

Connections

FEBRUARY 2000 A\$5.00

POWERED 12" PA boxes
SIDE BY SIDE COMPARISON

ENTECH
MARCH 5 - 7 2000
**SHOW
GUIDE**



NEW DMX - PROPOSALS DETAILED
DILI CONCERT: FULL REPORT, PIX
NEW WAY TO WORK: INSIDE MOBILE ONE
DAMIEN GERARD: STUDIO REPORT
WHY CATS GOT BAD SOUND REVIEWS

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Philippine 240ps • Elsewhere US\$7

ISSN 1320-5595

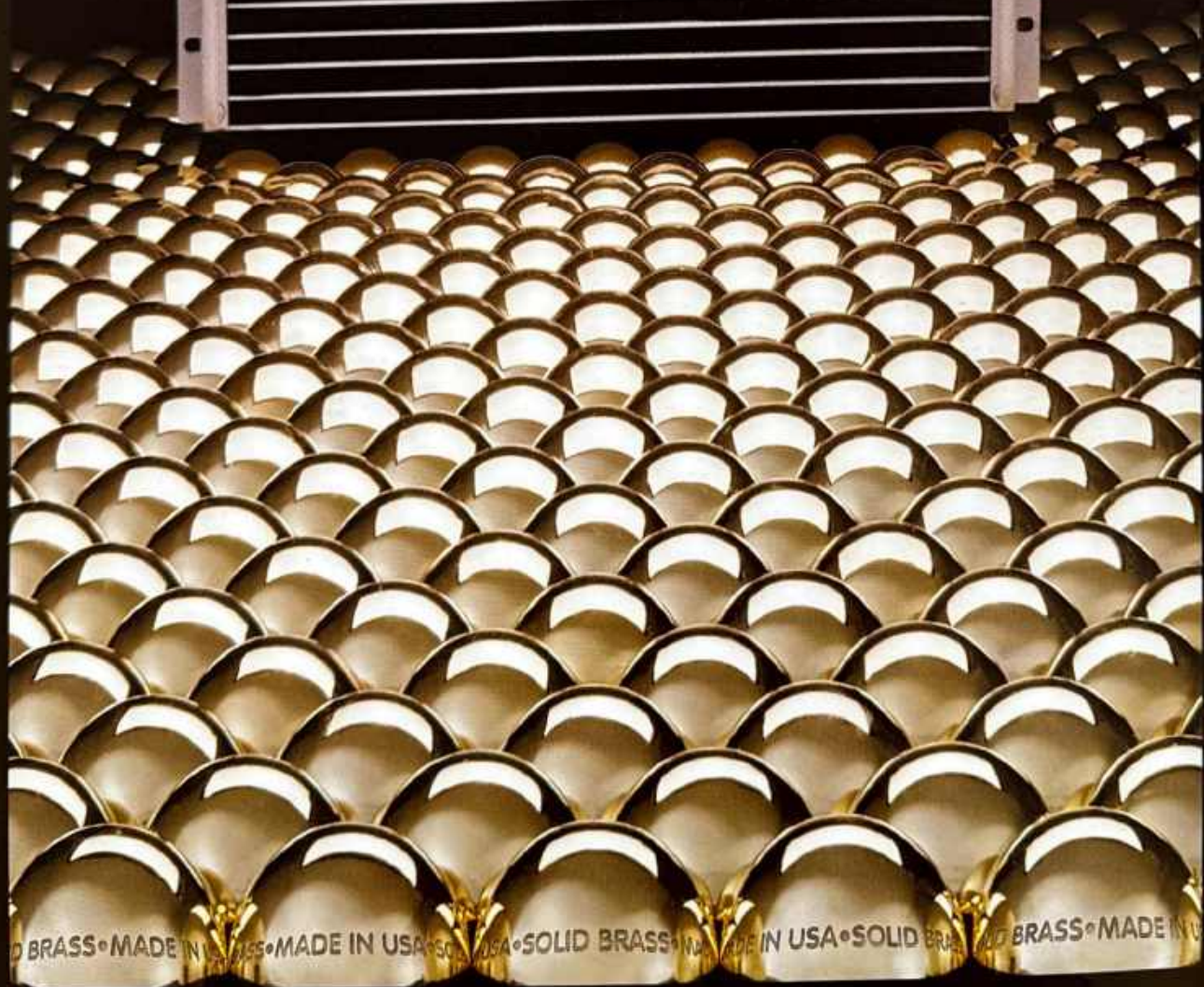


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Pro Audio, Lighting & Staging monthly



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#73. February 2000

The Entertainment & Presentation Technology monthly

12" and Horn - Powered speaker box comparison

We opened our ears, so you can open your eyes - without opening your wallets

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Industry pulls together for Dili Concert

One of the more unusual gigs that come up from time to time, the Dili concert took a lot of sweat to bring to the troops. Our SPECIAL REPORT details the effort involved in staging this unprecedented event.

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Blind test - 9 powered loudspeakers. See page 38



Keith Walker in Mobile One (see page 48)

HOT at ENTECH: PULL OUT SHOW GUIDE IN THIS ISSUE

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CATS

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OUR COVER:
Many thanks to Amber Technology for this great Neumann shot. Anyone with a GREAT photo which may make a good cover should contact us!

Take control of a major

Apple introduces Desktop Movies.

Combine the Power Mac® G4 with

Final Cut Pro® software and you have



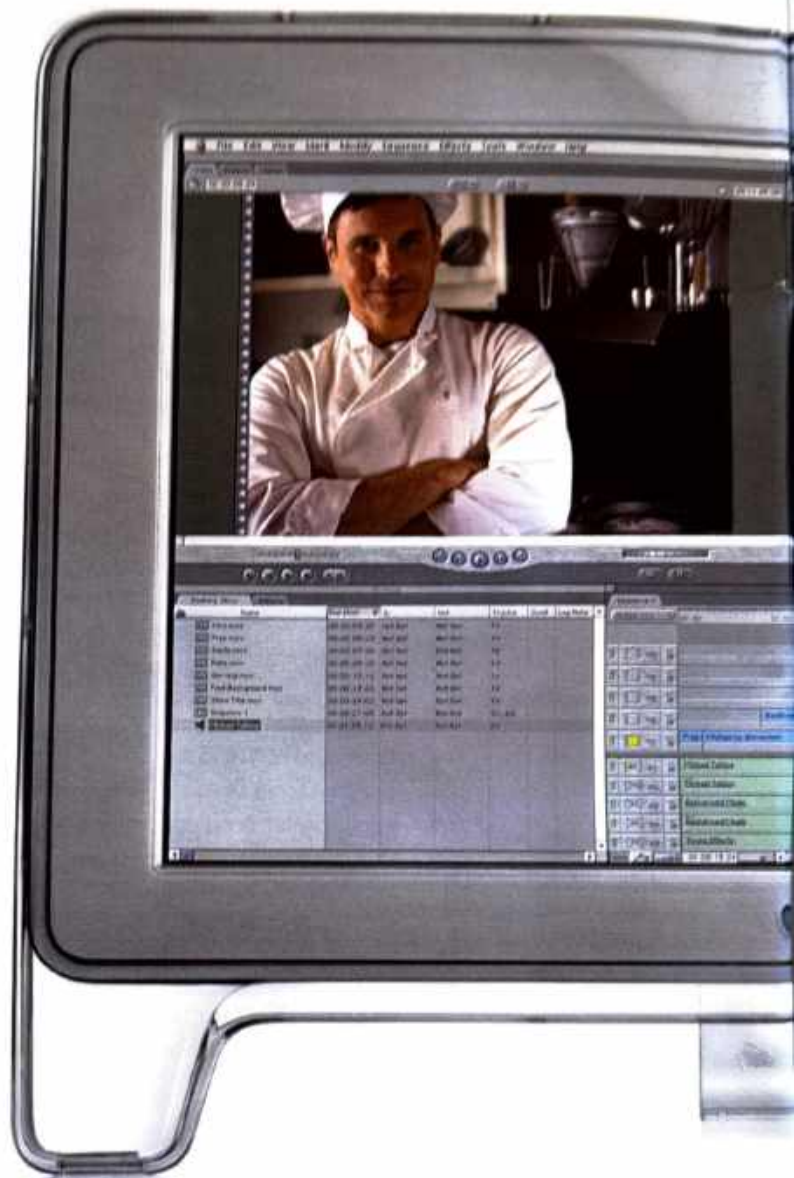
Built-in FireWire lets you import video directly from a digital camcorder with zero loss of quality.

the first pro-quality desktop movie studio for under \$10,000.*

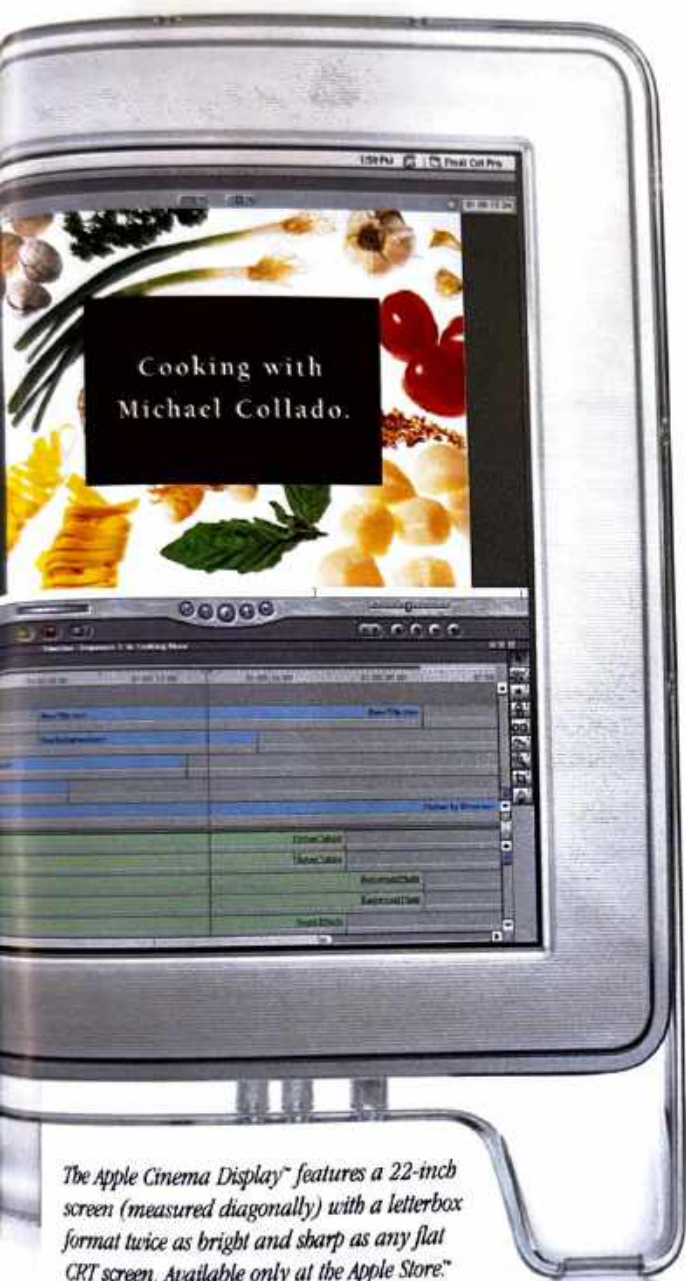
Never before has so

much digital-video firepower been built into such a small space — with everything you need to create and edit Desktop Movies, develop rich multimedia websites, even host a site serving thousands of concurrent video streams. At the heart of this

hard-working movie studio is the G4 processor with Velocity Engine® — a 128-bit supercomputer on a chip that can perform compute-intensive tasks (like rendering



motion picture studio.



The Apple Cinema Display™ features a 22-inch screen (measured diagonally) with a letterbox format twice as bright and sharp as any flat CRT screen. Available only at the Apple Store.™

disk. So if you want to make it big in movies, forget the power suit. And go for the Power Mac. For complete details, visit www.apple.com.au

digital video effects) up to twice as fast as the 700MHz Pentium III.¹

In fact, every part of the Power Mac G4 is built for Desktop Movies.

It has built-in FireWire, so you can connect a digital camcorder and import video with superior digital quality. It has superfast memory (expandable up to 1.5GB) and hard disk (up to 27GB), with room for three internal drives. And it offers DVD-RAM, so you can archive up to 6GB on a single



Optional Final Cut Pro software has the features of a high-end edit bay, with built-in effects, at a fraction of the cost.



Think different.™

GO WILD



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16-track hard disk record/play expansion card for the LD-88

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The Meyer Sound Self-Powered Series

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

"We really nailed it! Our new Self-Powered cabinets give us the flexibility to adapt to any environment on tour, and we now have the best stadium sound I've ever heard."

Jeff Thomas ◦ FOH Engineer, The Dave Matthews Band

"Self-Powered speakers mark a new beginning for both Meyer and the live sound industry."

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

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

Marcio, Nelson & Marcos Pilot ◦ Loudness Sonoriza, Brazil

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

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

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

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

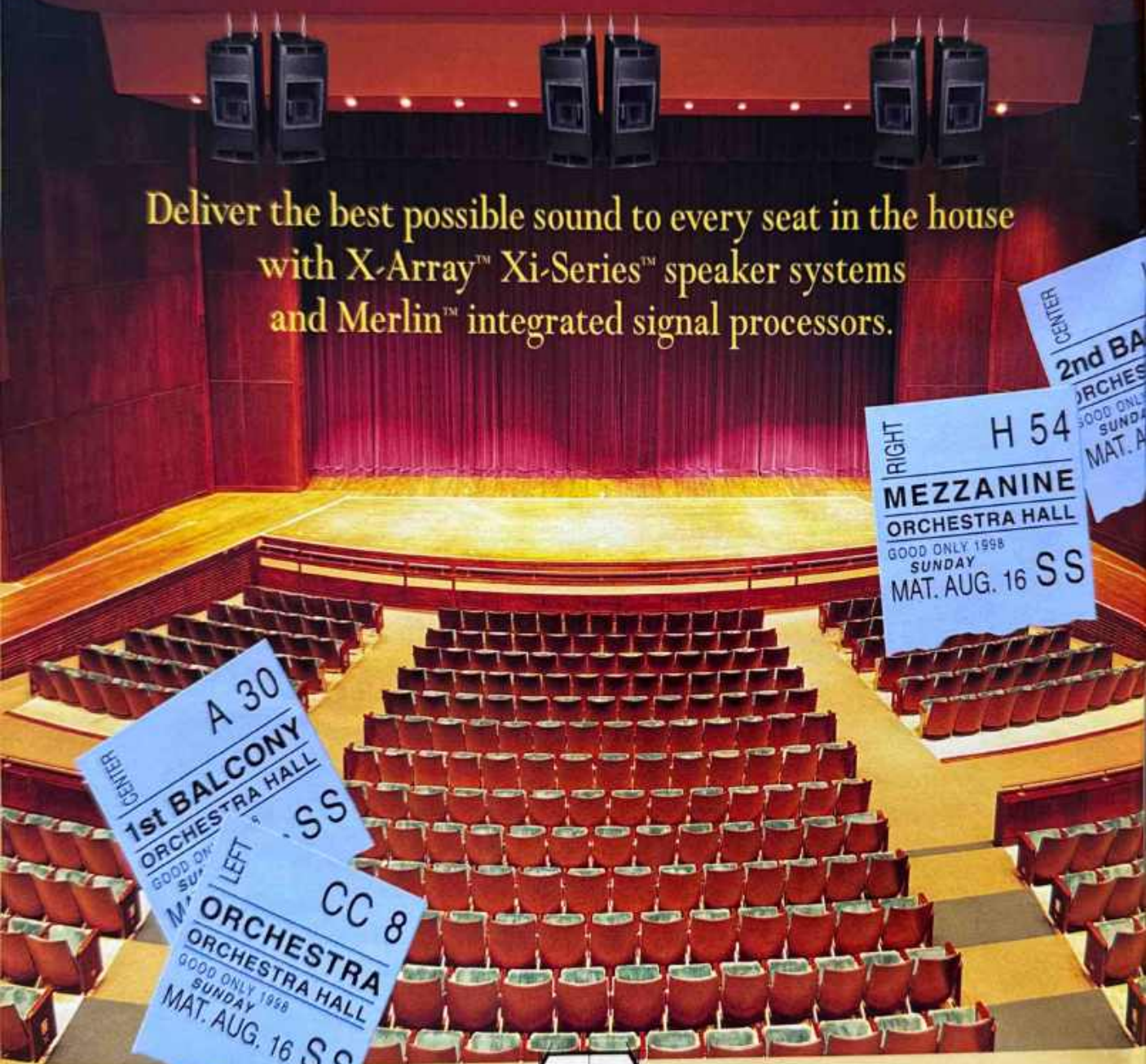
Imagine what you'll be hearing...





UNRIVALED FIDELITY. TOTAL CONTROL.

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



X-Array Xi-Series



XI-2183/94 XI-2183/94 XI-1153/94 XI-1183/94 XI-1101 XI-1152/94 XI-1152/94 XI-1122/95

ADDITIONAL MODELS TO BE RELEASED AT ENTECH - STAND NO. U3

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

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

PERFECT FIDELITY AT ALL SOUND PRESSURE LEVELS

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

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

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

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

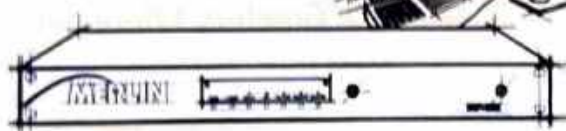
1 Top woofer slot

2 Mid-bass horn mouth

3 Bottom woofer slot



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



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

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

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

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

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

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

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

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

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

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

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



QuickMAP's designed by Brian Elwell, Acoustic Dimensions, Dallas, Texas

THE BEST INSTALLED AND LIVE SOUND, ANYWHERE.



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Website: www.eviaudio.com.au

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ENTECH 2000

Call for Crew / Performers

ENTECH is, of course, THE trade event for the entertainment and presentation technology industries. The organisers invite applications from interested parties to assist with staging this large event in Sydney. **DATES:** Setup Friday 3, Saturday 4 March, show Sunday 5, Monday 6, Tuesday 7 March, 10am - 6pm.

Volunteer roles

1. General runners, setup day(s)

Assist the organisers and exhibitors during a busy setup. See and learn (and work). Please advise your age, fitness state and availability.

Minimum 4 hour block, between 0800 and 2000, either or both setup days. We feed you.

2. Awards Dinner Loaders

The ENTECH 2000 awards are the peak industry awards recognition event, a sell-out dinner held on Monday March 6. As a not-for-profit event, sponsors are providing excellent live production for the night. We need some volunteer loaders to do the IN (early on 6 March) and the OUT (just after the awards). If inexperienced we will team you with someone who is proficient. It isn't terribly heavy, just time consuming. You will get a crew meal and see the show. Please advise your age and level of fitness.

Paid roles

1. Transport Marshals

You need a mobile phone, some brains, and a friendly face, because you will be 'out there' making sure that the transport to and from the show works. A three hour call on showday mornings, \$25/hour.

2. Greeters / floor performers

You've got a friendly face and genuinely like people. Our show director insists that the thousands of visitors and exhibitor staff are kept happy - so you will either warmly greet them and help direct them to where they are going, or stage some 'street theatre' inside the show - or both! And, you'll help liven up the Carnivale on day one too!

Expect a minimum three hour call, at \$25 per hour. Costume allowance negotiable if you are a performer.

Apply in writing only, BY FEBRUARY 21. (Our phones are too busy!)

To: Events Manager, ENTECH, PO Box 439, EPPING 2121 NSW - or - Fax +61 2 9876-5715 - or - email julius@conpub.com.au. Include your daytime contact number and a brief spiel about how you can make ENTECH work for us (and you!)

Connections

THE ENTERTAINMENT TECHNOLOGY MAGAZINE ~ FEBRUARY 2000



The music industry put it on for Australian troops in Dili at Christmas. Our report details this very difficult gig, starting page 63

Bad sound reviews tarnish a good show

Cats Run Away to the Circus is a most ambitious two year tent tour of regional Australia, underway now. The show previewed uneventfully in the Northern Territory, but struck a snag in Sydney, where media reviews slammed the audio.

But when we saw the show a few nights later, it was fine. What was the problem? Was it related to audio design or operation?

We know what happened. The problem is one that afflicts some productions. It's a problem that every producer, audio designer, house engineer and production company needs to recognise. But it doesn't usually warrant any thought - until it happens to you!

There are steps to take to avoid this, read on.....

* Cats coverage starts page 72

VHF wireless not completely dead

Australia's regulator leaves door open for some wireless mic channels

By John Penhallow

AFTER ALMOST TWENTY MONTHS OF CONFUSION, the ABA (Australian Broadcasting Authority) has clarified which VHF frequencies are affected by the introduction of DTV.

As a result, I would not encourage the wholesale transition of every existing VHF user to UHF. VHF Channel 9A remains open for use, except in Hobart or the ACT.

This means you are still able to use Channel 9 frequencies of 202.4, 202.9, 203.3, 203.8 & 204.25.

After studying the ABA's web page these are my conclusions:

1) If you have a system in Channel 11 (216-223MHz) ie 216.25 or 220.6MHz they're gone - change to UHF before October 2000!

2) Likewise, if you have VHF sets below Ch.9A in channels 6 (174 - 181MHz) & 8 (188-195MHz) you too are gone - change to UHF before October 2000.

3) If you use Ch 9A sets in Hobart or Canberra - they'll also be gone - probably before 2001's out - so best to change over to a UHF set asap. Call SBS in Hobart and the ABC in Canberra for a DTV start date then change over at least 3 months prior to then.

4) Major centres like Wollongong and Newcastle, along with most of country Australia, get their Free to Air TV Channels on UHF frequencies only and that's how they will receive their DTV signals too. So lower cost VHF Wireless mic sales are still OK in these areas which covers most of Australia's land mass.

However for everyone else around the country - in the major state capitals as listed - no panic purchases if you have 9A systems - it's business as usual for the time being.

If retailers & contractors run around their town
please turn the page >

ENTECH OPENS SUNDAY MARCH 5

It's the show you call your own. The largest trade expo for sound, lighting, staging and AV in the southern hemisphere. Occupying 3 acres of floor space, ENTECH bursts into life for just three days next month as more than 160 stands compete to win business. Showing for the first time at the new Sydney Showground, ENTECH also hosts a big program of social events and educational seminars.

This is the first time ENTECH has been held as a biennial show, and it's paid off with a bigger show and more exhibitor commitment. This must be an omen for other annual shows overseas.

Trade entry to the show is free after registration, trade is anyone with a genuine interest. Show hours are 10am to 6pm, full info and pre-reg is at www.conpub.com.au, or call 1-800-635-514.

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ETHICS: We operate under the journalists code of ethics, as detailed by the Australian Media Entertainment and Arts Alliance. Respect for truth and the public's right to information are over-riding principles for all at this publication. In pursuance of this principle we have always committed ourselves to these ethical and professional standards:

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

VHF WIRELESS - SOME CHANNELS OK (continued)

trying to convince their regular customers to change before they really have to, then that may well be held against them down the track when they find out in 2001 that other Channel 9A sets around town are still working fine.

Finally, a word in support of VHF frequencies generally: they travel further, go through walls and water better and are cheaper to manufacture and easier to service than UHF so let's not abandon them completely.

I stress that the above is my informed opinion only as I cannot get a written definitive con-

firmation from the SMA in Canberra but I did receive a verbal acknowledgement from one of its officers over the phone that this is a fair reading of the situation.

• www.aba.gov.au/what/digital/wireless.htm

**John Penhallow is the Managing Director of Aerobic Microphones Australia P/L. Email johnp@aeromic.com.au*

CORRECTIONS

In our story about The Hobbit last issue we messed up a name. Adam Iuston is correct, Luston is not. Apologies to Adam, who also features this month in our story on Powered 12" and horn speaker boxes. His pic is on page 43.

Our Trade Show dates for Frankfurt MusikMesse were wrong, our 2000 Year Planner CORRECTLY shows the new dates as 12 - 16 April. We were not told that the dates had changed. Several readers called to say they had travel arrangements effected. We apologise.



BRENT GRAY IS NOT PAUL GUTHRIE - CORRECTION

THIS is Brent Gray. Last issue on page 24, 'My Favourite Mic' featured Brent talking about his gig. But the picture that appeared was that of Paul Guthrie - an LD who was featured in our regular 'My Favourite Gel Colour'. Connections regrets the error.

PRO-OUTLETS DIRECTORY; ALL AV PTY LTD

Last issue we had a listing snafu in our Pro Outlets Directory. This is the correct listing (we regret the error) for All AV Pty Ltd:

All AV Pty Ltd

Unit 6, 19 Rodborough Road, FRENCHS FOREST NSW 2086

Phone: (02) 9453 4900

Fax: (02) 9453 4911

Email: info@allav.com.au

Website: www.allav.com.au

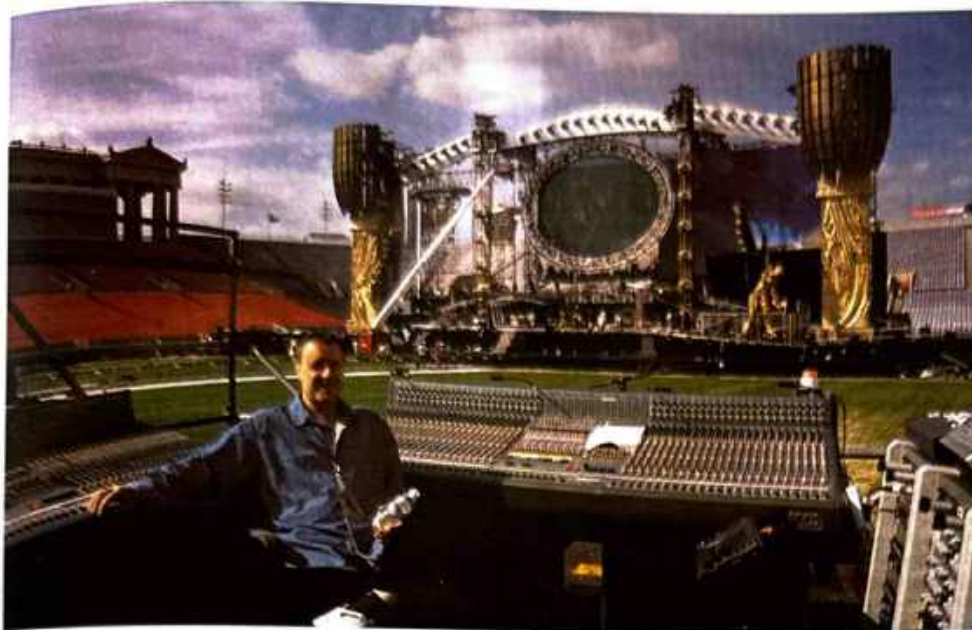
Key Staff: Brett Collison: Director/Sales & Marketing, Anthony

Jeffcoat: Director/Technical & Research, Jason Lewis: Sales Manager, Main Brands: 1.Sanyo, 2.NEC, 3.Hitachi

Changes to Connections

This issue brings a new year and some important changes with your magazine. The BUYERS GUIDE is no more, instead we will run concise Market Reports on products. The first of these is

inside, on Powered 12" and horn speaker boxes. MICHAEL ORLAND has retired, see Letters. And finally, the READER SERVICE CARD is no more, less used as the internet kicks in.



Stones engineer for ENTECH

Robbie McGrath is a special guest at ENTECH, courtesy of EVI Audio. Robbie (*above*) is currently FOH engineer for the Rolling Stones, and before that AC/DC and Simply Red. He will attend the Big Audio Funday semi-

nar on Monday 6th March, to talk about live sound for major concerts. He will also appear on the EVI Audio stand.

Robbie is a Connections reader's favourite, having been interviewed in these pages several

times over the years.

He once famously suggested to the Young brothers (AC/DC) that they look at MIDI and sampling, which (after a long, quiet pause) resulted in the suggestion that his air travel may be downgraded from business class to luggage.

At the Big Audio Funday, Robbie will be available for the question and answer session at the end - which is shaping up as a highlight, with several other famous sound people likely to attend.

The Big Audio Funday is one of many seminars and sessions at ENTECH, the whole program is online at our website at www.conpub.com.au, or you can get a hard copy by calling us.

The Funday starts at 10.30am, and features a tour of the Olympic stadium PA, and a large format PA shootout - along with various sessions. It costs A\$45 (Students \$32). Bookings are strongly recommended as it is filling up at presstime.

Venue Technical and Production Managers' Meeting at ENTECH

Technical Managers and Production Managers are invited to attend a special meeting to be held at ENTECH 2000. This is a follow up meeting to the one held at the last ENTECH in Sydney, and is to be hosted by **Patrick Buckle** (Technical Manager, Glen St Theatre).

Issues to be raised at the meeting include establishment of an association of technical and production managers; sourcing show crew, standards in training of technical crew; and common problems faced by all.

Attendance at the meeting will be open to all, however, those people that currently hold these positions in venues across NSW are especially encouraged to attend. There is no cost, no RSVP.

The meeting will be held at 12pm on Sunday 5 March. Gather in the Foyer.

SECURITY MERCHANTS TAKE ON JVC

Security Merchants Australia have joined in a strategic alliance with Hagemeyer Video Technology to promote the complete range of JVC Professional CCTV products in Australia & New Zealand as exclusive dealers.

All JVC Professional CCTV sales inquiries :

• Security Merchants Australia
Unit 3-1B Kleins Rd, Northmead
NSW 2152. Ph: +61 2 9890 5300
Fax: +61 2 9890 5600

EVI MELB. FAX CHANGE

EVI Audio in Melbourne have changed their fax number. Effective immediately the new number is +61 3 9796 0861. All other details remain unchanged including phone number, address and e-mail address.

Naughty G3 now nice

Readers have been calling us to find out the outcome of our Apple G3 saga - which started with the 400Mhz Blue machine being delivered to us *Dead On Arrival last March*. As reported subsequently, our G3 was a troubled creature, and plain refused to open some older software (like Word 5 for Mac, our preferred word processor).

The Mac Vendor got very upset when we tried to hurry the initial week long service interval by suggesting the Mac was subject of story in these pages. He threatened to sue us. Charming man.

With the machine doing weird things and crashing every hour or so, we had a lot of dialogue with Apple, and installed a new hard drive. They sent us another G3 which also mimicked some of the problems with our machine.

To cut a long story short, Apple suggested we send the machine to another Apple dealer, Total Recall Solutions. They replaced the processor board, and the CD drive under warranty. We then updated the Apple Fonts Manager, and installed Suitcases V8.0.

The G3 now works like it should! (But still doesn't open Word 5).

STOP PRESS: ... YAMAHA PM1D DIGITAL MIXING CONSOLE
Tel: 1800 805 413

Altronics

This year, Altronics we will be displaying the following new items on their stand:

Redback Phase 4 Amplifier range (pictured). These are selling well and are being specified into projects around the region.

Redback UHF single ch. true diversity radio mic. Good balance between price and features.

The recently introduced Redback 16 zone paging system. In addition to this they will have on their stand a range of 19" rack frames and accessories, horn speakers, PA speakers, microphones, mixers, compactors to name but a few. (Stand V13)



Audio Telex Communications reintroduce Australian Monitor

Audio Telex Communications will feature numerous new devices on their stand at Entech. This will include:

- Two NEW amplifiers from Australian Monitor
- NEW Sabine FBX Wireless Microphone System
- NEW Symetrix 9022 DSP engine
- Media Matrix Seminars including all the new generation
- NEW range of low cost installation speakers from Audio Telex
- NEW Q8 Soundsphere, 100 watts for the same price as the 55 watt version.
- SPECIAL Assisted Hearing Centre for one of the growth areas in our industry, induction loops and FM/IR assisted hearing systems.

(Stand Q12)

Technical Audio Group to preview new products

Technical Audio Group will be displaying at least five new products of their stand at ENTECH:

• **Euphonix S5 Digital Mixing Console** - Euphonix have released an all new 96kHz fully digital console: the Series 5. With its dazzling appearance, remarkably intuitive facilities and fault tolerant operating stability the S5 is guaranteed to be one of the ENTECH highlights.

• **Martin Audio W8 Longthrow** - Martin Audio has launched long-throw derivatives of their award winning Wavefront 8 concert cabinets. Their stated aim was to create a truly long-throw array that eliminates the need for delays in configurations for large outdoor festivals and stadia as well as large arena events.



• **QSC PowerLight2** - A second generation of the multi-ENTECH award winning QSC PowerLight amplifiers.

• **Allen & Heath ML5000** - The ML5000 puts the Allen & Heath marque firmly on the large touring console market. Designed to shake the established order, it is a VCA equipped 16 Aux, enhanced LCR and IEM equipped big-league console in a compact package. As with the GL Series, the ML5000 is a dual function console with a stack of capabilities for both FOH and Foldback.



• **Marantz Portable Minidisc** (above) - Marantz have released a professional Minidisc version of their famous portable cassette recorders. (Stand UB)

StudioMaster returns

Studiomaster's range of mixers, powered mixers and amplifiers will be on view for the first time - prior to their official world launch in Frankfurt 2000. Check out www.studiomaster.com for more information. You can see these new items on the stand for their Australian distributor, GUET. (Stand O2)

Steinberg new for Music Link

Steinberg has changed distributor in Australia, just in time for ENTECH. Music Link has taken over from Music Technology - who were very gracious, and wished them "all the very best with this world class product". It will be an ENTECH first for Steinberg. Music Link will also feature new products from Behringer and from Event Electronics. (Stand U20)

Meet The Men That Make the Mics

On Sunday afternoon 5th March from 2 to 6pm you can meet Peter Paisley of Sydney who designed and manufactures microphones under the Aeromic Systems brand name - and Ian Du Rieu of Adelaide who designed and manufactures microphones and DI Boxes with the Leon Audio brand.

Both will be in attendance at Aerobic Microphones Australia for the afternoon to talk about their products and the manufacturing challenges they face.

They are two of only three Microphone manufacturers operating in Australia. (Stand AA19)

DJ Boot Camp

Donte D'one, founder of Australia's DJ/MC Boot-Camp Professional Training Courses, announces the official launch of his new book "Master of your Domain" at ENTECH.

The book is a DJ/MC Handbook that much covers more than just Beat mixing.

As an added bonus, each copy comes with a \$50.00 Voucher, which can be used at any Boot-Camp Training Location Australia. You may purchase the book (retail A\$19.95) at The Boot-Camp DJ/MC Seminar/Workshop, March 5 at ENTECH, or from The Boot-camp Booth. (Stand i16)

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AV industry debut in style at ENTECH

For the first time, major exhibits featuring video and presentation technologies are at ENTECH. Barco and Sony lead the move into ENTECH with large displays featuring video and LED displays.

Major AV industry participants at ENTECH include Audio Visual Australia (representing Toshiba), Fujitsu, JVC Professional, All AV and Sanyo, InFocus, AV Technology (AMX, Panja), Gearhouse, WolfVision, Axis Av and others.

The Presentation Zone is located at the end of the wide main aisle, and also features the ICIA theatre, where a daily Presentations Academy is to be held.

A cornerstone event is the Audio Visual Facility Manager's Conference, to be held on Monday March 6th.

• Info at www.conpub.com.au

New Mackie Fussion Active Concert System to debut in free concert at ENTECH

Australian Audio Supplies has confirmed the first shipment of Mackie's new Fussion Active Speakers have left RCF in Italy bound for an ENTECH debut.

The FUSSION 3000 is a full-range, medium throw, active loudspeaker system, capable of extremely high sound pressure levels and wide dispersion. With almost 2000 watts of low-distortion built-in power, the FUSSION 3000s are ideal for large sound reinforcement systems that require precise reproduction of transients, high levels of intelligibility, and compact size.

The FUSSION 3000 features specially designed, high-output transducers including a special eight inch, horn-loaded mid-range that allows the FUSSION 3000 to generate extremely low distortion (< 0.05%) at full power.

The mid-range operates between the frequencies of 500 and 2500Hz, eliminating the

placement of a crossover point in the middle of the critical voice frequency range. The result is a smooth phase and power response that delivers extraordinary intelligibility at extreme output levels. Frequencies above 2500Hz are reproduced by a 3" titanium diaphragm compression driver mounted to a 80 x 60 degree horn with a 1.4" exit throat. Two high-precision MOSFET amplifiers, one for the mid-range driver and a modified version for the high-frequency compression driver are designed to emulate the celebrated warmth and transparency of vacuum tube amps.

The FUSSION 3000 delivers deep bass through the use of four 12" high-output woofers. Each 12" woofer handles 350 watts RMS long term. Arraying four woofers within the cabinet allows the FUSSION 3000 to produce very deep, precise low fre-



quencies, says Mackie.

The FUSSION 1800SA and 1800S is an extreme output active subwoofer system, designed to complement the 3000 (above).

Australian Audio Supplies will be running a free presentation with a live band playing through the new Fussion System after the Carnivale on Sunday night - day one of ENTECH. (Stand O12)

Six New Products from Meyer Sound

Meyer Sound will be presenting a number of new products at ENTECH 2000.

• The Meyer UPM-1P self-powered loudspeaker (below) is more than a powered version of the Meyer UPM-1. The speaker includes a sophisticated amplification and control electronics package, which adds a mere 2kgs to the units weight. The UPM-1P is ideally suited for under-balcony, front-fill, and keyboard speakers and also makes an excellent small PA.

• The compact UMS-1P professional reinforcement subwoofer, the company's latest addition to the



Self-Powered Ultra Series, incorporates dual 10-inch drivers, proprietary control electronics and a dual channel 400 W Class AB/H powered amplifier

• L Track Rigging System has been newly introduced this year as an option on the MSL-4 and new DS-4P. L-Track comprises solid stainless steel tracks that run the full height of the loudspeaker enclosure

• The DS-4P is a self-powered, arrayable mid-bass loudspeaker, providing high power and extremely low distortion. It was developed to supplement the 70-200Hz band in full-range systems, affording additional mid-bass headroom.

• Meyer Sound's self-powered PSW-6 is the

first commercially available subwoofer to exhibit a true cardioid coverage pattern throughout its entire operating range. This makes it the first subwoofer to offer directional control of low frequencies. Covering more than two full octaves, the PSW-6 has a front to back SPL ratio of more than 15dB, and typically more than 20dB, from 30 Hz to 125 Hz.

• The MSL-6, Meyer Sound's largest self-powered speaker, is ideally suited for large-scale vocal public address applications as a stand-alone system, and for musical sound reinforcement in combination with Meyer self-powered subs and/or mid-bass speakers. The MSL-6 features a 25° vertical coverage angle, permitting long-throw arrays with up to three vertical rows with minimal overlap between coverage areas. (Stand O30)

Second Hand Equipment Catalogue now online

CC's Light & Sound specialises in the buying and selling of second-hand audio, lighting and associated equipment for the entertainment industry. Since 1989, CC's Light & Sound has gained a formidable reputation for its range of quality second-hand equipment, all workshop tested, backed by a money back guarantee.

Recently their second hand catalogue made it onto the net at www.ccslightsound.com.au to offer a more up to date and informative listing of the current range of second hand equipment. Also available online is a comprehensive range of consumables.

Visit their stand for an exclusive offer to save next time you purchase from their on-line store.

(Stand AA20)



Amber Technology's ENTECH Stand packed full

Amber Technology's stand will be packed with the latest professional audio & A/V gear from such industry-leading manufacturers as TC Electronic, Neumann, Otari, Neutrik, Canare, Fairlight, Dynaudio Acoustics, Tube-Tech, N.E.A.R. and Electrohome.

ENTECH 2000 will see the Australian premiere of the stunning new TC System 6000 multi-channel digital processing platform. TC's design brief was simply "Any Format + Any Quality" and the result is ground-breaking technology which takes digital signal processing to a new level, they say.

With its ability to handle ANY surround format (including 4-channel encode / decode), the System 6000 offers a unique solution for music, broadcast, film/post-production and mastering applications in surround-sound environments.

Other products to check out on Amber's stand include:

- Neumann M147 Tube - the award-winning new tube mic offering true Neumann performance with a very pleasant price tag.
- Otari RADAR II - the latest generation of Otari's internationally acclaimed multi-track disk recorder for no-compromise recording applications.
- TC M-ONE & D-TWO - Another two hot new digital processors from TC. But at only \$1,295 R/R, the M-One Digital FX and D-Two Digital Delay offer TC sound at an "others" price.
- Neutrik ML-1 "Minilyzer" - a hand-held professional audio signal analyser to match Neutrik's MR-1 Minirator signal generator (...a complete test system in two pockets!)

(Stand X18)

ARX to display the new SPL speakers at ENTECH

ARX will have the Australian launch of the new SPL Self Powered Loudspeakers at Entech 2000. Models on display will be the SPL12 trapezoidal Active 2 way system (below), the SPL 10 ultra compact co-axial, the SPL 18 Active Sub, and the SPL12M Active 2 way monitor. All models use their proprietary 'CoolPort' cooling technology.

Although these speakers have sold extremely well worldwide and in Australia, this is the first time that the range has been on

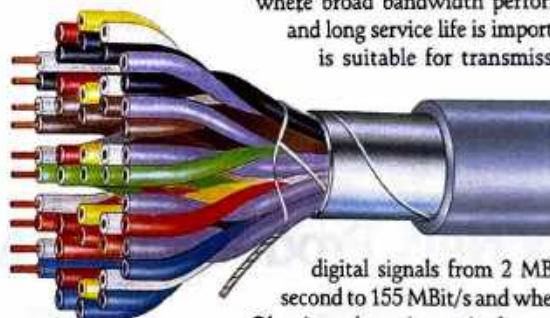


display locally for all to see. They say: 'Build a better mouse trap and the world WILL beat a path to your door'. (Stand U25)

Belden's High Performance Digital Carrier Cable Answers New Demand

A unique Australian designed and manufactured cable is proving a success in commercial and industrial applications for intra-building digital communications.

The Belden Digital Carrier Cable is also suitable for telecommunications carriers and other multiple system operators where broad bandwidth performance and long service life is important. It is suitable for transmission of



digital signals from 2 Mbits per second to 155 Mbit/s and where 120-Ohm impedance is required.

Manufactured at Belden's plant in Melbourne, the screened Digital Carrier Cable has a unique construction that produces a smaller dimension cable making it ideal for installation in existing buildings where space is limited, particularly for ISDN applications, and lighting data protocols (including the draft DMX512/2000 standard)

The cable can be supplied with either bare or tinned copper conductors and an optional low cost PVC sheath is also available. It comes on 250-metre reels in a box for one pair to eight-pair cable and on 500-metre plywood drums for 16-pair cable and above.

(Stand R19)



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

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

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

Call us or visit our website to find out more.

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

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



AT Shotgun Microphone enters new era

Audio Technica have recently released a directional microphone that has some unprecedented specifications. With some very impressive off-axis rejection, the AT895 has a pick up pattern of just 20 degrees, allowing for significant improvements in distance pickup and gain-before feedback.

AT895 Systems incorporate a revolutionary DSP-controlled five-element microphone array that provides adaptive directional audio acquisition. The output of the array is sent to a control pack, which manipulates and filters the audio by acoustical, analog and digital means to enhance the pickup of a sound source from a desired direction relative to unwanted background noise or interference, providing cancellation of up to 80 dB. The AT895 is designed for handheld interview use or long-range sound pickup - in the field, in the studio, or in security operations.

Several of the units are currently being appraised for use during the Olympics. Audio Technica is distributed in Australia by Yamaha, and this microphone will be on the Yamaha stand at Entech. *(Stand BB13)*

New EAW Avalon Series Club Loudspeakers

Production Audio Services and Kenton Forsyth (the co-founder of Eastern Acoustic Works - EAW) will be launching the new Avalon series at ENTECH 2000.

The Avalon series consists of six full-range loudspeakers, two specialized super-high-frequency arrays, and a dedicated subwoofer, all designed specially for the unique criteria of dance club sound reinforcement applications. *(Stand Y8)*

EBONY expand powered speaker range

Audio Assemblers have advised of a further two additions to the EBONY speaker system range, a 12" and a 15" model.

The EBONY EL250P and EE250P are both powered 2 way speaker systems.

Both models include ply cabinet, stand adaptor, black carpet, handle and full grille. (250 W 4 ohm)

Audio Assemblers stand X13



dbx Drive Rack on Jands stand

ENTECH is the launch pad for one of Jands' top releases for the year, dbx's new all-inclusive Drive Rack loudspeaker management system.

Designed to be the only device necessary between the mixer and the power amps, dbx's Drive Rack can handle all post mix processing and signal routing with one master controller.

There are four components available in the Drive Rack line, providing quick and easy solutions to every imaginable scenario across the audio spectrum: the 480 master processor, the 480R master remote controller and the 481S and 482S slave units.

The 480 is the heart of the Drive Rack system and provides four inputs and eight outputs along with comprehensive processing including a pre-crossover EQ, notch filters, speaker delay, multiple crossovers, speaker compensation EQ, driver alignment delay and compression/limiting.

Two real-time analysers can be

run simultaneously on the 480.

The model is capable of driving as many of the 481S and 482S units as each application requires, and is fully programmable from the front panel, with the 480R remote control or through a computer via the GUI port. The 480R is the master remote controller for the system. It is capable of controlling and programming multiple 480, 481S and 482S units, and features 31 flying faders which can automatically recall the graphic EQ settings of any unit on the network.

The 480R can simultaneously control multiple Drive Racks, allowing global EQ adjustments to be made quickly. Thirty-two instant access screen buttons can be programmed to immediately recall frequently used parameter screens. A large custom display mirrors the display of the selected unit, and the unit includes its own real time analyser. It can be stationed over 150 metres from the master 480, making it the perfect choice for front of house mixing. *(Stand I2)*



Lexicon's new MPX 500 is but one of many interesting new devices on show at Studio Connections stand, # O25.

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CMI strong on speakers, as Apogee, dB and Peak line up

Eminence US, (the largest Speaker manufacturer in the world, producing over 10,000 speaker components per day) have developed the long awaited 2" Compression Driver - the DSD-3003. (right)

With a recommended retail price of \$400.00, this little driver has some good specifications. More details are available on the show stand.

• The Peak Audio HPS range of loud speakers have been specially designed for high performance and high power handling. In one reliable and cost effective package, Peak Audio have combined American technology with the Australian ingenuity, design and know-how. This same design team are extremely please to introduce to the HPS rage of speaker cabinets, the PEAK AUDIO HPS-156R

This extremely high powered speaker enclosure boasts all the standard features of the HPS range. These features include, all Ply Construction, all Us Speaker components, Trapezoid shaped speaker enclosure, stylish deep coloured covering of dark green tweed carpet, heavy duty steel handles, Peak horn protection circuitry, and the extendable 36 month Peak warranty.

In addition to the above standard features, the HPS-156R has a 15" cast frame professional Eminence woofer and the Eminence 40w, 1" driver to give you a comfortable power handling capability of 600W RMS.

• Apogee's new F-series loudspeakers represent the culmination of fourteen years of accumulated expertise in research, development and manufacturing. All F-Series models are processor-based, yielding superb results in the most demanding applications.

The FS-2 stage (floor) monitor is a breakthrough in size versus performance. Ideal for the concert stage, it features exceptionally high output capability and specialised sonic properties that



enable it to cut through any amount of ambient stage 'wash'. Its small size makes the FS-2 extremely versatile, permitting it to be used for a wide variety of applications.

• dB Technologies' compact series of active loudspeakers consists of models in two power formats. The LIVE series is designed for the active musician for rehearsals and on stage-

applications. The MONITOR series has been designed for the critical evaluation of music.

dB Technologies have developed a new range of active speaker enclosures manufactured from the latest polyurethane technology giving the cabinets a completely new look and finish.

See them on Stand O8.

Lots of showroom

On Monday, 7th February, Lots Of Watts opens its new, larger showroom featuring:

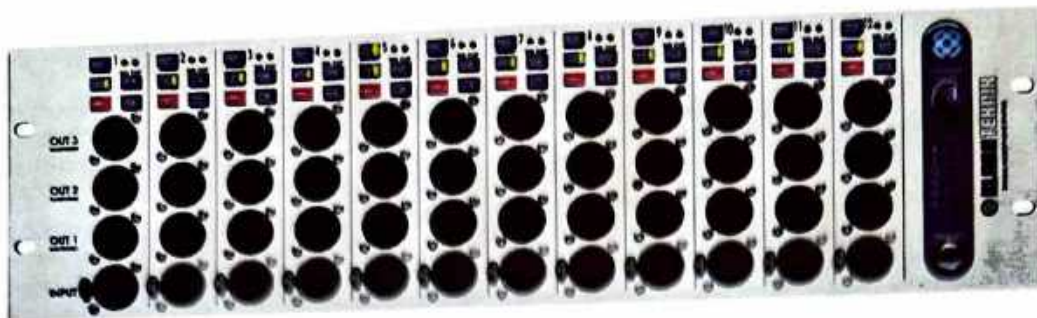
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EVI Audio plan many drawcards for ENTECH

EVI have brought two international guests over to Entech: Robbie McGrath, an EV X-Array & Midas specialist (FOH Engineer for Rolling Stones, U2, Metallica etc), and Kent Peterson, Intercom Specialist, Telex Communications, USA.

In addition to this, EVI have put together a wide selection of new systems to put on display. These include...

- From Midas - Heritage Range of Consoles (*pic, below*).

Special pre-release at Entech of the Midas Heritage 1000 Console. To compliment your Midas or other large consoles comes the Midas Easy Tilt - a Revolutionary tilting console stand suitable for transportation of all large consoles.

- From Electro-Voice - Introducing 3 new System 2000 speakers the Sx80, Sx100+ & Sx100 PI. New additions to the best selling EV Eliminator

Speaker Range. Australian Release of 10 new vocal and instrument Microphones and the new EV UHF wireless range. EV X-Array launch new models in the Xi Series speaker range and the unique EV Vari Intense range of installation speakers

- From Klark Teknik - Australian release of the new DN9848 system controller, DN1248 active mic splitter (*above*), DN422M mic pre amp and DN1414 rack mount multiple DI Module.

- From Dynacord - Demonstration of the new Promatrix Integrated Digital Public Address System.

- From Merlin the new Chameleon Fibersnake on display and the Merlin ISP100 Integrated Signal Processor.

- From Telex Communications a new range of wired talkback systems.

(Stand U3)

Soundcraft Series Two Compact 8-Bus Live Console

Soundcraft has released the classic Series Two live console. The model embodies the classic eight-group, eight-aux format pioneered by Soundcraft in the '70s which has since become the standard for mid-range live consoles.

Ideally suited for small touring sound companies, theatres, churches and other fixed installations, Series Two is available in 24, 32 and 40 mono channel frame sizes with two fully featured stereo line inputs on each version. Its newly designed frame offers classic three-tier raked styling for excellent visibility of control settings and an integral meter bridge provides input and output metering on LED bar graphs.

A variable-frequency high pass filter with separate In/Out switch is available on each channel, as is Soundcraft's classic four-band EQ with two sweepable mids and EQ In/Out switch. Eight mono auxes have pre/post fader switching in pairs and a pre/post EQ switch.

Direct outs with pre buttons on each channel enable the Series Two to feed out to multi-track recording devices during live performances. Additional standard features on the desk include four stereo returns with routing, auxes and 'tilt' EQ; an 11x2 matrix section; and a MIDI mute system.

Jands Stand i2

New compact LSR Monitor from JBL

JBL has released a compact, high performance studio monitor in its acclaimed Linear Spatial Reference (LSR) Series.

The unit combines two high power amplifier sections with an active crossover system. The LSR25P also includes a 5.25-inch woofer based on a low distortion, high excursion design with a non-woven carbon fibre composite cone, and a one-inch titanium composite diaphragm tweeter integrated with an Elliptical Oblate Spheroidal (EOS) Waveguide with 60° x 100° dispersion for a smooth spatial response.

Jands Stand i2



MAJOR TRADE EVENTS

- NAMM, 3 - 6 Feb 2000. LA. www.namm.com
- AES 108th. Feb 19-22 2000. Paris. Fax +1 212 682-0477. web: www.aes.org
- ENTECH 2000, March 5th - 7th, 2000. Sydney Exhibition Complex at the Olympics, Homebush Bay. Fax + 61 2 9876-5715. web: www.conpub.com.au
- SIB, Mar 26 - 29th, 2000. Rimini, Italy. Ph +39 541 711711. www.tierarimini.it
- NAB, April 8-13th, 2000, Vegas, USA. www.nab.com
- MusikMesse, April 12-16th 2000, Frankfurt. www.messefrankfurt.com
- NSCA, April 27 - May 1, 2000. Las Vegas. Ph +1 904 273-2760 www.nasca.org
- PLASA Shanghai, June 7-9, +44 171 370-8231. www.lightandsound-shanghai.com
- WORLD LIGHTING FAIR, June 22-24. Tokyo. www.wlf.co.jp
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New from Numark

Show Technology Australia introduces the new CD MIX-1 from Numark. The CD MIX-1 (above) is a compact, portable, and self-contained unit that combines two fully controllable CD players and a DJ mixer.

The CD players have full cueing ability with pitch control, BPM counter, and track sequence programming. The mixer section features crossfader play start, a 3-band equaliser and addition inputs for microphones, turntables and other line sources.

• Another new Numark product on show is the CDN32 Anti-Shock Dual CD player.

Stand K10

New DJ Omnitronic Equipment

Omnitronic now has 22 Dealers across the country and is fast becoming an important force in the Australian Entertainment Industry.

At Entech they have two new professional Dual CD, Players and two limited edition Blue Dual CD Players coming out. They will also be launching a limited edition Blue DD4250 Direct Drive Turntable with Platter reverse, Blue LED's & slipmat.

There are also four new models of DJ Mixer, including the DJ200 (with Effect Assign, send & return plus cross-fader contour control) and the EX530 Effect Mixer with built in beat effector and filter banks.

The new Omnitronic *flag ship* mixer is the EX680, a 4 channel installation or club mixer with 4 x 4 second and 1 x 8 second sampler banks, built-in beat effect unit, 3 band EQ on each channel, assignable cross-fader, full frequency kills plus loads more features.

(Stand i17)



Moore Music display DJ & computer audio products

Moore have a variety of products from Vestax, including the CDX 35 Professional Cd Player (below). It is destined to become a new standard for CD DJ's across the globe. It offers features that will please both sound engineers and DJ's alike, such as seamless looping up to 20 seconds, 1/2 rack space design two players fit into a rackmount frame, large jog wheel for cueing (with 5 cue / memory points), 10% tempo control, and 20% key control with a "master tempo" switch and reverse play feature.

• Mark Of The Unicorn (MOTU) 24i - offers 24 high quality, 24 bit analog inputs in a compact, economical single rack-space design, allowing you to connect and record from 24 simultaneous analog inputs.

• The MOTU 308 is a multi-format digital audio interface designed for use as an expander for an existing MOTU core system.

• Terratec's PhonoPreAmp is for editing vinyl discs on your PC and then preserving them on CD.

Stand U17



Tascam debut new DJ CD player

The CD-302 will be publicly released at Entech. This unit is a first for TASCAM and is reputed to be the best dual CD player on the market for DJ work. It features mind boggling features like 32% tempo change without altering pitch, 10 second RAM buffer for seamless loops and A/B looping, auto tempo sync function, brake and scratch functions with authentic analogue sound plus heaps more.

• Also, a stand alone CD recorder that will sell for \$999 will be on the stand at Entech. Called the CD-RW700, it features 24-bit ADC & DAC, an erase function, auto track increments, sync start, repeat function, random and program play, remote and headphone out.

Stand O40

Corporate audio services bring out the big guns

If you are into big audio, then you may want to spend a bit of time at this stand at Entech.

• Turbosound - Speaker Cabinets and Controllers: Thirteen new products, including the entirely new TCS contracting series, the Q-Light powered cabinet series, new active and passive wedges, and the new LMS-D6 2-in/6-out Speaker Management System. Plus, a Flashlight stack will be on show at the PA shootout on Mon 6th.

• MC2 - Digitally Controlled Amplifiers: New from Tony Clarke (Klark Teknik fame) and Manufactured in the U.K., this range of digitally controlled, ultra high quality amplifiers that apparently have to be heard to be believed. They too will be involved in the PA shootout on Mon 6th, plus one will be on display at the show configured for remote control via a laptop and MC2s Amplifier Management Software.

• Ashly - Processors: On show will be the powerful new Protea Series DSP processors, with 24-bit resolution from input to output. In addition to 4 channels of 28 band 113 octave. graphics there are 4 channels of programmable compressor/limiters, programmable delays and programmable 24dB/octave high and low pass filters.

• Samson - Wireless and Audio Products: Entirely new frequency agile wireless systems, a UHF micro system small enough to use with almost any video camera, new power amps, powered desks and an extensive microphone range.

• Audient - Studio Consoles and Equalisers: The owners of this British company are the founders and ex-owners of DDA, Gareth Davies and Dave Dearden. On display will be Audient's latest offerings - the ASP231 - 31 band graphic equalisers and the ASP-8024 high-resolution studio mixing console. The console utilises full-feature in-line architecture, 80 inputs in their standard 2m long frame. it has full 24-track routing.

• Focusrite -Audio Processors: The latest releases from Focusrite includes the ISA-430 Producers Pack. This is a professional analogue audio processor, with an optional multi-format digital output board. The ISA-430 features include their classic dual-gain transformer-based mic pre, original ISA110 EQ, original ISA-1 30 Compressor and Expander/Gate, De-esser, Multi-Band Limiter, and an optional 24bit/96Khz digital output board.

(Stand Q8)

Two semi-regular features have been held over until next month. They are Tiny Good's Rigging Column and My Favourite Microphone.

YAMAHA MIXERS DID YOU KNOW?

FACT:

From left to right: GR32/12, M3000-40C, GF24/12

Yamaha consoles are specified by more tours than others. And with good reason. Refined and developed over the years, Yamaha has achieved an enviable reputation for dependable quality. From power supplies to potentiometers, every component has been rigorously tested and retested by Yamaha engineers. Their passion verges on obsession. And now, with the introduction of three new consoles, Yamaha reliability is reaching brand new audiences. The prices you'll find are hard to believe. The quality you already know about.

M3000 Series - from \$26,995 RRP

- Available in 24 or 40 mono input channel versions, both with an additional 4 stereo channels
- Mono inputs with XLR-type microphone/line connectors • Phantom power individually switchable on all mono inputs • Stereo channels have both "A" inputs (1/4" jacks) and "B" inputs (RCA pin jacks) • Group/Aux Diversity System for a wide range of signal-routing requirements allows the console to be used as FOH or monitor mixer... or both! • Midi Mute Groups with 8 hard assign switches and 128 scene memories with MIDI-control capability • Input channels can be individually assigned to any of 8 VCA groups • 20x8 submix matrix provides eight independent mixers of the signals on the 16 mix busses, the stereo buss, and matrix sub inputs • Outstanding RF noise rejection eliminates unwanted interference and assures a clean clear signal • Insert send/return patch points are included on all mono channels, stereo channels, as well as mix, aux and stereo busses • All mono channels feature switchable high-pass filters, sweepable from 20Hz to 400Hz • Mono channels have a flexible 4-band equalizer, with sweepable frequencies in all 4-bands and switchable bandwidth for the HI MID and LO MID bands • Fixed-frequency 4-band equalization with switchable HI MID and LO MID bandwidth on stereo channels • EQ bypass switches are provided on all channels • Dual (redundant) power supplies may be used with no switching unit required.

GF Series - from \$1895 RRP

- Available in 12, 16 or 24 input channel versions • Mono input channels feature both XLR and TRS type connectors • Phantom power and insert jacks available on all mono inputs • Stereo inputs are switchable between "A" input jacks and "B" input RCA type pin jacks • Three band EQ with switchable midrange on mono inputs plus HPF • 6 Aux Sends: aux 1 and 2 are fixed "pre" and auxes 3/4 and 5/6 are "pre" or "post" selectable • Input channels assignable to any or all of the four busses and/or stereo outputs • Two stereo aux returns with independent return level control feeding the 4 groups, aux 1-4 and stereo busses

GA Series - from \$5295 RRP

- Available in 20 or 28 mono input channels versions • Both consoles have 2 stereo input channels in addition to mono inputs • Mono inputs have both XLR type microphone connectors and balance/unbalanced TRS phone jacks • Phantom power switchable in groups of 4 for all mono inputs • Twelve Mix Busses: ten mix/aux busses plus (dual) stereo busses • GA Diversity features allows the console to be used as a FOH or monitor mixer • Two matrix sub-mixes from the M1 through M4 mix busses and the stereo buss • Four stereo aux returns with independent level controls • Record Out/Tape In feature • Compressive monitoring via control-room monitor and headphone outputs with independent level controls • Peak-reading level meters provide accurate visual monitoring of the signal appearing at the ten mix busses, the stereo buss, and the PFL and AFL busses

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ACN 004 259 527

PM1D REDEFINES PRO CONSOLE MARKET

Yamaha draw on digital expertise with new concert consoles. Julius Grafton has a look-see....

YAMAHA'S PM1D IS THE DIGITAL MIXER for serious live, theatre and location sound. It kind of walks in Cadac territory, while more than acknowledging the now one year old Harrison Show Console, designed by expatriate Australian Howard Page from ShowCo in Dallas.

But Yamaha have a 'this year, right now' technology with the PM1D, priced from a quarter of a megabuck or so, which is keen territory for a mixer that does what this does.

In basic 48 channel or optional 96 channel guise, an additional 48 or 96 inputs can be run, which are 'mic B' inputs- say from a second stage. The console stays the same, the options happen at the equipment racks, where you keep adding analog input and analog output boxes to the one Mix/Processing Engine module. Think of PM1D as a system, rather than a desk.

The A18 and AO8 has in 8 frame blocks, each frame module has four XLR connectors on it, typically for two channels of dual switchable A & B inputs - or another option is four single input XLRs. Output modules have four XLR outputs.

After mixing and matching the input and output modules, you can choose to locate some of the input or output boxes remote from the main processing engine. Yamaha have a 68 way proprietary connection cable from the console to the engine, which can be 200m distant. The output boxes can go another 200m from the engine too, if remote locations are needed. Goodbye multicores!

The way the proprietary operating system is designed, if the console stops due to power failure, the system engine keeps passing audio. Put a UPS on this and you are as secure as using a normal analog mixer.

At the console, mixing is intuitive. There are two banks of faders, 12 on top, 12 on bottom, at each side of the master control area. At any time you have immediate fader control over 48 channels. Hit a flip switch to reverse the order of top and bottom faders, hit another to flip over the channels 49 to 96 if required. Each of the 48 channels has a fader, a rotary pot for input gain, one for balance, and one which is assignable for - say - an auxiliary output.

One selected input channel at a time can be routed through the master area, where there are controls for everything you can imagine - like 48 mix bus outputs (or auxiliaries in the old language), extremely comprehensive EQ and a lot of dynamics control over things like compression and gating.

You can select it via a button at the channel, or from the master channel itself. So you could have the master channel affecting - say- channel 52, while channels 1 to 48 are operable on the 48 channel faders. In the live world, it's never really

Please turn the page >



Michael Lasa (Soundcorp) and Michael White (SOS Communications) with PM1d at its launch in New York



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Where is Orland?

Gone! Although I initially intended to only take a short break from writing the PA Page, right now I can't imagine myself ever returning to it.

Reasons are many. Firstly, I ran out of things to say. Regurgitator may be a cool name for a band, but I would not like the label for myself.

I promised my family years ago that Sunday would be family day. In '99, I think we had 4 out of 52. If I spent anything less than a full day writing the page, I ended up with something at which I cringed to see my name at the bottom. In the last few years T.Pac has expanded exponentially. I'm ashamed of the number of times I've like totally lost it and thrown tantrums lately. It's become crystal that I need less deadlines in my life.

A famous writer once said that he hated writing but loved having written. I concur. I've enjoyed the 6 years or so that I have written for Connections but feel that it would be boorish to outstay my usefulness. Thanks to all regular readers for your support and encouragement. Have nice lives.

Michael Orland

OHS is a serious issue

Reading your news item that ShowSafe has collapsed, I wish to say that safety is an issue taken seriously by most people I work with and for. An example: The Happy Days arena tour had a comprehensive health and safety manual, constructed at some cost in time and expertise.

On this show, every risk was theoretically identified in advance, and there were plenty. Examples: motorbikes, a 1959 Cadillac prop vehicle, and a stage with lifting automated components that operated with crew and cast on or nearby.

The manual identified who was responsible for managing what risk, and every cast and crew member signed an acknowledgement that they had read the manual.

- Concerned, email.

Include us too!

Following on from Aldo Scott's letter Connections #72, a further suggestion, why not use a little ink "listing" the small players in this business. The lighting and sound guys who own maybe a 2000 watt PA or a few dozen lanterns and probably haven't registered a company or even a business name. We are out there in pubs and halls weaving our magic too.

I enjoy your magazine and you seem like a fair minded bunch, of course we haven't either the time or the money to promote ourselves. So what about a directory entitled 'Lighting and Sound guys/gals directory'. Give me a form, I'll fill it in.

- Garry Boast, Netherlea Electric, Mirboo North, VIC.

Mini disc backup vs. DAT

I am a freelance sound recordist and I enjoy reading your magazine. The way technology is going at the moment every thing helps. I'm considering getting a portable walkman mini disc to put in my mixer bag as a back up recorder for my radio mic link to the camera - as something to record atmos and fx on when the camera isn't rolling.

This was something I would not have dreamed of doing previously because of the compression. However my HHB Portadat is too heavy to carry around in the mixer bag and I made the stupid mistake of selling my Sony walkman DAT several years ago. So after a few dead batteries in my radio mic link to the camera at critical moments, who really gives a stuff about compression?

Since many producers are doing their picture & sound post on their own Non Linear editing workstations at home, I am researching a CD burner to be able to dub to, from which ever mini disc recorder I buy or even to dub to from my Portadat (which I love by the way) as I figure presenting any material to these people on CD would give them instant access to it.

- Rob Stalder, Sydney.

• Obviously, the best way to dub off a digital medium is digital interconnection. If you plan to buy a CDR for a computer, then be sure to get a sound card with the appropriate digital I/O for your situation. If you are looking at stand alone CDRs, be sure to test the unit with the actual equipment you intend to use - as I have found in the past that the copy protection facility on MDs can get in the way of what I was trying to do. - DrC

Yamaha's PM 1D (continued)

possible to reach more than 48 channels from any one position anyway, so on the PM1D you just hit the flip switch to get the channels onto the work surface.

Likewise at the output side of the board effects and signal processing is really only limited by software. For example, there are 24 third octave graphic equalisers and eight effectors inbuilt, so external signal processing is reduced to whatever esoteric devices an engineer desires. There are 24 matrix sends in two layers of 12 too.

The console has a 800 x 600 pixel colour LCD display which remains easy to read off axis, and an extra SVGA output for a larger monitor. On the monitor are cool icons representing things like reverb and gated reverb - your interface is via a mousepad, keystroke or keyboard.

I could figure the basics of the console out just by looking and poking for five minutes. On this basis a professional sound engineer will have no trouble at all.

When it comes to recall ability, the PM1D remembers 999 scenes, and can do a timed displace between them. But it doesn't have dynamic automation, where the console follows (or generates) time code. "About 80% of the software is done, but there are some niceties yet to come" said Yamaha Australia Pro Audio Manager Mark Amory. The automation capabilities of PM1D are best thought of in terms of 'snapshots', which is, according to Yamaha, what most live sound engineers are looking for.

At least one engineer we spoke with said that he could see a humble Yamaha 02R pressed into service to drive automation alongside the PM1D, linked by midi. But that is a typical Australian mindset, looking for different ways to do things!

The new Yamaha console displaces

just under 2 metres wide by about a metre deep, and weighs about 120kg. This is one third of the area that 96 channels of analog mixing requires, and more space is saved by the elimination of third octave equalisers and dynamics processing, which might normally occupy two to four effects racks. So seats are added back into a performance- or a broadcast truck is suddenly an axle or two smaller! That saves money.

This is a serious professional product built well with industrial strength bits. The pricing starts at about A\$230k and ventures up to nearly 290k for a fully loaded 96 channel model. These prices are list including 22% sales tax, expect to pay about 7% less after the GST rolls in.

• See it at ENTECH 2000!

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- 2 Aux sends.
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- Internally modular.
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Club 2000

- 102 - 4 mic/2 stereo rackmountable
- 142 - 4 mic/2 stereo rackmountable
- 182 - 4 mic/2 stereo
- Balanced mic & line inputs.
- 3 band EQ with Mid Sweep.
- 2 Aux sends.
- Listen (PFL).
- Stereo Aux return.
- 48V Phantom power.
- Balanced outputs.
- Internal power supply.
- 60mm faders.
- Internally modular.
- Optional rackmount kit available for 102 and 142.



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What pisses me off!

An occasional series of self-righteous spleen venting, by Duncan Fry



#1. The Internet

Did any of you out there buy anything via the Internet this Christmas? Statistically speaking, some of you must have done, but somehow I get the impression it wasn't as big a deal as the media hyped it up to be (neither was the Millennium Bug, but perhaps the least said about that the better!).

Another of those quick straw polls around the office showed that apart from myself, not one of the 20 to 30 year old upwardly mobile, high disposable income Generation ARX employees had ever bought anything that way. They all surf the Net regularly on their home machines, but not one of them has made the leap from looking to buying.

One of the reasons might be that most of the shopping sites are just so-o-o-o slow. With a 56K modem and an average connection, these pages take forever to load, and actually getting to the point of buying something also takes forever. No wonder people get bored with waiting, click off and type in 'big bazoongas' or whatever, just to see where it takes them!

I logged on to a local distributor's site to get a software upgrade, and there was a problem with the direct ordering section, which just didn't work. So, I rang the company to let them know, and was told "Oh, that never works. Just print out the order form and fax it to us."

Leaving aside the non-working issue, which should never last for more than a day or so, there was a major flaw in this plan. The page was black with white text. When you print a page, the background colour is non-printing. I pressed the Print button, and after about 10 seconds, a beautiful clean white piece of paper popped out of the laser printer!

A major reason for the shopping sites slowness is their pages are full of animated links and animated ads. Which leads me to my two least favourite Internet pissoffs - animation and ads.

Pages with animation drive me crazy - they never seem to stop loading. The page is always doing something, and sucking up computer energy that should be spent bringing up the content of the page. I often want to print out a page, to refer to later or to have handy when I've somehow lost that page from my bookmarks or favourites list, but it's very difficult to print a page with animation, since it's never really finished. Can anyone technical tell me why, when you press the Print button, does the page have to re-download itself to the printer. It's already up there on the screen - why not use that?

And ads.

Shopping sites are full of them, and for what possible reason, apart from money from the advertisers? Why on earth, after spending all those promotional dollars to finally lure Mr and Mrs Front Porch to your website so you can sell them something, would you want to have an ad on there that with one click can whisk

them away from your site, probably never to return? How stupid is that? Talk about shooting yourself in the foot; that's the equivalent of shooting yourself in the head with both barrels. And yet that's what thousands of companies do, day after day.

Look, in the late nineties and now in the noughties, running a website is a cost of doing business. If you're running a commercial enterprise, your website is a cost, just like advertising. It shouldn't have to be subsidised by advertisements for other companies. Aside from shopping sites, when I go to a company's home page, it pisses me right off if I have to wait for ads for other companies to run before I can get to the content of the page.

The only exception are sites like www.live-audio.com, which are bulletin/ message boards where audio people can seek out advice on all aspects of live sound. These sites are expensive to upkeep, and generate no income, so accepting advertising to help pay the cost of keeping the site going is a reasonable trade off.

One of my jobs at work involves running the website. When I create pages, I've got three things in mind: Speed, speed and more speed. Nothing is guaranteed to drive people away from your site than waiting one or two minutes for the page to pull up on the screen. Time is money; there are a lot of sites out there competing for a minute of web-surfers' time; they won't wait around while your arty-farty graphics laden page loads up.

People want information from a site, not a graphic designer's wet dream, because the Internet is a content-driven medium, not design driven. This doesn't mean that graphics are not important - they are, but only as a part of the information process.

Speed, Content, Design, that's the pecking order. Nothing should be on the page that might slow it down when loading. Need a photo in there? My rule of thumb is to crop it so that there's nothing apart from the photo subject, shrink the size, then squish it up in a

JPEG/GIF web squeezing program. My picture size limit is 5K, tops (10K absolute max and only if there are no other graphics on the page). If you do need an intensively detailed large picture, use a thumbnail pic and link it to a hi-resolution version, indicating the size so people will have a rough idea of how long to wait.

But time and time again I log on to various sites, only to find that there's a 180K (or bigger) pic on the first page, and no text will load until the picture is finished. One site consisted solely of giant A4 size pictures, as though someone had scanned their brochures and just stuck 'em up there! Not only that, but whoever designed the site was so proud of it that they had a link to their web-design company at the bottom of the page. I bet when they showed it to the client, running off their hard disk or via a cable modem it must have looked really swisho.

Down here though, at the end of a very long string, it looked like crap. I hope the client got their money's worth.

• Any thoughts on this? E-mail me at dunk@dunkworld.com

People want information from a site, not a graphic designer's wet dream, because the Internet is a content-driven medium, not design driven.

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IN TIME FOR CHRISTMAS, Brisbane's Queen Street Mall introduced its new pro-audio and lighting systems to crowds of patrons. The mall, which attracts more than 2 million shoppers per month, featured a host of performers over its opening week at both its Upper Performance Area and Lower Stage, including artists such as James Morrison, Vanessa Amorosi and Kate Ceberano.

The Mall's sound system is comprised of a high quality, programmable, multi-zoned music, effects and paging system. It is controlled by a computer-based system and supported by a network of cabling

Outdoor install puts Meyer weatherproofing to test in tropical Queensland

infrastructure, providing reticulation of audio signals. Included in the Mall's PA design are 8 UPA-1P's and 68 Meyer Sound HM-1 distributed across 32 output channels.

Brisbane City Council decided to purchase the self-powered loudspeakers from Meyer Sound Australia based on the recommendation by Vision Design Studio who specified the pro-audio system designs, as well as the architectural and specialized lighting, stage lighting, video and communications networks for the Mall.

"This project presented many design challenges for the systems design, not the least of which was the requirement to maintain as much open space as possible in the Mall and to minimize the size and density of the structures," said Vision Design Studio's Philip Viney.

"Self-powered loudspeakers were necessary to reduce the space required for amplifiers and processing equipment," said Viney. "In addition, the Mall is basically an outdoor space with many of the loudspeakers exposed directly to the weather. Meyer's weather-proof range of self-powered loudspeakers, the three-year outdoor warranty offered and the inherent quality of the product made the selection of UPA-1P and HM-1 very attractive.

"The ELV [extra low voltage] 48 VDC reticulated power supply for the HM-1 loudspeakers was particularly attractive as it solved some wiring code problems and resolved some safety concerns we had regarding reticulating 240V around the shopfront awnings and other people's buildings."

Other systems at the Mall that were designed by Vision Design Studio include the Upper Performance Area, which now features 4 UPA-1P's, and the Lower Stage, which is powered by a pair of weatherproofed UPA-1P's.

In keeping with the stages' design and usage, Viney commented that the only fixed elements in the two performance areas are the cabling and power reticulation.

"The selection of the UPA-1P loudspeakers," he said, "responded to the demands of the Brisbane City Council requiring professional, state-of-the-art stage systems."

Viney also mentioned that with the severe space limitations for the stages, that the self-powered loudspeakers aided in fitting the permanently installed parts of the system onto the very small



racks in the main stage.

Overall, he said that Vision Design Studio has been particularly pleased with the performance of the loudspeakers in the Queen Street Mall project. "We have received quite a lot of favourable comment, particularly from the users." •

The Queen Street Mall control system includes facilities for automated, multi-track digital audio playback of pre-produced material allowing the audio to be dynamically panned across groups of speakers throughout the mall under computer control. Control equipment includes a 16/16 channel LCS SuperNova system complete with Wildtracks, a 32 channel Mediamatrix system with Pagematrix paging and a Yamaha 01V with extended outputs.

The facility can be used in conjunction with specialised lighting elements that are installed (intelligent moving lights and fibre optic luminaires) to allow the mall to "perform" - allowing designers and artists to be commissioned to "produce" a range of such performances as required.



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ARQ joins swelling ranks of Sydney clubs

By Cat Forcer

Situated at Sydney's Taylor Square, Arq nightclub is proving to be a popular venue for hoards of clubbers. With the mezzanine on the upper floor, the total site area is about 1300m².

It took five years to conceive, research and build the nightclub which has two levels plus the mezzanine on the upper level. Upstairs has an upmarket feel whereas downstairs has a more underground atmosphere.

The venue is not used only as a nightclub. It is multi functional and has been designed for a variety of uses. The upper floor has a restaurant in the main auditorium and can be used for supper shows, live shows, touring acts and for corporate events. Full AV facilities are available.

Lighting equipment includes 12 MACs (4 X MAC250's, 4 X MAC500's and 4 X MAC600's) which hang off needles, 2 strobes, 24 pinspots, 4 Clay Paky Goldenscan (Miniscans) HPE's, 1 Astroraggi Power and 8 Martin Robocolor PRO400's

An important design issue was the ability to shrink the space to prevent it looking uninviting on quieter nights. Upstairs, this has been achieved by a custom made structure known as the 'waffle iron'. In addition to being an architectural feature in itself, the waffle iron is designed to conceal the intelligent lights when upstairs is not in use as a nightclub.

The lower floor can be used as a piano bar, cigar bar, wine bar or cocktail lounge. Lighting includes 8 Clay Paky Goldenscan Miniscans HPE's plus 8 Robocolor PRO400's and 1 Astroraggi Power. There are a further three HPE's located in the foyer. Control is a Jands Echelon.

The venue has its own sub-station arrangements to ensure adequate power supply. A laser system is soon to be installed.

SLAVE P/L were responsible for the audio and lighting design and installation at ARQ Sydney. Audio design for the upper level



was a collaboration with US based associate - Steve Dash of PDS, with whom Slave have been working with for the past four years.

The audio system on the upper level dancefloor is an active 5 way system comprising of all JBL components in custom enclosures. Processing is by Rane, custom modified BSS Omnidrive and custom built active crossover and system program equaliser. Amplification is all JBL and Crown.

The upper level DJ booth monitor system is an active 3 way design with custom designed sub-bass enclosures and tweeters both JBL loaded with an EAW mid/high cabinet. Again processing is by Rane and custom crossover, amplification by JBL.

The lower level dancefloor system is a SLAVE design using standard JBL boxes and their custom tweeter boxes using JBL drivers. Processing is by JBL digital system controller, Rane and dbx with amplification by JBL and Crown.

Lower level DJ booth monitor system is the same as upper level excluding the tweeters.

The lower level has also a background music system comprising of JBL Control 28 speakers and JBL Marquee Series sub-bass enclosure. Processing and amplification is by Rane, dbx, Crown and JBL.

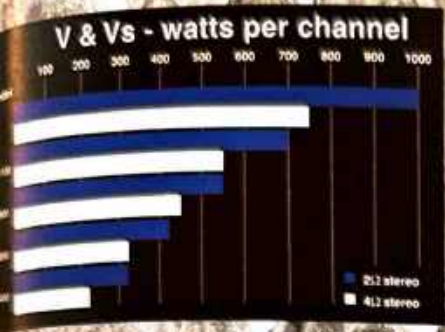
Both level DJ booths have a modified Rane MM8x mixer, 3 Technics SL1200 turntables and 2 Pioneer CDJ 500 CD players.

There is also a foyer and bathroom system both JBL powered using Control speakers with Rane and dbx processing Crown amplification. It can be fed signal from either the upper or lower level or have its own program source.

• Arq owners: Shadd Danesi and Chris Curtis



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Audio Cables and Pseudo-Science

or: cables remystified

Part 2 - Loudspeaker Connects. By John Matheson

In the first article in this series, I took a few general swipes at those in the audio industry who use pseudo-scientific explanations of cable properties to justify exorbitant prices for their product. Well, I wasn't flamed with hate email - Gotta try harder I suppose!

One of the neat things about the universe we live in is that the Laws of Physics, which describe the behaviour of things, have the same mathematical form for wildly different systems. For example, the equations that describe the displacement of a mass/spring/damper system such as a car suspension or a loudspeaker are identical in form to those that describe the current in an electrical network of resistors, capacitors and inductors.

Back in the dim, dark days before digital computers and Sony Playstation, analogue computers were used to investigate everything from car suspensions to city water reticulation systems. Made of analogous electrical circuits, the output of the computer was an electrical waveform displayed on a cathode ray tube (CRT). The analogue computer is dead, but the CRT lives on as the colour monitor through which we enter the virtual world today.

Stay with me - I'm getting to the point!

A loudspeaker is a snake pit of coupled mass/spring/damper systems, each of which can be transformed into its equivalent electrical circuit. For example, if we make the displacement of the cone equivalent to current, then mass is equivalent to capacitance, force is equivalent to voltage, damping to resistance and compliance (springiness) to inductance.

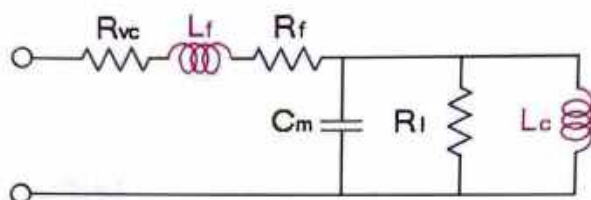
Since the sound pressure wave from the cone is related to the displacement of the cone, it is possible to extend this electrical model to include the acoustic response of the loudspeaker as well. We can predict the performance of a loudspeaker by analysis of its equivalent electrical circuit. More importantly, we can predict the effect of changing a component of the system by changing the value of its equivalent electrical element.

Here's the point:

We can determine the effect of different speaker cable properties

on acoustic output by analysing the total equivalent electrical circuit of the amplifier / cable / loudspeaker system!

Figure 1 shows a simplified electrical model or equivalent circuit for a typical loudspeaker driver. The model is for a simple, single driver system. In the real world, we usually use multiple drivers coupled by crossover circuits, which are also far from perfect.



- Rvc = voice coil resistance
- Lf = frequency dependent inductance
- Rf = frequency dependent resistance
- Cm = equivalent moving mass including air load
- Rl = mechanical losses
- Lc = mechanical compliance

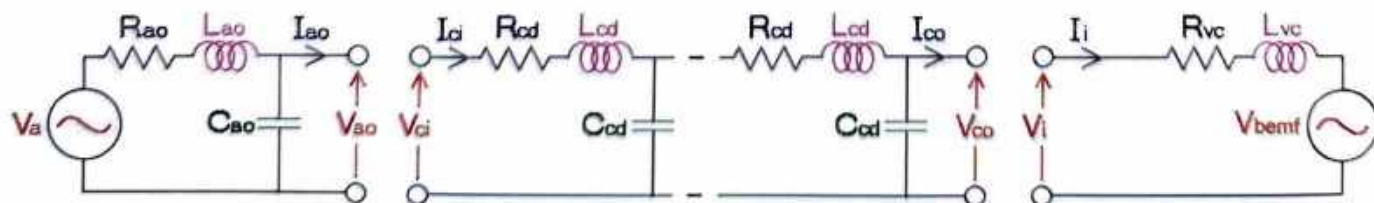
Figure 1: Electrical model for a loudspeaker driver

and requires a great deal of understanding to model. Now, anyone who thinks that the cable (b) in the middle is not important in the scheme of things has rocks in their head!

You will notice in Figure 2(c) that I have shown a voltage generator in the loudspeaker section. This is the back emf (electromotive force or voltage) generated by the voice coil when it moves in a magnetic field. Try this experiment: Take a large, compliant loudspeaker driver in free air and sharply press down on the cone. Take note of how easily the cone moves in and out.

Now short-circuit the driver's input terminals and press down sharply on the cone again. You will notice that with the terminals shorted there is a much greater resistance of the cone to movement. Short circuiting the back emf of the driver has applied some electrodynamic braking to the cone.

please turn the page >



(a): Amplifier simplified output circuit (a = amplifier, o = output)

(b): Cable equivalent circuit (c = cable, i = input, d = distributed, o = output)

(c): Loudspeaker simplified circuit (i = input, vc = voice coil)

Figure 2: Equivalent circuits for an amplifier / cable / loudspeaker system (V = voltage, R = Resistance, L = Inductance, C = Capacitance, I = Current)

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Audio Cables and Pseudo-Science or: cables remystified

I like to think of the back emf as, in part, an error voltage. The driver will produce a back emf proportional to its movement, and if that movement is in any way different to the driving voltage from the amplifier, there will be a difference in the back emf and the driving voltage.

The amplifier acts as more than just a short circuit on the "error" signal: because of negative feedback in the output, the amplifier will actually deliver a "correction" current to the driver. This ability of an amplifier to "improve" the sound quality of a loudspeaker is related to its so-called "damping factor" property. Two things typically get in the way of this process: crossovers and loudspeaker cables!

Since there are many different variations of amplifier and loudspeaker system design, it is not possible to make definitive statements about the importance of the loudspeaker cable on sound quality. Some loudspeaker systems are incredibly sensitive to speaker cables whilst others are not. I am inclined to believe that loudspeaker systems with simple or well-implemented low-loss crossover designs are more likely to show sensitivity to cable properties.

For example, I have found the performance quality of Bose 802's incredibly dependent on the loudspeaker cable. Even with only three or four meters of cable between an amplifier and an 802, the difference in sound quality between, say, light duty "figure eight" cable and heavy duty cable is staggering! The term "Shit and Sugar" springs to mind. This certainly explains why 802's can sound good sometimes and absolutely disgusting at others.

Some audiophiles might say that Bose 802's are a superior loudspeaker because they have the ability to reveal the deficiencies of a lesser quality cable. I won't even tell you what I think of that statement!

By now I hope I have convinced you of the importance of the loudspeaker cable in a high quality, sound reproduction system. But what are the electrical properties that are important?

Looking at the cable equivalent circuit in Figure 2, you will see that the cable has distributed resistance, capacitance and inductance. Depending on the construction of the cable, these properties can be traded off against one another to some extent. (See Part 1 of this article in Connections January 2000 issue for a more detailed explanation.)

In my experience, the capacitance of a loudspeaker cable is almost inconsequential. Modern amplifiers have a low enough output impedance and high enough current capability to drive a capacitive load many hundreds of times greater than that ever likely to be imposed by a normal loudspeaker cable of reasonable length.

By far the most significant factor is just plain old resistance. People have often

considered the selection of cable size in relation to signal or power loss, as depicted in Figure 3. Let me assure the reader that if you have any significant signal loss, you will almost certainly have already significantly degraded the performance of your loudspeaker system!

There is no substitute for large copper conductors, other than larger low resistance conductors! I wouldn't consider using less than 2 square millimetres of copper per conductor for any loudspeaker cable, regardless of how short. (That's equivalent to almost 3 "figure eights".) For 5 to 10 metres I would be doubling that conductor size and over 10 metre using at least 8 square millimetres per conductor (ie 4 x 4mm quad).

For cables over a few metres in length, the series inductance of the cable begins to become significant. Larger copper conductors do reduce the series inductance to some extent, but for cables over about 5 metres in length, I always use quad cable wired for inductance cancelling, as shown in Figure 4.

Quad speaker cables are available from most of the high quality cable manufacturers such as Belden, Hartland and Canare. These cables have superior mechanical and handling properties as well. Belden is suitable for use at outdoor rock concerts and other war zones, whilst Canare is sensual to hold and Hartland is somewhere in between.

By far the most economical way of purchasing quad cables is to buy "three-phase, four core, ordinary duty" electrical cable from one of Australia's electrical cable manufacturers, such as Pirelli or Olex. Electrical capacitance, inductance and resistance will be within an iota of the equivalent and much more expensive designer brands. The standard PVC sheaves are not nearly as sexy though!

To achieve inductance cancelling, it is imperative to wire opposite conductors in the quad together as pairs. I have often seen quad cables miss-wired as adjacent pairs, which will perform no better than standard two-conductor cable of the same resistance.

For the ultimate in low inductance loudspeaker cables, a coaxial design cannot be beaten. Mogami make a coaxial loudspeaker cable, but since it is only available in 2 square millimetre conductor size, it is suitable for very short runs only. It would be perfect for studio monitors.

OFC (oxygen free copper), LCC (long crystal copper), and different low loss insulation materials certainly may have merit in extreme high-end audiophile systems, but for general applications there are better ways of spending your money to achieve tangible sonic improvements! *

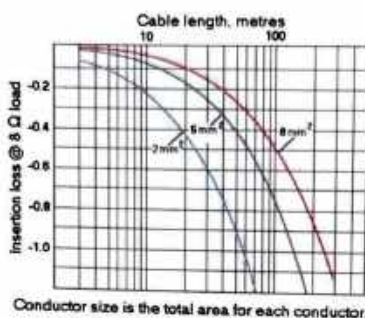


Figure 3: Loudspeaker cable attenuation

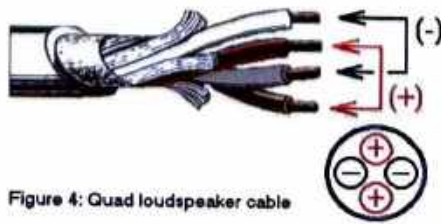


Figure 4: Quad loudspeaker cable

* By the way, I have moved on from Bassett Acoustics and am now employed by VAF Research (www.vaf.com.au). I welcome calls from readers in response to my articles. You can contact me on +61 8 8363 9996 during normal business hours for South Australia. Alternatively I have a new email address: jmatheson@adelaide.on.net

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12" AND HORN POWERED SPEAKER BOXES -THE COMPARISON-

The hottest selling speaker product in the past year is the self powered PA box, especially in 12" and horn 2 way format. Connections lines up nine boxes in a dead space, and has seven experts often in disagreement. Read on....

The first speaker box with an amplifier inside it appeared in the early 1970's. Then no-one really bothered until Meyer introduced the MSL-4 in 1995. The rest is history, because the self powered speaker cabinet is the hottest selling item of the past year.

Connections readers have been calling for reviews, so we conducted a poll of some People Who Know to figure out the best method. We wanted to compare side by side every commonly available 12" and horn powered box.

There were two lines of thought about where to do it. One was to test the boxes in a 'typical' environment, but no-one could nominate a specific venue which had the best acoustic balance. The other was to do it outdoors where there were little or no reflections. This left us open to the weather and wind, and besides - we couldn't readily find a venue.

So to do the test we ended up in the large anechoic chamber at the National Acoustics Laboratory in Chatswood. This room is about 13m x 9m in size, and is virtually dead. Shut the (huge) door, sit still for a while, and you can hear your heart beating. It proved an ideal test venue!

CHOOSING THE BOXES

A general call was put out to manufacturers and importers, and thus a cast of nine boxes was assembled. The only obviously missing candidate was the EV SX 300a, which is about to be replaced with a new model.

In no particular order, we had models by **Zeck** (Germany), **Fender** (USA), **Peavey** (USA), **dB Technologies** (Italy), **Meyer Sound** (USA), **ARX** (Australia), **JBL** (USA), **Mackie** (Italy/USA), and **RCF** (Italy). The competition was open to any box with an amplifier inside which also contained a 12" woofer and a high

frequency horn of some kind. The JBL Eon wasn't eligible because it has a 10" woofer, but it was included anyway. Eon comes in 10" and 15" varieties, no 12".

There are other boxes on the market too, if it wasn't included here then that should not be taken to mean anything other than that either Connections, or the manufacturer, missed each other.

Meyer's UPA-1P candidate probably shouldn't have been there either, because it isn't full range, and is optimised to be used with a subwoofer. It also came 'off the road', having been in use for the past year or so. But we thought it would be a good 'benchmark'.

HOW WE DID THE TEST

Each manufacturer or importer was asked to suggest someone independent who had good ears. They managed to collectively nominate no-one, so we hit the phone book and selected a cross section of people. They were chosen because they all had a different perspective, and they were noted as having some skill dealing with speaker systems.

Coda Audio came to the party to assist with the logistics, and sent an excellent audio engineer in the form of Adam Iuston, who is also sound designer for the Sydney Dance Company. He came with the gear we needed - a Yamaha stage monitor desk (because we needed nine outputs, preferably switched), heaps of cables, a Klark Teknik DN 6000 analyser, and odds and ends.

Coda are best known for their theatre audio pursuits, and excelled this summer in Sydney by doing a lot of large concert work at the Domain and the Sydney Opera House - simultaneously on New Years Eve. But it isn't so widely known that they install and sell audio too.

Acoustics consultant Glenn Leembruggen of Arup's advised that we needed to set up each box on a speaker stand, as its designer



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12" AND HORN POWERED SPEAKER BOXES -THE COMPARISON-

intended. Because the anechoic chamber has a mesh suspended floor (all surfaces, including the 'floor' are covered with acoustic deflection baffles) we needed to place boards under the speaker stands. This wouldn't interfere to any great degree, advised Glen. The spacing of the stands needed to be at about one metre centres, and they needed to be in a slightly curved array. "Spacing between the speakers needs to give them a more consistent radiation load and minimise response problems due to diffraction" he said.

The final detail was that we wanted a blind test, and putting a blindfold on each listener was ruled out! We obtained some black medium weight jersey fabric, again sanctioned by Glenn as being of least acoustic resistance. As our people entered the chamber, they were confronted by a black draped line of boxes, simply numbered one to nine.

Why a blind test? The best answer is that perception is a powerful influence. This is demonstrated this later in the story!

SET UP AND FEATURES

It was fun seeing the different packaging methods - ARX sent their box in an oversized carton crammed with dreadful bits of plastic coated fibreglass, a couple of hundred strips of cardboard and a few metres of bubble pack. At the other end of the packing spectrum, RCF had a nice compact effort.

ZECK

The Zeck Vector T3A is a plastic box, it emits minimal noise at turnon without an input (as did most others), has an IEC mains cord, balanced XLR input and loop output, a mic/line switch and LED, an internal limiter with LED to show it is limiting, and a fuse. It has a green LED on the front panel to show power on from the front, a sensible feature considering some users may not see the back panel.

What they said:

Glenn: Top end too forward, unpleasant on full orchestral parts when soft, instrument definition OK, low mid resonance that colours things.

David: Strings strident through upper mids.

Tim: Fizzy, extreme top end, 'shouty' in upper mids. The low end transients were a bit softened.

Al: Harsh on hi-mids, smooth-ish lows, I like that I could hear 15kHz.

John: Bright and peaky, violin and vocals sounded boxy.

Adam T: Forced, un-natural sounding definition.

Adam I: Low powered (remember he ran the 'loud' test).

Conclusion:

Overpriced at \$2,599.

THE TEST

Our team assembled and we had a brief talk about the best process. Consensus had us start with a reasonably low level CD track, from the Burt Bacharach and Elvis Costello CD, *Painting with numbers*. We ran track one for about 20 seconds through each box.

WHY POWERED SPEAKER BOXES ARE A GOOD IDEA

Before now, this market sector was made up of passive 2 way speaker boxes, which means a box with a passive crossover network of coils and capacitors and resistors inside it. You hooked up your own choice of amplifier - be it under, or over powered. Maybe you added on a processor of some kind. The thing was, the designer of the speaker box had no control over how it sounded. Putting an amp in the box means you can put some electronic trickery in there too, and a limiter. It's all optimised, and of course you needn't worry about long speaker lead runs either.

Previous, Adam had carefully gain matched each box using pink noise from the Klark Teknik DN6000, measuring with a reference microphone to get each box at virtually the SPL (same sound pressure level) in dB (decibels).

Adam re-started the CD as he switched it through each box. They each sounded different, but one sounded VERY different. It was number 2 in blind test. More on it later.

Our next track was a concerto for violin by the Russian National Orchestra. (Track 6, Gil Shaham and Mikhail Pletnev). Then we moved onto *Puppy Belly Dance*, track 18 from a Sound Advance test CD. Eclectic taste this panel had, eh?

Then it was on to Dave and Don Grusin and track 4, *The River Song*. By now we had reversed the order, starting with box 9 and working back to box 1. Jeff Buckley's *Everybody Here Wants You* followed, then Dave Foster's *The Symphony Sessions* (tracks 4 and 9).

One of our panel then used a Shure Beta 58 to talk through each box, and various test tracks at various levels were played from the

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12" AND HORN POWERED SPEAKER BOXES -THE COMPARISON-

FENDER

Fender offered a big design exception with the Powerstage 100, a black carpeted foldback wedge shaped device with a stand mount in its side so you can use it for PA. It has the neatest detachable 3 channel mixer on a long cord which you can attach to a mic stand. Clearly designed for a musician. It was the only entry with a coaxial 12", where the high frequency horn is in the middle of the cone driver. At turnon the Fender emitted the most hum and noise before anything was connected to it.

What they said:

Glenn: Pronounced 2-3kHz, absence of midrange, highly coloured, voice un-natural.

Terrible. David: Disgusting. *Tim:* Shakes head.

Al: Painful. *John:* Not impressed

Adam T: It's nothing we wanted and everything we didn't!

Adam I: Low powered, by far the worst.

Conclusion:

Second cheapest box here (at \$1,299) and the features are terrific. But what appears to have occurred is that Fender have researched their target market and put all the features together without properly 'voicing' the product. Reasonably easily fixed through electronic processing, but until they do, avoid it.



PEAVEY

Peavey's Impuse 100 is a plastic box, with a mic in and out XLR connector, mic/line switch, 6.5mm jack line input, an IEC lead, switch rear LED and fuse.

What they said:

Glenn: Bottom end unnatural, boxy sound on French horn and woodwind, h/f is OK, midrange a bit rough.

Adam T: Noticeable intermod distortion on low frequencies, smooth, no real bite.

John: Not excessively bright, good reproductive overtones, really good dispersion.

Al: Big hole in middle, but acceptable lows and highs.

Tim: Mids shut in, mid bass congested.

David: Lacked definition in all mid instruments.

Adam I: Okay frequency, under powered.

Conclusion:

At \$1740.78 it's well priced, a reasonable if average performer.



dB TECHNOLOGIES

dB Technologies EXE3P was the lightest weight (and least most expensive) entry. Another plastic box, they saved weight by using a composite high frequency horn of some kind. It had an unbalanced 6.5mm jack, volume control, IEC lead, and a power on LED.

What they said:

Tim: Smeared upper mids, extreme lows acceptable, no extreme hi frequencies or sparkle.

Glenn: Midrange forward, violin not particularly accurate, lower range woodwinds not well defined.

Al: Use for vocal announcements.

John: (Goes) off axis very quickly, lots of low bass, not grossly bad, good when on axis.

Adam T: Bass was good, all there but no wow factor.

David: I missed the upper register of voice.

Adam I: EQ sounds OK, under powered.

Conclusion:

The cheapest box here, at just \$1,099. Read on and you find some more references to this little guy. Value for money.



OUR PANEL



Glenn Leembruggen is an acoustics consultant at Arup Acoustics.



David Connor is an electroacoustic and sound system design consultant.



Adam Iusted is an audio engineer at Coda Audio, and sound designer for the Sydney Dance Company.



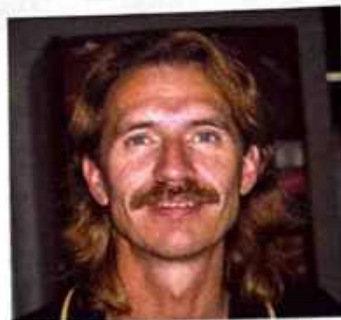
Tim Vandenberg is an audio production manager for Events, in Wollongong.



John Maizels runs Entropy Entertainment, (sound for theatre) and is on the board of SMPTE.



Adam Townsend is an acoustics consultant at PKA Acoustics.



Al Craig is audio manager at the Sydney Olympic Broadcasting Organisation.

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12" AND HORN POWERED SPEAKER BOXES -THE COMPARISON-

MEYER

The Meyer UPA-1P is a timber trapezoidal cabinet with a steel grille, it has two ring-type top flying points and no stand mount because it wasn't designed to work in this market. We hung it off a lighting stand using two hook clamps and shackles. Like all amplified Meyer's, it has a removable amp module, a very quiet internal fan, a professional Neutrik mains connector and output, 2 XLR's (one male, one female), and a green LED. There is a 24v power outlet for an external fan, but we don't know any user who has required this.

What they said:

David: Strident on strings and vocals, bit distorted as it got going.

Tim: Ability to resolve detail in reverb is good, wasn't generating mush. Sounded EQ'd.

Al: Like number 4 (dB Technologies) good for vocal push. Felt like a pretty flat box, a good reference.

John: I thought it was more balanced on orchestra, clean top, really light bass, good off axis, (had a) consistent 45° either side.

Adam T: Very tight, great definition, good off axis, use a subwoofer for music.

Glenn: 1kHz forward, orchestra is unnatural, edgy h/f, instruments lose definition due to colouration.

Adam I: High frequency definition superior, dispersion quite even, needs a sub.



Conclusion:

As we said earlier the Meyer shouldn't really be included because it is optimised for a subwoofer. It costs \$8,995, making it the dearest box here by a long shot.

ARX

ARX have designed the SPL-12 as a timber trapezoidal box with flying points plus a stand mount. It also has a rear tie-off. Like Meyer they use the professional Neutrik mains connector with an output alongside, and to our eyes are up there with Mackie for superior back panel graphics. For example, there is a switch for normal operation, or for operation with a subwoofer. It is plainly and properly labelled. There is a system protect LED, circuit breaker, and XLR in and out. Like the Meyer, there is no volume control. Both ARX and Meyer boxes are designed for line level PA input, not for microphone input.

What they said:

Adam: Nice, nice, nice. Relaxed and precise, very rare.

John: More like a box than 7 (JBL EON) or 5 (Meyer). No deep bass, OK top.

Al: Liked the colouration, whatever its response! I know its not flat, everything's there. Nice controlled pattern (dispersion), lots of headroom.

Tim: Open and warm, balanced and relaxed. If you push hard, it'd open up. Very good all rounder.

David: Reasonably well balanced, sounded touch compressed. performed quite well, not quite (there) on vocal and piano, some non-musical resonances.

Glenn: Violin is OK, tutti sections OK, orchestral good, vocals good, forwardness in some upper mid sections that damage full orchestral sections.

Adam I: Ultra high frequencies missing, frequency response OK.

Conclusion:

Second most expensive box, at \$4,295 - but you get what you pay for. Most like the Meyer in design, and does more bottom end. Probably will get chosen where a Meyer may be considered?



WHAT IS A GOOD LISTENING TRACK?

"If orchestral sounds good, then rock and roll will sound good too - not counting low frequencies".

-Glenn Leembruggen



JBL

JBL's EON 10 is the most space age cabinet of the lot, and has probably won a few design awards. The heatsink is integrated into the front speaker venting path, so the natural air movement of sound also cools the output devices. It has an IEC lead, an XLR in and out, a very recessed mic/line switch that requires a ball point pen to operate, and a volume control. One green LED on the front of the box denotes the juice is running, and there is no rear fuse.

What they said:

David: Clouded in lower mid acoustic, instruments recessed and woolly. Not bad, bottoms overbalanced between 100 and 300Hz. Tops a little tizzy.

Tim: Polite, strings and piano reasonably clean.

Al: Good restaurant music box, very wide coverage. Rich vocal colouration between 100 and 200Hz.

John: Wide dispersion, 45° at the right hand side (probably same on the left). Relatively clean bass, listenable.

Adam T: Unforced bass, may have been too weak. Could have been because of overpowered low mids. Good off axis.

Glenn: Coloured in low mids relative to 6 (ARX), vocals and flute a little thick, LF not too well defined.

Adam I: For a 10" (woofer) a good box. Very high freq. big, but HF a little dull. Underpowered.

Conclusion:

What a neat product! Soldiered well considering it was up against 12" competition. JBL make a 15" EON too. At \$1,495, these sell well.

Continued from page 40

Alan Parsons Sound Check CD, including test tones and noises.

All up, we did three hours of listening in two sessions, between which Adam ran some ultra loud tracks with the door closed.

What the test did NOT achieve was how the boxes would perform in a typical venue with -say- live music running through them. But our panel were sufficiently across this, and I think their comments prove that our test was as thorough as time and resources allow. It is certainly the most complete test that any magazine anywhere in the world has done in recent time.

DOWN TO IT

We sat down and had some Latté and such things in the excellent Magic Mushroom Cafe at the Lab, and I had the team tell me what their copious notes revealed about each box.

Here is a caveat: some of the comments on each box may appear

Go to next page >

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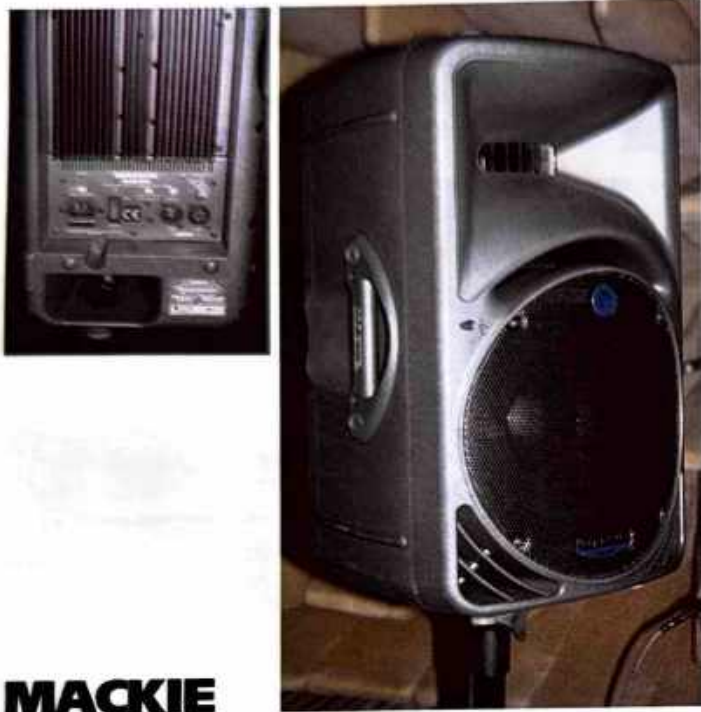
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Turbosound
KNOW HOW

12" AND HORN POWERED SPEAKER BOXES -THE COMPARISON-

harsh. They were made not knowing the brand or type of each box - Adam lusted was the only person who knew, so his comments are possibly coloured as a result. You need to read them all together, and look at our conclusions to form a *general picture* of the merits of these products.

We decided NOT to publish the manufacturers specs for these boxes. They are all roughly the same size, and weight, give or take a bit. The specifications for frequency response, wattage, sensitivity and suchlike are increasingly meaningless because in a



MACKIE

Mackie's SRM 450 is also quite space age in appearance, another plastic box, with a piercing deep blue LED on the front. We needed to gaff this over, lest its brightness give away the box type behind the black drape! It's got a lot of cool features on the back, like a 'timed turnoff' switch, contour EQ & infrasonic filter and signal present LED. Its got flypoints on all sides, a servo-controlled 12" woofer, and is sideways reclinable as a floor monitor.

What they said:

Adam T: Huge solid bass, obviously resonant. Good vocal definition, slightly harsh highs.

John: Clear mids, bit down on high's, warmish on some tracks (like Jeff Buckley), good job on high notes of bass in 'Puppy', narrow dispersion.

Al: Most music from this box. It's all there. If there is too much bass, its easy to turn this down. Nice 3'd -ness. Plenty of headroom, lets you see down into the track.

Tim: Big, open box, bottom end processed in some way, least congestion and complex midrange passages. Air around the instruments, reverb details excellent.

David: Pretty good box, open, balanced and seemed to handle power. Complex passages without breakup. As a criticism I'd say it's larger than life, and the piano sounded unrealistic.

Glenn: Highs a little forward at 4 to 6kHz, missing a little mid range, low frequencies is too big.

Adam I: Big bass, over the top but good. Powered very nicely, sounds EQ-able.

Conclusion:

Bold and sassy. The servodrive bass works, keenly priced, \$2,295.

competitive market, the manufacturers fib. We debated the merits of comparing the printed spec with a tested one, but decided that our listening test was a more valuable exercise for you.

What counts is what you plan to do with them, there are models here that are inexpensive, through to boxes that you need to really think about.

Our advice is to test the boxes you have short listed in the acoustic environment that you most often encounter, with the programme source that you will most commonly use. *

RCF

Completing our lineup, the RCF ART 300A comes from the same plant where the speaker part of the Mackie is made. Mackie now own RCF in Italy, but that's where the similarity ends - because the RCF and the Mackie product are completely different, and even have their own distributors. The ART 300A has no front LED, but the back panel is quite comprehensive, with unique setting switches for 'music', or 'voice' - and mic/line. We elected to test it with the switches out.

What they said:

Al: To me it sounded like a passive box, and that's no criticism - there is no distinguishing crossover effect. It's pleasant, it feels like value for money. Worth buying!

John: Orchestral basses not prominent, bass chords less relevant, top of string bass lumpy. I'd have trouble picking 4 (dB Technologies) and this on a dark night.

Adam T: Bass is reasonably tight, low mids well controlled, good definition - not harsh, not offensive.

Tim: No real lows, what there is quite defined.

David: Reasonable detail, it'd be between this and 8 (Mackie) as the best 'all rounder'.

Glenn: Fairly pleasant, low mid thickness that is evident on some parts of voice, flute OK, doesn't have box forwardness and lack of control. Low freq's OK, but perhaps a bit big. Sounds most balanced with pink noise.

Adam I: OK box, high frequency detail a little lacking, seems to be powered nicely.

Conclusion:

Priced at \$2,495, this box would appear to do battle with its Mackie cousin for the hearts and minds of sound people everywhere. The price difference is probably equalised in a volatile marketplace, the only reason you might pay a little more for the RCF is if Mackie are out of stock of their box!





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HONEY I SHRUNK THE TRUCK (and the budget)

How the digital revolution downsized the mobile studio. Exit 18 tonne semi, enter four ton van.



YOU CAN SPEND WAY MORE THAN A MILLION DOLLARS on a recording truck. Indeed Global TV recently spent roughly a million on a Calrec console alone, before counting the cost of the truck itself, wiring, air conditioning, power, recorders, racks, CCTV, video links and soundproofing. That's their prerogative.

At the other end of the cost scale, the Mobile One truck recently commissioned in Sydney by Sound On Stage was very modest in capital outlay, but has come up spades.

Our story starts when Good News Week transferred from the ABC to the Ten network. Keith Walker is retained to mix all music used on the show, separate to the actual voice audio. The new arrangements saw the show move to Global's studios and Keith found himself in a familiar place - the Jands Mobile.

Keith is an institution in Australian recording history, he has recorded more live, or live to tape, shows than anyone - possibly in the world. If you hear an archive live recording of almost anyone recorded in the 1970's or 1980's on ABC's youth network JJJ, chances are Keith did the mix.

His most shining claim to fame, and one he really should have won an award for, was the final Crowded House concert, live outside the Sydney Opera House. He recorded the show to DA 88's (Tascam DTRS 8 track digital recorders) then remixed it in two days flat with a Yamaha 02R and a bunch of DA-88's - in his front room. The final product was considered by most people we know as the best live concert mix of its kind this century.

MOBILE CONSIDERATIONS

The Jands Mobile is a converted 20' shipping container, which sits

high on a detached trailer. It is fitted with a 20 year old, but refurbished, Harrison console.

"I was one of the guys who originally unpacked the Harrison when it was first installed at Paradise Studios" says Keith. Until the advent of instantly resettable, dynamically automated digital mixing consoles like the Yamaha 02R, the Harrison and its analogue brethren were the best there were.

Engineers like Keith became adept at fast resets, whizzing around between input gain, EQ, auxiliary and effects sends, and the channel faders. If you were doing a live show like the ARIA awards, every five minutes the whole console would be reset to accommodate another band.

With a digital console, you still set up every channel needed, but you record the settings in memory, usually at soundcheck or rehearsals. Then as the band moves into position you zap back the desk settings, which saves considerable time and eliminates errors.

Keith's main problem with the Jands Mobile was simply that the desk was getting too old, and it didn't let him do all the things he can do on the little 02R - a desk that sells for less than 15 grand.

ENTER THE SOS TRUCK

Michael White is another audio institution in Sydney and surrounds, he has owned and run Sound On Stage and SOS Communications since forever. He had the contract to supply audience FOH PA and monitors for Good News Week - and being close to most people in pro audio he sniffed an opportunity.

Keith was talking about doing away with the Jands Mobile and plonking some DA-88 and an 02R or three in an un-used dressing

Keith Walker in Mobile One



room. This didn't sound like too good an idea for when the show went on tour though, as it records live from different venues as well as the studio.

Michael was wondering about a couple of un-used OB vans that were quietly rusting away on the backlot at Global Television. These four tonne Isuzu's were acquired by Global when they purchased their studio from the Ten Network and were fitted out as tape trucks, with air conditioning, wiring and power run throughout the 16' body. He purchased the trucks and armed with the promise of an extended contract, spent three weeks converting one into Mobile One.

COME INSIDE

Mobile One isn't as well sound isolated as the Jands Mobile. Indeed most mobile studios are very carefully designed to try to eliminate as much ambient noise as possible. Mobile One is simply a double insulated box, with a pair of air conditioners on the roof and a lot of nifty doors and access panels.

According to Keith Walker it's just fine - if he were recording backstage at a rock concert he would just crank up his nearfield monitors to get on top of any noise spilling in. "Sure, you don't want to be working at those levels too long, eventually your hearing gives in". But this is a tradeoff against a heavily con-

(Please turn the page)

An advertisement for Eminence HF Compression Drivers. The background is a dark blue with a grid pattern and a glowing sphere. A large, detailed image of a compression driver is shown in the foreground. The text "EMINENCE HF" is written vertically in large, white, bold letters. Below it, "COMPRESSION DRIVERS" is written vertically in smaller, white, bold letters. A white box contains the text "Engineering Perfection, just got better." Below this, smaller text reads: "Professionals rely on the performance of the popular 1 inch and newly designed 2 inch throat sized compression drivers from Eminence." At the bottom, it says "Distributed in Australia by CMI Professional Products Group (03) 9315 2244 www.cmi.com.au".

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Studio ROUNDUP

structured, and expensively designed, fully isolated mobile.

There are three O2R consoles, side by side, facing forward towards the front of the truck. The righthand unit has an optional TC Electronics Unity effects card installed. Overall there are fifty two microphone inputs available, which all appear as XLR connectors at the main patch panel on the side of the truck. The patch panel has audio in and out connectors, and video too. Power comes into the truck via a 32 amp Wilco 3 phase connector. The original broadcast engineers who built the truck as a tape van had expensive Joy plugs and the heaviest mains cables I've ever seen run under the floor. They must have had expectations of some very heavy duty new tape machines that sadly never were invented!

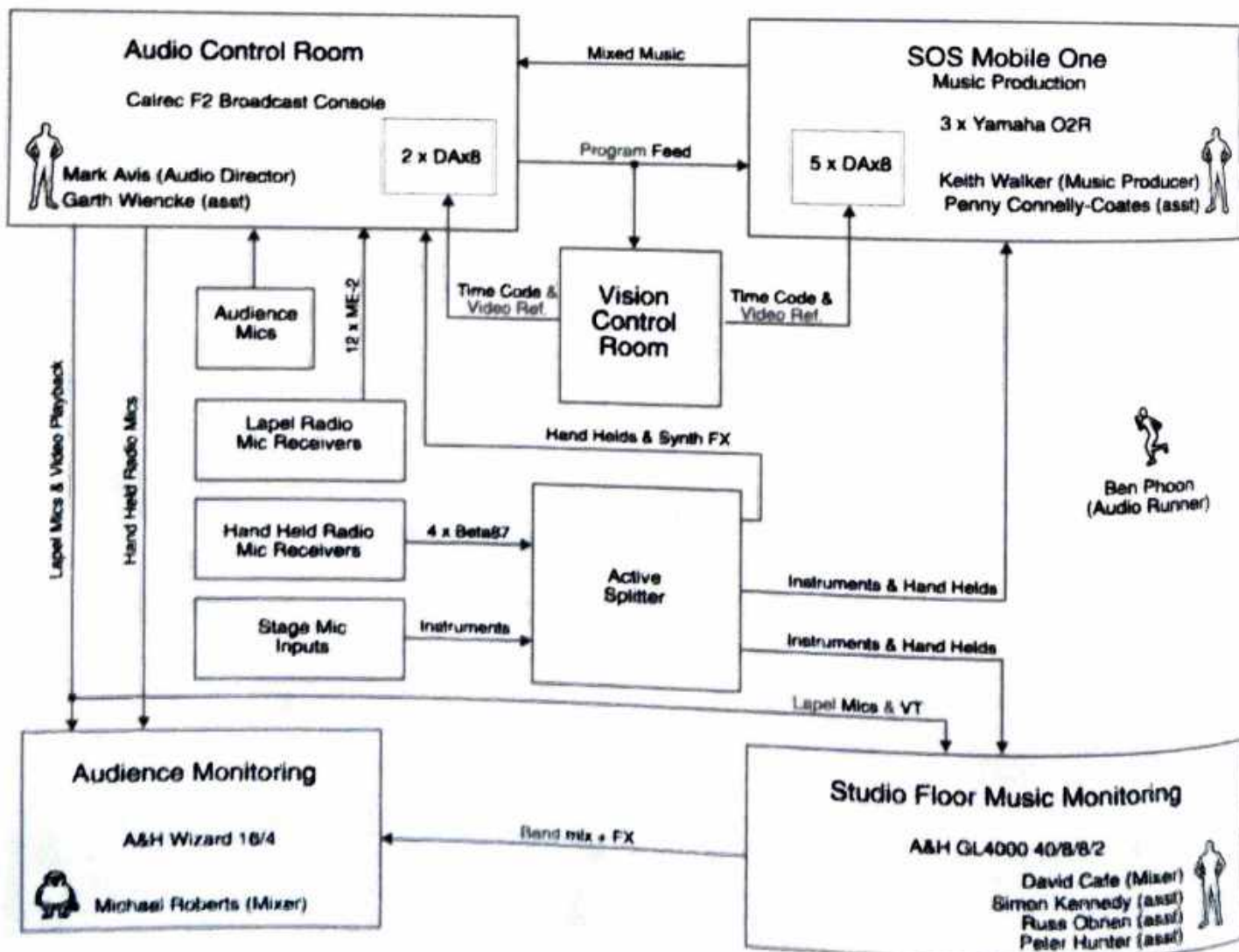
In front of the consoles are a bank of video monitors, for show feeds and for CCTV vision of a performance if there is no broadcast feed available. The truck has its own CCTV system and camera's. A pair of Quested H108 nearfield monitors provide the noise. A side table on the right, opposite the entry door, accommodates the remote control for the DA-98 and DA-38 recorders, plus provides ample space for notes (and beverages too).

The back wall is rack city, with one DA-98 and four DA



Audio Flow for 'GNW Night Lite'

Studio A - Global Television, Sydney



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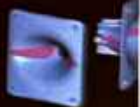
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38 recorders, for a total of 40 tracks. These are to be replaced with new Tascam 24 bit DA/24HR recorders, probably as you read this. Also coming are a pair of new Tascam MX-2424 24 track, 24 bit, hard disk recorders. "No more tape formatting!" says David Cafe, Good News Week studio floor music/audio monitor engineer.

The truck has plenty of incidental rack mounted gear and all the bits and pieces I'd imagine you'd need. Being way smaller than a semi, the truck can squeeze closer to the action too. Most importantly, SOS have an array of multicores and splitters of all lengths and persuasions.

A 40 channel active splitter rack made up of LA audio splitters allows a fully isolated three way split of every mic input, one for the truck, one for the front of house PA, and one for the GNW monitor system - driven by David Cafe.



Too loud! Good News Week Audio Director Mark Avis visits the floor to find David Cafe mixing it hot and hard! (RIGHT) Mix assistant Penny Connolly-Coates prepares to hit DAT button....

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GOOD NEWS WEEK

You may wonder why a show needs a separate music mix, distinct from the main mix, done in the studio control room.

"One person can, and on some shows does, do it all" says Keith. "But on GNW, with seven voices all live through a PA, all on lapels, and all open just under feedback level all the time, there's too much going on".

Then there's the creative aspect. The show has plenty of music, and the musical acts are all represented by recording companies with investments to protect. They are hardly likely to agree to a live performance if they don't have confidence in the people and the technology.

"The show tries to put a focus on the music beyond normal TV requirements" says Keith. "That means there is a creative argument, there are huge reputations at stake".

"We have a lot of experience miking different ensembles" adds David Cafe. "And we have a lot of microphones, and are careful how we use them". But Keith and David are also ready to simplify technology to get a better result. A recent show with an acoustic Paul Kelly and Uncle Bill segment saw the performers clustered around one AKG C12 microphone, switched to omnidirectional.

With a little reverb and some judicious 'secret' treatment by Keith, it superbly reproduced the double bass, banjo, dobro, acoustic guitar and voices. One mic!

The multitrack recorders allow remixing if a segment really needs it, and also gives the producers an archive from which to mix CD's. Indeed, Keith was doing just that, in the truck, parked in a Sydney suburb when I called. Most time, the actual show is sent live as a stereo music mix and backed up onto DAT. The multitracks (every input to the 02R has a DA-88 track) are there for security and for the future.

-By Julius Grafton

• Mobile One will be on show at ENTECH

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- SR-835 18 dB/octave
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- SR-834 24 dB/octave

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"In the past years I have used Connections to research, price and assess many excellent recording products. The 'How To' articles are a very useful learning tool. Also, the news and fun make me feel part of the industry".

Bedrock has accommodation and a useful equipment list centred on a Mac G3 running Logic Platinum 4.0. There is a Hammond with an 88 note keyboard (plus sounds) and a Leslie there too, which sure beats

taking your own! A Yamaha 03D digital mixer does the touchy-feely stuff.

"I've played in R&B bands

READER PROFILE



Peter and Jenny Hughes

since Clapton did the Hordern Pavilion" says Peter, giving away his roots - and age! "Little did I realise the learning curve and the money needed to bring Bedrock into reality - but here it is. Recording, mixing and producing people's art is enjoyable and demanding. The mental challenges keep me young and inspired. Now all I need to do is to convince the record companies to send some work my way, to get the best out of their clients".

"Entech is where it all started for me in 1996 at the Darling Harbour Convention Centre. I saw the need to get involved in reading industry publications and the Connections stand did the rest".

"The magazine is eagerly awaited each month. Arriving in its sealed brown paper package adds spice to the local post office, where we collect out mail. I tell them it's 'Connections', the dating magazine!" (Yes readers, there IS another Connections, which we have forced to change its name after getting a lot of weird

phone calls, like: 'great mag, how do I get in touch with Miss Z09034? Worse still were the shrill calls from female spouses who demanded that we stop sending our smutty rag to their husbands! Naturally we usually assume they refer to this very publication, and get a little upset - until the penny drops. Then we ask them just HOW they think their dear hubby got his name onto the smut magazing dating database anyway!

"Seriously though, I do enjoy the connection, living down in the bush!"

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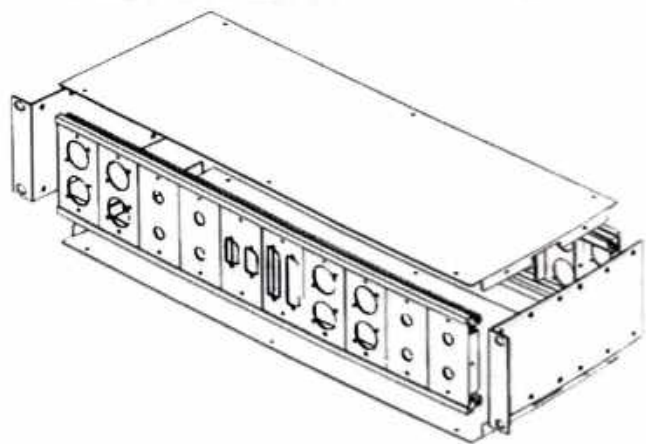
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Studio ROUNDUP

Hits and Sessions

Compiled by our music editor

Our BASF National Tracking Guide this month unearths some notable sessions and projects. Somehow this month's pick of the bunch mainly come from NSW.

• **Festival Studio** has **Yothu Yindi** cutting an album, produced by Andrew Farris with Mark Thomas engineering.

• Over at **Sky Lab** are two revered vocalists doing separate singles: **Doug Williams** and **John Paul Young**, both engineered by Dave Russell.

• **Trackdown Digital** have a self produced album called "Ghost of Time" underway with **Iva Davies**, engineered by Simon Leadley.

• **Troy Horse** have that band who are an acquired taste **Directions in Groove** with Mark Worrall engineering for live album mixing, and venerable Australian institution **Jon English** cutting an album, produced and engineered by himself and Blicka.

• At **Velvet Sound Recording Studios** are **The All-Nighters Band**, for whom your editor once mixed foldback. Oy! Oy! Oy! They are making album tracks with Tony Wall engineering.

• In Victoria **Back Beach Record-**

ing have hot club act **Madison Avenue** frantically finishing an album with Mark Rachele engineering.

• Funny bandname roundup: Try these: at Fotissimo (Melb): **Chickenhead**, at Dex mastering: **Crazy Baldheads**, and at Crystal Mastering (Melb): **Goat**. But True Form Recording win this month with band names like **Sledge**, **Biggy Rat**, **Deadpan**, **Wormhole** and **Tiltmeter!**

• At **Rockinghorse Studios** in Northern NSW, American producer and former 'Trouble Funk' member Robert reed is currently producing **The Resin Dogs** first full length recording. A hit pick?

• **Blast Studios** in Christchurch claim to have made the first album release of the new year - and indeed, the new (here comes THAT word) - Millennium. Band **Seven Tongues** released their 'Music for the modern mammal' album at the stroke of midnight. No word about HOW the album was released, can't imagine too many record stores in NZ open at midnight on new years eve...

NEWS PLEASE! Send by email to: mail@conpub.com.au or fax to +61 2 9876-5715. Do it NOW!



BASF

National Tracking Guide

ARTIST	PRODUCER	ENGINEER/PROGRAMMER	NOTES
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Wiley Park Primary School	Jeff Cripps	Jeff Cripps	C.D.
John da Silva	Jeff Cripps	Jeff Cripps	CD
The Cher Show	Jeff Cripps	Jeff Cripps	Demo
Trouble No More	Jeff Cripps	Jeff Cripps	Blues C.D.
Cloud Studios Parris MacLeod 02 4353 2429	24 Track Analog 16 Track Digital Tape/16		
Track Hard Disc			
Novakayn	Parris MacLeod	Parris MacLeod	Demo
Hess	Parris MacLeod	Parris MacLeod	Demo
Sugar Moth	Band	Parris MacLeod	Mix
Andrew Clermont/	Parris MacLeod	Parris MacLeod	Parris MacLeod
Enrec Studio Steve Newton 0418 683 431	Analog/Digital/HD		
Vince Brophy	Steve Newton	Steve Newton	Album
Feral Studio Jon Robertson (02) 6299 3224	Multitrack Recording, Mastering CD		
Replication			
Mr Fistar	John & Joel	Jon Robertson	E.P.
Exhibit A	Jon Robertson	Jon Robertson	Album
Paul Wesley	John+Paul+George	Jon Robertson	Demo's
Joll Project	Jon Robertson	Jon Robertson	Demo's
Festival Studio Suzanne Hill Tel: (02) 9395 8070.	Tracking room. Neve 2 x 24 Ana, 32 dig.		
Yothu Yindi	Andrew Farris	Mark Thomas	Album
Gadflys	Gadflys	Mark Thomas	Album
Midnight Oil	Paul McKercher	Paul McKercher	
Spatial Music Orchestra	Zomba Productions	Adrian Bolland	Orchestra
Hindsong Studio David & Lyn Hinds (02) 6582 7070	Digital Project Studio		
King David and Bathsheba	D. & L. Hinds	D. & L. Hinds	Album Tracks
Balance	Balance	D & L Hinds	Album Tracks
David and Lyn Hinds	D. & L. Hinds	D. & L. Hinds	TVC Soundtrack.
JMF Recording Studio Fran Esther Tel: (02) 9790 4097			
24 TRK. 2" Analogue 32 TRK X850 24 TRK ADAT			
Heaven Sent Ent.	Mr Kool/G. Phimister	Glen Phimister (E)	Album
Pat Drummond & Karen Lynne	Rod Coe	Glen Phimister (E)	Album
Cold Turkey	Bill Croft	Guy Saminaden (E)	Album
Animation	Band	Ralph Esther (E)	Demo
Rino	Band	Ralph Esther (E)	Demo

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Studio ROUNDUP

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ARTIST PRODUCER ENGINEER/PROGRAMMER NOTES

Ne-Town Studio Greg Hopping Tel: (02) 9516 3306. Music Production			
Anita Spring	Greg Hopping/Kyle Neven	Sofie Loizou (PR)	Album Demos
Kanoe	Greg Hopping	Sofie Loizou (PR)	Demos
Navigator	Greg Hopping/Sonny Agrillo	Sofie Loizou (PR)	Single
Shield	Greg Hopping/Kyle Neven	Mark Worrall (E)	Single
Mark Edwards	Greg Hopping/Mark Edwards	Sofie Loizou	Demos
Rockinghorse Anthony Lycenko Tel: (02) 6688 4005			
Neve 48 Chan 24 TRK Studer, Protocols Mix24.			
Pirol	Christian Pyle	Michael Worthington (E)	Mastering
The Bell	Anthony Lycenko/Christian Pyle	Michael Worthington (E)	Mastering
Kirsten McKendie	Artist	Anthony Lycenko (E)	Album Mixing
Chenlab	Band	Anthony Lycenko (E)	EP Tracking
Sky Lab David Russell 02 9310 4774 24 Track Analogue, 32 Track Digital			
Doug Williams	Doug Williams	Dave Russell	Single
John Paul Young	Doug Williams	Dave Russell	Single
TE LARES	Hernan	Dave Russell	Album
WAIKIKI	Peter Stein	Josh MacLeod	Album
Mighty Reaper	Rose Langford	SPACEMAN	Single
Juliet Obsessed	Juliet	Josh MacLeod	Album
Sound Level John David (02) 9552 3200 24 TRK DA 88 ENSON Q PARIS 16 TRK HD			
Shale	Band	Jordan Brebach	Demo's
Quirk	Band	Jordan Brebach (E)	Demo's
Bulletproof	Band	Jordan Brebach (E)	Demo's
Cellfish	Sean Lowry	Jordan Brebach (E)	Demo's
Women of Troy	Band	Brett Valentine (E)	Demo's
Soundwarp Meredith or Bill Tel: (02) 9905 7144. Mastering			
Sesa Naga	Albert	Meredith Brooks	Single
Mal Eastick	Mal Eastick	Meredith Brooks	Album
Firesticks	Cliff Grigg	Meredith Brooks	Album
Reverb Volume 2000	Steve	Bill Syrratt	Album Compilation
Silencer Seven	Todd	Meredith Brooks	Album
Studios 301 Mastering Jacqui Espie Tel: (02) 9211 7301. CD Mastering Facility			
Oscailima	Jonathon Burnside/BMG	Don Bartley	Album Mastering
Wendy Matthew's	BMG	Steve Smart	Single Mastering
Area 7	Zomba Records	Don Bartley	Single Mastering
Lee Kernaghan	Garth Porter	Steve Smart	Forthcoming Album
Top Cat Recording Studio Brad Wann Tel: (02) 6628 0843			
Automated 24 TRK 1" Anal. Pro-Tools Mix 24 Plus			
Cleavage	Band/Brad Wann	Brad Wann (E)	EP Tracking & Mixing

Box	Brad Wann/Band	Brad Wann (E)	EP Tracking & Mixing
Country Compilation	Brad Wann/Band	Brad Wann (E)	Album Tracking
Mal & The Longboarders	Brad Wann/Lloyd Brown	Brad Wann (E)	Album Tracking
Adrian Gawain	Brad Wann/Adrian Gawain	Brad Wann (E)	Album Tracking
Trackdown Digital Mike Duffy 02 9550 6890 64 Tracks/Post + Music			
HI 5	Chris Harriott	Kathy Naunton (E)	Album
Iva Davies	Iva Davies	Simon Leadley (E)	Album
Hong Kong Museum	A. Gregan, T.Lista, D.Canouso, T.Ryan (E)		Talking Audio Guides
Liberation	M.Toddman/MeukeMarketing	Tim Ryan	TV/Video Post
Troy Horse Mickey Levis Tel: (02) 9319 1799 Fax: (02) 9698 9494.			
24 TRK, Fully Automated			
Directions in Groove	Worrall/Rollinson	Mark Worrall (E)	Live Album Mixing
Fire Hose Reel	Band/Trump	Dave Trump (E)	E.P.
Swell	Levis	Mickey Levis (E)	E.P.
Jon English	English/Blicka	English/Blicka	Album
Big Wally	Band/Henderson	Dave Henderson (E)	E.P.
Velvet Sound Recording Studios Dave McCunn Tel: (02) 9267 2915.			
64 Ch.Protocols/24 TRK.Analogue			
Welter	Elliott Weston	Tony Wall	Album Tracking
Skirt	Band	Tony Wall	EP Track & Mix
The All-Nighters	Band	Tony Wall	Album Tracking
Schneider's Ape	Lui Lui	Lachlan Mitchell	EP Mixing
The Hive	Oscar Goana	Adrian Grigorieff	Track & Mix Singles
Kwim	Band	Adrian Grigorieff	EP Track & Mix

Queensland

Vandersound Studios Eric Vandersande Tel: (07) 5546 8100.			
All Digital & Valve ADAT/XT 02R CDR HDR			
Ian Francis	Eric Vandersande	Andrew Hines (E)	Edit and Mix Album
Expeditarian	Andrew Hines	Andrew Hines (E)	Record Demo
Mystery of Sixes	Eric Vandersande	Andrew Hines (E)	Mix/Master Demo
Sharon Oakhill	Eric Vandersande	Andrew Hines (E)	Record/Edit Demo
Sinian College	Eric Vandersande	Eric Vandersande (E)	Record/Edit Demo
Swashika Studios Leon Prescott 07 3252 2872			
Future Voice	Leon Prescott	Leon Prescott	Album
Tonjit	Mark McElliott	Mark McElliott	Album
Rinubarb	Mark McElliott	Mark McElliott	Remix/Tracks
Guarding the Empress	Mark McElliott	Mark McElliott	Tracking
Feel	Leon Prescott	Leon Prescott	Single

South Australia

Disk-Edits Catherine Linke (08) 8340 1377			
Audio Pre-Mastering & Post Production & Cassette Manufacturing			
Orianthi	Peter Panagaris/Rumpus Room Prod.	Neville Clark	Mastering/Album
Darren Conway	Conway	Neville Clark	Mastering/Album
The Sweet Baby James Trio	James Meston	Neville Clark	Mastering/Album

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Studio ROUNDUP

Damien Gerard Sound Studios

Case study of a happening mid sized
music studio facility - and its owner

By Julius Grafton

THE LIGHTS WENT OUT QUICKLY at Damien Gerard Sound Studios last winter, when the landlord of the long established mid ranking studio invoked a one month quit clause in the lease. "We were expecting it, and had been looking at other premises for over six months" said owner Marshall Cullen.

Thinking of buying a warehouse within reasonable distance of downtown Sydney, Marshall and partner Elia were shocked to find prices well over the quarter million or so they had expected. Then there were the zoning problems, not to mention fit out costs. The studio looked like fast becoming a homeless state.

Then Festival Records studio manager Rick Cameron jumped on the phone with an unexpected offer to locate a new digital studio in rented space within their complex. DG's had been a good source of mastering work for Festival, and new management there headed by Roger Grierson has a good sense of street savvy.

Festival reasoned that DG's were a good synergy to attract upcoming business, and without red tape a new studio - 'The Retro Room' - was born. It fits neatly into Festival, which houses a main-

Marshall feels that many artists now realise if they produce and engineer themselves, they are spreading their creativity too thinly. Plus it can be tricky to engineer a good sound digitally, ask anyone who has inadvertently overloaded a converter!

please turn the page

BASF National Tracking Guide

ARTIST	PRODUCER	ENGINEER/PROGRAMMER	NOTES
Graeme Harrison		Neville Clark	Mastering Album
The Full Bench	Andrew Bayfield 08 212 0211		
Katherine Renner	Katherine Renner	Andrew Bayfield	5 Song Demo
JR Recording	Graeme McNeil 08 8202 9282	Tracking Mixdown	
Get Back	Get Back	Louis Panayiotou (E)	Album
Damaskos	Damaskos	Louis Panayiotou (E)	Album
Heather Frahn	TBA/Music Police	TBA	Single
Temporal Lobe	Temporal Lobe	Louis Panayiotou (E)	Single
Fine Lines	Bob Petchell	James Sweeney (E)	Album

Victoria

Back Beach Recording	Mark Rachele (03) 5988 6948		
Class A Analogue Auto mixing 2" recording			
Madison Avenue	Van/Coats	Mark Rachele (E)	Album
Delerium	Morrison/Van	Mark Rachele	Re-Mix
Alchemist	Band/D.W. Norton	D.W. Norton	Album
Day of Contempt	Band/D.W. Norton	D.W. Norton	EP
Rock and Roll High (Various)	Bands	Kane Hibberd/D.W. Norton	Album

Big Beat/Samadhi Studios	John Toth 03 9898 5815		
32 Track Digital 16 Track Analog			
Steve G	Steve G/Shokkiah T	(E): Shokkiah T (PR): Shokkiah T	Demo Single
Miss Max and Deluxe	Miss Max/Deluxe/Hitman	(E): Hitman (PR): Deluxe	Single
Our World Records	Shadow/Jimo	Shadow	Album Tracking
Miss Max	Shokkiah T/Hitman/Miss Max	(E): Hitman (PR): Shokkiah T	Album
Education Department	Graeme Askew	(E): Hitman (PR): Graeme Askew	CD

Cavalier Music	Jeff/Justin Tel: (03) 9437 0444		
Multi Track Digital Studio			
The Cryptic Lanes	Band	Justin Skim	EP
Semou Magila	Band	Justin Skim	
Side Show	Band/Justin	Justin Skim	Demo
Downstares	Walter	Justin Skim	Single
Musket	Band	Simon Banko	Demo's

Crystal Mastering	Joe Carra Tel: (03) 9326 2318.	CD Mastering Facility	
Rocket Science	Band	John Ruberto (E)	Mastering album
Sgt. Slick		Joe Carra (E)	Mastering Remixes
Goat	Band	John Ruberto (E)	Mastering Album
Big Day Out		Joe Carra (E)	Mastering Album
Crackjack	Band	Joe Carra (E)	Mastering Album

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Studio ROUNDUP

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ARTIST PRODUCER ENGINEER/PROGRAMMER NOTES

Dex Mastering Adam Dempsey (03) 9372 2266

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Nick Charles	Chris Corr/Nick	Adam Dempsey (E)	Album
Sandro	Chris Corr/Nick	Adam Dempsey (E)	Album
RAAF Band	Graeme Lloyd	Adam Dempsey (E)	Live Album
Flatfoot Shakers	Jamie Suppa	Adam Dempsey	Remastering Album
Crazy Baldheads	Tim Prince	Adam Dempsey (E)	EP

Edensound Mastering Martin/Robbie (03) 9682 9066

Prof. CD Mastering using focusrite 'Blue' mastering suite.

Largest Living Things	Paul Hester	Martin Pullan	Been There Doughnut
Pound System	Woody and Jim	Martin Pullan	Get Amongst It Single
Australian Cast	Ross Fraser	Martin Pullan	The Sound of Music
Deep Purple	Dr Drew Thompson	Martin Pullan	Smoke on the Water Single
Astrid Munday	Tony Cohen	Martin Pullan	Apparition Album

Fortissimo Recording Studios (Aust.) Andy Parsons 03 9699 5811 24 TRK Studio, Large Recording areas, Classic Valve & Transformer outboard, Automated Harrison Cons

Marcia Howard	Siiri/Marcia	Siiri Metsar	Album
Chickenhead	Mark Cutfield	TBA	Album
Tex Perkins	Self	Ted	Demos
Ross Wilson	Kerryn Tolhurst	Andy Parsons	Songs

Lo Ricco Sound Studios Marcello Tel: (03) 9701 6220.

16 TRK. ADAT XT. 32 TRK. Logic Audio

The Methinks	Band	Marcello Lo Ricco (E)	Album
All Down	Various	Marcello Lo Ricco (E+PR)	Demos
Deep Soul Duo	Band/Marcello	Marcello Lo Ricco (E)	Demo
Carol Whitfield	C. Whitfield/M. Lo Ricco	Marcello Lo Ricco (E+PR)	Demos

Moose Mastering Francois Tetaz (03) 9417 7712 Music post production

Nicholas Osburn	Paul Morris	Francois Tetaz	Album
James Gordan Anderson	Jagland	Francois Tetaz	Album Remix/GOIT
Seiena Cross	Buzz Bidstrup	Francois Tetaz	Single
David Thrussell	Thrusten	Francois Tetaz	Surround Mix
Fragile Soul/Zen Paradox	Steve Law	Francois Tetaz	Album

Move Records Martin Wright 03 9497 3105 Acoustic Music Studio/ProTools 24/ Mastering

Woof!	Martin Wright	Vaughan McAlley	Percussion
Tony Gould & Peter Petrucci		Tom Grubb	Album - River Story
La Compania		Tom Grubb	Album
Choir of Ormond College	Martin Wright	Vaughan McAlley	Album

Pink Noise Studios Rodney Beuthin 03 9349 1043 Broadcast Film & Sound Reinforcement

Various	TWI	J. Pierce, L. Ibel, R. Beuthin, M. Hewes	Live Broadcast
Vika & Linda Bull	PNA	Rodney Beuthin	Concert
Various	7 Network	Michael Hewes, Leanne Ibel	Live Broadcast
Various	TTFM	Rodney Beuthin	Live Broadcast
Scared Weird Little Guys	John Fleming	James Pierce	CD Mastering

Studio 52 Paul Higgins Tel: (03) 9417 7707.

24+ Track. Adat 4 32+Track Analogue/Digital studio.

Qualm	Qualm	Andrew Meakes	Demo
Ashwood College	Ashwood College	Andrew Meakes	Demo
Hipno Avenue	Hipno Avenue	Andrew Meakes	Demo
Lemon parade	Lemon Parade	Andrew Meakes	Demo
Katya/Peter Cupples	Peter Cupples	Trevor Carter	Album

The Ranch Norman James Tel: (03) 9419 1506. 24 TRK. Residential Studio

Shenanigans	Gary King	Norman James	Album
Rasputin	Norman James	Norman James	E.P.
Various	AMMA	Norman James	Album

True Form Recording Neil Gray (03) 9391 0907 24tk digital/analogue + H/disk

Sledge	Neil Gray	Neil Gray (E)	E.P.
Biggy Rat	Band	Neil Gray (E)	Live to Dat
Deadpan	Band	Neil Gray (E)	Demos
Wormhole	Neil/Band	Neil Gray (E)	E.P.
Tiltmeter	Band	Neil Gray (E)	Demos

Wombat Road Recording Studio Barrie Clissold (03) 5145 4204

24 Track Digital + 16 Track analogue

Glitch	B.Clissold/Band	Barrie Clissold (E)	Demo C.D.
John Mazur	J.Mazur/B.Clissold	(E) J.Mazur (PR)	Album C.D.
Mick Diamante	M.Diamante/B.Clissold (E)	M.Diamante (PR)	Album C.D.
Angie Higgins	Geoff Cross	Barrie Clissold (E)	Album C.D.
Heyfield P. School	John Caldwell	Barrie Clissold	Album C.D.



Marshal Cullen

stream studio that caters to top level bands, and a mastering facility which is possibly second only to Studio 301 in business activity on the Sydney scene.

Retro Room features ProTools, and is good for overdubs, mixing, voice overs, compiling and editing, and all format transfers.

THE STUDIO IS REBORN

This still left DG's without a live recording area, which again was quickly resolved when an existing empty studio space in nearby Balmain came up for grabs. Now named 'Ultimate Warmth', the Mullens street studio was originally set up by Phil Punch in the 1980's, and features a main room with two smaller booths, and a decent sized control room. It's got the right semi-grunge aspect, and is now elegantly fitted out with a refurbished Soundcraft 2400 console and an analogue MCI JH24 2 inch 24 track recorder.

When I visited on a long Sydney summer afternoon, Wollongong band Thumloc were recording an album, a 5 day lockout project that DG's charged \$3,500 for. Add on \$1,200 for mastering (at Festival), and - say - \$1,200 to press 500 CDs, and you have a professionally produced album for about six grand. Marshall was happy, and making money on the deal. The band were looking relaxed amongst their quad boxes, guitars, pedals, cigarettes and drum paraphernalia - it's hard to record live, simultaneously and loud in a home studio somewhere.

Ultimate Warmth has recreated what Marshall describes as the fabulous warm and fat analog sound DG's is so well known for.

This is the third iteration of DG's, which started as a rehearsal complex with basic 16 track demo recording facilities. Marshall purchased the complex as a means of getting away from his native Tasmania, where he ran a live PA production touring business. He quickly grew DG's into the mid ranking studio it is today. Now the facility is slightly more virtual, split between two adjoining suburbs and controlled from Marshall's home office. And, he insists, business has never been better.

Studio ROUNDUP

NUCLEUS OF STUDIO SUCCESS

Anyone can fittout a studio and send Connections a tracking guide listing. The reason why Damien Gerard (the name came from the original owner, who was called Luke) is a success rests with the philosophy of Marshall.

He has a real passion for the music industry. He manages bands, operates his own label (Foghorn), and is now chair of the International Managers Forum (Australia) Limited. DG's produce a Grow Your Own CD, the fifth of which will be released next month. Bands pay a flat rate to have their track included, and Marshall stresses that track order on the CD is based on merit - not how much the band pays.

Marshall is a good marketer too, emailing and faxing a regular news-sheet to all the media he can identify. It keeps the facility, and most importantly its customers, in the eye of the market.

MARKET FORCES

Marshall and I are ensconced in a coffee shop, talking about how the business is different in 2000. We ponder the live gig scene and agree that there are drastically less venues for bands, especially since poker machines were introduced to hotels in NSW. But we recall knowing bands ten or twenty years ago who couldn't score a gig then either.

In Australia the government broadcasting network JJJ FM now covers 90% of the population, and is responsible for breaking a lot of new Australian artists, some of whom are now international stars, Take silverchair as an example.

We talk about home recording, and Marshall feels that many artists now realise if they produce and engineer themselves, they are spreading their creativity too thinly. Plus it can be tricky to engineer a good sound digitally, ask anyone who has inadvertently overloaded a converter! DG's gets plenty of business from acts who have done part of their project at home, then needed to record live parts and have the thing properly mixed.

Interestingly, Marshall puts in a good word for the more established Studio Courses. "We recently had a guy start as an assistant engineer, he could mic up, start up the tape machine, and deal with all the technology. I've noticed the studio schools calling and sending out surveys in the last few years, asking what skills we need in the real world. It's paying off!"

In approach Marshall is very level, a good conversationalist, and a positive person without excessive hype. You get the feeling you can trust the guy.

THE RECORD COMPANIES

Marshall is careful what he says, mindful of his position on the IMF.

So I put a proposition to him that some of the major record companies are still working to a model that has new artists and bands signed to a five album deal, with a lot of quit clauses that allow the company to walk away if they loose interest.

"It happens" he says. "The one thing I'd say to a band is not to sign away the rights to things like internet rights - because the major label can't yet tell you what they are worth, they don't know themselves! And if a band signs away world wide rights in Australia, they might find themselves at the bottom of a pile of acts on a roster in the USA".

Marshall has had two acts he manages, Once upon a Time and Noogie, signed to US recording contracts. He says he now understands and can read such a contract - indeed, the IMF is producing a manager's handbook to help others in the same boat. "I learned early on not to use an American lawyer, because they base their charges on the gross total worth of the deal - which can lead to the deal collapsing".

ONWARDS.....

Marshall and Elia were expecting a baby at presstime, and Marshall was looking forward to getting back to Los Angeles to chase more opportunities for Noogie and other bands he knows. And, both studios were booked strongly.

I guess Marshall never expects to get rich off the back of DG's, but he can probably see that with the right approach and a lot of hard work, eventually one of his musical projects will hit the big time in the USA. With a payout to follow!

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Studio ROUNDUP

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Western Australia

Bonsai Tom Thorpe	08 9246 4408	Pro-Tools, Digital Recording + Mastering	
Jobb	Mathew DeLattunty + Tom Thorpe	Tom Thorpe (E)	Album
Keith McDonald	Keith + Tom	Tom Thorpe (E/PR)	Demo
Outcast	Tom Thorpe	Tom Thorpe (E)	Demo
Planet Sound Studio John Villani Tel: (08) 9382 2211			
Frank B Marvin	Frank B Marvin	Les Williams	Album Mix
Jaz Coleman	Jaz Coleman	John Villani	Mix Prague symphony
Revolver Sound Studio Manfrin Tel: (08) 9272 7505. 32 TRK. Automated Analog & Digital			
Greenroom	Band/Ben Glatzer	Ben Glatzer	Tracking
Sleepy Jackson	Band/Ben Glatzer	Ben Glatzer	Tracking
Cartman	Band/Ben Glatzer	Ben Glatzer	Tracking
Gyroscope	Band/Laurie Sinagra	Laurie Sinagra	Tracking
Autopilot	Band/ Laurie Sinagra	Laurie Sinagra	Tracking
Satellite Recording Studio Darren Halifax Tel: (08) 9470 4003. ProTools 64TRK x 24 bit.			
The Dingo's Breakfast	Eric Kowarski	Eric Kowarski	Album
Cartman	Band	Darren Halifax	Demo
Another Light	Band	Darren Halifax	Album
Mistress Suzannah	Suzannah	Darren Halifax	C.D.
Monterey Lodge	Band/Andrew Neal	Andrew Neal	Album
The Sonic Lab Mark Whitehouse 08 9375 3902 Sonic Solutions Mastering Facility			
Kevin Gunn	Kevin Gunn	Mark Whitehouse	Remaster/Restore
Shanti Collins	Dean Booty/Shanti Collins	Mark Whitehouse	Mastering CD
Auto Pilot	Auto Pilot	Mark Whitehouse	CD EP Master
Skybiz 2000	Pro-copy	Mark Whitehouse	Mastering
SDI Band	SDI Toni Italiano	Mark Whitehouse	CD Mastering

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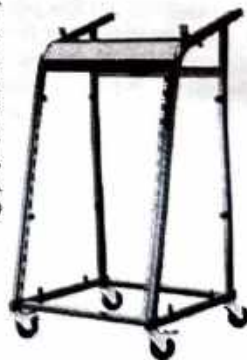
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DIGITAL AUDIO (Part 21)

DIGITAL AUDIO

Digital audio is the first major change in the way music is recorded and reproduced since Edison invented analog recording. While analog systems are continually improving, it is digital audio that holds the most promise for the future.

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Digital recordings do not actually store the music. What is stored (and later played back) is a series of binary numbers, each representing the music as it existed for a fraction of a second.

Binary numbers are made up solely of zeroes and ones, which can be represented electrically by switches turning on or off. It is these numbers - rather than the amount of signal level put onto the tape - that determines the signal level, and this means that problems associated with analog recordings (e.g. tape hiss and saturation) are no longer relevant.

The fact that music can be accurately described by a string of zeroes and ones is easier to understand by looking at a photograph in a newspaper. If you look closely, you'll note that it is made up of fairly coarse dots. Now look at a black and white magazine photo. From a normal distance, it looks sharper than the newspaper photo, and a magnifying glass will reveal why that is so: it, too, is made of dots, but they are smaller and closer together. In each case, what you are looking at is not a picture, but a grid of dots arranged to represent a picture. The brain takes those dots and makes them appear as a picture.

Digital audio works in much the same way.

The size of the dots translate into the length of the numbers, and their density into how long a period of time each is required to represent. If the number is too small (in digital terms, if it has too few bits), or if there are too few of them per unit of time, much of the music's subtlety will be lost. The Compact Disc uses 44,100 numbers per second (this is called the sampling rate), using 16 bit 'words'. In terms of dynamic range, 1 bit = 6 dB of

dynamics, therefore a 16 bit system will theoretically give the listener a 96 dB maximum dynamic range (16 x 6 dB).

CD TECHNOLOGY

The CD is a domestic version of digital audio. The actual workings of the CD are quite complicated, but they can be summed up fairly easily. The numbers representing the music are engraved on the disc in a spiral of microscopic pits (each pit being 1/250,000 inch x 1/50,000 inch). The surface is aluminized so it can reflect light, and then coated with a protective plastic shield to make the CD less affected by dust and dirt.

Playback is via a laser, which focuses through the protective layer and reflects off the pits and into an optical sensor. The pits are evenly spaced along the length of the spiral track, which means the disc's rotation must slow down as the laser approaches the outside edge. This is known as a constant linear velocity system, with speed variations from 200 RPM to 500 RPM.

Since the digital information is encoded in binary form, with only two values (mathematically 'zero' and 'one') the laser pick-up need only differentiate between two values - it is virtually impossible for it to be 'fooled' with another value.

The digital output is stored in a memory buffer, which holds it momentarily and then releases it in a continuous stream, eliminating any wow and flutter that might result from rotational inconsistencies. The signal passes into the player's error correction system, and then to the digital-to-analog converter. Finally, it is filtered to eliminate ultrasonic noise, and then appears at the outputs of the player as a perfect replica of the original recording.

Similar playback technology is applied to 'sampling' for the recording studio, where sections of songs or sounds are sampled and stored on disc for later use.

Recording Info: Live feel drum machine

If you want to add a more "live" feel to a drum machine, send the output of the drum machine to an guitar amplifier located in the studio area.

Place a microphone 1 meter (approx) in front of the amplifier and record the output onto a spare track(s). This can be achieved during track laying or after the dry drum track has been recorded to tape. The same concept can work with sampled vocal harmonies.

Decimal	4-bit Binary Number	Parity Bit
0	0000	1
1	0001	0
2	0010	0
3	0011	1
4	0100	0
5	0101	1
6	0110	1
7	0111	0
8	1000	0
9	1001	1
10	1010	1
11	1011	0
12	1100	1

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

How to do it

TOM MISNER'S PRACTICAL STUDIO TECHNIQUES

DIGITAL AUDIO (Part 21)

DIGITAL AUDIO

Digital audio is the first major change in the way music is recorded and reproduced since Edison invented analog recording. While analog systems are continually improving, it is digital audio that holds the most promise for the future.

HOW IT WORKS

Digital recordings do not actually store the music. What is stored (and later played back) is a series of binary numbers, each representing the music as it existed for a fraction of a second.

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How to do it

DUNCAN FRY'S LIVE SOUND MIXING SERIES

- EFFECTS (Part 2)

Digital Delays with knobs

These were the first, and are still commonly found in a lot of systems. As a typical example, here's a look at the Delta Lab Effectron II, one of the first and a very popular unit. The company is no longer around, but their effects are.

How to get it to work

Set the Input Level at about 2 o'clock - less if the Limit LED lights up. Set the Delay Mix control at + 100%, and set up the delay time you want in milliseconds (marked above each switch) by pressing the appropriate switch and fine tuning it with the Delay Factor control. Next, set the amount of repeats on the Feedback control, and bring up the return on the mixing desk.

Note two important features: both the Delay Mix and the Feedback controls are off at the 12 o'clock position. Turning them to the right gives you the Delay Mix and Feedback repeats In Phase (+), while to the left gives you them Out of Phase (-). Stay away from the modulation controls (Width and Speed) unless you are using the first 3 (Flange) switches. To get an idea of their effect, set them both to 12 o'clock, and press the second Flange switch in. You should hear a sweeping, chorus type effect. Move each control and listen to the difference.

Another very popular delay with knobs was the Roland SDE 2000 (and others from the same family). You get it to work in a very similar manner to the Effectron, except you adjust the delay time by pressing the Up (for shorter) or Down (for longer) nudge buttons, and the delay time shows up on the screen.

Digital Delays without knobs

Instead of a row of knobs and switches, these delays have banks of 'nudge' buttons and a readout screen on the front panel. The concept is the same as setting the time on your digital watch or clock radio. Here's the front panel of a typical one, the Yamaha D 1500.

How to get it to work

The D 1500 has 15 memory banks, 0 through 9, and A through E. Start off with your Input and Output levels at about 2 o 3 clock.

Press the UP or DOWN arrow buttons to scroll through the factory presets, and have a listen to each one. If you find one that comes close to what you want, use the bank of square buttons on the right to modify each parameter until it is what you want. Pressing either the UP or DOWN button and the STORE button simultaneously will store your new settings in that memory bank until you change them, even when you disconnect the power from the unit.

Use care when Racking

These older digital delays are very deep - 16" for the Yamaha, 15" for the Roland. They need support at the back of them or they will twist and tear the front rack mount ears. This family

of delays is very convenient for people who are mixing the same band all the time, and saves you the time consuming chore of constantly resetting the delay for different effects on different songs. However, they do take more time to set up when you are working with a different band every night.

Make a note of the various factory presets and it will save you having to start from scratch when you want a particular effect. If you have the time you could even preset and store some common delays, like:

- #1 a short 'double tracking' delay,
- #2 100 ms delay,
- #3 200 ms,
- #4 300 ms, and so on.

Think of the delays you like to use and have them stored ready.

All these 'knobless' delay units work along the same lines; scrolling through the parameters and grabbing the bits you want, then storing them. Other brands and models may have different names for the controls, but they'll all work the same way. Get to play with as many as you can.

There are hardly any stand alone delays being made new today, as the trend is to multi-effects processors that do everything. So the only way you may get to use any of these delays is on someone else's rig, or via the second hand market.

Reverb

Reverb is a different effect to echo or straight delay, being a whole series of short and long delays that combine randomly together to give an effect of space and depth.

The same technological revolution that brought us affordable digital delays has also brought with it affordable digital reverbs. Because good reverb is such an awkward thing to achieve in an analog manner, digital has taken over completely for live use.

They are available with programs that recreate digitally what would be totally impractical in a mechanical form; Studio Plate reverb, Huge auditorium reverb, falling down a well reverb, anything you can imagine, in a little box 1 3/4" high!

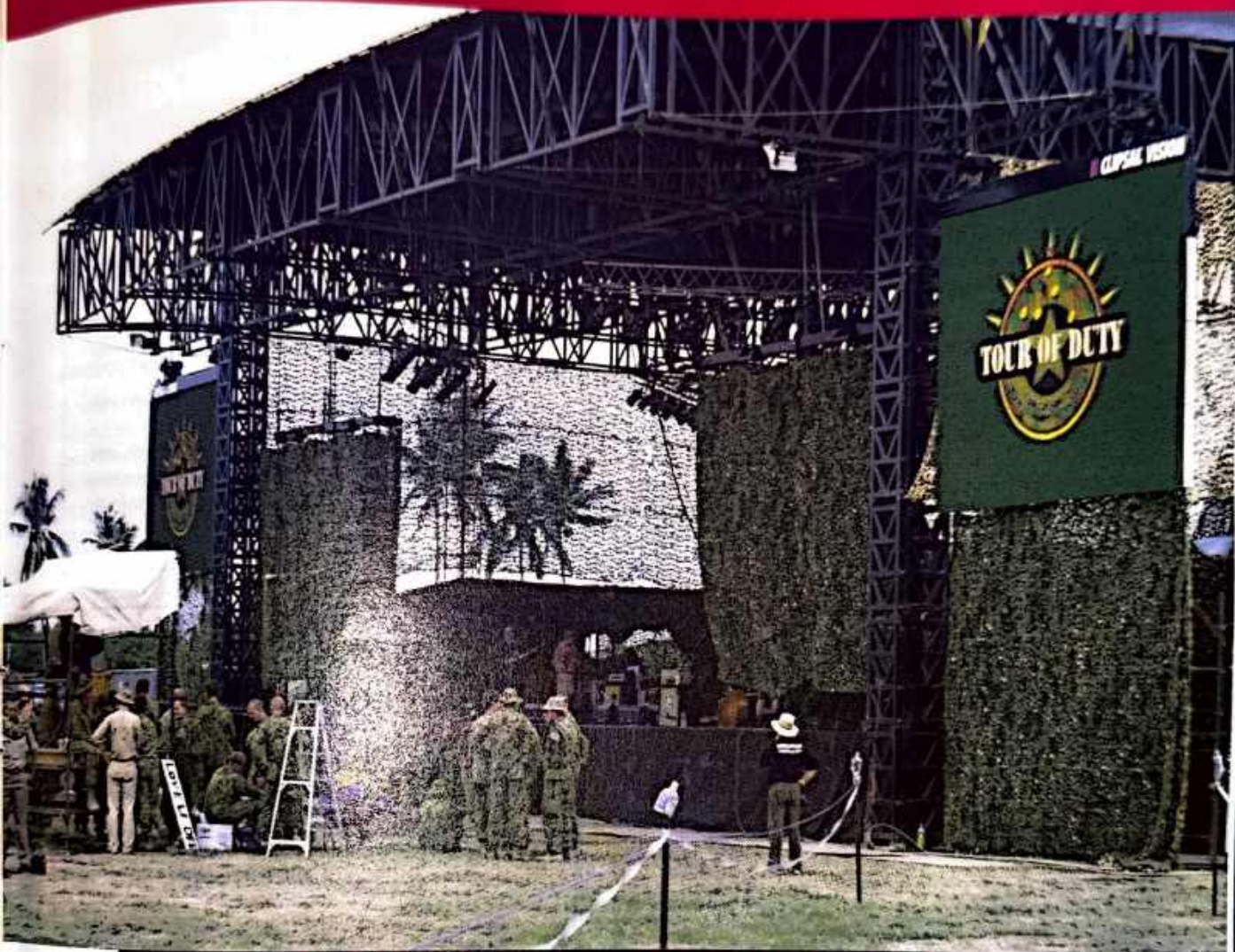


WE KNOW, this pic ran last month too. BUT it is necessary to show YOU what the heck Duncan is talking about!

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

LIVE

PRODUCTION REPORTS



TOUR OF DUTY

Industry puts it on for the troops in Dili

BY CAT FORCER

The Christmas concert for the troops in East Timor was a major production success. Few people watching the live telecast of the show from the comfort of their living rooms would have any idea of the planning that went into the production.

The concert was funded by a number of sponsors including Westfield, Arnotts, Solo, Compaq and Qantas. Australian megaperformer John Farnham, his manager Glen Wheatley and veteran rocker Doc Neeson were responsible for the overall idea of staging the show - and then Glen had to get the sponsors to come to the party.

Artists on the show included John Farnham, Kylie Minogue, Doc Neeson, Gina Jeffreys, Dili Allstars, RMC Band, James Blundell and

The Living End. Production for the show was the responsibility of the same team who did last year's John Farnham tour.

Not only did every bit of equipment from PA boxes to sunscreen have to be shipped over to East Timor, about one hour flying time from the northern Australian capital of Darwin, there was the high possibility of monsoonal rains and cyclones to prepare for. The man in charge of organising this nightmare scenario was Concert CoOrdinator, John Phillips. It was a far cry from his usual role, dealing with known venues and situations. Instead, he was staging a remote event in a potentially hostile territory - and being responsible for the whole thing working!

(please turn the page)

TOUR OF DUTY

INNOCULATIONS

One of the most difficult tasks involved getting 115 personnel inoculated. Each person needed 10 injections, to be administered over four visits. People were scattered all over Australia, some on tour, and also overseas.

John and Production Manager Adrian Smith did a reconnaissance trip to East Timor six weeks prior to the gig.

"It was the first time we got a real idea of what was ahead of us," confided John. "Although you can plan a lot of it in theory, until you've actually seen the site, you don't know what you're up for - even then we weren't too sure because it was the dry season. We only had one shot at the show even if it was pouring with rain or blowing a cyclone."

The threat of bad weather was behind most of John's choices in production particularly the stage which came from Frank Greer of World Stages in Melbourne.

"I needed a stage with weight within itself in case there were strong winds," explained John. "I went for their Hydro System which is a hydraulic system, a hydraulic ram pushes it up and then they put panels in before pushing it up further. I planned on a performing stage size of 40ft x 40ft so I went for an overall stage size of 80ft wide. Another reason I went for the hydro stage is



CREW QUARTERS

East Timor was totally sacked and looted by the Indonesian Military, its Police force, and local hoods and goons in their employ. Basically every window and most roofs were removed from buildings, wells were poisoned, power stations vandalised, wiring ripped from walls.

This building served as crew quarters, with an army water unit parked outside for showers.

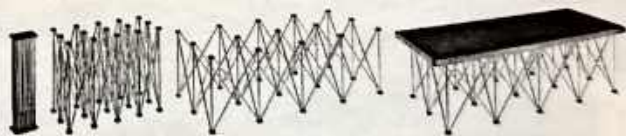
Inside, stretcher beds on steel frames, covered with fly nets, were crowded into each room. The floor was hard, so every movement in each bed created a lot of noise, reducing sleep opportunities for the crew.

(Picture courtesy of Chris Newman)



Dili Concert CoOrdinator John Phillips deplanes from an Australian Airforce Hercules 130 transport aircraft

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because it has a roof with quite a large 'lip' at the front, about 18ft, with another 10ft at the back, so if it did rain there'd be some protection for the crew, artists and gear."

The stage was further secured by digging holes, filling them with cement and then adding brackets with chains attached to each leg - kind of like heavy duty tent pegs. On either side of the stage were 20ft x 20ft tents to house and protect equipment.

The stage was packed into eight containers which went by rail from Melbourne to Alice Springs and then by truck to Darwin. It left two weeks prior to the show date.

"Transport was one of my biggest costs," said John. "Fortunately Federal Rail shipped the containers to Alice Springs for cost price only which was only about \$1000."

The containers went over to Dili on a Perkins Shipping Lines ferry taking up valuable shipping space from the Army, a deal that took John several meetings to secure. Fortunately the show was considered a priority by the Defence Forces.

PRODUCTION

As well as the stage containers there were another four containers housing the Clair Brothers S4 PA boxes and lighting gear from Jands Productions. Also in the containers were tables, chairs, mirrors, fans, a couple of air conditioners, and many smaller items such as cups, water coolers, insect repellent, mops, buckets and sunscreen.

(please turn the page)



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Music Box - Doing it Better

TOUR OF DUTY



"It was all very rushed and you had to think of all these little, fiddly things as well," said John. "You also had to think of them well before hand because if they didn't make the container, they just didn't go."

The S4 speaker system from Jands were chosen by John because he wanted a cabinet that had everything in it from bottom end to top end.

"I felt that it was safest to have the PA system tucked up under the roof rather than half of it in the air and half on the deck," John explained. "We took hand chain hoists rather than electrical chain motors because of space and weight."

It was decided to hold the concert during daylight so a live television link-up could be made to Australia. Consequently the lighting was not a major consideration and saved another couple of containers worth of gear being shipped over.

Meanwhile another truck was on its way from Sydney to Melbourne with all the gear required for rehearsals, mainly monitoring gear and FOH electronics. Melbourne Park kindly donated the Entertainment Centre for three days of rehearsals.

"We really needed production rehearsals although they weren't originally planned," John said. "We set up all the monitoring systems, all the FOH systems and also the broadcast audio systems. The FOH had about 90 audio channels, the monitor system had about 110 channels and the broadcast audio had 90 channels. That's nearly 300 channels of audio to get together, split up, mic up etc."

The broadcast audio was done by Metropolis Audio.

"Basically the broadcast station - Channel 7 - didn't do the audio," said John. "We did all the audio for them so they only had to worry about vision. I don't know

how that all came about but we dealt with it by getting Metropolis Audio in."

After the rehearsals the gear was packed into a semi which raced up to Darwin non-stop. There was no time for the ferry, which took a day to get to East Timor, so the gear was loaded onto seven pallets for transportation via a Hercules aircraft.

PALLETS, PLASTIC AND MEDICAL ALERTS

The two computer controlled generators came in their own 20ft container which, with the other containers, had to be loaded on a pallet and then carefully wrapped in plastic and cling-wrap to seal it. This was because rain was expected in Darwin where the pallet

Broadcast audio for Tour of Duty was done by Metropolis Audio. Here is Doug Brady, in a portable shed, praying the air-con doesn't pack it in! (It sounded pretty good on TV we all thought too, under the circumstances!)





could sit for up to half a day on the runway waiting for a spot on a Hercules.

Peter Waldin, whose company Generator Hire Services of Brisbane supplied the generator truck, travelled as the electrician for the show. For the three days he was in East Timor, a medical team was on alert as he developed appendicitis. However, the show must go on, even if you are clutching your stomach waiting for your appendix to rupture!

It was during rehearsals that John thought it would be a good idea to have some screens to take over. A broadcast crew were already out there with cameras so screens were a logical idea. Despite December being the peak season of the year, Clipsal Vision kindly donated two screens and personnel to the gig. John would like to pay them special thanks as they did the whole gig for absolutely no money. The screens chosen were used for Carols in the Domain in Sydney on the 18th and were available from 3am on the 19th. It was then up to John to work out how to get the screens to Darwin. A truck would not have made it in time taking about 55 hours. However the Army felt the screen was very important as it was going to show footage of the soldiers families in Australia so they, with some difficulty, scheduled a Hercules



from Sydney to Dili. It must be stressed that the Defence Forces couldn't lay on transport at the snap of John's fingers, each transportation requirement took a lot of organising.

The stage builders arrived in Dili on the 15th December, having the stage built within three days. The PA arrived on the 17th with the rest of the gear arriving on the 20th, the day before the concert.

"The guys worked day and night, I don't know how they did it,"

WAVECOM JR.

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TOUR OF DUTY

marvelled John. "I found it hard enough just walking around in that humidity. I'd also like to say that the 17th Battalion, who we used for labour, were the arms and legs of a lot of what we did, they were fantastic. They worked their arses off but they loved it!"

CREW FLY IN

The technical crew arrived on the 19th with the artists and management arriving a day later. The artists decided to visit some of the outer regions to do a few acoustic sets for the soldiers who could not leave their posts. Soldiers in Dili who were on duty at the time of the concert were allowed to watch the sound check.

Most of the concert was played in dry and not too windy weather but the heavens opened towards the finale of the show although spirits were not dampened.

"We had no gear damaged on this production," stated John. "Except for (Jands CEO) Eric Robinson's cardboard boxes for his fans which he's upset about - but I don't think anybody else cares! It's quite amazing when you think we had nearly 200 tonnes of equipment coming from all over Australia to that type of weather and those conditions. People were a bit reluctant to let their gear over to Timor and I had to convince them we'd do all we could to protect it. The Defence Forces gave the gear top priority and made sure all their people knew the gear had to get back in one piece."



Gun on cables (above)

The troops have no safe area for anything, so for the entire deployment must carry their guns everywhere. This means putting them somewhere dry and clean when doing something, so here is a gun on some cables. Haven't seen that before!

Crowd Control (left)

Naturally the locals were VERY interested in what was going on. The crew were touched at how the large numbers of children in Dili interacted with the Australian troops - they have a very high regard for the troops. Amazing, considering that until very recently, military types in uniform terrorised the population for the 25 years that Indonesia unlawfully occupied the territory.

Sweat wrapped (bottom left).

Wayne Rafferty drips as the gear is glad wrapped.

Crew transport (below)

Spot the crew (from left): A Jands audio guy (far left), Glenn Williams (Jands Lighting), Wayne Rafferty (Stage Mech), Barry Woods (Gtr Tech), Grant 'Tosh' Walsh, FOH engineer. Unimogs - a new standard in crew transport. Give us a Tarago anyday!





If it hadn't, I dare say there would have been a few law suits going on because people needed the gear for New Years Eve. It would have been ugly and it was one of the biggest fears in everybody's mind."

John stated that Jands Productions did a very fair price, basically covering their costs, as did Showfreight.

"The work that Showfreight did on the logistics was extremely good," said John. "They kept track of all our containers, pallets and gear making sure it got on all the flights. We got good deals on everything but people still have to get paid.

"The magic thing was the way everybody worked together so well. If a sound guy had finished his job, he'd help elsewhere. Everybody pitched in, not like on a normal tour where you stick to your own area. It's one of the things that made it all possible. It was a good exercise of civilian and defence logistics working together.

"The actual concert went fantastically. There were so many things that could have gone wrong. I had a lot of good people. I picked the people who I thought would be the best for the job. It was very emotional and even now people still have very mixed emotions. To have seen what we did over there, well some people are still trying to handle their thoughts. To see the looks on the faces of the soldiers, East Timorese and the kids, to see what they got out of it made it all worth it."

Getting all the equipment back to Australia could make another story in itself. All the gear had to be thoroughly washed and cleaned prior to leaving Dili, due to strict quarantine regulations. •



FROM THE 'SURVIVAL KIT':

"Consent by Civilian to subject himself to defence force discipline"

You will be required to sign a legal document, Defence Force Discipline Act 1982, putting us under the care, laws and enforcements of the Australian Army. You must obey all instructions and requirements set down by the Military. We will be in secured compound areas and are not permitted to go outside these Military secured areas unless authorised.

ACCESS PASSES

You will be issued with an access pass which must be worn at all times whilst in East Timor. Do not lose this pass as you will not be issued another! Please supply your own lanyard.

PASSPORT and MEDICAL DOCUMENTS

You must carry a valid passport and up to date medical documents for inspection prior to travel to East Timor. No personnel will be permitted to travel without these.

CUSTOMS/QUARANTINE

No alcohol is to be taken in or out of East Timor. You may not bring back into Australia souvenirs (of any kind) from East Timor.

Be prepared to have all clothing thoroughly inspected ie: pockets turned out, cuffs checked etc.. You will be required to

(CONTINUES OVER PAGE)

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TOUR OF DUTY

Tour Personnel

Concert CoOrdinator: **John Phillips**
 Producer/Audio Director: **Ross Fraser**
 Concert CoOrdinator Asst: **Michelle Dundon**
 Production Manager: **Adrian Smith**
 Site CoOrdinator: **Eric Robinson**
 Stage Manager: **Paul Wheatley**
 Production Assistant: **Rose Greig**
 FOH Engineer: **Grant Walsh**
 FOH Engineer (Living End): **Paul Martin**
 Lighting Director: **Chris Newman**
 Monitor Engineer: **John Henderson**
 Audio Tech Chief: **Greg Rosman**
 Audio Techs: **Bob Daniels, Rohan Goss, Aaron Woznicki**
 Lighting Crew Chief: **Glenn Williams**
 Audio OB Engineer: **Doug Brady**
 Audio OB Supervisor: **Brian McMahon**
 Video Screen Techs: **Cam Johnson, Danny Garde, Peter McIntosh**
 Band Crew: **Gary Radbourn, Barry Woods, Frank Iskia, Lindsay Smith**
 Stage Crew: **Frank Greer, Tom Wilkins, Barry Thompson**
 Rigging, Safety officer: **Michael 'Shackles' Kent**
 Staging: **Wayne Rafferty**
 Transport Logistics: **Seamus O'Connor**



Army dudes patch the old Jands analogue dimmer racks, which were brought out of storage for the gig.

SURVIVAL (continued)

have footwear and/or other items that have been exposed to soil inspected.

CLOTHING

No camouflage type clothing of any sort is to be worn. We are not military personnel, do not dress as such.

Due to the threat of disease spread by mosquitos it is highly recommended that full length, loose & light weight clothing is worn at all times. Denim and synthetic is not recommended, cotton fabrics are ideal.

You will not be permitted to travel on Hercules with high heels, open toed shoes or sandals. Flat heeled solid shoes or boots are recommended for travel and whilst in East Timor. The ground will be wet and muddy.

Please take a wide brimmed hat. (This is a must!)

Sunglasses should be worn during the day. If you are taking Malaria tablets your eyes will be especially sensitive.

Please take your own towel as supplies are not available.

SUNSCREEN

Sunscreen should be applied thoroughly. If you are taking Malaria tablets your skin will be especially sensitive.

INSECT REPELLENT

Insect repellent should be applied to your whole person.

HERCULES FLIGHTS

You will be advised of your scheduled departure time. Transfers to and from the Hotel will be organised. You must be prepared to transfer two (2) hours prior to departure time.

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noise level is quite high during flight.

ACCOMMODATION

Accommodation in Dili will be very basic. 4-6 shared rooms without facilities, stretcher beds with mosquito nets. There are no formal showers and the toilets are portable.

Accommodation in Darwin will be at the Carlton Hotel, The Esplanade, Darwin.

WEATHER

The weather in Dili is extremely hot and humid and it is the rainy season. Following instructions regarding clothing, sunscreen etc.. will ensure you are as comfortable as possible. Please ensure you drink plenty of fluids.

MOBILE TELEPHONES

There is mobile telephone service in Dili via the Australian Telstra Mobilenet: service. Only Telstra Mobilenet customers will have access. Dial as per an interstate call.

a flight out of Darwin before Christmas.

There will be a nominated point of contact person in each group who will be responsible for passing on any information regarding amended flight times to the rest of the group. The contact person should also have a Military Movement Order which confirms the groups authority to travel. Those of you nominated as a point of contact will be advised.

The Hercules we are travelling on are not commercial flights.

As such luggage capacity is greatly reduced. Each passenger will be allowed one hand luggage sized bag ONLY. As most of you will not be returning to the hotel in Darwin from Dili you will not be able to store excess luggage. Please make do with the one bag only.

If carrying toiletries, please ensure that each item has a securely fastened lid.

Cigarette lighters, including Zippo's, are NOT permitted on the Hercules.

Boxed safety matches are permitted, however book matches (the type which are usually complimentary) are not permitted.

Ear plugs will be supplied. If you have ear muffs you are encouraged to bring them as the

The Army Band get down. The concert featured each act doing a couple of numbers, and some combined numbers. It was a VERY busy show schedule



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CATS



COMING TO A TOWN NEAR YOU

If you can't bring the people to the show, then why not bring the show to the people? That's exactly what The Really Useful Company, in conjunction with the Ross Mollison Group, have done with the musical *Cats*.

The two-year tour of *Cats* is a world first, combining traditional musical theatre with the atmosphere of a circus to produce *Cats Run Away to the Circus*. Set in a custom-built, multi-million dollar Big Top tent, this version of *Cats* will travel to 73 cities around Australia during the next two years. Ninety vehicles will tour with the production including 17 semi trailers. Even in Sydney, the show will play in five different locations.

"We wanted to develop a show that was suitable to go to parts of Australia where shows never go because there aren't suitable theatres," said Tim McFarlane, Managing Director of The Really Useful Company. "What theatres there are hold only 1000 people, or smaller, and have limited stage facilities. They're certainly not big enough to accommodate a show like *Cats*. If you're going to take a show to regional Australia, you have to take the theatre with you and what better way to do that than with a Big Top.

"We're already working on the assumption that if there's an ongoing demand for it around Australia, this will be the first of other shows. We may even replicate the tent so we have a second touring around."

Tim admitted it was a major financial commitment to put the show on the road and he expects it to take about 45-50 weeks just to break even.

"But that includes all the costs of the infra-structure so, once we've gone through this tour, we're going to own a lot of the infra-structure we can use on subsequent tours."

Whilst touring, show will close on a Sunday afternoon and

opening on the following Wednesday night, providing the travel distance is no more than 200km.

"It's a very tight schedule and huge logistical exercise to move something of this scale and quality in that time frame," said Tim.

Design and construction of the Big Top and the sets is a multi-state and international affair.

The Big Top is totally black, nearly 27 metres in height, is air conditioned and seat 2000 people. There is 6500 metres of fabric for the Big Top and surrounding tent structures in the Cats village.

150 tent pegs anchor the Big Top, some up to 2.5m long, and 8 kilometres of wire rope and strap is used to erect all the tents in the village. The Big Top was constructed by a New Zealand company called Baytex with the king poles made in Brisbane. The tent fabric comes from Italy, the seating was made in Brisbane and the sets at the Adelaide Festival Centre. Automation was by APC of Adelaide.

"The Big Top is an absolutely magical environment to present *Cats* in," said Tim. "In many ways, it's taking *Cats* back to what it was intended to be - with the whole theatre intended to be an environment for the show. We designed the tent with Baytex, the design of the show dictated things like the distance between the king poles. And that influenced other elements of the overall design of the tent itself."

A thrust stage is used so the audience sits around 2100 of the stage. The bulk of the set unfolds from the back of a semi trailer at the push of a button.

"One of the major effects of *Cats* is the giant tyre which, along with its hydraulics, is permanently mounted on the back of a semi trailer," explained Tim. "The set is mounted on a series of gull wings which, when you get in the theatre, fold progressively out forming the bulk of the show deck."

Other parts of the set are scaffolded to the side of the stage, giving a 40m width of scenery. The set itself, goes right out into the auditorium with ramps and a ringroad running through the middle of the auditorium.

Associate Lighting Designer for the show is Richard Pacholski, the original lighting designer was David Hersey.



Tim McFarlane and Richard Pacholski



"I've been doing *Cats* for quite a while now and this one is quite a big diversion from previous tours," he said. "In the past it's been quite a conventional lighting rig but this was a chance to utilise all the new technology particularly moving lights. The show does lend itself to that but it's useful for the quick turnarounds we'll have to do."

Apart from one Clay Paky Stage Zoom for special effects, all the moving lights are from Martin - MAC500's and MAC600's - rented from Chameleon. Custom colour and gobo wheels were designed.

"The Martin gear has been fantastic and it's been through some harsh elements already," said Richard. "We've just done Darwin where we were waiting for the airconditioning to kick in and the equipment was running very hot, some units were reading over 90°C internally. It was a lot hotter than what we expected up in the truss! Direct sunlight on the black fabric of the Big Top radiates a lot of heat."

Added to the 35 moving lights are about 80 conventional lamps, which is about half the number of units in previous tours. A Strand 520 control desk is used, 'a rock solid, reliable, theatre desk great for moving lights' described Richard. A small amount of dry ice and smoke is used and is quite stable in the air conditioning.

"The great thing about taking the venue with you, is that you can work on any problems within the venue and, once they're right, they're right all the way through!" said Richard.

The *Cats* Village is powered by four generators, each weighing 5 tons and delivering 1100 KVA of power.

"The most important element of the rigging is the four king poles and of that, we designed a truss system to accommodate all the lighting design positions as well as the scenic elements such as the pod," described Richard. "The trussing also has a lot of the circus rigging off it as well accommodating a cloud swing system and a couple of trapezes. The truss system was a collective design, built up in Brisbane. It's quite long sections, 8m, so we only have a small amount of joins to put together, saves time. We incorporated all the cabling for the lighting in the truss, living in cable trays running down the side of the truss. Rigging wise, it's very quick.

"We also made the trussing different sizes so it all sat within each other, the whole footprint of the truss is about half its overall size. We had tight restrictions as to how much room we had in the truck."

• *Cat (nothing-to-do-with-show) Forcer*



AUDIO for CATS

When Ross Mollison and the Really Useful Company decided to send the latest incarnation of the Andrew Lloyd-Webber Musical *Cats*, they turned to System Sound to continue their association with the show from previous productions. Whilst the Producers were aware of the unique requirements of the circus tent touring format, they were admirably adamant that this Tour to many towns and cities previously unable to see such a show would not be saddled with an artistically second-rate product. No reduction in the artistic or technical quality of the show would be accepted. In the case of Sound, this included maintaining the legendary dynamic range of the show, it's complex and stylistically varied Orchestration, and the Surround sound effects. Oh, and it has to be able to move towns in about 3 days...

When Sound Designer Peter Grubb looked at these requirements, it was obvious that the system would be at least as complex as the previous "indoor" touring version, and any efficiencies in touring speed would have to be achieved by modularising the system. His first decision was to use only Self Powered series Meyer speakers. This eliminated all the Amp racks and heavy speaker cabling. In fact the only amplifier in the system is a 100v line Audio Telex unit feeding the paging speakers backstage. The Speaker system is split into three parts. The Band reinforcement is via a pair of flown clusters, one on each side of stage behind the back-cloth. These each have two Meyer CQ-1s, a Meyer DS4P low-mid box, and an associated PSW4 Sub. The Vocal System comprises 5 main hangs of a UPA-1P with a UPM-1P downfill, and an associated ring of UPM-1P Frontfill speakers mounted on the front lip of the thrust stage. The Surround Effects speaker system comprises 12 Mackie SRM450 powered speakers, hanging in a ring under the rear of the seating, facing in.

As there would not be sufficient time to re-patch the complex FOH mix setup (and you wouldn't want to do it when moving every week, anyway), System built the entire Mix area into a custom designed pallet type Mix Unit. This 8' x 8' box enables the entire setup to travel patched and ready to go. It is simply forked out of the side of the Sound truck, and lifted onto supporting beams above one of the entrance ways. The cover is removed, and 3 multipins and a mains feed are plugged in, and that's all folks. All up it weighs about 800kg. In it, Head Operator David Greasley commands a 32channel PM4000 console with System's custom Automation package coupled to a Promix 01v mixer handling keyboards and track mixing, the usual selection of effects and processing, and a system of 4 LCS Supernova digital sound control units which provide individual matrixing, panning, delay and EQ for every speaker in the rig. Any mic, instrument or sound effect (from MiniDisc) can be sent at any level to any speaker, and dynamic moving pans can be similarly created. This is a level of complexity greater than any previous production of *Cats*, and proof that this is not a "Cut Down" production for the Bush!

continued over



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AUDIO for CATS

continued from previous page

All the cabling from this unit runs backstage to the Radio & Distro trolley, a single unit on wheels that houses the Radio mic receivers, the Radio operator, David Tonion's work bench, and the racks required to distribute power and signal to all the speakers. From here a set of cables run outside the rear of the tent to the Sound truck, a 42' Pan which has the Band Room built into the front third of the trailer, the remainder carrying the system when on the road, and used as a workshop when parked.

The *Cats* band has always been offstage in a band room for historical reasons to do with the original London venue, and also so as not to spoil the illusion created by the set being scaled up to make the performers "Cat Size". For this wide-ranging tour, the producers came to the decision that touring the entire complement of 15 musicians was out of the question, and they were not prepared to settle for a small number of musicians playing an entirely synthesized version of the orchestration, so Production Musical Supervisor Peter Casey developed a scheme where a core band of two Keyboard players (one of whom is the Music Director), Bass and Drums would play an expanded version of the score, augmented in the more heavily orchestrated numbers by a recorded track of strings, winds and brass recorded using previous *Cats* band members. The recording was prepared & mixed by



noted scoring mixer Christo Curtis, who even brought his Soundscape multitrack HD system into the Tent in Darwin to perform balance touch-ups in the actual acoustic space.

In their acoustically isolated room in the Sound truck, the Band instruments, keyboards and the Roland electronic Drum Kit can stay set up as the show moves, further reducing setup time at each stop. A Band rack houses the Samplers, a Mackie 1604VLZ mixer deriving foldback mixes, and the Akai DR8 playback devices. The whole system is on a UPS in case the generator providing sound power has a 'moment'. Each musician has their own Mackie 1202VLZ mixer driving a pair of Headphones for foldback.

continued Page 77

Why Cats got bad sound reviews - and why it shouldn't have

'Tis a joyful event is a *Cats* show. The touring tent city is a real ambience setter, a feeling of some excitement is created when you first set eyes on the uniform sea of black trucks and the multi-peaked marquee. Even the purple logo of the major sponsor, Cadbury, is themed into the visuals, a line of tall flags flying either side of the entry.

The reviews were partially unkind. Acknowledging the superb lighting (hats off to Richard Pacholski) and the stunning production design (John Napier), the audio was panned from start to finish by several newspaper reviewers, one of whom also sniped at the 'pre-recorded orchestra'.

First, the show itself is *Cats*. For affirmation that this is one of the most successful stage musicals of all time, just look at the faces of the audience during the opening and at intermission. Children in particular are mesmerised. The tent is very comfortable too, with regular padded seats and some other comfort features - one of which is the root of the audio problem.

The sound worked fine on night four, when I sat in Row F, seat 16. By design, the sound system has partially escaped the number one problem of a tent show, because the circle of five Meyer UPA's is rigged off a mother grid, allowing the speakers to be placed where they should be. A small front fill box is underhung from each, and there appear to be small fill boxes discretely around the front of the stage.

So what was wrong with the opening night? I wasn't there, but I think I know the answer. Outside, behind OP, is an air conditioning truck containing what sounds like a 400 horsepower Caterpillar diesel engine that runs at 2000 rpm. Allied with the resulting rush of very cold air (we were shivering in there) is a nice 300hz truck engine soundtrack that accompanies the show. "Memories, all alone in the moonlight..... thrumm

thrumm thrumm". Get the idea?

The machine noise was evidently worse in Sydney due to the shape of the surrounding buildings, bouncing it back into the tent. At the previews in the Northern Territory it was not an issue.

At the opening night, the audio tried to get on top of the ambient noise, which closed up the dynamic range. There is also always a feedback limit with a lot of open lapel microphones on a lot of rapidly moving performers.

Over near the middle of the tent I spot Syntec boss Bob Sloss. "It works for me", he says of the show. "I was only conscious of the actual performance, so the technical elements were fine." He wasn't conscious of the noise from the air conditioning plant, but then again he was further away from it than I was.

Hopefully the show will do well and make its scheduled tour of remote towns (and suburbs) around the country. Take the family - it's worth it!

• Julius Grafton

Ambient noise: whose problem?

I would imagine that sound companies are now quickly reviewing their terms of tender to exclude liability for outside noise. We all assume that our work will be done in a venue with little ambient noise - but when it does spring up it totally changes the dynamic of the show.

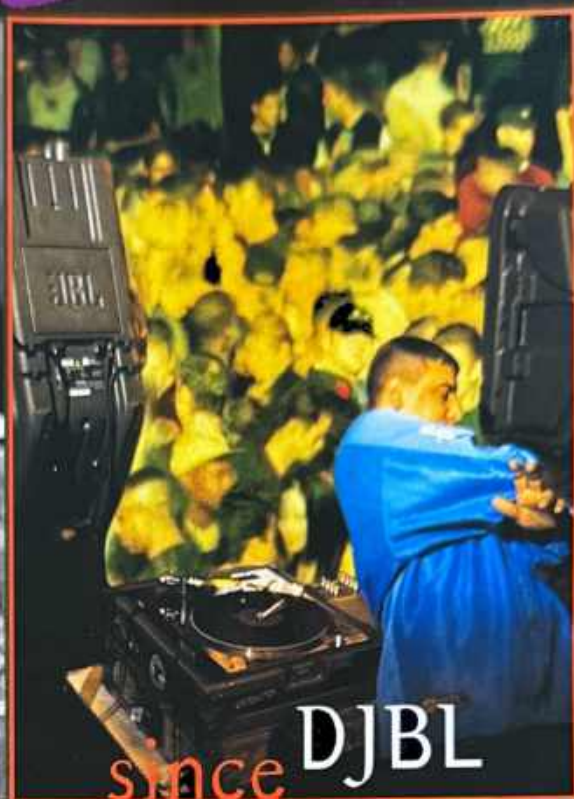
Would you accept responsibility for your sound design if outside noise intruded into your show? Likely you'd blame the vendor of the outside noise product, easier if the same show producer is paying them as well.

Then who is responsible for the abnormal reflection of the outside noise into the venue - like what happened at the Showing in Sydney?

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QUEENSLIFFE MUSIC FESTIVAL

lighting a bush bash



Queenscliff is a small town in Queensland. The Queenscliff Music Festival is only in its third year. Yet, few other regional festivals have had the initiative to present a standard of production that was evident at the recently held festival. The festival does not have much money, yet the patrons have benefited from a standard of production that they would not ordinarily expect to find in a small Music Festival.

Steven George is the Production Manager and LD at the Festival. Steven has worked on many shows over several years as lighting designer, however, when the chance arose to become involved in his own home town's festival, Steven immediately got on board from the first day. This third year, a grant was obtained which was primarily to be used for lighting.

"We wanted to enhance the atmosphere of the new Festival Compound," said Steven. "Everyone who saw it could not understand how the new location could work. A project was developed where by a lightshow I had designed would run continuously through the night, projecting images and colour on the two main venues as well as the general area. The lightshow would run to a soundscape which played continuously and which consisted of sounds relating to Queenscliff."

For the Outdoor lighting system project, Steven chose 8 Cyberlights and 16 Martin Pro 400's. Additional to this there were fresnels and Q1's. The lighting was rigged on to five vertical box truss towers with clear festoons strung between. For daytime aesthetics, the box trusses were decorated with sailcloth which were custom made for the job.

"Box truss is certainly more attractive than scaffold, however, there is always the weatherproofing issue," said Steven. "It rained on Friday morning, which sent the lighting guys into a bit of a tarping frenzy which proved quite difficult with more than 6 fixtures per truss however, luckily the rest of the weekend was HOT. Hopefully someone remembers to book that kind of weather next year."

"The Cyberlights were fantastic as usual. We were lucky in that they just fit inside the box truss that we were using with a little

angling. This helped distribute the weight a little better and made tarping a breeze. One of the buildings I was lighting was made from white painted galvanised tin. This was a great surface to put light onto. Even the Pro 400's were coming up good."

For the opening of the Festival, Steven put on a bit of a light show to some techno music. The standard strobing shutters and spinning gobos did the trick for the 3-minute piece.

The idea was for people to watch the outdoor light show and then head into the main stage for more lights (and performers). The Main Stage had 8 x Technobeams, 6 Colour Scrollers on Silhouettes as well as cans, Groundrows, and truss spot seats. The lighting here was rigged on Vertical and horizontal Tri Truss. Front wash was on Box truss and motors. Being a circus Tent and having the stage at one end causes problems with rear truss height. With the stage moved away from the wall, they were able to get about 3 meters between the stage and the roof. This was not ideal but was high enough. Haze was taken care of by a Le Maître G300.

"The unit has great output which is variable up to warp speed, however, slow hazing is a bit of a pain unless you can put up with the periodic "Pfffssss" that it makes every other second," said Steven. "Everything was controlled by a Jands Hog 600 inside and a 250 outside. I find that people usually have bad things to say about the Jands Hog's, but I disagree. I have been using them for a few years now and the software has come a long way to fix a lot of problems."

The festival had three temporary power boxes made to supply power to the event. These are hooked up each year by Powerco which Steven describes as a great investment.

"Generators are quite expensive to hire and run, and are not likely to be an item purchasable by a regional festival. None the less, we have a generator on standby all of the time. The power boxes were all made to supply 80 amps per phase each. One of them had to be upgraded to 100 amps per phase to cope with the lighting this year."

Lighting and staging for the entire festival was handled by Arena Production Services who are based in Geelong.

"APS have been fantastic!" enthused Steven. "The event would probably not have been possible to the extent that it was without the help of manager Scott Parker. Scott's passion and dedication to lighting is truly paramount. Nothing has been a problem. APS became a Gold Sponsor of the Queenscliff Music Festival to help with costs, and still when we went over budget after that, Scott would say "I'll deal with it".

• Cat Forcer



LIVE

AUDIO for CATS

continued from page 74

The effect for a visitor to the band room during the show is bizarre, with the only sound being the thwack of drumsticks on the V-Drum pads, and the calm Count-ins from the MD. A large Video monitor showing a stage picture keeps him in touch with the cast, and a camera feeds his image to monitors visible from the stage so the cast see his conducting.

Whilst Sound Designer Peter Grubb found the tent provided a surprisingly benign acoustic for the sound system to work in (with the exception of requiring a bit more bass level than a Theatre), the major difference between the tent and a brick-and-mortar venue is its lack of isolation to outside noise. The two massive Air Handling units situated just outside the rear of the tent, required to keep the temperature inside a Black tent under control in even moderate outside temperatures, along with the associated Generators, significantly contribute to the noise floor inside. The multiple sources of this noise create an uneven noise floor across the seating, with level and frequency "beating" changing in even adjacent seats. As parts of the show are intended to be extremely subtle in sound level, the ambient noise floor in the venue has been the source of some adverse comment. As all previous venues for the show were open sports grounds, the amount of noise making it inside the tent was deemed to be with in reason. In Sydney, however, the enclosed nature of the area near the Air Handling and Generator trucks, featuring a big wall nearby as a reflector, has dramatically increased the problem. The Producers and their consultants are investigating various solutions to the problem. With the exception of this, though, the



Producers have succeeded in their aim to provide the same quality Theatrical experience available in a big-city theatre to a vast new audience without being tied to the few suitable venues scattered around the rim of this vast Continent.

• Nick Reich, System Sound Pty Ltd

Sound Designer *Peter Grubb* Lighting Design Associate *Richard Pacholski* Scenic Design Associate *Lats Hoffman* Assistant Sound Designer *Nicholas Reich* Technical Director *Michael Auckland* Production Manager *David Filshie* Moving Light Programmer *Hugh Hamilton* Touring Technical Manager *Malcolm Lamb* Stage Manager *Mary Benn* Head Mechanist *Eric Duffy* Deputy Head Mechanist *John Shedden* Mechanists and Riggers *Mik Becker, John Fairhall, Matt Norman* Head Electrician *Ed Cymerman* Deputy Head Electrician *Hugh Calton* Touring Electrician/Automation Operator *Chris Younger* Touring Electricians/Spot Operators *Rob Cicala, Adam Jackson* Head Sound Tech *David Greasley* Deputy Head Sound Tech *David Tonion*

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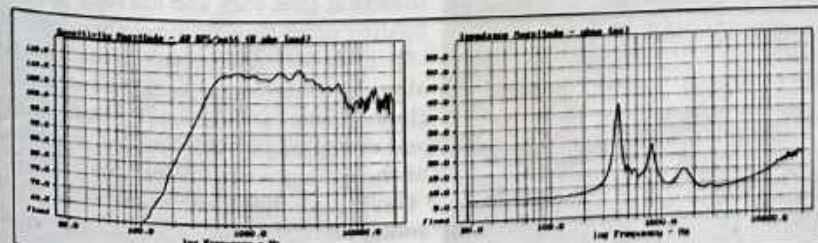
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LIVE



Taxiride charging up the Ranks

Love them or hate them, you can't ignore the phenomenal success of Aussie boy-band *Taxiride*. Debuting at number 1 on the charts with their first album, the boys have also created a buzz on the live scene by snaring the 18 - 35 year old market.

David Reeves describes himself as *Taxiride*'s tour manager, FOH engineer and drinking partner. He also supplies all their touring audio gear out of his Melbourne company Sound Solution Australia.

"You couldn't hope to work with a better bunch of guys, they're fantastic - I really hope things keep going the way they're going for them. It's a bit like standing on an elevator at the moment."

Currently on tour with the band throughout Victoria and New South Wales, and with another overseas tour of New Zealand, Europe, Japan and America not too far away, David says things couldn't be better for *Taxiride*.

For the current shows David describes the touring PA as an unusual combination of Meyer MSL3s and new Martin WSX subs powered off QSC amps using an Omni driveprocessor.

"It was a little different but the outcome was exactly what we wanted so everyone was happy.

"I use a PM3000 mixer, nothing too flash, it's a nice desk and an easy desk to operate, and you can get it up the stairs...just. The only thing in the rack that is a little different is that I use all TC effects, so I use the new M3000 reverb, an M2000 and the good old 2290 delay which everyone still uses. Nothing too clever there, just good honest stuff."

David explains *Taxiride* have had an endorsement deal with Sennheiser for some time now so microphones are never a problem on tour.

"We use all the latest range of Sennheiser Evolution series of Wireless microphones and the new 500 series mics, and pretty much every mic on stage is Sennheiser these days from the kit mics to all the guitars, so it's Sennheiser land!

"We're very happy with it - it has worked out really well.

"And the boys are just about to try out the Evolution In-ear system, so it could be very

interesting because all the guitars and going to be wireless, and the mics are wireless, and then wireless in-ear as well! It will be kind of like having a radio sub-station! We just haven't had time to rehearse with the in-ear because when they're not rehearsing and doing gigs they're in radio stations, so it's pretty hectic trying to find a solid week of rehearsal to really try out the system."

Whereas on the album the four band members played all the additional instruments, for the live shows they use an additional bass player, keyboard player and a drummer in the backline. At one count, Stage Tech Andy Patterson was looking after fourteen guitars each show.

"Trying to transpose the album into a live show has been an interesting equation because we normally have something like three electric guitars, acoustic guitar, drums, bass and keyboards all going at the same time, and then you've got to poke a four part vocal harmony over the top of that, so it gets fairly interesting."

Lighting Designer for the *Taxiride* tour is Dave Jackson from Phaseshift Productions. For Dave, the shows have been a great opportunity to try out his new baby - an

Avolite Pearl console.

"It went really well considering I only had one weekend to play with it before we left on the tour. But by then I'd nailed what I needed it to do. I'm still learning though. Everytime I use it I find something new on it which is pretty cool."

Phaseshift supplied six MAC 250s and four Mac 600s, as well as five Molefays and four Selecon Acclaims for the local tour.

Dave says his design for the shows is more theatrical than rock and roll with more static lighting states than movement from the MACs.

"It isn't dark and moody, although I probably do use a lot of Congo Blue and 172 (Lagoon Blue) which is more of a lighter blue, and of course 106 Primary Red which is one of the main colours I like to use."

Dave says the four MAC 600s provide enough wash for the stage and with the MAC 250s as well he has plenty of options by

continued over



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TAXIRIDE

continued from previous page

staggering them around the stage on speaker stacks and cases.

And for specials, Dave uses some actual taxi cab lights which he rewired with transformers so he can run them in a chase or individually during parts of the show.

Dave's secret weapon on these shows is the molefays which he says he probably uses more than most people usually do in a show, relying on them for silhouette effects which have become a fairly big part of the look of the shows.

"I have the hazer on full at the start of the night before the guys come on, and they come on to a really long chord from the keyboard in darkness. I have three molefays on the floor behind

the guys so it uplifts them and they come on in a silhouette. It looks really good"

And without much programming time, Dave says the Pearl has worked beautifully as a live console giving him lots of time-saving shortcuts when he needs them.

"I have most of my static positions pre-programmed and then I use a

lot of palettes and movements during the show, the rest of it is done on the fly. Most of the songs I have pre-programmed positions for set focuses and then I just re-edit. But the Pearl is great for doing re-editing because I do my main positions across the board and then it automatically updates every scene so it just saves so much time. We are a bit short numbered with crew so it doesn't leave a lot of time for programming but the Pearl is great for that."

• Mandy Jones



SHOWS WE'VE SEEN LATELY

A Punter's Perspective

THE SOUND OF MUSIC

When I was a child, I insisted on seeing *The Sound of Music* seven times and my rendition of *Edelweiss* was my one and only party piece. After a few gins, it still is. However, at the ripe old age of ahem, it wasn't an experience I was particularly looking forward to but I have to say it was one of the most enjoyable theatre experiences I've had since that back-row incident we don't discuss any more.

Playing at Sydney's Lyric Theatre, *The Sound of Music* is produced by Sports & Entertainment Ltd and The Gordon/Frost Organisation. Original a Broadway hit, the production is directed by Susan Schulman.

The most striking component of the musical is the stunning, ingenious set

design by Heidi Ettinger (an appropriate alpine name). Soft colours, semi-transparent scrims framing the stage in a key-hole effect, beautiful skies lit up with lightening and most effective of all - the reconstruction of the Abbey. With a clever use of perspective, the cloisters seem so real. Stained glass windows add to the ethereal state. The elegance and softness of the scenery made me guess the designer had to be a woman. It's difficult to describe the aesthetics of the set design, my advice is to see it and judge for yourself.

The scenery was constructed by the Adelaide Festival Centre Trust who also took care of the engineering and automation used on the show. The set changes were smooth and non-obstructive. Scenic art was done by the Queensland Performing Arts Trust as well as Scenic Studios in Melbourne. Technical director was Brian Downie.

Complimenting the sets was a subtle and harmonious lighting design by Paul Gallo. Using gear supplied by Bytecraft, Trudy Dalgleish re-created his ideas for the Australian tour. The use of non-technical lighting such as candelabras and torches was just as effective, maybe there's a lesson there.

Sound design was by those theatre veterans System Sound with John Scandrett at the helm. Again, the sound was faultless. I liked the 'bad sound' effect put on the 1930's microphone used in the 'concert' set.

The cast excelled themselves and appeared to be really enjoying the show. Lisa McCune is still Maggie Doyle (sometimes it was like Maggie Doyle playing Maria Rainer) and I think it'll be a long time before she shakes that ghost away. It was a surprise to hear her sing so well, however she is so popular I think the audience would have forgiven her anything. John Waters played Captain von Trapp well although his voice was a bit shaky and Bert Newton was an excellent, camp Max Detweiler. The von Trapp children were extremely good, not one of them came across as sickly-sweet, vomit-inducing stage-brats.

Go on treat your mum or Auntie, you never know, you might enjoy yourself.

• Cat Forcer



Personnel

FOH Engineer/Tour Manager Dave Reeves Lighting Designer/Operator Dave Jackson Monitors Engineer Tony Shanahan Stage Technician Andy Patterson



REPUTATIONS ABROAD

Currently on tour in the States is Cher with a lavish production designed by Patrick Woodroffe and Mark Fisher. An article written by Steve Moles in LSI magazine offered the following quote..

"Since coming out of rehearsals, the show has been run by Jim 'Jack' Straw. A native of Australia, and survivor of the Eric Robinson commando school of roadie-hood, Straw has worked with Woodroffe before, notably on Michael Flatleys' Lord of the Dance."

How reputations travel! Expect to see Cher in Australia later in the year.

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The fifth Entech tradeshow will be teaming with new products. High profile products on show include the new Vari-lite fixtures for retail, MiniMAC's, LSD Icon M and the award-winning Robert Juliat Cyrano followspot.

Detailed in this month's lighting section are a few of the new products which will be on show in Australia for the first time. However, expect many surprises at Entech, as distributors are still confirming products to be on display.

Entech 2000 will see the birth of Club Light, a place which lighting designers, technicians, distributors and manufacturers can hang out and mingle.

Club Light will also host the following semi-

inars: Dimmer Shootout; Basic Power Distribution; Olympics/Paralympics Ceremonies: Opening & Closing - what kind of animal are they?; 1K Fresnel Shootout; Control Technology: Protocols & Technologies; and Moving Head Washlight Shootout.

Every day in Club Light there will be Lighting Control Desk Presentations. So if you want to see demonstrations on the major brands - Avolites, Strand, ETC, Compulite, Martin, Jands, Colortran and High End - this is the place to be.

Vari-Lite sell Australian inventory

Jands restructure ahead of new Vari-Lite sales push

Vari-Lite have sold their local inventory to Jands Production Services, ahead of introduction of new moving lights available for general sale. The Australian Vari-Lite operation was the last independent Vari-Lite office worldwide, and operated on a rental basis with fixtures owned by Vari-Lite. Jands now become one of the only outside owners of Vari-Lite's.

The move came ahead of the launch next month at ENTECH of new Vari-Lite luminaires which are available for outright purchase from Jands Electronics. Vari-Lite have signalled an aggressive new push to gain sales of moving lights for the first time.

Jands commenced renting Vari-Lite automated lighting into the Australian market in 1986. Vari-Lite say "Jands will continue to meet the Vari-Lite rental needs of the Australian and New Zealand markets, and provide the same level of service and support to customers that would prefer to purchase Vari-Lite equipment".

NEW DMX STANDARDS FORECAST

A new standard for DMX is looming, and there are some significant changes being suggested. DMX is going to be with us for some years yet, so the changes that ESTA (Entertainment Services and Technology Association) have suggested are going to affect all of us that work with lighting data. We have compiled a brief overview of the draft, starting on page 98.

INSIDE LIGHTING



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DON'T MISS IT

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A FISHY TALE
WINNING LASER SHOW

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SYDNEY OPERA
HOUSE LIT UP

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DMX HEADS FOR A
REMAKE
AN INDEPTH LOOK

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MELBOURNE TOWN
HALL TRANSFORMED

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ESTA FOG REVIEW

page 103

ENTECH PREVIEW

JANDS ELECTRONICS - STAND i2

One of the products I'm sure everyone will be keen to see at Entech is the long-awaited line of first-ever direct sales luminaires from **Vari-Lite**. Although feedback from punters at the recent LDI'99 was rather lukewarm, make your own mind up by visiting the Jands stand.

Vari-Lite plans six configurations of the VL2400 Series wash luminaire with lamp sources including 1200W and 1000W incandescent or 1200W and 625W arc versions with smooth-timed crossfades and faster colour changes.

The compact and lightweight VL2201 spot luminaire is based on Vari-Lite's VL6B spot luminaire, with 3:1 zoom optics, and rotating gobos.

Both the VL2400 Series wash luminaires and the VL2201 spot luminaire are operable through the Vari*Lite Virtuoso control consoles, as well as DMX-512 standard protocol consoles. Each features resident lamp power supplies and associated electronics within the luminaire, with virtually silent operation ideal for use in theatres, churches and television productions.

Also of great interest on the Jands stand will be several new products from ETC including the

award winning Source Four PARnel, which introduces a new category of fixture to the lighting world. With its patent-pending wave lens design and easy focusing knob, the fixture lets the user quickly spot or flood like a Fresnel - accessing a smooth, soft, symmetrical field with a range of 25 to 45°.

Architectural space can take advantage of the lighting punch and long throws of a theatrical spotlight with the new Source

Four HID, a high-intensity discharge fixture with a 9,000-hour lamp. It offers the level of performance of a 2,000-hour 575W Source Four spotlight, and boasts all of its features: cool beam, excellent imaging, crisp pattern projection, and bright, even field.

On show for the first time in Australia will be the CE approved ETC Unison architectural lighting control system. At the heart of the Unison system is a control rack housing the central processor with battery back-up memory for storage of all system parameters and programs, and an integral floppy disk drive. The rack also provides network connection to wall stations, PCs for on-line control and other Unison racks. Output is via a single DMX-512 data stream to dimmers and a DMX-512 input is also provided

with powerful supporting programming options.

The control station is available in a range of finishes with button, fader, infrared and LCD touch screen stations to suit any application.

Any button or fader can be configured for virtually any function including preset selection, room combine and macro selection. An integral astronomical time clock provides a variety of programming options, and interface stations offer integration with AV, security and building management systems.

From Jands themselves is a new range of Event 4 consoles which combine the simplicity of two preset lighting consoles with a powerful palette-based moving fixture and scroller controller. Designed to control a combination of up to 20 moving lights and 80 colour scrollers as well as conventional lights, the Event 416 offers 512 control channels with the familiar Event operating procedures. Three parameter wheels and a 20 memory palette for each parameter type (focus, colour and beam) ensure easy programming. Additional features include 36 x 2 preset fader channels and 16 assign masters, single or double fader crossfade stacks, parameter masking in memories and chases, manual control of fixture parameters, cue linking, simplified patching, timed crossfade in 0.1 second increments and MIDI control. The Event 408 offers 350 control channels, 24 x 2 scene presets and eight assign masters.

Jands Electronics +61 2 9582 0909.



NEWS

TECHNICAL ART SOLUTIONS

Technical Art Solutions is a new technical service company providing both expertise in repairs and manufacturing work, and expert consultancy for technically demanding projects.

The man behind the company is Dan Ditman who recently moved to Australia from Europe. Specialising in repairs to a variety of equipment used in the entertainment industry, Dan maintains a number of useful contacts in Europe allowing him access to many hard to get spares and expert technical advice. He has also completed nu-

merous manufacturer's training courses run by European and North American manufacturers.

Call Dan on +61 3 9467 8772.

STAR HAZERS

The LeMaitre STAR Hazer continues to be popular with the nightclub market, with Phaseshift Productions supplying Melbourne's Mercury Lounge with a LeMaitre STAR Hazer Pro to replace their DF-50. Phaseshift Productions are also supplying LeMaitre STAR Hazers to the new nightclub venue opening at the new Docklands Colonial Stadium.

Distributed by ULA 1800-648-111.

ENTECH PREVIEW

wysiwyg SOFTWARE

All Entech 2000 brochures at the show will carry a cover CD containing the demo version of this award-winning suite of lighting design software, featuring:

wysipaper Your free copy of this fully functioning paper-work module for your lighting designs. This software is available free to all lighting personnel worldwide, allowing quick e-mail communication of files between personnel, rental companies and venues. WYSIPAPER accepts information from the extensive fixture and symbol libraries, and automatically generates detailed schedules and data lists for you. Colour cut lists, instrument counts, patches, weight loadings and many more, you can even build your own custom reports.

wysicad A viewer and demo version of this 2D and 3D lighting design program, (print and save commands are disabled). WYSICAD is fast becoming one of the industry standard lighting design software packages; featuring simultaneous 2D and 3D environments, extensive fixture and symbol libraries, DWG and DXF importation, all of the WYSIPAPER tools, and much more.

Installation Instructions

This software only functions on Windows 95, 98 and NT platforms. Your CD should auto-run when inserted into the CD-ROM Drive of your Windows machine. However, if you experience problems, select 'Run' from the Start menu and execute the file called 'InstallPanel.exe'.

WYSIWYG products require a Windows component called DirectX. Most computers bought recently have this component installed. Older computers may not. WYSIWYG products will work with 5.2 (or later) of DirectX. If you need a copy of DirectX, visit the Microsoft DirectX website at <http://www.microsoft.com/directx/>

If you experience any problems with your CD, have questions about the software, or would like further copies for your colleagues, visit A.C. Lighting at stand R38, or contact A.C. Lighting by telephone on +44 1494 446000, or e-mail at <mailto:info@aclighting.co.uk>

A.C. LIGHTING - STAND R38

SHOW TECHNOLOGY STANDS i8, i12, K10, i10

Show Technology have three stands at this year's Entech - one for Martin/Jem (i8) products, one for Clay Paky products (i12), one for Numark (K10) and one for products from the Pro-Shop 2000 catalogue including Studio Due, Geni, and ADJ products (i10).

The focus on the Martin stand will be on the award-winning MiniMACWash and MiniMAC Profile luminaires. Aimed primarily at the retail market, the fixtures would also fit into clubs, restaurants, theme bars and corporate launches.

The MiniMAC Profile spot features 12 rich colours, 7 rotating gobos, replaceable projection patterns, strobe and a 170 focused beam angle. The MiniMAC Wash is an all-purpose fresnel colour changer featuring 12 colours, strobe and a 23° field angle. Both fixtures have 540° of horizontal pan and 270° of vertical tilt. A 150W metal halide lamp is used.

Also new is the MX-4 which has the same attractive look as the MX-1 but features a 150 watt discharge lamp rather than a halogen lamp. This makes the scanner appropriate for larger disco and club environments. It also houses separate colour and gobo wheels (MX-1 houses a combined wheel). The colour wheel features 15 rich colours, 2 split colours plus white while the gobo wheel contains 20 gobo patterns including open. A fast shutter for strobe effect possibilities has also been added.

Check out Martin's Trackpod a single operator multiple-followspot controller - one person can control up to 128 followspots.

Studio Due will present a brother for the City Color - City Beam - which is similar to the City Color but with a very narrow beam angle to be used over a greater distance. Also new is the Mini City. Show Technology +61 2 9898 1111.



A FISHY TALE

Fish Opera, Laservision Macro-Media's animated production took out 1999's highest accolade for 'laser animation' at a glittering Gala event hosted by the International Laser Display Association at Disney World in Florida.

Fish Opera introduces a madcap cast of colourful, animated underwater creatures irreverently performing favourite arias from popular operas on Darling Harbour's Cockle Bay. The Laservision images are projected onto AquaMagic's two shimmering semi-circular Aqua-Screens, created by tens of thousands of litres of seawater. AquaMagic is the world's only permanent floating Laservision theatre.

The distinguished international judging panel also awarded 'World's Best Outdoor Spectacular' to the Laservision Macro-Media installation at Asia's largest theme park, Everland. The nearest thing to a "best picture" Academy Award in the specialised laser attractions industry, acknowledging this innovative and creative Dural company's global dominance in this market.

Laservision Macro-Media on +61 2 9658 1000.

ENTECH PREVIEW

COEMAR DE SISTI AUSTRALIA - STAND A11

Coemar De Sisti Australia will feature a host of new products from various manufacturers including Coemar, Space Cannon, Compulite and Color Kinetics.

From Coemar the CF4 HE moving yoke hard edge fixture incorporates colour mixing, zoom and focus in one compact, quiet package. Utilising the same carbon fibre casing as the CF1200, the CF4 HE uses a Philips 400W MSR/SA short arc lamp and it has two pattern wheels with interchangeable gobos. The colour system uses dichroic CMY filters and iris and mechanical dimming are standard.

Also on show will be the Panorama outdoor colour changing, architectural fixture.

Sparktop, a new version of the Spark 4D control console from Compulite, will make



its debut at Entech. Sparktop contains all the standard Spark 4D

features including 1536 DMX channels, crossfader, 20 controllers, effects, hard disk drive, Ethernet, SMPTE and MIDI. It also includes a 10.4" colour LCD screen and a rugged cover and carrying handle eliminating the need for a separate monitor. It fits in an aeroplane overhead compartment and can be set up and ready to go in seconds.

The new Luna series of expandable yokes from Compulite will also be on show. Suitable for a variety of luminaires, including PCs, Fresnels and profile spots, the yokes can take a payload of up to 20kg, and luminaires are mechanically retained in the last position, even with an unbalanced load.

A new compact moving head spotlight from Space Cannon called the Ibis will be on show. It uses an electronic power control system which allows it to run either a 1K, 1.6K, 2K or 3K Xenon lamp. Instant lamp strike, electronic dimming down to 10% of beam output and a strobe function are all standard. The Ibis also incorporates CMY colour changing, a mechanical shutter and a motorised zoom for beam shaping.

The Easy is an automated searchlight similar in features to the Ibis but without colour mixing. Both fixtures can be run any way up as they use a low power Xenon lamp.

For the first time in Australia the Color Kinetics range of LED lights will be displayed.

The French made Con'dome is a range of inflatable domes to protect almost any lighting fixture against weather. Two holes expell air near the top fast, so rain can't get in. They fold flat into a kind of cymbal case, and the clear plastic part can be replaced if it gets tired.

CDA +61 3 9467 8666.



ROSCO AUSTRALIA STAND F19

Creating quite a buzz recently is Rosco's HORIZON lighting control software which has joined forces with Cast Lightings WYSIWYG and offers all the features of a control board with an intuitive interface and html based magic sheet to ensure easy operation and a short learning curve. HORIZON and WYSIWYG were awarded Lighting Tools and Software Product of the Year at LDI99. Check it out.

The Rosco Coldflow is one of several Rosco products to be shown in Australia for the first time. It's an accessory for standard fog machines that converts liquid carbon dioxide to dry ice. The dry ice cools a uniquely designed aluminium extrusion that is capable of converting large volumes of fog into dense low lying fog. The fog is chilled below ambient temperature and will hug the ground. Best results are achieved when the Rosco Coldflow is used with a Rosco machine and Rosco Stage Fog which is specifically designed to help create fog that will create a carpet of fog effect.

The Rosco Intelligent Fog System is designed for permanent or long running installations that require reliable fog effects for long duty cycles. The system is designed to operate up to 24 hours a day, day after day and delivers fog, in the volume needed at exactly the time it's needed. The IFS system operates with minimum maintenance and 'purges' or cleans itself automatically on a regular cycle.

SOFTPLOT is a Windows based program for creating and maintaining professional light plots and the associated paperwork.

FLEXCOAT is a flame retardant, non-toxic water based covering for a wide variety of foams and other surfaces. Apply by brush or roller on scenery which will undergo excessive handling on tour. Flexcoat also performs well over concrete, primed metal and primed wood and does not add significant additional weight, will not become brittle with age or exterior exposure.

Rosco Australia Pty Ltd +61 2 9906 6262

CORRECTION

David Storie of Bytecraft pointed out that in the Story on the University of Western Sydney's New Performing Arts centre, Page 22 of the January 2000 issue, it reads as if all equipment is from Jands and fails to mention that the venue also has a Strand 520i Lighting Control desk and Strand SL Lanterns supplied by Bytecraft.

NO CORRECTION

Con'dome make nifty inflatable weather covers for moving lights, an idea that Martin have also just embraced - at somewhat lower cost. We reported in our October issue that in Australia ULA were distributing Con'dome, but on December 13th received a letter from another importer, Coemar deSisti Australia, stating that we were in error.

Peter Kemp requests that we state that our article was incorrect. "We presume you were informed this (the distribution arrangement) by ULA".

In fact, at the time ULA were indeed the new distributors of Con'dome. We met Con'dome sales manager Jerome Brehard at PLASA, where we gathered the information leading to the story.

Connections is happy to correct anything we get wrong, but in this case there is nothing to correct.

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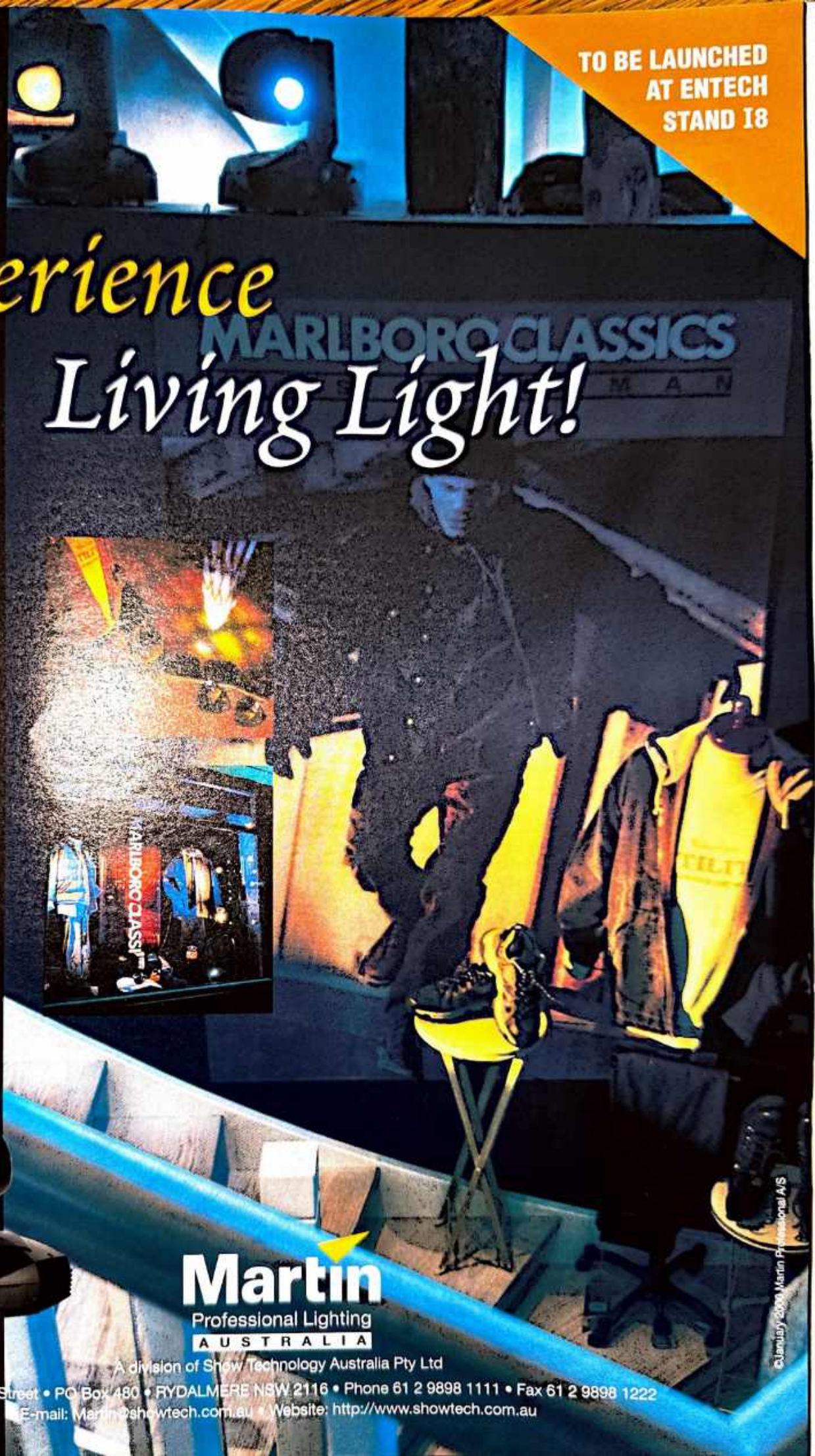
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ENTECH PREVIEW

BYTECRAFT - STAND D3

The Icon M from LSD is set to draw the crowds to the Bytecraft stand at Entech. Having impressed crowds at the recent LDI'99 with its seemingly endless stream of moving gobo type effects, which were video generated, the Icon M is the way of the future in lighting.

This 1,200 watt MSR fixture has an onboard library of up to 1,000 digital effects - named gobo's, but not as you know them - and will store another 250 customer designed vector or bitmap images as well. Because it is all done digitally, gone are the wheels, shutters and motors of the current crop of moving lights. Instead, think of this as a video projector on a moving yoke.



ICON M

effect system; new large and ergonomic handle; new heavy duty adjustable yoke; new boomerang 6 way colour changer unit; tungsten correction filter; deep blue and red dichroic filter; fittable with magnetic or electronic ballast; over 100 meter efficient; and weighs 65Kg.

Bytecraft will also be introducing CXI Color Fusion from Wybron - the new state-of-the-art in colour changing. CXI uses just two colour scrolls with graduated frames of cyan, yellow, and magenta to create a color palette far beyond that of any other colour changer. Packaged in a unique, durable, and compact housing, CXI Color Fusion starts with single channel control to mix the most commonly used gel colours. Built right into the system are 255 pre-set colors that match the most popular gels from Rosco, Lee, and Gam. Simply choose the colour you want from the CXI Color Menu, select the corresponding DMX level and the two CXI scrolls will move into position to mix that color. Switch to two-channel control to create your own colours. Full frame combinations offer nearly 100 additional colours, and partial frame mixing makes the colour range virtually infinite. With 4", 7", and 10" models and numerous mounting plates to choose from, CXI fits all of the most common stage fixtures.

From High End Systems there will be the Cyberlight Turbo which has an increased light output of up to 100%, an improved control over beam flatness and a new twin achromatic lens system which improves focus quality.

Also new from High End is the Studio Spot 575 CYM, a fully convection cooled moving head spotlight offering CYM colour mixing as an optional replacement for the colour wheels. The mixing system uses two gradient wheels for each colour to give smooth, even coverage. The patented mechanism uses newly de-

veloped manufacturing techniques which have enabled the miniaturisation necessary to fit the wheels and motors into the compact space available.

It utilizes a custom MSR 575/2 lamp and has 370° pan and 225° tilt. The pan and tilt systems feature optical encoders which automatically correct the beam head's position if the head is manually moved from its programmed position. Other features include variable speed iris, variable frost, smooth mechanical dimming, plus instant blackout and strobe effects while dimming.

Ten user selectable gobos/effects can be installed into two rotating gobo wheels, resulting in 35 gobo/effect combinations. Bytecraft +61 3 9587 2555, 2 9550 3955.



new products::

DMX-KABUKI

Artistic Licence have launched the DMX-Kabuki, a motion control system designed specifically for Kabuki style drape reveals. DMX-Kabuki was born of a custom requirement - Blackout Ltd commissioned Artistic Licence to develop the entire control system and cable infrastructure required to reveal the Millennium Dome during the opening ceremony on New Year's Eve. The control system was required to sequentially release a 600m circumference of drapes, and so reveal the outer circumference of the Dome to those seated in the central area. Each DMX-Kabuki controls up to four motor releases via DMX512. The product is enclosed in a G-Clamp mounting case for ease of truss mounting. The product also provides large fuse fail indicators, visible from ground level along with internal DMX512 isolation and re-transmission. A total of twelve DMX-Kabuki along with Artistic Licence DMX distribution products and Proplex DMX512 cable were used for the opening ceremony. Call: Coemar De Sisti +61 3 9467 8666.

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brightline lighting systems continues in the tradition of manufacturing highly versatile, energy efficient, modular fluorescent lighting fixtures by introducing the revolutionary T-Series lighting system.

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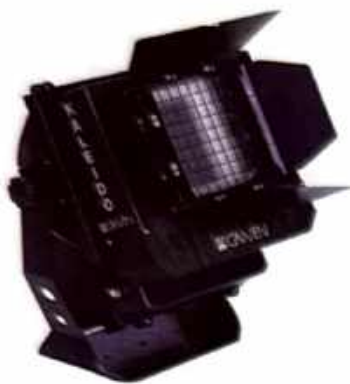


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ENTECH PREVIEW

UNIVERSAL LIGHTING & AUDIO - STAND E11

ULA have a host of new products on their stand including the new Kaleido outdoor CMY washlight, together with the Kolorado and the popular Griven searchlights - Imperial, Tracer4000 and SkyRose as part of their ArchiVision(R) range on their Entech



stand. Kaleido is a compact architectural colour changer featuring a CMY subtractive colour mixing system, and a 575w MSD lamp. It's weather proof and can withstand dust particles larger than 1mm. Other features include stand-by function on black-out for lamp life extension, built in power saving system, multi unit synchronisation via master/slave option, linear 0 to 100% dimmer, strobe effect and easy lamp replacement.

Also new from Griven is the Acrobat moving yoke 250 watt luminaires, in fresnel and profile

versions. Recently re-modelled, the Acrobat range has been extended by a 1200 HMI version. Danilo Betannzi of Griven will be on hand to offer an insight into Griven products and their future plans.

From Avolites is the ART 2000 range of dimmers and the Azure Shadow console. ART 2000 is designed for modern lighting rigs containing numerous intelligent fixtures as well as conventional lanterns. To facilitate the constantly changing needs of

today's shows and events, the ART 2000 has four bays that can be fitted with either mains distribution or dimming channel modules. Avolites continue to expand their console range with the Azure 2000 Shadow. The Azure 2000 Shadow features all the facilities offered by the Azure 2000 with the additional functionality of the 'Shadow' live playback buttons that have always been integral to Avolites' consoles.



A big drawcard from Le Maitre will be the Dry Icer machine - small, compact and capable of delivering low cool fog in conjunction with high pressure liquid CO₂. Also new is ProSno, a powerful new snow machine that will find a wide range of uses in pubs, theatres and clubs, and the Electric Air Cannon, a cost-effective electrically fired Air Cannon capable of shooting streamer, confetti, glitter up to 15 metres. Le Maitre's new Bubble machine will also be on show as well as a new electronic pyro control system and the STAR Hazer Mk4.

Absolutely hot off the factory floor will be the JB Lighting Varyscan 6, a 1200HMI moving yoke fixture in a plastic body as well as their new lighting console.

Abstract will debut the VR8 rotating fixture as well as their new computer software - Showmagic.
ULA +61 7 5532 9922.

SELECON - STAND A16

Selecon will be exhibiting and demonstrating the innovative Pacific range in its entirety at Entech 2000. Qualities of the Pacific range are:

- The only base down axial profile in the world combining a new optical system with the latest in compact filament low wattage lamps and advanced optical design and manufacturing technologies.
- The only 90 degree profile in the world with all the advantages of the Pacific range including cool beam, cool operating controls and low cost of ownership.
- The smallest and most powerful 12- 28 degree profile in the world in a very compact sized luminaire.
- Currently up to 4 different tungsten lamp sources and 4 different discharge lamp sources available in the Pacific range.
- The only luminaire in the world that can take plastic images from a bubble jet printer and use them as gobos for anything up to 96 hours (depending on lamp source).
- City Theatrical have customised their EFX2 unit to accommodate the 23-50 Pacific. This unit controls two DMX controlled concentric circle gobo's or images.
- Angstrom Lighting, California in association with Selecon have developed the Finline Image Projector which can not only take plastic images but can stream up to 25 images controlled by DMX512. This unit can also use MSR 575 lamp source.
- The first truly flexible modular luminaire.

Selecon will preview the new 80v 1200w lamp designed by Philips with input from Selecon's optical design engineers at Entech 2000. This lamp delivers maximum efficiency for tungsten halo-

gen filament lamps due to the lower voltage with a unique beam quality which lighting designers are expected to find very useful combining as it does a high colour temperature (3800 - 4000K) and intensity. The lamp fits into Selecon's innovative Pacific range of base down ellipsoidals.

Selecon will also be demonstrating the latest in the Precise range of moving yokes attached to a 2.5kw PC. Samples of the rest of the Selecon range including CYC units, PC's and Fresnels will be available for demonstration.

A new range of architectural products on show are the Aureol Spot, and Beam Shaper or profile. The Aureol spot provides for the use of colour glass filters, diffusers, barndoors, and snoots. The design is timeless rather than "trendy" a result of a significant investment in pressure die cast and moulding tools. The Beam Shaper is a lens system that simply slides into the spot providing the facility to accurately shape the beam or project patterns. With a zoom range of 25 - 50 degrees, shaping shutters, and integral holder for steel or glass patterns the beam shaper adds versatility to the tools that make up the Aureol range. The Aureol products were nominated for an ESTA Equipment Award at LDI '99.
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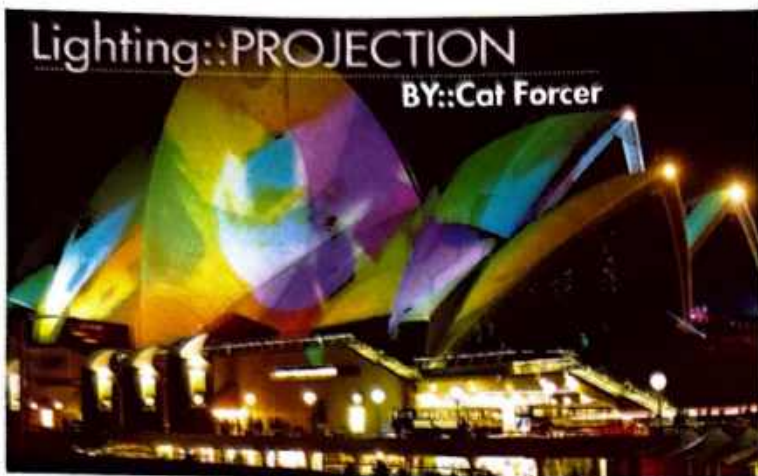


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Lighting::PROJECTION

BY::Cat Forcer



Sydney Opera House Lights Up

mammoth task undertaken for Sydney Festival

For the past two years, Alan Stone has lit the Sydney Opera House in shades of blue and then red to celebrate the Sydney Festival. This year the industrial designer Marc Newson was hired to design some astrological and psychedelic images to be projected on to the Opera House sails. The free show runs for 18 days although during the Olympic period it will run for 56 days.

Each lighting sequence runs for an hour and ten minutes starting with open white through to yellow/amber tones, to red/magenta and then into a deep blue night scene. The first sequence of gobos follows which is a universe scene complete with stars and nebulas. Next is a subtle psychedelic pattern which grows to outrageous hues, followed by a rainbow effect. The loop finishes back into white. Seven loop sequences run each night.

"Marc and I collaborated on turning his pencil-sketch images into a computer graphic and then the next stage of producing a gobo," explained Alan. "Realising the lighting images required the production of 12 individual 4 colour custom glass gobos, in total 180 gobos were produced for the project.

"On my recent visit to LDI, I spent a lot of time speaking with various custom gobo manufacturers about fabrication techniques in conjunction with Fausto Orsati (senior design engineer at Coemar). Although some of the new full colour photographic procedures are stunning, it was felt that the type of glass used for this process would not sustain the heat produced at the gobo gate of the 4kW NAT which I have measured at 230°C."

It was therefore decided that the Swedish Beacon system would best suit the project. The guys at Beacon told Alan about Lighting By Design using the patented Beacon formula and consequently they produced all the gobos for the event. Lighting By Design

have secured the Beacon 4 colour glass gobo production system. This method involves the laminating of layers of waver thin coloured and clear glass with an alloy coating to produce high resolution images.

Once the initial concept was decided, Alan started looking at the different lighting products available to realise the

ideas. He gave all the major distributors in the country an opportunity to sell their gear but he was adamant that he wanted a 'one-product-show'.

After trials held at the Opera House, Alan opted for a Coemar package.

"I found the output of the Coemar products to be far superior," said Alan. "I also had direct access to the factory in Italy. The senior design engineer made some changes to the products for me. They manufactured a wider angle NAT moving mirror, 15-30°, for this particular job and they were very open to suggestion. Coemar have really lifted their game, I think they were dragging their feet a bit in previous years."

The Coemar gear had been installed pre-Christmas and was utilised for the New Years Eve celebrations at the Opera

House. This gear was supplemented with 16 x 4kW Millennium searchlights, Martin PAL 1200's, Studio Due CityColors and two large stage lighting rigs all provided by Chameleon.

The lighting gear is housed on six towers along the Western side of the Opera House, one tower on the Eastern side, two towers on the upper podium, two custom brackets rigged around the sail pedestals between the two sets of sails and one tower on the Green Room roof for a hint of light on the Northern side.

For this Alan was using 17 4K NAT MM's, fifteen of which were the 15-30° and two were 8-15°, to do the long 163 metre throw on the eastern side of the Opera House. Nine 2.5K NAT TM's, at a fixed 10°, were used to highlight tips on the tops of sails.

"We're finding that once we zoom the 4K's out to 30° and the 2.5K at 10°, the lux levels are about even and give us a nice, smooth image on the building," said Alan. "For a base wash I'm using 27 Coemar CF1200 spots - a CMY washlight with a fresnel lens. In the centre of the building I'm using a 1.2K Coemar hard-edged moving head as well as the new Coemar Panorama which is an architectural, DMX-controllable, fixed CMY washlight. It's basically a 1800W MHD which is comparable with lamp sources I've used in previous years - the Sylvania Stadium Pro and the Philips Arena Vision. With the reflector system we're actually getting more light level in that area of the building."

continued over



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Lighting::PROJECTION

BY::Cat Forcer

Most of the products were brand new out of the box and Alan had expected a certain amount of product failure and minor problems but that turned out to be minimal. A bad batch of globes was the only real problem.

The project saw the first use of the Con'dome in Australia, a product which Alan was very pleased with.

"It saved us from using high towers in the central area of the Opera House and working out all the roof calculations," Alan said. "There is a bit of lamp bounce inside them, occasionally you get a hot spot bouncing back off the Con'dome and out at another angle, but it's not too obtrusive giving the scale of the project. With white light, they do change the colour temperature ever so slightly so you get a blue tinge."

As Alan went for a complete package deal with Coemar De Sisti

Australia, it is no surprise that he was given a Compulite desk. He would have preferred a Whole Hog II or an ETC Obsession.

"The Compulite isn't quite as logical as a Hog and is slower to programme," said

Alan. "It has a few annoying features but they are all in the software and I'm sure they'll work them out. The time-code is brilliant on them."

Compulite whizz-kid Megan McGahan flew in from Melbourne to programme the show.

For working out the details on the towers and engineering Alan and Barry Mair used AutoCAD and Accurender. Matt Cohen of Everything IT Management was the 'roving' technician.

"We worked out the necessary tower heights and designed a roof structure which lets enough light out to light the building but keeps the weather out," detailed Alan. "That was a design nightmare in itself. Originally I wanted building crane truss which they use for high-rise cranes, two pieces of that were at the height we required and the footprint we required and we would have had 5 tonnes of weight just in those two sections plus internal ladders, kick rails and work platforms. But due to the late sign-off of the project we were unable to secure that and had to use



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Lighting::PROJECTION

BY::Cat Forcer

scaffold which increase our bump-in time by a day and a half. It also meant we had to put 12 ton of lead weight in the bottom of each tower on the Western boardwalk in case of high winds."

In previous years Alan has designed with pencil and paper but due to the complexity of this job, he has switched to AutoCAD. Alan used an existing plan of the Opera House which he found a few flaws in.

"All the scaling was done to the nearest metre rather than millimetre so we're finding things 950mm out. We've rectified what we could to get the model up and working. One of my primary objectives was to mask the light of windows and off cutaways to stop shadow spill from one sail to the next. So we needed to build a mask scenario which we did using Accurender, an architectural lighting programme. So we placed our rigging towers and hung our lamps in AutoCAD, then we found the centre of our mirrors, as that's where the beam would emanate from, worked out of beam angles



and entered photometric data for the Coemar products. Then we put the light on the building, found the optimum focus position and literally lit the building on a 3D model. As we lit the 3D model with a full, open beam we found a substantial amount of overspill which needed attention. From here we needed to calculate a masking gobo which we would place into the indexing gobo wheel.

To achieve this, Barry Mair and Alan had much head scratching to devise a technique to design the individual masks to suit the semi spherical surfaces of the Opera House. Alan suggested that they take the AutoCAD viewing camera and place the view from the centre of each mirror in the rigged position and look directly up the centre line of each focused beam.

"From this point we could see where are cut off lines were required," explained Alan. "We then drew an outline onto the light at the point where it hit the surface of the building. Then it got tricky, Barry and I then had to devise a method to lift the light from the surface of the building in the 3D model, then lay the spot out in a plan view cut away the centre of the beam along the predetermined cut lines to leave us with our final mask gobo. The only way to achieve this was to convert each light into a fabric at the focal point of the sail and then remove the fabric from the 3D model and lay it out in the plan view. We then applied the necessary cutlines to each light requiring a mask and sent them off to be cut as steel gobos. All bar two of the masks on the Eastern side have been spot on. We've had three redraws on the Eastern side because of engineering concerns with weight loading on the wharf."

Lighting equipment was supplied by Clifton Productions of Melbourne.

Personnel
Lighting and Technical Designer Alan Stone
Programmer Megan McGahan
Drafting and Rendering Barry Mair
Graphics For Gobos Silas Hickey
Production CoOrdinator Nicolas Barclay
Electrician Graham Ashwell
Technician Matt Cohen
Crew Chief Gerard Pearce
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DMX HEADS FOR A REMAKE

Industry split on final format

Under the working title DMX 2000 you'd think Bill Gates has taken over lighting data protocols - but he hasn't. USITT (United States Institute for Theatre Technology) and ESTA (Entertainment Services and Technology Association) are in the process of inventing the upcoming revision of the DMX512/1990 standard. This revision has been raised as result of the continued development of the vast numbers of new and varied products that use DMX as a control source.

The existing standard - DMX512/1990 is just seven pages long, whereas the current draft of the new standard is now pushing more than seventy. This substantial increase is largely due to the fact that the draft DMX512/2000 attempts to specify many additional options for the use of pins 4&5 on the existing 5pin XLR. Various manufacturers have created numerous different add on features to their DMX streams, and since there has been no defined standard, we are starting to see many and varied protocols being added - not to mention plugs and connectors.

There are as many different opinions out there as there are people that have read the draft. However, there does appear to be a trend towards two opposing points of view. Karl Ruling, Technical Standards Manager at ESTA, defines these as "the lean camp" and "the fat camp":

"The lean camp that wants the messy bits in the existing standard cleaned up by forbidding variations that hinder functional compatibility and interconnectivity. This camp wants to see a document that is not much thicker than the 7-page original. They are horrified by the size of the current document", says Karl.

"The fat camp takes the view that all the different varieties of DMX we now have are responses to market needs. This camp wants to make the document include these uses if possible, but to

set down rules so that equipment is not damaged by intermixing equipment. Therefore compatibility is enhanced as much as possible (while acknowledging that complete compatibility and interoperability is impossible), and so that the moderately knowledgeable user can sort out incompatibility problems if they arise.

This approach necessitates a larger document, but people in this camp will point out that many other standards are entire books, so size should not be an issue".

A significant amount of the apprehension in the industry is due to the fact that the draft suggests seven standards of DMX. This is a complex issue, and the following comments from Michael M. Lay, (Vice President of Systems Integration Group / Production Arts in the USA) are typical of the concerns raised by many people:

"I feel that this draft standard (if eventually implemented) would be unfortunate for the end user. I believe that having seven different "types" of DMX512 allowed on a single connector would cause an unacceptable level of confusion for the end user during the load in and technical setup of lighting systems world-wide".

"Depending on the number of different proposed "types" of DMX512 that might be used in a single rig, the end user may be required to have several different types of DMX512 distribution (opto-splitters) in their lighting system to properly distribute and manage the "types" described in this draft. While this would be a boon to equipment manufacturers, I feel that this is an unnecessary expense to be born by the end users in our industry".

One of the key figures in the creation of this draft is Peter Willis (Andera Ltd in the UK). Mr Willis is a member of the DMX task group (a sub-committee) of the ESTA Controls and Protocols working group, and chaired an earlier sub-committee known as

Optional TYPE Symbols

→ TYPE 0

⇨ TYPE 1

⇨⇨ TYPE 2


⇨⇨⇨ TYPE 3

⇨⇨⇨⇨ TYPE 4

⇨⇨⇨⇨⇨ TYPE 5

⇨⇨⇨⇨⇨⇨ TYPE 6


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the DMX physical layer task group. His position on the seven types in the draft:

"To many users, DMX may only be three wires; the use of single universes to connect controls, lights and dimmers is widespread. So is the use of third party DMX "glue" products - buffers, splitters, merge units, converters. However, with over 150 manufacturers world wide, we have also seen a number of other, legitimate, uses of the hither-to optional second pair. A number of these uses are mutually exclusive, and although inter-connection of such products does not cause electrical damage, the desired functionality is compromised".

"Some manufacturers have introduced the use of the second pair to convey status information, typically either to or from a dimmer rack. In simple electrical terms they have followed the existing standards, but since these standards did not define which way the data should "flow", there are of course several different schemes in existence. If you use only equipment from a single manufacturer this may be fine, but as soon as you introduce third party products you frequently need to know what goes on "under the cover". If your dimmer or automated fixture needs to see data on the second pair for any reason, you will also need to know how the second pair is handled by any splitter/buffer/merge unit or even cable that you place between it and its controller".

"The concept of TYPES is introduced in the revised standard to give us all a common language - most of the time you will simply plug the system together and it will work. When it doesn't you can use the declared TYPE number to assist in the debugging process, without recourse to taking the covers off. Even without understanding the details of all the types, if you have a piece of equipment that doesn't behave as you expected, and its type is different to those that do, you are probably

well on the way to sorting out the problem".

"Remember also that the use of the 5pin XLR connector is not limited to DMX512. It is a foolish technician who assumes that just because it has 5 pins it must be DMX. In my own experience I have encountered 100V audio lines, 12-30VDC Cuelight systems, lighting riggers controls and even Pyrotechnic controls. As users we should be demanding better and consistent documentation - and as manufacturers wishing to claim compliance with this new revision of DMX we would be required to provide it".

The two camps have fundamentally incompatible visions of what a standard is or should be in the best of all possible worlds.

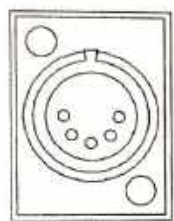
"The discussions are quite heated, because, not only are their different philosophical underpinnings, there are different economic interests" says Karl Ruling.

"Some people make their living in a market sector where power on pins 4 & 5 helps sell products. Some make their living in a market sector where feedback on pins 4 & 5 helps sells products. Some make their living in a market sector where nothing is connected to pins 4 & 5, and any product that does use pins 4 & 5 simply complicates work and cuts profits. And so it goes. Eventually we will hammer out a consensus. I don't foresee this group coming to a stalemate as the WTO did in Seattle".

As you read this, submissions for alterations and suggestions for the current draft will have closed, and the task group

working on the project will have started the process of refining, and re-drafting the standard.

Currently, there is no guarantee that the standard will be adopted in one year or three, or if 95% or 5% of the current draft will remain as is. In any case, this draft as it stands contains some very interesting issues, and how these are resolved will affect all of us that use DMX.



DMX512/2000
TYPE 0 : ISOLATED

TYPE 0 Isolated Transmitter - Pins 4 & 5 Not Used

USITT DMX512/2000
TYPE 1

TYPE 1 Ground Referenced Transmitter (Processor) - Pins 4 & 5 Loop-Through

DMX512/2000
TYPE 2 : FLOATING

TYPE 2 Floating Transmitter - 2nd DMX512 Universe on Pins 4 & 5

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ENTECH 2000 STAND D3

WHAT CHANGES ARE IN THE DMX512/2000 DRAFT STANDARD?

The new draft standard requires backwards compatibility to existing equipment. The idea is that standard DMX dimmers you own now will still work if you buy a control desk that works to the new standard. The new standard also defines some very important issues, including the specific methods that can be used for:

- return data diagnostics/information
- voltage supply for accessories
- use of balanced cables and Category 5 UTP (Unshielded twisted pair) and STP/FTP (Shielded or Foiled Twisted Pair) cables
- wiring and use of 4 and 5 pin XLRs, and JP45 connectors

THE SEVEN DMX TYPES

The draft standard defines seven different types of DMX that can be implemented. The easiest way to describe what these are is to explain how they are wired in a standard 5pin XLR:

TYPE 0

Pin 1 is shield. Pins 2&3 are DMX512 data. Pins 4&5 are not connected. This type of installation would be typical of many existing DMX installations at the moment.

TYPE 1

Pin 1 is shield. Pins 2&3 are DMX512 data. Pins 4&5 are used to loop the same DMX stream on to the next DMX outlet. Used in this way, a single DMX cable with all five pins connected could send data to and from a single location in a venue.

TYPE 2

Pin 1 is shield. Pins 2&3 are DMX512 data. Pins 4&5 are used to deliver a second and separate stream of DMX data, raising the number of available channels to 1024.

TYPE 3

Pin 1 is shield. Pins 2&3 are DMX512 data. Pins 4&5 are used to return diagnostics or other data information generated by the remote equipment. This data must follow a strict protocol format as defined by the Standard.

TYPE 4

Pin 1 is shield. Pins 2&3 are DMX512 data. Pins 4&5 can be used for any other signals that conform to EIA485 levels. Amongst

other things, the "EIA485" defines the voltage and current levels that DMX512 currently uses.

TYPE 5

Pin 1 is shield. Pins 2&3 are DMX512 data. Pins 4&5 can be used for any non-EIA485 signals that do not draw more than 300mA, or exceed 12VDC. There are other strict limitations to the use of this standard.

TYPE 6

Pins 1, 4&5 are not defined. Pins 2&3 are used by test equipment that sends, receives and interprets DMX512 data.

Under the draft, each of these "Types" is to have a symbol which is to be used when labeling any DMX port (see table on pg98).

According to the draft standard, any installation or piece of equipment must label exactly what type of DMX is available or required. There is a small potential for damage to equipment that is plugged into the wrong sort of DMX type, but the standard also indicates that it is the responsibility of manufactures to ensure that their equipment has adequate protection against these events. It is interesting to note that the draft standard also says that a 5pin XLR MUST be used for DMX connection, and when this is not possible, it cannot be any other type of XLR or an RJ45 (ethernet type) connector. If implemented, this will result in a few manufactures having to modify their designs slightly. For example, the many manufactures including Martin on their "MAC" range that use a 3pin XLR for DMX, Bytcraft's Bytesize dimmers that have used a 25pin "D" connector for DMX as well as other protocols and Selecon's mini colour changers that have used RJ45 connectors to deliver power and DMX. (XXX I'm not sure if Byte's are still the same, or the exact name of the scrollers - John to investigate) In this regard, it certainly will be nice to see a standard adopted.

DMX AND ACCESSORY POWER

As mentioned in the seven types of DMX above, Type 5 allows for limited accessory power to travel with DMX. There are a number of electrical restrictions associated with this option which are described in detail in the draft standard. Assuming that these restrictions are met, this DMX type will cover most low current

accessory applications. However, this does not really allow for the high current, 24V requirements of the standard colour scroller. There are some instances where individuals and companies have used pins 4&5 for 24V accessory power. As Karl Ruling, Technical Standards Manager at ESTA suggests, this has a dangerous potential for making some of your precious lighting equipment become "smoke emitting devices". (We all know that electrical devices run on smoke, and when you let the smoke escape, the device probably won't work anymore!)

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Lighting::TECHNOLOGY UPDATE

BY::John Grimshaw

The draft standard addresses this problem with a standard for 4pin XLR wiring specifically for this application. In this situation, Pin 1 is the common, and wired to a cables shield. Pins 2&3 are Data - and Data + respectively (as per normal) and pin 4 for a power supply up to 24V 5A.

CABLING OPTIONS

For those of use who work with DMX regularly, we all know that we should not use microphone cable for DMX, despite the fact that is very convenient. The reasons for this are conveniently located in the draft standard. Microphone cable typically has a high capacitance and low impedance. DMX requires a low capacitance and matched impedance. While microphone cables may "work", there is a greater chance of distorting the data being transmitted. If this manifests itself as an intermittent fault, you could be stuck for hours thinking that you have a dodgy connection somewhere - and just to be annoying, maybe there is a dodgy connector as well. (for more info on capacitance and impedance, see John Matheson's article "Audio Cables and Pseudo Science, Part 1" in Dec 1999 Connections)

The draft standard specifies that which most of already knew, that cables to be used must be balanced and have a characteristic impedance of between 100 and 150ohms. The interesting addition to the draft standard here is with regards to the use of Category 5 cable. This cable is, by far, a cheaper alternative to standard DMX spec cable, but there are some strict guidelines to follow.

Cat 5 UTP (Unshielded Twisted Pair) cable is the cable of choice for most ethernet installations. This cable contains 4 pairs of conductors that are coloured in a specific format. Under the draft standard, this cable can only be used where it travels in an earth grounded metal conduit. The shielded version of this cable, known as STP (Shielded Twisted Pair) or FTP (Foiled Twisted Pair) can be used if the cable's shield is grounded to earth. There

are two standard pin connections supplied for a Cat 5 installation. One (Scheme C5.1) allows for two DMX Type 0 universes to run at the same time, the other (Scheme C5.2) allows for DMX Type 0 to Type 5 use. The table below is reproduced from the draft proposal, and shows the proposed Cat5 wiring layout.

One very wise aspect of the standard is to avoid the use of RJ45 connectors with the Cat 5 cable. This will help prevent damage to equipment from end users plugging into existing computer network systems - which use the RJ45 connector. The only instance where the draft standard allows the use of a RJ45 is when it is installed in a situation where it is not accessible to the end user. Another aspect of using Cat 5 cable in installations is that it is preparing venues for the future.

BEYOND DMX 1.2 / 2000

It is clear that DMX will be with us for a number of years to come, but already there are moves to design a much more capable lighting data protocol system. Some manufacturers have already moved ahead, creating ethernet type networks for their equipment. There is a standard that is still in the developmental stage known as ACN or Advanced Control Network. Its designers want it to do much more than simply replace DMX, such as incorporate audio control and staging automation. They intend to design the system so that, like the current DMX, one manufacturer's control desk will be able to control another's dimmers etc. They want this network to be able to cope with multiple sources of control data, to use existing "off the shelf" networking technology like hubs, switchers, tools etc, as well as having the bandwidth to support device diagnostic feedback, manufacturer specific data and...
...its bound to have more than 512 channels.

Readers are encouraged to visit the ESTA website to see if there is a new draft on which to make comments - <http://www.esta.org/tsp/>

TABLE 1 | 5 CONNECTION SCHEDULE FOR DMX512 SYSTEMS USING CATEGORY 5 CABLE

Pair	Wire #	Colour	Function	Cable Scheme C5.1	Cable Scheme C5.2
Pair 2	1	white / orange	data A +	DMX512 Pin 3	DMX512 Pin 3
	2	orange	data A -	DMX512 Pin 2	DMX512 Pin 2
Pair 3	3	white / green	data B+	DMX512 b Pin 3	DMX512 Pin 5
	6	green	data B -	DMX512 b Pin 2	DMX512 Pin 4
Pair 1	4	blue	v not exceeding - 0 / + 25 VDC		
	5	white / blue	0 v (signal common) / Wire 4 common	DMX512 Pin 1	DMX512 Pin 1
Pair 4	7	white / brown	v not exceeding - 0 / + 25 VDC		
	8	brown	0 v (signal common) / Wire 7 common	DMX512 b Pin 1	Wire 7 common
Shield		drain			



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Melbourne Town Hall *Transformed*

Picture courtesy of The Age
Images by Ian deGruchy

Melbourne's Town Hall was the backdrop for a multimedia presentation that paid tribute to the sights and sounds of the city. *Transformed* was a ten minute show which utilised different forms of projection to change the facade of the town hall into a series of images symbolising the history and the future of life in Melbourne.

Created by projection artist Ian de Gruchy from Art Projections and featuring a soundscape by Chris Knowles and Dan Witton, *Transformed* literally transformed the town hall's facade into a series of striking images. While predominantly used as a two dimensional surface to project onto, several times the buildings' shape made the images seem three dimensional, in particular when the building took on the enormous image of the front grill of an old Holden.

The images ranged in detail from architectural line drawings detailing the features of the building, to full colour projections of maps, flags and even Jackson Pollock's painting Blue Poles. Other projections acted as tributes to significant events in the city's history such as settlement, the hanging of Ned Kelly, and a field of red poppies in remembrance of the World Wars. The accompanying soundscape provided the sounds of the city from its aboriginal heritage and the original indigenous tribes to modernisation and the introduction of cars and trams.

A combination of large format projectors and standard projectors were required to produce images to cover the of 55 metre wide facade of the town hall including the distinctive high clock tower. The projectors were installed on shop awnings directly across from the town hall on Swanston Walk.

Project managers Explosive Media contracted renowned large format projection company The Electric Canvas to provide the films and the projectors for the show. Peter Milne from The

Electric Canvas explained their role;

"Basically our involvement was to survey the town hall using our proprietary techniques of capturing accurate architectural features that allow accurate projection back on to a building facade. We're the only people in Australia who can do that. It allows us to use our Pigi projection system to very accurately map colour and images onto a building or any other structure. Ian de Gruchy then went about creating and applying images to the building. Those images were then sent to us to manipulate them into the masks to create accurate film for projection onto the town hall. In the mean time we came down and set up six projectors covering the facade and the clock tower and installed the film and programmed the show in consultation with the creative director."

The Electric Canvas supplied six scrolling projectors to cover the enormous building facade, three of which were 7000 watt Pigi

large format projectors each with double scrollers so that two independent film strips can be in the gate at the same time to create amazing results. And one Pigi utilised a rotating double scroller feature allowing for vertical scrolling. The other three projectors were 5000 watt Xenon projectors with single scrollers which provided support images to cover smaller areas of the facade and clocktower.

Screens were installed across the balcony of the town hall so that images could be rear projected from 35mm

slide projectors as well as from a video projector. The slide projectors were used for the 20 minute pre-show where 'millennium messages' from famous Victorians were projected onto the screens, and the video projector provided video footage of a huge eyeball, and of a young Queen Elizabeth waving from the balcony.

Peter Milne specified the show control system so that all the projectors and the soundtrack would be accurately synchronised.

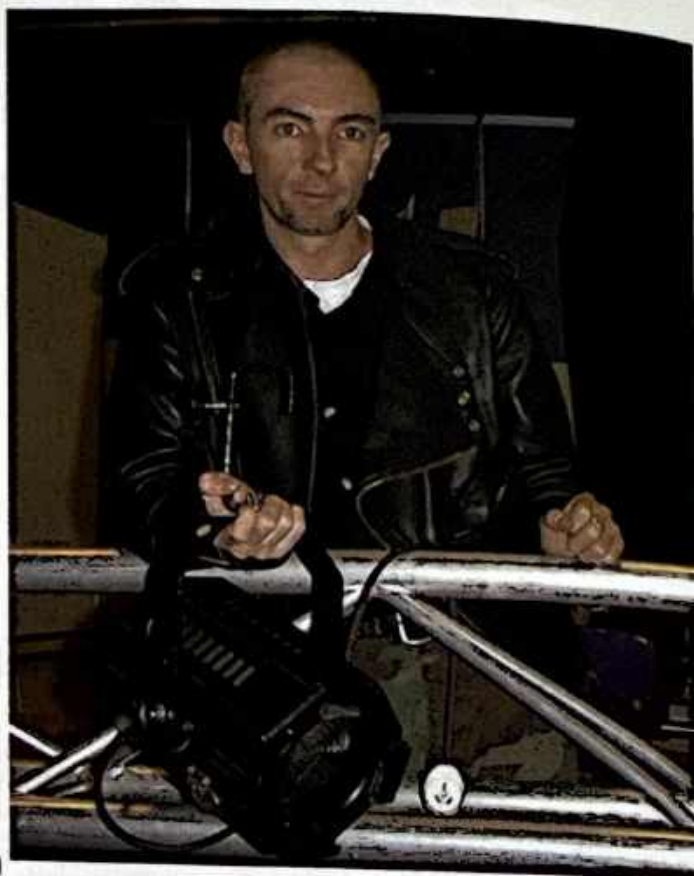


Why do I like 'Connections'?
Because every month there's a plain brown envelope in the mail. What must the neighbours think?!

I enjoy the unbiased reviews of shows and products, and generally keeping up-to-date in an industry that's moving faster and faster.

It's important to have an Australian forum.

**- Jamie Ivarsen, LD
(and Connections Reader)**



I'm a Lighting Designer, working mostly in Dance Parties. I also enjoy theatre lighting design, but don't get to do as much as I'd like. Recent lighting designs have included the Sydney Mardi Gras and Sleaze Ball parties.

I'm also in demand as a lighting operator for Dance Parties, including Adelaide Charity Sleaze Ball and Redemption parties (in Melbourne). In 2000 I will be Lighting Designer for the 10th (and last) Fantasy Ball in Melbourne, and the WinterDaze party.

Sometimes I work as a theatre technician/follow spot operator. Most recently, I domed for the Melbourne seasons of David Copperfield (no comment), RENT (that was a REALLY fun show) and Show Boat. Maybe its the gay gene, but I really love musical theatre.

How did I get started? I trained at the VCA, graduating in 1990. Following that I worked in Stage Management until the bottom fell out of the Theatre industry about 1992. Forced to eat, I commenced as resident Lighting Designer at '3 Faces' in Melbourne, a position I kept returning to (at the company's request, and more than once!) until the venue closed last October.

The best equipment? I've got a lot of time for Clay Paky fixtures. They're brilliantly designed with ease of maintenance in mind - I once made a bet that I could dismantle a Golden Scan '3' blindfolded. (The bet wasn't taken up!) They also run nicely without a trillion control channels slowing down the plot, and the optics are excellent.

The impact of the new Vari-Lites for sale will be interesting, as will the revision of USITT DMX512.

Source 4's are managing to surpass my love of Pattern 23's, so there's something. But they're still bigger. When are we going to see another such compact, rugged, useful profile as the '23?

I draw my plots using CAD, primarily VectorWorks, on a G3 Mac. VectorWorks is fast becoming the industry-standard CAD package in the US, because it is completely cross-platform, reads and writes DXF and DWG, and comes with Theatrical Lighting plugins, symbols and macros as standard.

TRAINING TIPS: As I'm also involved with training lighting technicians at Box Hill Institute in Melbourne, my tip to others would have to be don't forget our history. Dichroic Reflectors, moving lights, colour mixing and control desks with more brains than mechanist are all very exciting, but a really good designer can get by without them. We must maintain our skills and knowledge of analogue lighting for the benefit of the industry in general.

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MT1040
XGA resolution (1024 x 768)
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