90s on the upper level and classic house on the ground floor, from 9pm 'till 7am Saturday Morning, cover charge is \$5 with a pass and \$7 without. Saturday nights the Paramount presents Oxygen with two levels going off from 9pm. Entry is \$7 with a pass and \$10 without. For more info on what's happening at The Paramount call 03 9670 9457 or see it for yourself at 584 Lonsdale St, Melbourne.

**Ireland** has made its way to **Geelong West** in Victoria with the opening of **Irish Murphy's Bar and Restaurant** during December '96. Said to pour one of the best Guinness's in the area, Irish Murphy's provides the atmosphere of a typical Irish pub with live music every Thursday through to Saturday nights. On Sunday bring along your musical talent for a Jam session in the Irish Murphy's bar from 3.30. The whole family can enjoy a good Irish Stew or perhaps a pie at the Irish Murphy's restaurant, also open 7 days, providing a very Irish menu at a reasonable price, don't forget to book as the restaurant has become very popular. The bar and restaurant are open from 12pm every day. For more info call 03 5221 4335 or call in and experience a Guinness in a true Irish atmosphere at 30 Aberdeen St, Geelong West.

**Priscilla** is alive and well and living it up, in the performance space in the rear of **The Imperial** in **Erskineville**, Sydney NSW. If you like to dance, drink and enjoy a show with a bit of flair, head to the Imperial in Erskineville for *Priscilla - Queen of the Imperial show*. The show is free and happening every Thursday through to Sunday Nights at 10.30pm and 11.30pm. If you can't make that, try the Star Wars show from 1.15am to 2.15am. The Imperial Hotel, 35 Erskineville Rd, Erskineville, or call 02 9519 9899 for more info.

December '96 brought the addition of **Underworld** to the sunny streets of **Spring Hill**, Brisbane QLD. Every Friday night from 9pm **The Alliance Hotel** provides you with the sounds of Techno, Industrial, Gothic, Trash Rock, Metal and more for only \$6. For more information call 07 3832 7355, or experience Underworld for yourself at the Alliance Hotel in Spring Hill, in Brisbane.

Also new on the Saturday night club scene in **Melbourne** is **Atomic Saturdays**. Common People and the recently refurbished Dream Nightclub bring you 3 Levels of pure entertainment every Saturday night. Level one presents music of the Alternative variety, with the sounds of such bands as You Am I, Spiderbait, Pulp, Elastica, Weezer and more. Relax a little on level two, in the lounge area with soft lounge music and the opportunity to chat before you

make your way to level three where you can drown yourself in the sounds of The Prodigy, Chemical Brothers, Underworld and other Techno sounds. Door charge is \$5 with a pass and \$6 without, this includes a free drink on entry. Atomic Saturdays is open from 10pm 'till late at 229 Queensberry St, Melbourne or for more information call 03 9439 1924.

**Kinsela's** in Bourke St, **Darlinghurst** has recently introduced Filter nightclub to its top floor. Originally from Melbourne, Filter goes off every Friday night, from 10pm 'till late providing you with resident DJs Mad Rod, Rudeboy HiShock and Gemma plus a live band every week, all for only \$10. If you'd like to find out who's on give them a call on 02 9331 2699.

**Melbourne's** original **Retro night** is kicking off every Friday night in Club 378 - Lonsdale St from 10pm. On level one you will find DJ Louie playing nothing but the best from the 70's and 80's. On level two new romantic, and the alternative 80s hits fill the room. So for 2 levels of pure retro fun, head to Club 378, Lonsdale St, Melbourne.

If your craving retro in **Sydney**, check out the Hilton's **Riche Nightclub** on a Wednesday night. From 9pm you can hear the best of retro for only \$10. On Friday's and Saturday's make your way to the Riche for a great mix of dance music. On Fridays make it in before 10pm and you can get in for free or pay \$15 after 10, door charge is also \$15 on Saturday nights. For more info call 02 9265 6017 or make your way to the Riche Nightclub, in the Hilton Hotel, 259 Pitt St, Sydney.

**Transition** is the recovery in **Melbourne** every Saturday Morning from 6am 'till midday. Transition is once again at Inflation Nightclub in King St Melbourne. Recently refurbished with the inclusion of a new sound system, Inflation Nightclub offers you an assortment of Techno and Progressive dance music, as well as fruit to munch on while you lay back and relax. Cover charge is \$3 for those with a pass and \$5 for those without. Experience Transition for yourself or phone Inflation Nightclub on 03 9614 6122 for more information.

**The Palladium Complex** is the new Club, Live band and Film venue to hit the streets of **Kings Cross**. Boasting two huge levels and a holding capacity of 1200 people, The Palladium is a venue with a difference. Tuesday nights is Cinema night where you can catch a European or American independent flick for \$5. Thursday nights, the Palladium brings to you Fun House, which features a live band for \$7 from 9pm. Friday nights, look out for Drum and Space, Sydney's only Drum and Bass night downstairs with a Latin theme upstairs from 10pm also \$7. Saturday Nights mellow out with Liquid Lounge when Andy Glitre from JJJ brings you the sounds of smooth jazz from 10pm for \$7. Sunday, it's Tender Trap, the longest running premiere lounge music night in Sydney. Tender Trap hits off at 8pm and costs \$7. For more information on what's happening at The Palladium phone 02 9331 0127. The Palladium is situated at 2a Roslyn St, Kings Cross.

# Venues

## The Olive on William

Sydney's famous William Street is the location of the Olive on William, the latest venue installation for Avsound Productions. The completion of the Olive was the crescendo of installations by Avsound, who commissioned a new installation every week in the final quarter of 1996. Avsound's Matthew Kline says "It was our busiest period ever. And yet we achieved our aim of making the Olive a showcase for Avsound."

Preservation of the venue's elegance for daytime lunches and functions was paramount in Avsound's brief. \$3 million dollars later, renovations both architectural and technical have achieved a distinctive and opulent Mediterranean/Tuscan theme, on two glamorous levels.

"The seven metre high ceilings on the main view-through street level, presented a lighting challenge and opportunity. Avsound fabricated special yokes to hang moving lights on their sides. These were suspended by thin steel rods three metres below the ceiling at the room perimeter, enabling the scans' pan features to highlight and enhance the distinctive lofted ceilings, floors and sweeping staircase".

### THE AUDIO SPEC

3 x QSC Audio Mx1500a and 1 Power lite amplifiers; 1x Electro Voice Sx200a, 4 x Delta Max DML1121, 8x 40 Room fill speakers; 2x Electro Voice DMC2181S Sub controller; 1 x Denon DN2000F Dual CD player; 2x Technics SL1200 turntables; 1x Rane MP 22 Disco mixer.

### THE LIGHTING SPEC

6 x Clay Paky Miniscan 300's; 4 x Martin Pro 400 Colour Luminaire; 1 x Clay Paky Piper; 4 x Shimmers; 2 x Jem Foggers; 1 x Jands Event 24 Lighting Desk; 2 x 36" Mirror Balls

### THE PEOPLE & THE PLACE

**Promoter:** Platinum Universal Entertainment - Anton Schatzle  
**Audio & Lighting Design:** Avsound Productions

**Decor/Interior Designer:** Harry Zouroudis

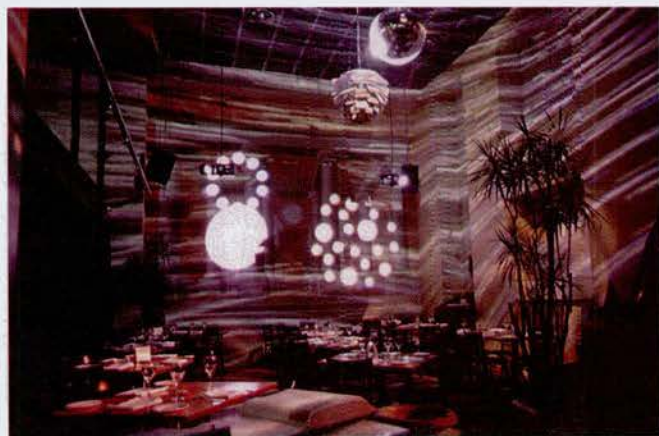
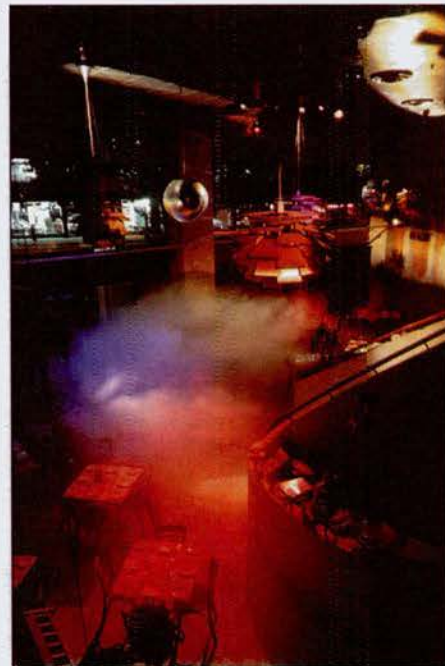
**DJ's:** Bill Wheeler, Captain Kirk & Joules

**Lighting Operator:** Trent de Witt  
**Door Charge:** \$5 to \$15 (varies)

**Entertainment Themes:** Wed - Funk, Soul & R & B, Fri - Gay & Lesbian Dance, Sat - Mixed Dance

**Location:** "The Olive on William" - 100 William Street, Woolloomooloo NSW

**Installer Details:** Avsound Productions Pty Ltd - 1/28 Roseberry Street, Balgowlah NSW - [www.avsound.com](http://www.avsound.com)



# EnTech

ENTERTAINMENT  
TECHNOLOGY TRADE  
SHOW

Melbourne  
Exhibition  
Centre

## VOLUNTEERS WANTED!

We are seeking some keen people to generally help out at this major industry trade show.

You could be assigned as:

- a runner
- a greeter
- a seminar usher
- assist in the Connections store or any other useful task.

We are assigning 3 hour shifts during the 3 days of ENTECH plus on setup day.

If you are keen to help out (and we don't mind how old you are as long as you're 14 or over) then get in touch now. The shifts are in 3 hour blocks from 9am onwards until 6pm, the dates are:

Setup - Tuesday April 22nd,  
Show days: Wed April 23, Thursday April 24, and Friday April 25th.

WRITE TO: Amanda Garland, ENTECH, Freepost 9, PO Box 439,opping NSW 2121. No stamp required.

Please indicate when you are available and how many shifts you would like to work. No money, but we'll look after you well!

Show promoter: +61 2 9876-3530, fax +61 2 9876-5715 Website: [www.conpub.com.au](http://www.conpub.com.au)  
email: [mail@conpub.com.au](mailto:mail@conpub.com.au)

# GRAB A CRAB

## A REVOLUTION IN LASERS!

**ESPEX**

### Laser CRAB

THE LASER CRAB IS A NEW REVOLUTION IN LASER SCANNER EFFECTS.

It is completely portable and runs on just 4 AA batteries or the included power supply



The 4.9mW red laser has 16 preset patterns and a manual control that can produce up to **one hundred** patterns. The laser crab has 3 modes of operation: auto speed, music mode and manual control. This compact affordable laser is great for any show or location

only **\$249**

**ESP's**



### PROFESSIONAL CD PLAYER



- Pitch bend joystick - allows pitch and bass beats to be matched.
- Cue to music - the CD can be played from the same position any number of times.
- Program - lets you program a sequence of up to 16 tracks.
- Looping facility.
- Instant Start
- Pitch control +/- 16%.
- Shuttle dials for scanning.
- Jog dials for searching.
- Two cue points.

only **\$1,295**

#### Your Complete Source....

- Special Effect Lighting.
- Fog Machines, Mirror Balls
- Lighting Control, Chasers
- CD Players, Mixers, Amps
- Speakers, Microphones
- Turntables, Strobes, Par Cans

# ELSTA

ENTERTAINMENT LIGHTING AND SOUND TECHNOLOGIES AUSTRALIA

Ph: 1800 35 80 80

e-mail: sales@lightsounds.com

Mail: PO Box 1013 (629 Parramatta Rd) Leichhardt NSW 2040

**CALL NOW FOR YOUR NEAREST AUTHORISED DEALER. DEALER ENQUIRIES WELCOME**

• Limited introductory offer on selected products • Products available from participating ELSTA dealers only • Prices are recommended retail only • All prices include sales tax • Prices and availability may vary from dealer to dealer • Prices are current up to February 28 1997 • Specifications subject to change without notice

Fax: (02) 9568 2300

**LP** Lite-Puter

**LIGHT-MOTION**

**LORANTZ**

**f.a.l.**

**Vestax**

**ECEN METEOR**

## ADVERTISERS INDEX

|                           |               |
|---------------------------|---------------|
| Active Lighting           | 62            |
| AIBA                      | 36            |
| Amber Technology          | 12            |
| ARX                       | 14            |
| Audio Sound Centre        | 45            |
| Audio Telex               | 15            |
| Aust. Audio Supplies      | 4,28          |
| Australian Monitor        | 37            |
| AWA                       | 17            |
| BASF Tracking Guide       | 52            |
| Bose                      | 19            |
| Bytecraft                 | 75            |
| Classifieds               | 54            |
| CLS                       | 58            |
| CMC                       | 11            |
| Disco World               | 68,70         |
| East Coast Audio          | 31            |
| ELSTA                     | 65,81         |
| ENTECH                    | 8,9,47        |
| Frontier Lighting         | 77            |
| Grey Edsell Timms         | 48            |
| GUVT                      | 69            |
| Jands                     | 2,18,35,50,76 |
| Lightroves                | 71            |
| Magna                     | 21            |
| Magna Systems             | 24            |
| Miller Professional       | 63            |
| Noisetox                  | 33            |
| PALA                      | 42            |
| Penn Fabrication          | 40            |
| Pipe Support Systems      | 38            |
| Pro Music                 | 34            |
| Production Audio Services | 12,23         |
| Qantari                   | 73            |
| Richardson & Devine       | 27            |
| Rosco                     | 70            |
| SAE                       | 29            |
| Selecon                   | 67            |
| Show Technology           | 84            |
| Sound Devices             | 44            |
| Studio Connections        | 20            |
| Studio Supplies           | 36            |
| Synrotech Systems Design  | 25            |
| Technical Workshops       | 32            |
| The PA Co                 | 49            |
| The Resource Corp         | 3             |
| ULA                       | 83            |
| Yamaha                    | 41            |

### READER SERVICE CARD:

You can obtain information on Products and Services in this magazine where a reader Service Number is indicated. Just fill out the **FREEPOST** Reader Service Card elsewhere in the magazine, and send it to us. Post FREE!

# THE PA PAGE

## ACTIVE? PASSIVE? Why not both! by Michael Orland.

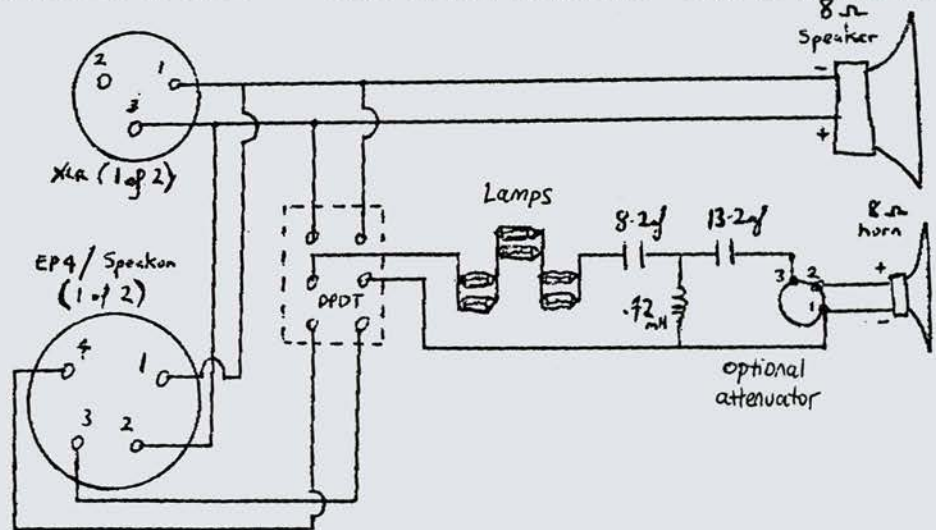
Welcome back to all my regular readers, and as my mates Kerry and Rupert would say, it's good to have your company. Hey, guess what I got for Chrissy! A van! A bit of a headspin for me seeing as how I started with a van 21 years ago and quickly progressed to hiring sound systems with trucks. Now, many trucks later, I'm getting so many hire enquiries which involve small neat little systems where a truck is just too clumsy and awkward to work with, that it's worth adding a van to the "fleet".

mains rated DPDT switch (Double Pole Double Throw). This can be mounted on a small metal plate and rear mounted behind the speaker baffle with a small hole giving access to the switch. Alternatively, you could use a rotary 2 position switch. There are types which allow you to mount them through a whole small enough that the shaft fits snugly and still allows you click from one position to another using a small flat blade screwdriver.

The crossover illustrated is one I have described in a previous

strictly speaking varies with each individual application, should almost never blow. They are intended as a means of draining off excessive, potentially damaging power. I have recently taken to using 6 x 12 volt 18 watt festoon type auto globes in series/parallel for my particular applications and I haven't replaced either a blown globe or diaphragm in quite a while.

Each of the wedges I own which are wired as below are fitted with 2 pairs of connectors, 2 are 4 pole for active use,



Which brings me long way round to the subject of versatility. I'll start by talking about my monitor wedges (again!). Ordinarily I run my wedges active. This means I use an electronic crossover which divides the full range signal into lows and highs at about 1500hz for my 1" drivers and 1200hz for my 2" drivers. This in turn feeds the separate amplifiers for my horns and speakers. I've discussed active vs passive in previous articles. Active is like so much better. But in prepping a system for a van hire, I need to be able to throw in 4 wedges powered by a single amp in a sleeve. KISS. (Keep It Simple, Stupid) So my wedges are switchable active/passive.

The method I've tried to illustrate here isn't the only method you can use. It is however the method I have used for at least 15 years with continued success. Use a reasonably heavy duty,

article, which due to a typographical error caused a great deal of confusion at the time. It is an M derived filter which uses relatively inexpensive components to give a nice 18db per octave rolloff. I do not use any passive high frequency rolloff on my 15" drivers. This compromises performance a little in passive mode. But I need the better performance from them in active concert type environments. And passive crossovers across 15"s can degrade the "motor" effect.

Included within the wiring diagram are the light globes, also mentioned in previous articles. There are many misconceptions which have arisen around the use of these in speaker cabinets. They are not, as many seem to think, intend simply as a fancy fuse. Although they can "blow" in extreme cases, which may otherwise damage horn diaphragms, the correct configuration, which

in this case EP4 type; and 2 are 3 pin XLR type for passive use. It is possible to do away with the whole switch deal altogether and just use 4 pole connectors on your wedges. To then run them passively (assuming you've fitted an appropriate passive crossover as a sort of "backup") you simply need a short adaptor lead with a female line XLR on one end (or whatever) to plug into your fullrange amps and a male line EP4 on the other with links between pins 1 + 3 and 2 + 4. This then plugs into your female to female EP4 speaker lead which plugs into your wedge. But the switching arrangement just makes it that much more versatile. Take your time, keep the wiring neat and if possible, colour coded, and always test your work at home at low levels before taking to the gig.

Michael runs The Public Address Co in Sydney, call (02) 799-7219.

IT'S YOUR CHOICE NOW

Varyscan®

made in Germany

See the range of  
JB Lighting Products  
at ENTECH '97  
Stand Number A 13

## VS 3 SPECIAL PLUS\*

Smart, powerful and friendly priced. Our new VS 3 Special / Special Plus\* is the ultimate answer to the needs of almost every discotheque and club.

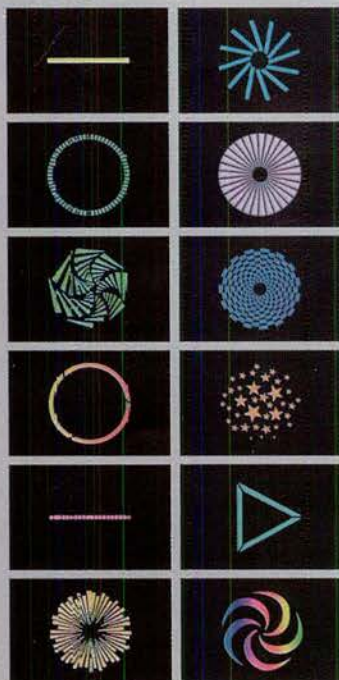
- 20 gobos (fixed) resp. 6 gobos fixed, 6 rotating\*
- 24 (36\*) great dichroic colours
- even illumination
- 200 W "longlife" MSD lamp, 2.000 h, 5.500° K, 13.700 lm
- high tech stepper motors
- 1 (2\*) conversion filter
- 4-way prism\*, flood effect\*
- black out, high speed strobe effect
- dimming fade to black
- overheat protection
- channel-code dip-switches
- standard DMX 512/1990 control



## VS 4 1200 HMI

JB takes pride in introducing the new Varyscan\* 4 1200 HMI. The unit offers you exceptional light quality and rugged, modular design. An ultimate range of features meets all your needs for high level mobile or installation use.

- double condenser, high efficiency optical system with parabolic reflector
- even and saturated light beams
- sharp projections
- 1.200 W HMI light source, 5.600° K, 13.000 lm
- conversion filters to 6.000° and 3.600° K
- 24 saturated colours (+ 24 mixed colours)
- 4 bi-directional variable speed rotating gobos, 68 mm diameter, M-size 66 mm possible
- dimming fade to black
- high speed shutter, up to 10 flashes/sec
- 4-way prism
- frost (diffusion) filter
- infinitely variable high speed iris
- double fan, low noise cooling system
- DMX 512/1990 standard
- 6 channel operation
- weight 35,3 kg



Also available several new designed DMX 512 Controllers for all kind of applications



Distributed by: UNIVERSAL LIGHTING & AUDIO PTY LTD  
Universal Place 4-43 Olympic Circuit Southport QLD 4215  
Phone: +61 (0) 7 5532 9922 • Fax: +61 (0) 7 5532 4155  
Manufactured by: JE-lighting  
OttostraBe 34 • 85104 Blaustein • Germany  
Phone: 00.49 (0).73.4-3344 • Fax: 00.49 (0).7304-3641

Write in Reader Service Number: 103

# Clay Paky. The guiding light.



Outstanding brightness, a perfect and uniform beam, and legendary reliability make Clay Paky intelligent projectors a must for Lighting Designers who insist on the best, and want an incomparable array of effects on hand to make the most of their professionalism and creativity.

## Super Scan Zoom

## Golden Scan HPE

## Golden Scan 3



| CHARACTERISTICS  | SUPER SCAN ZOOM                | GOLDEN SCAN HPE                        | GOLDEN SCAN 3        |
|--|--------------------------------|--|----------------------|
| Lamp   | HMI 1200                       | HMI 1200                               | HMI 575/1200         |
| Standard lens  | Electron c Zoom from 8° to 16° | 24 and 15 degree                       | 11°                  |
| Optional lenses  | —                              | 13 and 9 degree                        | 16° - 13° - 11° - 9° |
| Electronic focus   | *                              | *                                      | —                    |
| Wheel with 7 colours + white                             | —                              | *                                      | *                    |
| Wheel with 7 special colours + white                     | *                              | *                                      | —                    |
| Special light blue filter                                | —                              | *                                      | —                    |
| Rainbow effect, two-colour beams                         | *                              | *                                      | *                    |
| Colour temperature correction filters                    | 2                              | 2                                      | 2                    |
| RGB colour mixing systems                                | *                              | —                                      | —                    |
| Max. No. of colours                                      | Infinite                       | 113                                    | 24                   |
| Rotating gobos in dichroic glass                         | Optional                       | 2                                      | Optional             |
| Rotating M-size metal gobos                              | 4                              | 2                                      | 4                    |
| Fixed M-size metal gobos                                 | 4                              | 4                                      | —                    |
| Variable speed indexed two-directional rotation of gobos | *                              | *                                      | *                    |
| 10 additional gobos in metal                             | *                              | *                                      | *                    |
| Fixed prisms   | —                              | 1 (5 facets)                           | 1 (4 facets)         |
| Rotating prisms  | 2 (4 facets, 3D)               | 4 (4 facets, 3D, wake, image doubling) | —                    |
| Frost filters  | 2                              | 2                                      | 1                    |
| Iris   | increased speed                | increased speed                        | *                    |
| Dimmer 0-100% - Stop - High speed strobe                 | *                              | *                                      | *                    |
| Rotation of mirror adapter on projector body             | 360°                           | 360°                                   | 360°                 |
| DMX 512, RS 232 (PMX), analogue 0-10V controls           | *                              | *                                      | *                    |
| Number of control channels                               | ~2/16 selectable               | 12                                     | 6/8 selectable       |

The following are available as standard on **Super Scan Zoom**, **Golden Scan HPE** and the **T.V. version of Golden Scan 3** lamp hourmeter, side carrying handles, graduated scale on bracket and mirror, built-in power factor correction system, safety cables. Silenced versions available on request.

**Distributor:**

**SHOW LIGHTING AUSTRALIA** PTY LTD  
13-15 Bridge Street (PO Box 480) - RYDALMERE NSW 2116  
Tel. +61 (0)2 898 1666 - Fax. +61 (0)2 898 1222

**CLAY PAKY** SPA  
Via G. Pascoli, 1 - 24066 PEDRENGO (Bg) Italy  
Tel. +39.(0)35.654311 - Fax. +39.(0)35.665976



PROFESSIONAL SHOW LIGHTING

Write in Reader Service Number: 151