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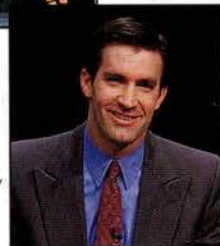
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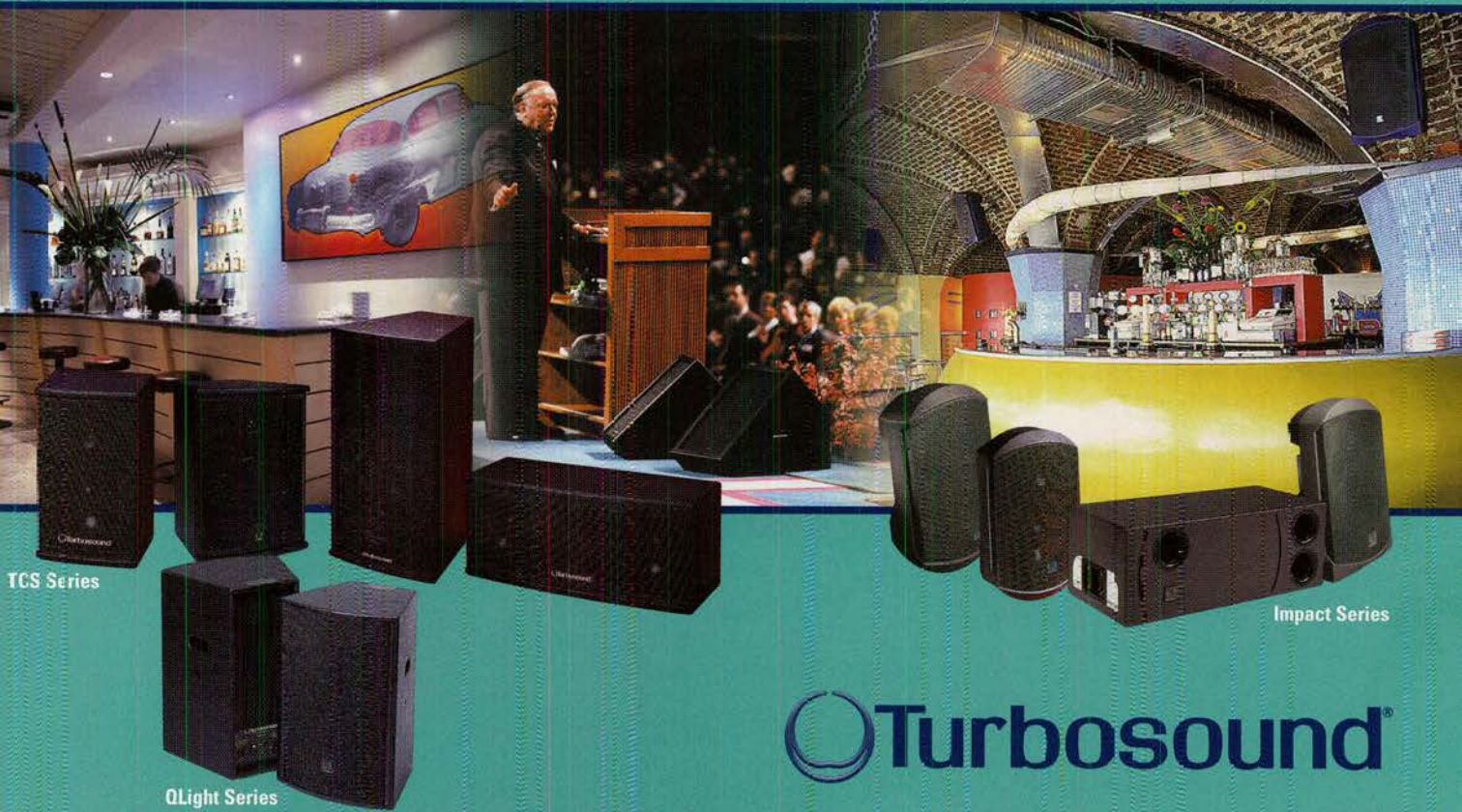
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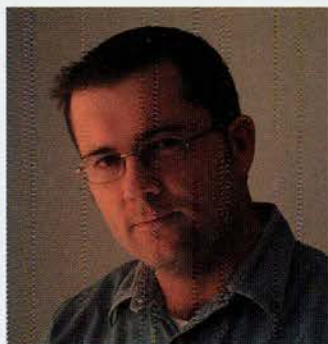
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For further information on the Turbosound range, email marketing@audiotellex.com.au or call your nearest Audio Telex office



While mixing sound recently for a hotel cabaret show, I had the opportunity to chat to the technician supplied to operate the lights. During one of our chats where he was describing previous companies he had worked for, I was reminded how poorly paid technicians that work for some specific rental and production companies have become.

I find it disgusting that there are companies out there that go out of their way to pay the least amount possible for semi-skilled labour to work on shows. There are firms that actively use up the energy of the young and keen, with the full intention of replacing them with new young and keen technicians when the existing ones wise up.

What the managers of these companies fail to realise is that their staff are the people on the ground that represent their company. If you provide a path for a technician to choose to better their skills, as well as basing their pay on their skill level, not only will you keep your staff longer, but you will also end up with more satisfied customers and increased repeat business.

If the morale of your technicians is low, don't expect them to go out of their way for your customers. Unfortunately, it is very hard for a manager to discover that his workers are putting a negative twist to that company's (and quite likely that manager's) name. However, if you have a moderate to high turnover of staff, your competitors seem to be gaining on you, you get temperamental from time to time or seemingly loyal customers start looking elsewhere - then alarm bells should be ringing.

It would be interesting to hear (in confidence) from people that think they or others are grossly underpaid - especially to see if it is a wide-spread problem, or only restricted to the occasional company.

We need to follow up on this!

-John Grimshaw, Editor.
email johr@conpub.com.au
or call +61 2 9876-3530.

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Known for the quality, re-recordable medium that provides TOC (Table Of Content) editing, MiniDisc now offers professional-users features like Auto-Cue, Auto-Pause and Vari-Speed. MDS-E10 and MDS-E12 professional MD decks have the latest ATRAC type "R" encode/decode DSP for superb recording and playback quality which is further enhanced with 24bit AD/DA converters.

New MDLP technology means you can record and playback in stereo for up to 320 minutes on an 80-minute disc, perfect for PA applications. Up to ten Hot-Start tracks can be programmed and the PS/2 front panel interface

lets you enter track and title text with a standard PC keyboard. Both units are rack-mountable and are supplied with a wired/wireless remote. The MDS-E12 has balanced XLR analog with RS232, parallel and play/record relay, extended remote features.

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Connections

The Asia/Pacific Professional Audio and Visual Technology Monthly **MARCH 2001**

LAKE TECHNOLOGY AND CLAIR BROTHERS DO DEAL

In a \$7 million deal for the Sydney high tech company, Bruce Jackson signs on with Lake Technology to commercialise new audio technology

One year ago Connections detailed secret work in progress to pioneer new pro audio control technology. A team of specialists, supervised by Australian born US pro sound legend Bruce Jackson, were developing devices under license to Clair Brothers, the world's largest live sound rental firm.

Now Lake Technology Corporation is acquiring this key speaker management technology from Clair Brothers - who have entered a three year volume purchase agreement for loudspeaker controller and processor products to be built by Lake.

The finished product embodies a unique DSP-based control system for loudspeakers. The product integrates several standard functions into a single unit with a highly innovative user interface and extensive remote control and networking features.

Over the next 3 years a minimum of US\$4Million (A\$7.14 Million) in revenue will be realised in guaranteed sales to Clair Brothers. The deal will deliver a minimum A\$2.1Million in revenue this financial year with around A\$1 million in gross margin. Additional revenues will come from sales to third parties. Marketing and distribution of the product to third parties will be handled by Lake Technology Corporation in California, with engineering and support provided by Lake's Sydney-based team.

Clair Brothers Audio is owned and managed by Roy Clair and his nephew Troy Clair (pictured top left with Bruce Jackson).

Lake Technology's Managing Director, Mr Len Layton, said the partnership will enable greater targeting of the Live Sound market which is low profile but big business.

- Julius Grafton



Mackie rolls out contractor range as it digests RCF

Mackie Industrial is a broad new line of contracting audio products, featuring a new flagship range of innovative digital processors and amplifier/mixers such as the new DX-8 (below). These new products will be distributed in Australia by existing Mackie distributor, Australian Audio Supplies.

The Mackie Industrial range also encompasses a number of re-badged RCF products previously sold in this country including the Monitor, Art and Vision speaker ranges.

This brings to an end a successful era of RCF Distribution by Melbourne firm Group Technologies. Distribution of RCF's speaker component range will now be handled by Production Audio Services of Melbourne.

"Apart from this, the synergy of Mackie (and subsidiaries) EAW and RCF will bring some very exciting speaker product to the table under the Industrial banner to supplement already successful models like ART in the range" said Dave Croxton, Managing Director of Australian Audio Supplies.

Village exit as Staging Connections restructure

BY SHERRIE MORREAL

Major Australian production firm Staging Connections was restructured on January 31st. No longer a Partnership, the firm has announced that it has evolved into a unified entity to provide a broader range of services. Shareholders now include Macquarie Bank and MGB Equity Group, replacing the public company Village Roadshow who have sold out.

"Staging Connections is a quality business, generating good returns but it does not fit naturally under our portfolio of core media and entertainment businesses," said Village Roadshow Finance Director, Peter Foo.

"We were attracted to the Staging Connections business because of its long track record of profitability and stable and

> continued over

Staging Connections
CEO Gary Hackett



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look at our website and see if you
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Who is doing what?

ENTERTAINMENT TECHNICAL AND RIGGING COURSES

Showtech Australia Pty Ltd & Showtech Rigging now offer Entertainment Technical & Rigging courses for all Entertainment Industry Persons, with various skill levels.

These courses are conducted at Showtech's premises in Port Melbourne, however specially tailored courses are available to suit your venue or organization.

These specially tailored courses can also be conducted at your venue or premises on request. They are designed by Tiny Good, who has a very good reputation in the biz.

For further information you can email riggingcourses@showtechaustralia.com.au with your details. Alternatively fill in the expression of interest form in the Tiny Notes page at www.showtechaustralia.com.au

The first Introduction to Rigging for Technicians and Performers course will commence on the 21st May 2001.

Limited bookings available, say Showtech.

Staging Connections (continued)

highly experienced management team," said the Executive Director of Macquarie Direct Investment Limited, Michael Traill.

"The business is strategically positioned to participate in the significant growth of the event staging market as the industry continues to consolidate and an increasing number of corporates outsource this function."

"This business is a rush!" says CEO Gary Hackett. When asked how long he planned to stay in the presentation industry, he simply answers, "Why leave? After 21 years, I am in it for the long haul. Many professions can be repetitious and become boring. But not this industry. We meet amazing people, we launch amazing products, we are there."

Gary becomes even more pleasantly animated as he speaks, "It's all happening right in front of our eyes. Where else can you launch a cosmetic one day, corporate events the next and a new drug the day after?"

"Its like starting a new business every 3 or 4 years with all the changes in the industry".

IS THERE A CAMPAIGN AGAINST KEN FLOWER?

Although it was way back in 1996, our story about one corporate show over 3 continents in Asia for US tobacco company R. J. Reynolds has ignited a storm of claim and counterclaim. The show was reported in Connections, where Creative Director, Production Designer and Co Producer of the project Ken Flower (pictured) kindly told our journalist about his roles and the team as well as the shows themselves. We had heard of the shows from LD Peter Neufeld and we went and sought the whole story from Ken.

Shows like this defy conventional scale, they can take up to a year to create. In this instance the team put the whole thing together in an amazing 12 weeks. The corporate environment is completely unforgiving. If you mess up one tiny thing, then you'll have the entire weight of the multinational bearing down on you.

Far from messing up, the team behind the show did such a good job that part of the project (the audiovisual module) named One Sight, One Sound, One Sell won two awards. It is clearly acknowledged internationally as an excellent creative work.

At the time we were surprised to receive a

letter after we published the show story. This letter wrongly suggested that Ken Flower had misled our journalist by distorting the truth and claiming credit for work he had not done. Nothing could have been further from the

truth and we were happy to print a retraction to that letter in the next issue. That should have been the end of it - a done deal

Fastforward to today. Connections recently spoke to Ken Flower about some alarming occurrences arising from, not the project itself, but the Awards arising from it. As we all know accuracy in Awards attribution is a hot topic at the moment -

and rightly so.

To our horror, during our recent investigations we have heard certain people still peddling a claim about Ken Flower 'distorting the truth'. If this stems from our article, and our decision to publish the subsequent letter, then Connections apologises to Ken Flower for being unwittingly involved in what may be a campaign against his reputation.

Connections confirms that Ken Flower's honesty and professionalism in dealing with our magazine was - and is - beyond reproach.

- Julius Grafton, Publisher



Premier Brisbane Moves, opens FNQ

Premier Lighting Brisbane has moved to bigger premises in Brisbane just around the corner from the old office. The new address is 33 Wyandra Street, Newstead QLD 4006. The phone numbers remain - +61 7 3257 0443.

Premier Lighting Queensland now operates in Cairns (Far North Queensland). **Leith Golding**, who managed both the Cairns Convention Centre and the Reef Casino's technical requirements at different times is in charge.

- From the end of March, **Sue Hicks** joins the Premier Lighting Brisbane team. She will be responsible for handling sales in Brisbane and Sydney and for co-ordinating their national marketing plan.

Staff Changes At Show Technology

Show Technology have announced that **Anthony Raad** (Tony to most people) has been appointed General Manager. **Phil Buckley** has a new position of Logistics Manager and Internal Sales. **Andrew Winslade** (formerly from LSC Lighting Systems), has been appointed as Professional Products Manager.

Also joining the staff is **Mardelle Collins** who will look after the Pro Shop Catalogue products. Mardelle worked previously for GUET where she was a Product Manager.

Finally, also new to the Show Technology team is **Silane Rahme**, as Credit Controller.

Lightmoves (Melbourne) Moves

Lightmoves has moved to new premises at 138-146 Browns Rd, Noble Park, VIC 3174. Ph +61 3 9701 2500. Fax +61 3 9701 2511. www.lightmoves.com

- Lightmoves also have a new person in charge of Education Sales - **Kristian Gardiner**. Formerly of Clearlight Shows Pty Ltd, Kristian replaces Peter Hough, who has returned to teaching.

New Staff at Active Lighting

Tim Newman has joined the staff in the role of Senior Production Manager/Resident Lighting Designer. Also, despite rumours to the contrary, Anne and Andrew Topp still own and operate Active Lighting, and the company continues to be quite busy. For more information ph +61 3 9819 6912.

CC's Light & Sound are Moving

CC's Light & Sound - one of Melbourne's largest suppliers of new and second-hand pro-audio, lighting & DJ gear has moved.

Both the Moorabbin and South Melbourne stores have relocated to one store at 486 City Road, South Melbourne.

Their new contact numbers are ph +61 3 9695 3999, and fax +61 3 9695 3900

The Roadogz Are Up & Running

As the name suggests, a new website for industry technicians has recently been launched. To quote their website, "Roadogz.com a place filled with stuff that works with and integrates our Industry in some way or another."

Developed by touring technicians, it wants to become a repository of local knowledge for any city worldwide that you care to tour to. This is a place where fellow Roadogz can go, in a social and professional environment. The site has lots of features including a production office filled with tools, and links that will get you through almost any scenario. Check it out. www.roadogz.com.

Audio Telex to distribute Soundtech

Soundtech (USA) has appointed Audio Telex as their exclusive distributor for Australia and New Zealand. Soundtech has recently undergone a major expansion of their production and R&D facilities. The result is a huge new range of non-powered and powered mixers, processors and speakers. National Sales, Marketing and Export Manager **Stuart Craig** explains "the investment in new facilities by Soundtech has allowed them to develop a huge array of products with all the industry standard features and a very, very small price tag."

- Audio Telex has also been appointed the exclusive distributor for Euromet (Italy) in Australia and New Zealand. Euromet are one of the world's largest OEM manufacturers of premium quality microphone stands, speaker stands, brackets and other accessories/hardware. Recently, Euromet launched their products under their own name and have been operating very successfully in Europe for some time.

Don McConnell, National Product Manager for Audio Telex explains "Euromet has made the aggressive move of launching their own brand after years of being the R&D/manufacturing arm of some of the biggest names in the business. Now we can all access their expertise and at very competitive prices".

Entertainment Lighting And Sound Expand Inventory

Entertainment Lighting And Sound have recently purchased an Avolites Diamond 3, Avolites Pearl 2000 and a Whole Hog 2 (with expansion Wing) to complement the company's large inventory of moving and generic fixtures. These recent acquisitions were undertaken to improve the company's rental stock.

Too many Studios, as miniature mic revolution fuels name change

Sydney based pro audio specialists **Studio Supplies** have changed their name, citing confusion with the Studio part of their former title. Now known as d2a Pty Ltd, the company run by Leon Hart specialise in import of DPA microphones, and have a 14 year old business dealing in audio for studio and broadcast.

DPA of Denmark have enjoyed major expansion of late, and have just moved into new factory. Their strengths lie in miniature microphones, both lapel and headworn, for theatre and presentations.

Presumably no one will set up and trade using the name a2d anytime soon?

- d2a, call +61 2 9957-5389.

301 launches "THE LOUNGE ROOM"

In a joint venture with highly regarded musician / producer / engineer Paul Najar, Sydney's Studios 301 has launched a fully digital facility for music production and content creation.

Named THE LOUNGE ROOM, the new studio at 301's Alexandria complex is set up to handle projects for record production, pre-production, song writing, vocal / instrumental arrangements, sound design, music for film/tv and advertising, multimedia content, audio sweetening and internet delivery

Situated in the spacious Studio 4 control room on the mezzanine level and based around Pro Tools and Logic Audio with the Mackie D8B digital console, The lounge Room includes the services of Paul Najar, use of the adjacent live recording area, an extensive range of synthesizers, sound modules & effects units, plus a huge library of sampled sounds.

Fast internet access using ADSL technology is enabled, providing rapid up/download of files.

Tie lines to 301's main studios facilitate live recording direct from The Lounge Room.

Who is doing what?

Mackie Digital Clinics

Bob Tudor, head of Software Development for Mackie Designs, will be in Australia at the end of March. Bob is in Australia to give an insight into the latest creations from the Mackie Digital department, the HDR 24/96 Hard Disc Recorder/Editor and Version 3 OS for the much acclaimed Digital 8 Bus.

Bob has been with Mackie for many years now and his passionate presentations at trade shows are always entertaining. Public Clinics on Mackie Digital Systems hosted by Bob Tudor will be held in Melbourne, Sydney and Brisbane in early April. Please call Australian Audio Supplies on +61 2 43884 666 for dates and venues.

Show Technology lighting technology training program

Show Technology have announced a range of all-day training sessions. Designed to bring understanding of the inner workings of numerous devices, the courses aim to give an appreciation of "the wide range of possibilities available for which the product may be used." Each course has limited numbers, and attendees will receive a Certificate of Completion as well as an "infamous Show Technology Bag of Swag" - whatever that is!

Andrew Winslade, Show Technology's new Professional Products Manager, will be in charge of the Training Program.

The training days will be held at Show Technology Australia Pty Ltd Headquarters, 13 - 15 Bridge Street, Rydalmere, NSW. Each course runs from 9.30 am - 4.00 pm and will cost \$99.

The preliminary calendar for training days is as follows:

- March 7th MARTIN MAC SERVICE
- April 4th Lighting Control on PC using MARTIN LIGHTJOCKEY
- May 9th Lighting Design on your PC using MARTIN SHOWDESIGNER
- June 6th Retail and Display Lighting using the CLAY PAKY VIP.

Call +61 2 9898 1111 or email awinslade@showtech.com.au.

Meyer debut powered line array

Long anticipated new line array breaks reliance on multiple boxes, more scalable

Meyer Sound's new long awaited powered M3D Line Array has arrived early, ahead of its rumoured June launch.

The Meyer 3D (M3D) Line Array System marks a significant breakthrough in the now-familiar line array concept, says Meyer. The M3D is the first entirely self-powered line array system to incorporate

BroadbandQ technology for precise 90° horizontal directional control across the full audio spectrum, from 18kHz down to 40Hz. (Control extends to 30Hz when full range M3D cabinets are augmented by M3D-Subwoofers.)

BroadbandQ achieves this remarkable directivity by combining a new high-frequency REM (Ribbon Emulation Manifold) and constant-Q horn with Meyer Sound's award-winning low-frequency directional control.

Unlike other line array systems, the M3D doesn't require a minimum number of cabinets: users can ground-plane load a single



M3D to create a virtual two-cabinet array, or fly up to sixteen deep for extremely long throw applications in the largest outdoor venues. Also, because the M3D is compatible with other Meyer Sound products, system designers can custom tailor downfills and short-throw arrays for balanced coverage in the near field - the difficult region for all line array systems.

In addition, the M3D offers innovative features for efficient touring logistics, including a captive QuickFly rigging system with integrated CamLink hardware, removable caster rails and cabinet dimensions scaled for tight truck packs.

Moore quit DJ lines, Vestax, Gemini and Lytequest move on

Melbourne based distribution firm Musiclink have acquired Moore Music's product lines in DJ Products and Musical Instruments and Accessories

The agreement includes the Vestax, Gemini and Lytequest brands.

The agreement does not cover those products in Moore Music's computer music software & hardware range.

Speaking on behalf of Musiclink **Mr. Mike Daws** said, "Musiclink is really looking forward to representing these products in Australia. It is a new product area for us, and we are excited about the potential of these products in the Australian Market."

The founder of Moore Music - **Tony Moore** - has left the company in order to take up a senior management position with the Vestax Corporation of Japan.

The management of both companies joined in wishing Mr. Tony Moore every success.

Launch of Club Navigator

For the last several months, Navigator Systems Ltd. have been looking at ways that they can improve their levels of technical support. As a result, they have developed a new web site - www.clubnavigator.co.uk designed specifically for registered users of HireTrack and HireTrack Eclipse. This new site will enable members of the Navigator community to instantly access their library of technical support documents, 24 hours a day, 7 days a week.

In addition, they have developed a forum of issues, where all users can post suggestions, ideas, and comments. Customers will have the opportunity to share customer reports and/or utilities with other users. The company newsletter will also be maintained, keeping customers apprised of current projects, and new releases of the software.

For more information, go to www.clubnavigator.co.uk



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For information on the full range of Neumann microphones & accessories, please contact:

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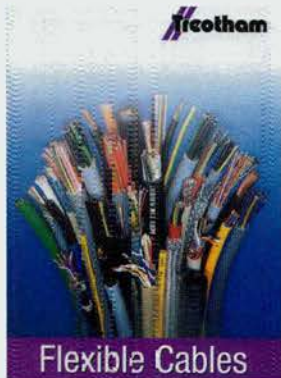
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What will you be using soon?

Flexible Cables catalogue



Electrical engineering contractors and manufacturers can look forward to a new catalogue available from Treotham Trading. The expanding line of quality Heukabel industrial and control cables is listed in a 500-page Year 2001 catalogue. Treotham Trading also carries extensive information to help with any technical and cabling need in control, power, data, Bus, Coax, communications, and industrial installations.

An abridged version, Flexible Cables, is available on request to anybody interested in an extensive digest of the larger volume.

For more information, contact Mr Mikael Paltoft at Treotham Trading +61 2 9907 1788 -www.treotham.com.au

Turbo Goes Powered

Turbosound (UK) have released a powered speaker package which includes a full range 3 way system (TQ440SP) and a dual 15" subwoofer (TQ425SP).

Early tests in various parts of Australia have proved extremely encouraging, say Turbo and their new distributor Audio Telex.

With a very corporate look and compact design, the Turbosound Q-Light powered enclosures are aimed squarely at the corporate hire, AV and theatre markets. The TQ440SP is a three-way self powered, full range enclosure incorporating integral amplifiers and control electronics.

The design incorporates a custom-designed, dual concentric 12"/1" driver in an optimally tuned vented trapezoidal enclosure handling low and high frequencies. The critical mid-range frequencies are handled by a propri-



etary 6.5" cone transducer on a 60 by 40 degree horn, loaded with a TurboMid device. With a maximum SPL of 134dB peak, rigging

points, pole mount socket, flush side handles and line in and out connections, the TQ440SP is a very convenient and powerful package.

The Turbo Powered Q-Light package is completed with a dual 15" powered subwoofer. Whilst the TQ440SP can be used on its own, if extra bass is required the TQ425SP can certainly deliver.

Four heavy duty wheels and integral pole mount, all in a very compact enclosure, and a maximum SPL of 138dB complete the spec.

Audio Telex has a demonstration system available. Please call your local Audio Telex office or Email them at marketing@audiotelex.com.au

New from Numark



The CDN-88 is a new CD player from Numark that has the ability to scratch in real time like a vinyl record. Other features include +/- 100% pitch change and Key Lock (aka master tempo), reverse play, dual loops, Anti-shock, and other sound processing. A built-in Beatkeeper with Interlock function can align all cue points, make perfect loops, and if required, lock both players together on the beat. The unit is priced at \$2599

at \$899.

Contact Show Technology Australia on 1800 646 666 or mcollins@showtech.com.au

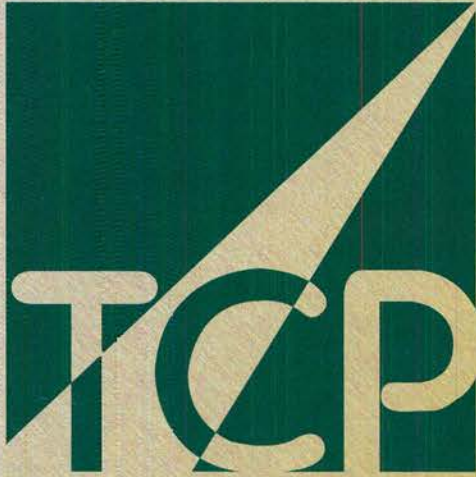


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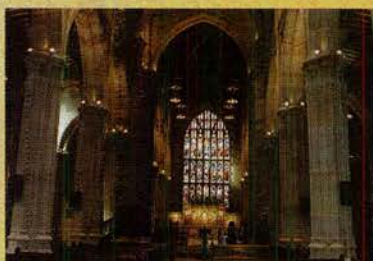
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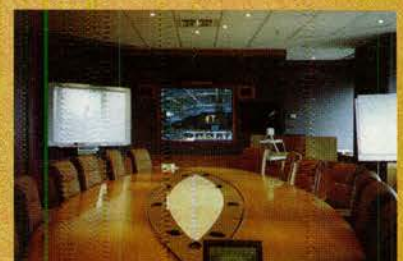
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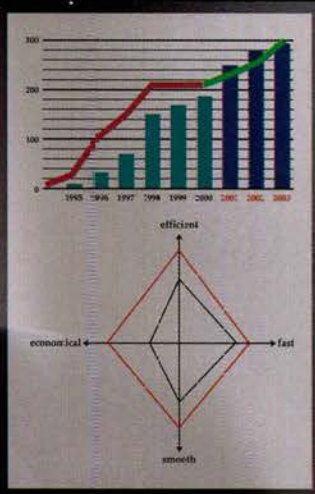
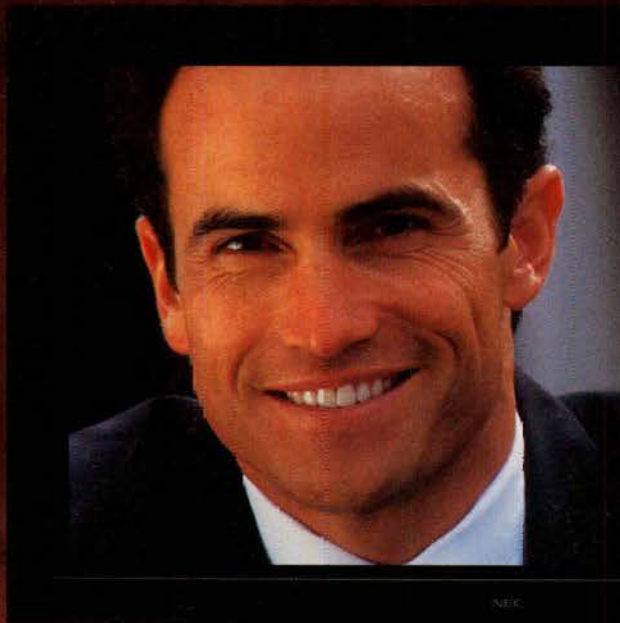
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With an NEC LT155, you get more than just one of the smallest, lightest projectors ever made. You get an instantly mobile business tool. Nothing is more frustrating than waiting for your laptop to boot up in front of a busy audience. With the PC Card Viewer you can set up and start presenting in less than a minute, directly from the projector, so you can leave your notebook behind. By connecting a USB mouse you can even make on-screen annotations. With NEC's exclusive AccuBlend & AccuSense technology, setting up LT155 requires little more than connecting it. The LT155 really is the ultimate tool for professionals on the go.



NEC has a range of projectors to suit any application including the micro portable LT Series, ultra portable VT Series, the powerful MT Series for boardroom and fixed installations and the highlight output GT1150 and XT5000 projectors for large venues.

Contact us today to arrange a demonstration NEC Australia Pty. Ltd.
Call 131 632 www.nec-pj.com www.nec.com.au

What will you be using soon?



CAD INTRODUCES COMPACT CONDENSERS

Australian Audio Supplies, the Australian Distributor for CAD microphones is pleased to announce the new CAD M-Series studio microphones.

CAD's new M177 is the first in a new generation of externally biased CAD Condensers. Bruce Forbes, CAD's VP of Design & Engineering claims, "The M Series promise, once again, to change the studio mics market the way our E-Series did years ago."

He added "these mics clearly demonstrate CAD's distinction with the "buy-sell" mentality that is fueled solely by low price. The M177 and 179 could sell for considerably more and they'd be well worth it. But since we realize that 'price' is a key element in the selling process we've calculated our structure as low as possible."

Employing the latest computer modelling tools, the design intention of the CAD engineers was to develop a microphone that had the best features of old world and new world technology at a very affordable cost. The striking, and compact, M177 employs a

Cardioid polar pattern in an externally biased capsule with a gold sputtered 1.1" diaphragm. The M 179 features five point detented pattern-control providing 9 useable patterns, continuously variable between detents.

Both mics employ a high speed, low noise operational amplifier (op amp) head amp, coupled with a new discrete high efficiency power-supply circuit.

This results in extraordinarily low noise, low distortion, and fast transient response, says CAD.

Other specs include a frequency response of 10Hz - 20kHz, sensitivity of 85dBA, S/N ratio of 85dB with remarkably low self-noise at a claimed 10 dBA. In addition the durable M177 offers robust casing, sturdy wind screen and a maximum SPL of 148 dB.

M Series mics may be powered using a 24 or 48 volt phantom supply. They feature a non-capacitive 20 dB pad switch and an 80 Hz high-pass filter. The M Series by CAD compact studio condensers promise to turn the performance/ price ratio topsy-turvy.

The CAD M177 has an Australian Suggested Retail of \$599, while the CAD M179 retails for \$699. For more information, Freecall 1800 50 20 15 or sales@ausaudio.com.au.



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The 1st Introduction to Rigging for Technicians and Performers course will commence on the 21st May 2001. Limited bookings available so please register your interest soon.

Rane debut MP44 mixer

The MP44 features 8 inputs - 2 on each of the 4 channels for either a CD or other line level device or a Turntable. All channels are fully assignable to the VCA crossfader featuring full curve control. Each of the 4 channels also has individual gains with overload indicator, as well as 3-band rotary EQ with Rane's Accelerated Slope technology for full cut and +6 boost. The MP44 is Rane's first full size club mixer to have FlexFX fully assignable effects loop available to all channels regardless of crossfader assignment, as well as CD-fader start capability making it compatible with all popular fader-start DJ CD players.

Another brilliant feature is the built-in Master Limiter on both the House (Main) and booth outputs featuring true RMS detectors, protecting speakers and amps. The MP44 can also be controlled remotely by the optional Rane VR1 Remote Level control, allowing 40dB of Master Mix gain control from a separate location providing added security for club owners and contractors alike.

Rane is distributed by Jands. +61 2 9582 0909



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What will you be using soon?

SADiE Release AES31

SADiE is pleased to announce the immediate release of AES31 compliant products. AES31 is the new standard for network and file transfer of digital audio. The goal of the standard is to re-introduce to the professional audio industry the concept of universal interchange.

A universal format for interchanging audio has not been present since the days of analogue tape. AES31 defines the source material alongside edited audio, including cross fades, that is text-based in the manner of a traditional EDL, which makes it easily readable and correctable if circumstances require it.

The format is sample-accurate and supports multi-channel files in excess of 99 channels, as well as interchange between PAL and NTSC formats. Many other major digital audio manufacturers are poised to follow SADiE's lead by implementing the AES31 project interchange standard, which is set to revolutionise the audio production industry.

The announcement follows the successful public demonstration of AES31 at the AES Exhibition in Los Angeles in September 2000. The format, which has already been ratified as an international standard, is open and non-proprietary and thus not exclusive to any single manufacturer.

AES31 for SADiE is immediately available. For further information on all SADiE products, including V.4 software features, compatibility and upgrades, please visit the website at www.sadie.com or the local distributor, Neotec+61 2 9873-3994.

THIRD XONE BREAKS NEW GROUND



The Allen & Heath family of DJ mixers has expanded with arrival of the Xone:32 - a three input 'scratch style' performance unit.

Designed to give 'scratch' artists the facilities and effects they need, the Xone:32 incorporates the unique Direct Recall System (DRS) whereby mixer settings can be stored in up to four user presets and recalled at the push of a button.

Used in a dynamic performance, where several switches can be invoked simultane-

ously the creative possibilities are endless. Another unique feature is the LFO (Low Frequency Oscillator), which enables much faster and consistent stutter and modulation, which, combined with the ground breaking variable VCF filter provides the artist another set of performance tools.

The mixer also includes advanced features including VCA channel faders and cross fader with variable contour, hamstering, transform and a fine-tuned extended slope channel EQ.

Reliability comes from using high quality components throughout including a premium quality extremely low drag VCA cross-fader especially developed for Allen & Heath by Penny & Giles.

The control surface is clean and easy to use with the top horizontal face split into two sections. The lower section comprises the performance area and can easily be removed for fader servicing and repositioning of the transform switches. The upper section houses the EQ, meters and filters. The front horizontal and rear horizontal faces are used to position the input and output controls not required for performance use, and better kept out of the way, such as gain, phono/line/mic selection and headphone.

Retail price (Incl GST) of the Xone:32 is A\$1,995. Allen & Heath is distributed in Australia by TAG, call +61 2 9810 5300.

Midas Introduces Venice

Compact format live mixing consoles

The brand new Midas Venice console is a pro audio mixing console in an ultra-compact format. Venice is designed to satisfy a number of requirements including smaller conference or live band applications, for effects returns or additional inputs in a large multi-console application, installation/contracting work or as part of a small complete mobile system.

There are three versions available - Venice 160 (8 Mono-Mic/Line + 4 Stereo-Line/Mono-Mic Inputs), Venice 240 (16 Mono-Mic/Line + 4 Stereo-Line/Mono-Mic Inputs) and Venice 320 (24 Mono-Mic/Line + 4



Stereo-Line/Mono-Mic Inputs)

Prices start at A\$4999.

The Venice 160 will fit in a 19-inch rack and will ship with the rack-mounting kit.

For more information contact EVI Audio (Aust) Pty Ltd.+61 2 9648 3455

Verity Systems' TrueCopy CD-R/RW

Verity Systems range of Automatic CopyDisc CD-R/RW duplicators and manual duplicators have been further enhanced by the addition of the Verity Systems TrueCopy 12s CD-R/RW writer.

The TrueCopy professional CD-R recorder operates at up to 12X writing speeds and provides a more comprehensive feature set for professional audio and data duplication. All Track, Session, and Disc at Once Formats are automatically

recognised, audio duplicates are to full Red Book standard.

The TrueCopy 12s recorder also offers a whole list of additional features for quality assurance, data tagging, dynamic laser adjustment, and the prevention of illegal copying. These new features make the CopyDisc range of automatic CD-R/RW duplication the most advanced available.

• For more information go to the Verity website at www.veritysystems.com



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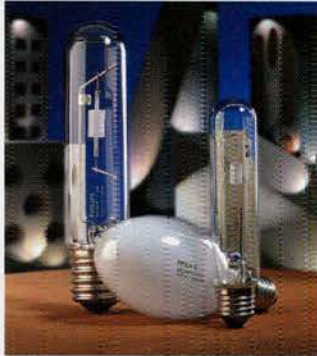
6-8 Elizabeth Street, Richmond VIC 3121

Tel: (03) 9415 1585 Fax: (03) 9415 1595

Email: gsteve@productionaudio.com.au Web: www.productionaudio.com.au

What will you be using soon?

PHILIPS LAUNCHES CDM-TT/ET LAMPS



Philips Lighting announces an extension of its Mastercolour City range of metal halide lamps. The Mastercolour City lamp combines the rigidity of the E27 and E40 capped SON lamps with the natural white light, excellent colour rendering and high colour uniformity and stability of the renowned Mastercolour ceramic arc tube. Currently only available in tubular 70 and 150W Mastercolour CDM-TT) formats, elliptical internally-coated lamps (Mastercolour CDM-ET) will be available in the same wattages during 2001.

These new Mastercolour lamps produce warm white light at 3000K, and the patented ceramic technology ensures colour fastness and consistency between lamps throughout the working life of 8000 hours. With system efficiencies of around 70 lumens/watt, measured light output is slightly reduced in comparison with SON, but improved visual acuity resulting from better colour contrast more than compensates. In trial installations, the general public comments that light levels actually seem to be higher than they were before, and invariably remarks on the vastly improved visual amenity.

Mastercolour CDM-TT/ET lamps have outer envelopes to give a robustness similar to SON, and the same E27 cap. Light centre length is the same, but the arc tube is shorter. For more information contact Karen Gifford at Philips Lighting ph +6 2 9805 4113.

Jem, Martin update range



JEM FX-2 DESIGNED FOR STYLE

Jem has developed a smoke machine that looks not unlike an intelligent light. The FX-2's outer shell is made from a specially formulated high temperature poly-carbonated material, which offers amazing strength as well as being lightweight. A Direct Thermal Protection device offers a safeguard from overheating and thus greater reliability. It has a fluid capacity of 1 litre and a compact hand held remote control. Jem's unique electronic pump ramping system produces a continuous and even fog output level. Soft start electronics allow the FX-2 to operate at a very low noise level. Priced at A\$699 inc GST.

For information on either of these products, contact Show Technology Australia's Professional Products Manager (Andrew Winslade) on 1800 646 666 or awinslade@showtech.com.au



Get Colourful with the Martin CX-4

After the success of the CX-2, Martin's CX-4 is a versatile, automated profile colour and pattern changer. The CX-4 uses a 6000 hour, 150 watt discharge lamp. A colour wheel combines with a colour/effect wheel to offer up to 77 different colour possibilities. The colour wheel houses 6 solid colours and open white, 3 CTC filters plus a multi-colour option.

The colour/effect wheel houses 6 solid colours, 4 gobo patterns and 5 beam reducing gobos plus a frost effect and variable strobe effect. An ultra-smooth, full range mechanical dimmer is also included. The CX-4 is DMX controllable or operates in stand-alone or master/slave mode. Priced at A\$1799.

Indy 575 Lamp Takes Studio Color into TV/Theatre

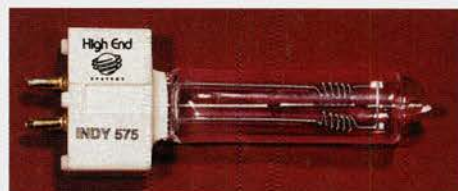
High End now offers a new lamp source for Studio Color with an adjusted colour temperature for film and television work. The Indy(TM) 575 is a patented incandescent lamp that gives designers the ability to match the colour temperature and colour rendering of a conventional lighting rig. At a lower colour temperature of 2200K, this lamp source allows designers to create deeper reds and warmer ambers with colour mixing. These colours are more difficult to achieve with the higher colour temperature of the MSR 575/2 discharge lamp normally used in Studio Color.

Using Indy 575 is easy - simply remove the MSR575/2 discharge lamp from the Studio Color S or Studio Color 575 unit (with electronic ballast - does not work with the

Studio Color M version with a magnetic ballast), plug in the Indy 575. That's it. No adjustments or modifications to the fixture are needed, not even for the voltage. The fixture will recognize the lamp and operate it correctly.

Indy 575 uses a patented filament design constructed to maximize efficiency with the reflectors in the Studio Color 575 fixture. Dimming is currently mechanical and will also be electronic in future fixture software versions. Electronic dimming offers smoother dimming and longer lamp life, as the lamp is on only when being used.

Says John Wiseman, VP of Worldwide Sales, "We listened to designers and we're happy to say we've met their demands. This extends the use of and expands the market for Studio Color 575s in giving designers an arc or incandescent source, while allowing rental houses and production companies the chance to broaden their business."



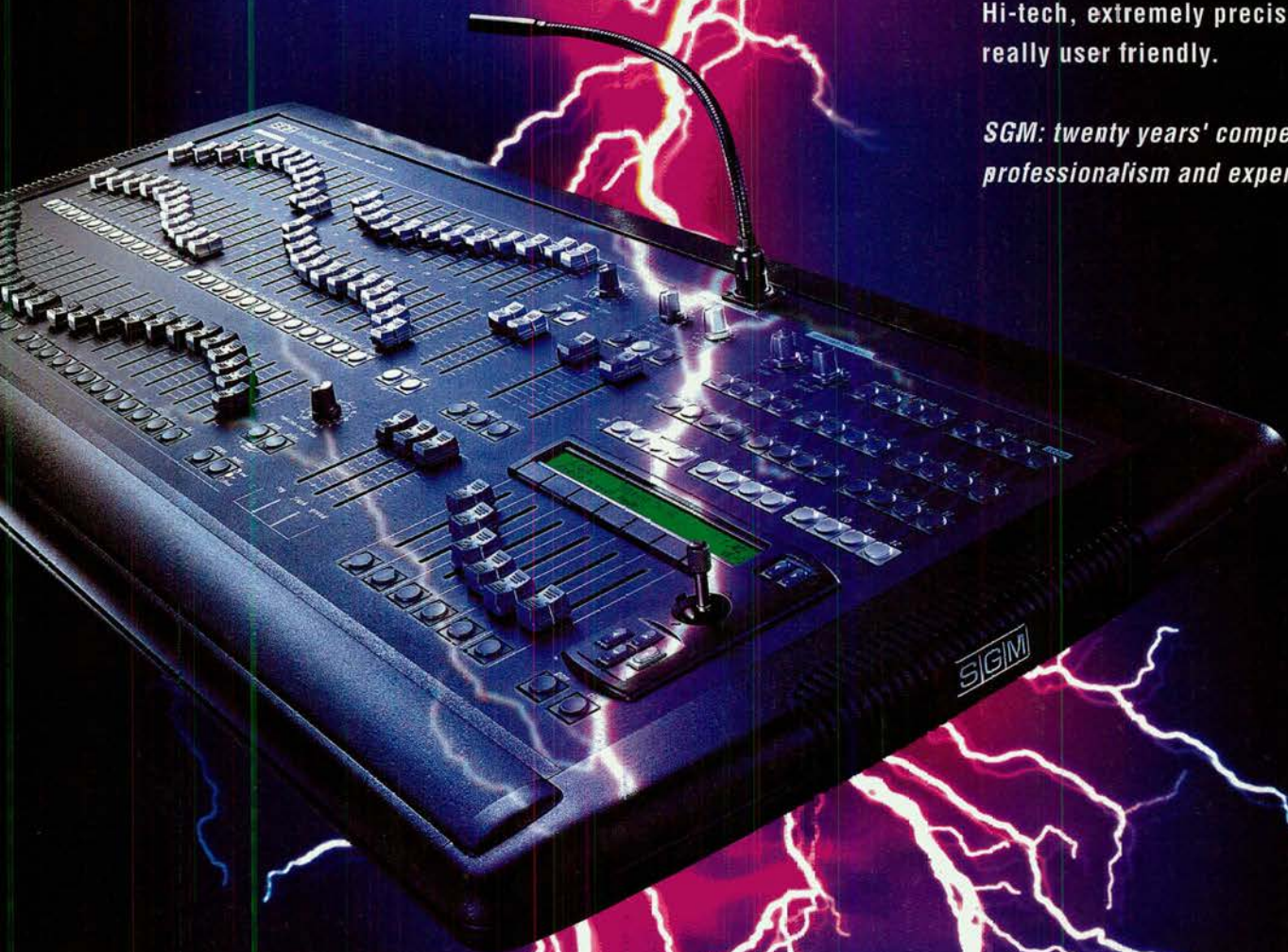
Bytecraft distributes High End in Australia. For more information, call +61 3 9587 2555

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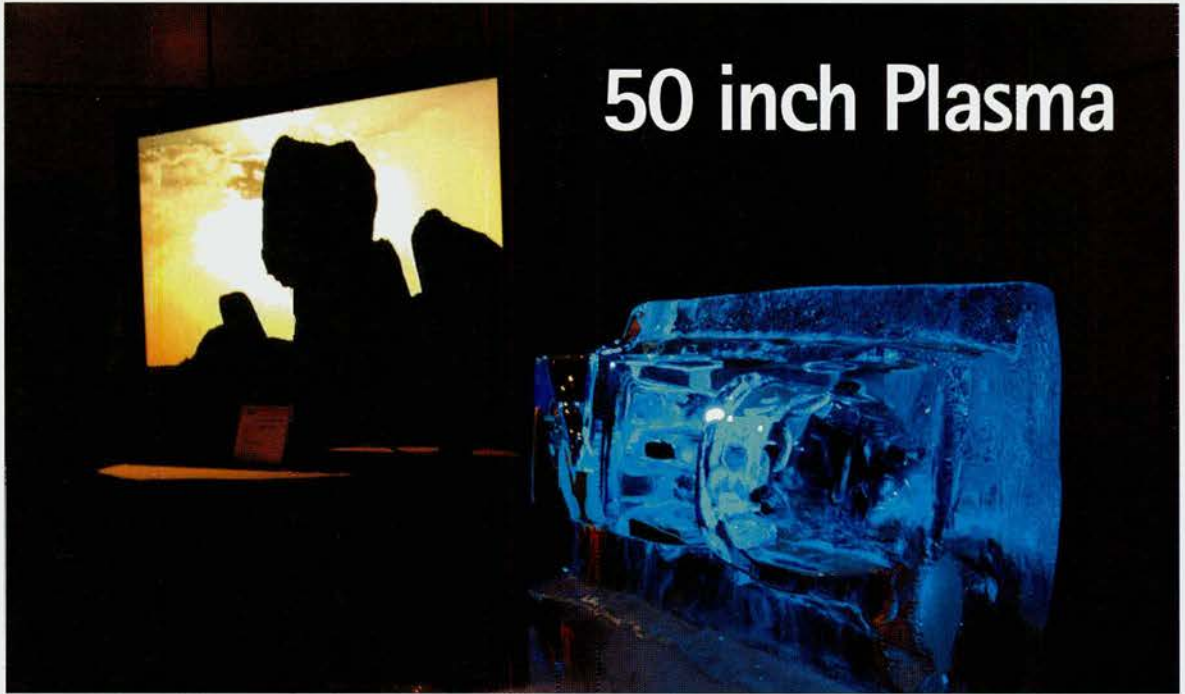


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What will you be using soon?

The newest plasma screen to hit the market comes from NEC. Its recent launch in Sydney was attended by numerous AV companies and other potential users. So, is it the next step in the display technology war?



by John Grimshaw

As plasma screens become more regularly seen in presentations and installations, many of the largest AV companies looked on in interest as NEC revealed their newest model – the PlasmaSync 50MP1. The 50 inch wide screen (16:9 monitors are measured by screen width) has a native resolution of 1365x768 pixels, and an impressive display clarity that we have come to expect from the plasma system.

The 50MP1 has the ability to handle ALMOST any input you care to plug in, including a very wide variety of computer resolutions, and the standard video input types (composite, Y/C and component). At the launch, NEC indicated that the monitor also handles a wide variety of high definition (HD) inputs. For 60Hz systems, this included 480P, 480I, 525P, 525I, 625I, 720P, 1080I, 1080I – but only 625P for 50Hz.

Another feature of this monitor is its ability to display side-by-side or picture-in-

picture using two vision sources of different scan frequencies at the same time. This is achieved using onboard digital processing of the vision sources so that they can co-exist on the same screen.

The monitor uses a proprietary colour filter process to enable the monitor to reproduce very good colour and contrast. Called Capsulated Color Filter (CCF), it removes the orange tinge created by the neon gas when it is excited by the charge required to activate the pixel. It also filters the colour emitted by the red, green or blue pixels, allowing only the saturated version of the required colour to pass. This CCF process, coupled with a black stripe surrounding every pixel, also greatly enhances the contrast, particularly in reproducing 'dark' images.

Physically, the monitor weighs in at a hefty 46kg – which is about average for a large plasma display. The overall depth of the unit is a very compact 107mm, and mounting



PHILIPS ★ PROXIMA ★ SANYO ★ SHARP ★ SONY ★ TELEX ★ 3M ★ AMPRO ★ BOXLIGHT ★ CANON ★ EIKI ★ ELECTROHOME ★ EPSON ★ FAROUDJA ★ HITACHI ★ INFOCUS ★ MITSUBISHI ★ NEC ★ PANASONIC ★ PHILIPS ★ SANYO

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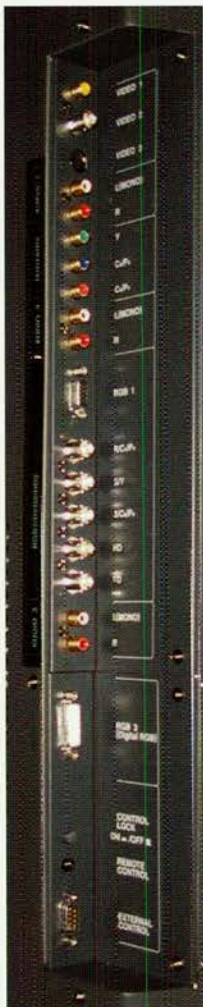
Buhl Optical has a large selection of zoom, long-throw and wide-angle accessory lenses for most brands of LCD projectors. Our lenses let you place your projector anywhere in the room and still completely fill your screen with sharp, bright, colorful images. So, whether you need a lens with a longer or shorter focal length than your projector's prime lens, we have the lens you need to produce larger or smaller images at whatever distance you require.

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hardware can be provided to allow wall or floor mounting.

The outer bezel (the surface surrounding the screen) is 67mm – small enough to allow a 2x2 configuration of four panels to make a large screen. At the launch, there was a display set up like this, but the black lines where the screens met was a little too wide to allow a decent uninterrupted view of the whole screen.

Overall, the monitor seemed to be a very impressive device, and competitively placed against the only other 50inch display on the market (from Pioneer). The native display resolution of the 50MP1 has room for improvement, as does its ability to display all HDTV formats. The suggested retail price of the display is \$29,900.

NEC +61 2 9930 2000.

Go the Distance with the ALTINEX DA1909

The new DA1909 Computer Video Line Driver from ALTINEX provides a way to drive computer video signals over lengths of multi-channel coaxial cable up to 100m or more. Offering unique 16-position equalization controls for each of the Red, Green, and Blue video channels, the DA1909 enables you to dial in the right amount of compensation for the cable run used in your system. As an added feature, the DA1909 also provides "GLI on Board" – built-in Ground Loop Isolation to prevent hum bars and other artifacts caused by ground loops in an audio/visual system.

For long runs of cable, using a DA1909 together with a computer video interface provides significant improvement in image quality over using a computer video interface alone.

The DA1909 provides a 5-BNC input for RGBHV and a 15-pin HD, VGA-type output. This makes it ideal for using at the end of a cable run, immediately preceding an input to a large screen projector, but it can also be used at the front end of a cable run if desired. Using optional brackets, the DA1909 mounts nicely into tight spots.



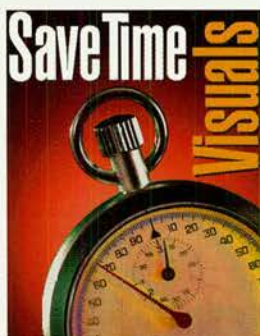
For more information, go to www.altinex.com, or call Axis Audio Visual, on +61 3 9761 2688

Little Support for HDTV in Australia

Australian broadcasters have found general agreement in which formats are going to be broadcast, thus removing the need for the government to legislate format requirements. The three HD formats that will be used by broadcasters are 576p, 720p and 1080i, all at 50Hz. In each of these formats, the number indicates the number of lines of resolution, the 'p' means progressive scan and the 'i' means interlaced.

You will notice that none of these format/frequency combinations appear in the list of compatible formats for this NEC plasma display. This is not unusual, as only two plasma manufacturers have made commitments to these formats – Sony and Fujitsu (a Fujitsu model is due in April).

The difficulties faced by equipment manufacturers is that Australia is such a small market, and the expense involved in adding these formats is hard to justify with the volume of sales. The net result is that the introduction of HD capable equipment in Australia is likely to remain very slow. The fact that there is no box you can yet buy to receive and decode 1080i@50Hz signals is not set to change before the end of the year.



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What will you be using soon?

Vision Switching on a Grand Scale

Connections had the opportunity to have a look at this new release vision mixer just prior to its first use in a major corporate presentation.

by John Grimshaw



Vision switching 12 or 16 inputs to three separate outputs would be a very complicated process if all of your sources could vary in size from composite video to high resolution computer graphics, and your outputs were all high resolution computer signals for projection. The solution the Folsom Research have developed is a very capable production desk vision switcher. Built in the USA, the

eleventh model of the production line was built to support PAL and sent to Technical Direction Company in Sydney.

The system is essentially made up of two discrete boxes – the I/O connections box and the control desk. The control surface is no more complicated than many vision switchers currently in use. Three preview monitors allow for precise set-up for each

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By using the web application in a standard internet browser, the user can access all vital functions of the projector from any networked location. With just one mouse click, projector features are easily accessed (switch sources, change brightness and contrast, adapt geometry, change lens zoom, shift, focus, etc.). In addition, the user can get information on the general status of all projectors in the network. More advanced diagnostics inform the user of when to change the lamp and other electronic errors. The projector can be programmed to automatically send this information via e-mail to the user.

According to Johan Stockman, Product Group Manager for BARCO's Corporate Product Group, "By introducing this network capability for our 6000 Series projectors, we redefine the way in which facility managers will remotely manage and control their fleet of projectors within their company environment. The embedded control and monitoring possibilities within a very familiar web browser interface result in an unmatched ease-of-use. The diagnostic information by means of automatic generated mail messages and job logs is a revolutionary tool, which will make service smarter and reduce the total cost of ownership."

For more information, contact
Barco on +61 3 9646 5833.

Vision Switching

(continued from pg 24)

transition to the main display screens. The transition itself can be one of seventeen fades, wipes, dissolves or cuts, each of which can be effected on all screens simultaneously while some effects can transition progressively across all three screens.

The simplicity of use of the system is achieved by the automatic control of input resolutions and frequencies. The universal inputs can accept composite video, s-video, component video, and computer video sources (640x480 to 1600x1200). These inputs are scaled to match the individual output resolution requested for any of the three outputs. In addition two to ten Auxiliary outputs can be used for feeds that do not require transition effects or scaling.

By removing much of the equipment previously required to achieve this kind of mixing, Folsom has significantly reduced the set-up time required. In addition, the transitions can be pre-plotted and stored by the desk in 'scene' memories. This system works in the same way as lighting desk 'scenes' in that there are 4 pages of 16 scenes, each of which can record which source to be sent to which output, effects, transition rates, and auxiliaries. Since all presets are recalled to the preview monitors, the operator can view, edit, and recall presets without affecting the program outputs.

The output formats capable are: VGA (640x480), SVGA (800x600), XGA (1024x768), SXGA (1280x1024), SXGA 4:3 (1365x1024). For plasma displays, 848x480, 852x480, 1280x768, 1360x765. Also provides HDTV 480p, 720p, and 1080p output rates. These HDTV output formats are 50/60Hz selectable in RGB format.

The unit comes in six configurations - 12 or 16 inputs with one, two or three outputs. In US dollars, the prices for the six models are: \$30,533 (1201), \$38,533 (1202), \$46,533 (1203), \$37,200 (1601), \$55,195 (1602), \$53,200 (1603). Folsom Research is currently working on distribution representation in Australia.

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Backstage with The



Local LX tech's from Bytecraft, Crew Chief - Matt Surden (right) and Icon Tech - Dion Weeks put it together for LD "Cosmo" aka Charlie Wilson.

The loudest show on earth crossed regional soil last month, and of course Connections was there. Nothing other than an AC/DC tour would see 80 EV X-Array speaker cabinets, plus subwoofers, crammed into a ten thousand seat arena.

The concept of loud is sometimes misunderstood. A sedate concert by the likes of The Corrs would use 48 speaker cabinets, plus some extra subs, in the same venue. But because there are almost twice as many for this band, it doesn't equate that it is twice as loud.

"They don't use any guitar effects" explains FCH engineer Paul 'Pab' Boothroyd, "so they need the strings to resonate at a certain pitch". This technique, loosely called 'extremely loud guitar', needs a Marshall stack, and if you are a very mobile, animated guitarist is featured with this group, then you need multiple Marshall stacks, spread across the stage.

So it is that the onstage sound is just slightly monstrous. We had a listen, with monitors and the PA turned off. The guitar tech gave us some sample riffs on the lead guitar, and rhythm guitar rigs. These hit the mix position at up to 110dB, seriously paint stripping loud. And chunky! Likewise the bass rig was thunderous, Pab ran it up to feedback through the PA to establish a 'no go level' during the line checks.

Suitably softened up, and eschewing ear protection, because the crew and band do not wear same. I decided to venture near the drumfill in the war zone. At that stage I was ignorant of one little fact that monitor engineer John Rcden did not tell me.

The drum monitor ensemble comprises four single 18" subwoofers in a line behind the drummer. On top are a pair of 12" and horn monitor wedges. At each side of the drum rise, is a single wedge. These carry one guitar programme alone in each.

The drum tech gave me a little blast. My head shook.

I needed to know that the drummer actually wears in-ear monitors. The drum



AC/DC FOH engineer Paul 'Pab' Boothroyd



World's Loudest Band

monitor rig then cuts through what he is hearing. It also acts as a kind of shaker stool. So I was hearing something that naked ears should never hear. The world's loudest drumfill.

"How do you cope without ear protection?" I asked Pab. "Oh, 'z OK", he said in his soft English accent. "I can use these!" attempting to shove his half sucked Chuppa Chup into one ear. "But then the ants are attracted, and they eat up all the loose ear wax!"

Maybe this guy has been on the road too long?

As it is, the previous FOH engineer for AC/DC was Robbie McGrath, infamous live sound engineer for the Rolling Stones, and star attraction at ENTECH last year. Pab has

been on every AC/DC tour since Ballbreaker some five years back, and the current tour started last August.

TRICKS OF THE TRADE

Way back when large PA systems were being first evolved, engineers struggled to get better gain before feedback, and cleaner sound. Early tricks involved using small microphones or contact strips as drum triggers, to open a noisegate, or activate a sample.

Later as guitar rigs were placed under the stage inside acoustically insulated boxes, in-ear monitors came down on stage monitor rigs, so the actual stage level was reduced to assist in separation and clarity through the PA.

Midi files, triggers, samples. There are a lot of tricks of the trade, but AC/DC have a firm



Monitor engineer John Foden prepares to go battle against the incessant wall of guitar quads (below). Every single one of these boxes is working..... and set to '11!





John Boshua from Powa Audio (Melbourne) put together the X-Array system with help from Queensland's Wild Gravity. EV amps powered the rig (below).



policy not to use them. So the show is based on a loud stage sound, and a PA that needs to get over the top of it.

This presents a challenge in terms of making the lead vocal cut through. "Brian has a distinctive, but not powerful voice" says Pab. "It's gravelly and excellent". He uses a Shure Beta 58A super cardioid vocal microphone.

The drum kit does utilise noise gates, but they are simply used in the traditional manner, shutting off spill in between hits of the drum nearest. No samples are triggered. Drawmer DS 201 gates are the unit of preference here, Fab says if he has the gain structure right at the desk, it gives him enough threshold gain range at the gate to get the threshold point set right.

Mixing is done on a Midas XL 4 console, and outboard effects are pretty rare. A little slap delay on the main vocal (Lexicon PCM 81), some reverb on the snare (Lexicon PCM 91), and a bit of compression here and there pretty well sums it up.

ABOUT P.A. SYSTEMS

Pab is using an EV X-Array system for the first time, after previous A/D/C tours used EV M7-4, better known as the Manifold system. The X-Array system used round the world on this tour was sourced from dB Scund in the USA.

As was the case with the Savage Garden tour last Autumn, dB Sound subcontracted with Melbourne based audio production firm Powa Audio to supply boxes and amplifiers for the Australian leg of the tour.

"It's fantastic here in Australia now" says Pab. "There are some great systems available - I used an EAW line array here last year from Norwest, and I am very, very pleasantly surprised with this system!"

dB Scund system engineer Dave Dixon prepped the system at Powa Audio's factory before the tour, setting system processor

settings on the XTA Audio Core controllers.

The topography of the system allows different amp racks to run at different gain and crossover settings. The mix of X-Array cabinets includes near and long throw variants, downfill and flown bass cabinets. Different cabinet types need different processing, and the XTA system has a processor in each rack of amplifiers, centrally controlled from the front of house.

Powa Audio assembled the system from stock, and sub hired some extra equipment and speaker boxes from Wild Gravity in North Queensland. Wild Gravity is one of a chain of audio production houses who now stock X-Array. Along with EAW's KF-750 range, the X-Array is the most prolific new technology high end loudspeaker cabinet available in Australia today.

MONITORS

The war zone is covered with twenty foldback sends, run from a Midas Heritage console by veteran monitor engineer John Roden.

"I've got 25 years of experience, but it is dragging the depths of my experience - I am pulling everything I know out - to do this show. The brief was, to make them happy. Make it loud. To do that, my work must be done (right) in the afternoon to have a chance of a half decent show".

Covering the stage are flown sidefills, each a pair of X-Array boxes. Then downstage is a stack each side, of three boxes on top of three riser boxes. Along the front of the stage are 8 pairs of Firehouse wedges. These are a dB Sound design, loaded with a TAD 15" woofer and some kind of 2" throat high frequency driver. John wasn't sure.

All the monitors were driven by Crown 3600 amplifiers, and "there is still some headroom. I'd rather no one knew that!" joked John. Nothing is worse than a band finding out there is still some foldback in reserve.....

Equalisation (EQ) of this platoon of monitoring was done on XTA programmable equalisers.

One trick of the trade for John is the Sabine Power Q, a two rack unit tall multi processor device which combines Sabine's feedback eliminator FBX technology with graphic and parametric equalisation.

"I do my normal EQ'ing, then set the Power Q to Turbo Mode, let it find and notch the troublesome frequencies, then lock it off".

This allows just that little bit of edge, where very narrow parametric equalisers can be brought into effect. Sabine have an interactive demo on their website at www.sabineuse.com.

- By Julius Grafton

2

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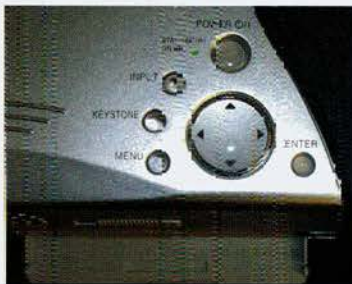
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Made in the USA

By John Grimshaw



This month's bench test takes a look at a new member in the class of video projectors known as 'Micro-portables'. Panasonic's PT-LC50 is a tiny 2.5kg device that is surprisingly capable for such a small package. The projector is a SVGA (800x600) native resolution, 700 ANSI lumen device which uses the new 3 chip 0.7" LCD panels.



Brightness:	700 ANSI lumens
Imaging Resolution:	300x600
Imaging Type:	3 panel 0.7" LCD
Lamp Type:	2000hr 130W UHM
Lens Optics:	F2.3 - 2.6 with f28 - 37mm manual zoom
Focal Distance:	Min - 0.6m (1.1"/15") Max - 15.7m (225"/300")
Dimensions:	267x208x74(WxLxD)
Physical Weight:	2.5kg
Speakers:	1x 0.5W RMS
Vision Inputs:	Composite; S-Video; 15pin HD D
Vision Outputs:	none
Vision Source:	All standard TV, and computer signals up to 1280x1024
Other Features:	Remote, special stand
Price:	\$5,995 (list incl GST)



On start up, the projector was first run with a composite video signal – just to make sure every thing was working properly. These first moments are critical for a portable projector because its 'ease of use' is an essential component to its design. The display was up and running within seconds. As is typical for these small devices, the focus and zoom control were both manually operated.

Image Characteristics

Initial impressions were that it was good to see a projector in this small class provide features like true white balance control with individual levels for each of the RGB colours. Once focused, the composite video display was sharper than I expected. Colour saturation was impeccable and the projector easily handled fast moving images from off-air and S-Video DVD sources.

Moving on to display 800x600 SVGA, I quickly found that the images capable from this device were extremely crisp and defined. I initially had trouble find the best brightness/contrast setting – various test patterns indicated that the projector had a little trouble displaying very dark greys. This is a problem that you can expect to find in lower lumen LCD projectors.

All of the other tests indicated that the PT-LC50 has very good imaging processing electronics. There was no identifiable electronic distortion on very fine pixel grids (something which generally sorts the good from the bad in projector comparisons).

Close inspection of a single row of white pixels on a black background showed that individual pixels were clearly defined – with only a subtle flaring of the blue image surrounding the white line.

Physical Characteristics

One simple, yet very practical, inclusion with the projector was a gimble stand like the ones used underneath computer monitors. As a result, this was the first projector I have tested that did not require any adjustment to my home-made projector stand made up of a couple of Ben Elton and Michael Crichton books.

Another nifty inclusion is the ability to store the remote control in a small slot on the projector – an obvious asset when you think about the use intended for the device.

A lack of handle on the actual device is offset by the fact that a shoulder carry bag is included in the package. Also included is a male to male 15pin VGA and RCA Video cables.

Despite the fact that the buttons looked like they should light up, they did not. As a result I found the buttons a little hard to use in the dark.

Summing Up

All in all, I was impressed by this projector, and its lack of limitations. Certainly well worth considering if you do not mind the fact that it really needs to work in a darkened environment. It conforms to all of the requirements for a portable device – light, simple to set up and easy to operate.



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MICROPHONES

SO MUCH CHOICE! This month we detail a representative range of microphones, but NOT WIRELESS. We did them in December! Our report this month shows FOUR representative models from each manufacturer in each of three categories. Dynamic, Condenser, and Miniature and Headset microphones. Each manufacturer usually offers more than four models, so this is just a guide. The prices are in Aussie dollars, including GST. Enjoy!

Small Print: Correct at whenever this went to press. All care was taken, but if there are errors, we are sorry! The words supplied below are from the distributors, so any porkies were not invented by Connections. Caveat emptor.

Miniature and Headset Mic's

AKG Miniature and Headset Mics

C420

The C 420 headset cardioid condenser mic is designed with a full frequency response bandwidth that delivers a pure powerful sound and carries a punch and presence to the audience. It is ideal for front vocalists, singing keyboard players, drummers guitarists and dancers. It has a new fully adjustable headband and earpieces that fit comfortable and secure on your head. \$379.



C444L

The new C444L headset mic from AKG is rugged, extremely easy to use, and provides incredible price performance. If you need your hands free at the gym, during presentations, or on stage you will appreciate the comfortable yet secure fit. A response peak at 10kHz and a roll-off below 800Hz ensures perfect voice reproduction and intelligibility. \$169.

AKG Dynamic Mics

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D880II / D880SII *HOT SELLER*

Dynamic stage mic designed especially for lead and background vocals. Brilliant sound quality with the newly developed AKG Varimotion System. The capsule's elastic Doubleflex suspension reduces handling and cable noise. Features include a high output magnet and a super-cardioid polar pattern for excellent gain-before-feedback and superb off axis rejection. Switched Version \$189. Non Switched \$179.



D770II

Stage mic designed especially for brass and wind instruments, mouth organ, guitar amps or percussion as well as for background vocals. Brilliant sound quality with the newly developed diaphragm technology AKG Varimotion™! System. Excellent feedback suppression due to frequency independent cardioid characteristics. Special Doubleflex shock mounted capsule system. \$169.

D550

The D 550 is a cardioid dynamic mic, designed primarily as a bass instrument mic for rough onstage use on bass drum, tuba, trombone, bass amps, etc. The wide frequency response of the D 550 that slightly favors the low frequency and treble ranges ensures a very powerful sound

and good intelligibility. \$259.

D 440

The D 440 is a cardioid dynamic mic, designed primarily as an instrument mic for rough onstage use on percussion instruments, guitar amps, wind instruments etc. The wide frequency response of the D 440 that slightly favors the mid frequency and treble regions ensures good intelligibility. \$229.

AKG Condenser Mics

C1000S

Excellent vocal mic works perfect even from a greater distance, e.g. for picking up choirs and so on. Outstanding performance when used for instruments. Ideal for home recording applications. A converter (PPC 1000) turns the mic characteristics from cardioid to hyper-cardioid, if mounted on the mic top. The new PB 1000 Presence Boost Adapter provides an additional 5-dB high-frequency peak in the cardioid mode adding brilliance in the 5 to 9 kHz range. This mic can also be used for a variety of studio applications. \$499.

C3000

Budget conscious performers and home / project studio owners now can enjoy the unmistakable sound of a premium AKG studio condenser mic at a remarkably low cost. The C 3000 B is a large-diaphragm cardioid condenser mic for universal use, designed and made specifically to suit the needs of musicians as well as the rigors of the stage. "True" large diaphragm, with

active mylar foil diameter of 1" (25 mm) Cardioid pattern for both vocal and instrument applications Classic character and rugged construction. \$799.



C535EB

The C 535 EB has the clean, open characteristic of AKG's best studio condensers, enhanced by a 2dB rise between 7 and 12kHz to project vocals in front of the mix. An integral four-position switch tailors output level and bass roll-off for a variety of uses. A sharp LF cut at the full output level reduces pops and handling noise in vocal applications, while a more gradual roll-off at the reduced output is ideal for most instrument applications. \$599.

C391B

The AKG C391B Condenser mic is a modular system comprising mic pre-amp and capsule, the SE300B pre-amp operates from any 9-52V phantom supply. Incorporates three position switch offering linear response, -10dB pre-attenuation and 12dB/octave 75Hz bass-cut filter. The flat frequency response and uniform polar pattern of the CK 91 make it ideal for applications where suppression of off-axis sound is desired. \$769.

Microphones

APEX Dynamic Mics

From Dynamic Music, +61 2 9939-1299

APEX770 Cardioid

The Apex 770 dynamic mic is low impedance with a cardioid polar pattern especially suited for instrument applications yet versatile enough for vocals as well. The rugged straight-end grille helps to minimize extraneous noise. The cartridge uses a patented one-piece molded design for exceptional reliability and durability. **\$120.**

APEX350 Neodymium Cardioid

The Apex350 is designed for vocal applications and features a high energy, rare-earth neodymium magnet, double dome-diaphragm and an aluminum alloy voice coil for high output levels with warm tonal characteristics. Its directional pattern maximizes gain before feedback for better on-stage performance. The solid 'feel' of this low impedance mic is complemented by an extremely rugged, heat-treated metal grille. It features a patented one piece cartridge with a single shockmount system which maximizes durability and shock resistance while ensuring proper alignment between the delicate components, and reducing extraneous noise. **\$179.95**

APEX380 Neodymium Cardioid Mic

The Apex380 is a low impedance, dynamic mic with high sensitivity and linear response. It features a high energy, rare-earth neodymium magnet, double dome-diaphragm and an aluminum alloy voice coil designed to provide incredibly high output. Its tight cardioid pattern maximizes gain before

feedback for outstanding live performance. An internal double shockmount system significantly reduces handling & extraneous noise while a unique filter minimizes breath noise and popping caused by some consonants. The extremely rugged, heat-treated metal grille is highly shock resistant for better element protection and performance. **\$225**

APEX Condenser Mics

APEX190 Stubby Pencil Condenser Mic

The Apex 190 is a professional, stubby flat-frequency response cardioid condenser mic suited to many applications. It can be used as a source mic for choirs, for string sections, background brasses or drum overheads. It also works extremely well on acoustic guitars, in tight on hi-hats, or for solo string or woodwind instruments. The mic is enclosed in a rugged, low reflectance matte black finish making it ideal for instrument micing in any studio, broadcast or live applications where a high performance overhead mic is required. The Apex190 requires phantom power to operate, and is shipped with a mic clip and windsock. **\$220 RRP**

APEX420 / APEX430 Large Diaphragm Condenser Mics **HOT SELLER**

Main mic for any studio, or computer based direct to hard drive recording system. Also outstanding choices for live sound reinforcement or live recording. Proven as overhead mics for drums, for guitar or bass cabinets or as the mic of choice for saxophones, flutes, acoustic guitars or bass for subtlety and clarity.

These are professional large-diaphragm dual pattern, pressure gradient condenser mics. The Apex420 features switchable cardioid and omnidirectional polar patterns, switchable -6dB 100Hz low frequency cutoff and a 1-inch diameter capsule. Frequency



response is 20Hz to 20kHz with a maximum SPL of 140dB (1kHz @ 0.5% THD). Input sensitivity is -40dB @ 1kHz and signal to noise is better than 73dB. Both mics are made with a heavy-duty aircraft grade machined brass body with a durable, scratch resistant anodized finish. Both the Apex420 and 430 are sold with a "cat's cradle" style shock mount. Apex420 mic also includes a windsock and an attractive flight case. **\$535 [420] ; \$375 [430]**

APEX 750 Dynamic Cardioid

The dual impedance Apex750 has a very solid 'feel' with an extremely rugged, soldered grille and a durable hi/low impedance switch. This cardioid dynamic mic is designed for vocals though its versatile design allows it to be used as an instrument mic as well. The cartridge is of a proprietary one-piece design which offers exceptional rigidity, stability and reliability. The Apex750 is your best value in a multi-purpose mic. **RRP: \$130**

Audio Technica Dynamic Mics

From Yamaha Music Australia, +61 3 9693-5111

ATM41HE

The '41' is a handheld hypercardioid pattern mic featuring a Hi-Energy(R) dynamic element for high output fast transients and clean articulation on

AKG Miniature Mic: C418

The C 418 hypercardioid condenser microphone has a specifically tailored frequency response for drum and percussion miking applications. Its two angled adjustment boom arm with vibration resistant rubberised clamp make it easy to place on any drum or percussion instrument. **RRP \$339.**

C417

Is AKG's answer to low cost micro sized lavalier technology. It's broadband audio reproduction in an omni-directional format is ideal for all types of broadcast and theatrical applications. The sound is extremely open and natural off-axis frequency response is extremely linear making it ideal for multi miking situations. **RRP \$259.**

APEX Miniature Condenser Mics

APEX 150 Low Profile Overhead Condenser Mic
A professional miniature high output cardioid condenser mic particularly suitable for choirs and other situations where it is important for the mic to be 'invisible' to the audience. The Apex 150 comes complete with a metal wire hanger and a mini XLR to standard XLR adapter. **\$290**



Testing.... one, two, three.....

**APEX165
Miniature Instrument
Condenser Mic**

Suited for many different types of instruments including sax, trumpet, trombone, woodwinds, acoustic (especially classical) guitars and drums. It has also been successfully utilized (with user modifications to the clamp assembly) on violins and violas, accordions and dulcimers. Don't let its size fool you. This mic handles the high SPL you would expect when close micing a tom or brass wind instrument. \$285

**Audio Technica
Miniature &
Headset Mics**

PRO8HE

Headset style dynamic mic with headband that circles the back of the head. Pivoting boom allows for either left or right-handed placement. The attached 16.5' cable is terminated with a standard male XLR and is packaged with large and small windscreens and cable clip. \$165

ATM75

Headworn cardioid condenser mic providing superior vocal performance with hands free operation. Moisture



stage. Goes far beyond usual neodymium designs for better sound balance. Patented floating diaphragm reduces handling noise. An ideal choice for live vocal reproduction. \$310 rrp

ATM63HE

Close-working Hi-Energy(R) dynamic mic ideal for both vocal and instrumental pickup. Features high output element design with neodymium

magnet. Extended frequency response is ideal for pickup of toms, snares, electric guitar and piano with excellent isolation and peak-free response. Extremely rugged with all-metal grille. \$295 rrp

ATM25

Rugged dynamic hypercardioid mic specifically constructed

to respond cleanly in high SPL environments. Big, warm, low-frequency response with



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2 650

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Microphones

resistant protective coating on the headband and boom to provide long life. Includes belt mounted power module, wind-screens and battery. ATM75cw model terminated for use with wireless systems, \$275 (ATM75cw \$245)

AT853a
Miniature hanging condenser designed for choir, theatre stages and boardroom applications. Offers a discrete size while still providing full range frequency, natural response. The AT853a is supplied with a steel hanger that allows it to be positioned inconspicuously over a choir, orchestra, stage etc. \$495.

ATM35
High-intensity miniature cardioid condenser mic includes unique Uni-Mount(R) that attaches directly to brass or reed instruments. Power pack accepts AA battery or 9-52V phantom power. Uni-Mount foam windscreens holds mic for accurate positioning while protecting element. ATM35cw model terminated for use with wireless systems. \$485 (ATM35cw \$475)

excellent presence making it ideal for Kick Drums, toms, acoustic bass or any high-output low-frequency instrument. \$365 rrp

ATM23HE
Hi-Energy neodymium dynamic hypercardioid instrument mic that combines excellent performance characteristics and rugged dependability for superior results on snare drums as well as other high dynamic instruments such as rack toms, piano and electric guitar cabinets. \$365.

Audio Technica Condenser Mics

ATM33a

HOT SELLER

Cardioid condenser mic for stage/studio use. High SPL capability and wide frequency response with low mass diaphragm. Provides balanced sound for strings and solo vocals, plus crisp reproduction of piano, reeds, brass and drum overheads. Frequency response of 30-20,000 Hz and maximum input of 137dB make the ATM33a ideal for both sound re-inforcement and recording applications. Operates off internal AA battery with 1200 hours between changes, or 9-52V phantom power and includes snap-in mic clip and rugged carry bag. \$330.

AT4033a

Studio cardioid condenser mic designed for use in the most demanding of applications. Uses a specially contoured, vapour deposited gold diaphragm to provide accurate reproduction of even the most subtle sounds, especially at high-frequency where conventional large diaphragm designs suffer. \$1095 (Includes AT8441 shock mount.)

AT4047SV

Ultra large diaphragm cardioid studio condenser finished in matte silver. Provides a remarkably warm, almost tube like sound while offering solid-state reliability and frequency response. The 40 series transformerless design allows for inputs of up to 159 dB SPL before 1% THD, making it ideal in modern digital studios. \$1695 (Includes AT8449SV shock mount.)

AT4050

Multi-pattern studio condenser (*below*) widely used by professional engineers such as Phil Ramone & Alan Parsons. Offers supremely transparent and accurate sound without sacrificing warmth and ambience. The vapour deposited gold diaphragm is aged through 5 steps to ensure optimum characteristics over years of use. \$1695 (Inc. shock mount.)

Audix Corporation Condenser Mics

From Production Audio Services +61 3 9415-1585.

CX111

HOT SELLER!

The CX-111 is a true large-capsule condenser designed to offer unmatched performance and a price that any studio can afford. Rather than designing a mic that tries to do all things to all people, Audix engineers decided that producing a simple and elegant design for a, reliable warm-sounding single pattern cardioid condenser, would fill the need of thousands of studios ready to improve their sound. Excellent choice for live sound reinforcement for vocals, piano, horns etc. Includes bass roll-off and a 10dB pad. Able to handle sound pressure levels of 145dB. Features a wide frequency range of 20Hz-20kHz, 1-in gold vapor diaphragm, black satin brass housing, shock-mount and roadcase. \$1,365.

CX211

On-air broadcast mic, with a front-address design to eliminate ambient room noise. Clarity and definition are achieved with a low mass 1-in gold vapor diaphragm in a thin mesh windscreen and acoustic foam windscreen. 10dB pad and bass roll-off are provided for additional attenuation. Includes integral yoke, stand adapter and roadcase. \$1,365.

TR40

Omni-directional test and recording mics with a π -in pre-polarized condenser capsule. Features excellent sonic characteristics and smooth accurate response from 20Hz to 19kHz at a very affordable price. Also suited for miking group vocals, choirs, pianos,



Forthcoming Market Reports:

APRIL: Digital Video
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Microphones

drum overhead and room ambience. \$379.

ADX50/51

Affordable pre-polarized mics designed to handle a wide variety of applications. Frequency range of 40Hz to 18kHz, maximum SPL 132dB. Features tight pattern and accurate reproduction of high frequency instruments, suitable for overheads, cymbals and Hi-hat. RRP \$669.

AUDIX Corporation Dynamic Mics

OM1 Vocal Mic.

First produced in 1985, now re-introduced for the new millennium. Machined from solid brass with a 2-stage design, the OM1 is one of the quietest mics on the market, ideal for lead vocals. Frequency response 50Hz to 18kHz with maximum SPL 140dB. \$745.



OM6 Vocal Mic

Full rich sound ideal for in-ear monitor systems, the OM6 is a very full range mic capable of reproducing tones down to 63Hz. Extremely pure and accurate, its "Studio-like" sound appeals to vocalists who want minimal colouration. \$637.

D1 Instrument Mic

The D1 is characterized with natural articulation and attack in the upper mid-range and will complement instruments requiring crisp, clean reproduction. Requiring little or no EQ, the D1 provides great results when close miking, ideal for Snare drums,



Bongos, Flute, H-hat etc. \$380.

D4 Instrument Mic

Utilizing a new capsule design the D4 is able to capture instruments with extended frequencies down to 63Hz. This mic ideal for floor toms, kick drum, djembe, bass cabs, piano & saxophone, as it has not only a great low end response, but it is full-range. \$562.

Beyerdynamic Dynamic Mics

From GUET,
+61 2 9420-4888



TG-X 58

BEST SELLER

The unbelievable price point of \$249 makes this probably the most affordable high quality name brand mic available on the Australian market today. TG-X 58 is a Dynamic Supercardioid mic with a frequency response of 50Hz to 15kHz. It is built to stand up to the more serious abuses energetic live performance can be guilty of. Beneath this is a quality product, soft lacquered for comfort and grip, featuring a lockable on/off switch. RRP is \$249.

Opus 69

Opus 69 is a Dynamic Hypercardioid with a response of 35Hz to 16kHz. This is a singer's dream, giving a wide uncoloured response and an ability to create individual proximity effect for unique vocal sounds. The pattern reduces feedback and background noise. RRP \$299.

TG-X 60

TG-X 60 is a Dynamic Hypercardioid with a response of 50Hz to 15kHz. This model was designed with high output and low weight in mind, and has been dubbed the ultimate "Rock and Roll" mic. It has a superb level of purity in a well defined pattern. RRP \$449

M69 TG

M69 TG is a one of the classics of all time, and has a frequency response of 50Hz to 15kHz in a hypercardioid pattern. Versatility and all-round superb response is evident in this model that has stood the test of time, and a very high SPL capability. RRP \$449

Beyerdynamic Condenser Mics

Opus 81

Opus 81 is a Condenser Cardioid Mic with a frequency response of 50Hz to 18kHz. This model can be used for vocals or instruments on stage, or in the studio, and can handle sound levels up to 138dB!. RRP \$499.



Opus 83

Opus 83 is a Condenser Cardioid with a response of 40Hz to 20kHz. It is designed to capture spatial and natural sound from all instruments from drum overheads to acoustic instruments. It is constructed of solid brass, and will keep sensitive parts protected from the road. RRP \$399.

MCE 91

MCE 91 is a handheld condenser cardioid with a response of 30Hz to 20kHz. This model is a faithful purveyor of the human voice. It has a sophisticated elastic suspension, ignoring the most heavy handed vocalists handling an SPL of 139dB. RRP \$669

MCE 90

MCE 90 is a studio cardioid condenser with a response of 30Hz to 20kHz. This is known for its presence lift and upper end tailoring and short cuts some of the normally required desk processing. It is designed as a multi-purpose project studio product, and has switchable controls. RRP \$849.

Beyerdynamic Miniature and Headset Mics

Opus 64 is a new model headworn hyper cardioid model designed for the increasing demand for high quality hands free live performance. The response is far superior to what has previously been available at this price point. RRP \$329.



TG-X 45 (above) is a dynamic headworn model with a frequency response of 40Hz to 17kHz, which is far superior to its competition. The well designed mini gooseneck allows for easy and precise positioning of the capsule. RRP \$349.

TG-X 5 is a mini hypercardioid mic with a response of 40Hz to 12kHz, and is designed for instrument miking. It employs a small gooseneck, and can be attached to drum rims and other instruments, and has incredible punch and discretion. RRP \$229.

MCE 52 is a condenser mini omni with a response of 30Hz to 20kHz. It has an integral mount for difficult situations. The mic is mechanically isolated from the mount, making positioning less critical, and producing a more open sound. RRP \$399.

CROWN Miniature and Headset Mics

CM-311

The CM-311 has become known as a standard in high quality headworn mics. With its Differoid pattern, it affords exceptional gain before feedback, and a full, distortion free sound. Available in both wired and wireless versions. From \$635.

CM-312

The CM-312 provides condenser hypercardioid directional characteristics with the same comfort and fit as the CM-311. The CM-312 has less discrimination against feedback than the CM-311, but is ideal in situations where the headworn mic needs to be discrete. Available in both wired and wireless versions. From \$575.

GLM 100

The GLM100 is an omnidirectional miniature condenser mic intended for all manner of applications including broadcast, recording and sound reinforcement. Supplied with numerous mounting devices, the GLM is the natural choice when a compact and versatile solution is required. Available in wired and wireless versions. From \$319 including GST

GLM 200

The GLM200 is an hypercardioid miniature condenser mic intended for all manner of applications including broadcast, recording and sound reinforcement. Supplied with numerous mounting devices, the GLM is the natural

CAD Condenser Mics

From Australian Audio Supplies, +61 2 4388-4666.

M 177 EXTERNALLY BASED CONDENSER MIC

A mic that features the best of the old world and new world technologies at an affordable price. The M177 (*below*) features a single pattern version of the original Equitek E-300 externally biased capsule with a gold sputtered 1.1" diaphragm. The M177 has a hi-speed, low noise head amp, coupled with a new discrete high efficiency power circuit. Extremely low noise, low distortion, and fast transient response. Works with 24-28 volt phantom supplies. \$599.



M 179 EXTERNALLY BIASED MULTI-PATTERN CONDENSER

The M179 is one of the first in a new generation of CAD condenser mics, featuring five point detented pattern control providing 9 useable patterns, continuously variable between detents. The M179 features a new multi pattern version of the original Equitek E-300 externally biased capsule with a gold sputter 1.1" diaphragm. High speed, low noise head amp, coupled with a new discrete high efficiency power circuit. Low noise, low distortion and fast transient response. Works with 24-28 volt phantom supplies. \$699.

CAD Dynamic Mics

TSM 411

The CAD TSM411 is a general purpose Neodymium dynamic mic in a compact, die-cast body with new internal shock isolation technology and a hardened grille. The TSM411 provides crisp, detailed reproduction of high ballistic sound sources. The TSM411 performs well as a percussion mic (snare, toms etc) and will deliver excellent performance when used on guitar and keyboard amp stacks and other similar applications. Shock isolation clip included. \$249.

ICM 417

Packaged in a slim aluminum body, the CAD ICM417 electret condenser mic performs extremely well as a cymbal and overhead mic and for many other percussive and string instruments. The ICM417 was designed to provide low noise, high output and a wide, flat frequency response. Shock isolation clip included. \$299.

KBM 412

The KBM412 is a large diameter, Neodymium dynamic mic, specially designed for bass drum and other low frequency sources. Die-cast body, hardened external screen provides additional protection from incidental striking. Designed to provide extended and extreme low-end frequency response, taking full advantage of any low frequency sound source including high SPL signals. Delivers exceptional performance as a kick and large tom mic, and used to mic bass and large diameter instruments. Shock isolation clip inc. \$349.

D 94

The CAD D94 is a high performance neodymium dynamic super cardioid mic designed for professional vocalists and musicians. The wide and flat frequency response of the D94 provides unsurpassed natural transpar-

ent sound quality. The super cardioid pickup pattern minimizes annoying feedback (when used close to sound reinforcement speakers and monitors) and reduces the pickup of unwanted off-axis sounds. An effective internal multi-stage pop filter minimizes wind and breath noise. Hardened steel grille screen dramatically resists deformation while greatly reducing any risk of adverse performance caused by bent or dented ball screen. This unique ability to retain its original shape assures that the D94 will maintain its attractive appearance. \$229.

Crown Condenser Mics

from Jands +61 2 9582-0909

PZM30D

The famous Pressure Zone Mic! A boundary style omnidirectional mic that can be used in applications where you need the mic to be unobtrusive. Whilst this is a recording quality mic, other PZM models are tailored for speech only, for use in conferencing, security and surveillance applications and the like. \$1115

PCC-160

The Phase Coherent Cardioid (PCC) mics are directional adaptations of the PZM approach. Featuring a cardioid polar pattern and a rugged steel enclosure, the PCC-160 is ideally suited to both stage floor pick-up as well as lectern or conference table applications. \$935.

LM300A

The LM300A is a gooseneck style condenser mic intended for lectern style applications. Having a supercardioid response, it rejects background noise effectively, while the supplied 2 stage pop filter effectively eliminates breath noise and popping. \$795.

MB 4

The Mini-Boundary (MB) Series is exactly what its name

Apex (eh' -pex) *n.* the topmost point, pinnacle or climax. - The definition of performance and value.



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Microphones

choice when a compact and versatile solution is required. From \$725 including GST

DPA Miniature & Headset Mics

DPA4060

The DPA4060 is a prepolarized omnidirectional Condenser Mic with a 5.4mm vertical diaphragm. A double vent protection system together with water resistant materials inside the mic makes it very difficult for humidity to cause the DPA4060 to fail. By changing the protection grids, the Miniature Mics can be acoustically modified. Noise floor of 23dB(A) re. 20µPa, an impressive sensitivity of 20mV/Pa and if powered correctly, the mic will be able to handle levels up to 134dB SPL. The DPA4060 is winner of Product of the Year Award 1997 from TCI. \$501.60.

DPA4061

The DPA4061 is acoustically identical with the award winning DPA4060, but the sensitivity is adjusted to 6mV/Pa to match some of the more sensitive transmitters on the market. The noise floor of the Type 4061 is 26dB(A) re. 20µPa and if powered correctly the mic will be able to handle sound pressure levels up to 144dB SPL before clipping occurs. Terminated with the B&K Microdot connector for use with a wide range of adapters for wireless systems and 48V Phantom. \$501.60.

implies a series of installation condenser mics specifically designed to be unobtrusive in conference style applications. The MB4 is designed for stand alone use, while others require the addition of a MB100/200 interface which also provides remote muting. From \$329.

DB Condenser Mics from CMI +61 3 9315-2244



DB-560N Valve Mic

The DB-560N (*above*) features a dual diaphragm, valve pre-amp with 9 selectable polar patterns. Located on the mic are 10db pad and low cut switches. As the dual diaphragm greatly assists in reducing proximity effect the DB-560N faithfully reproduces your sound source from 'on the mic' recordings. RRP \$ 1249

DB-267B

This condenser mic is perfectly designed for lectern applications. A very sensitive Hyper Cardioid whose polar pattern greatly assists the rejection of feedback, allowing the Presenter to stand freely without having to crouch into the mic. RRP \$ 59

DB-271B

Being discrete and flat in design, the DB-271B Boundary is an appropriate choice for Board Room meetings, Press Conferences and all Lectern applications. Hyper Cardioid in design and high sensitivity make this an excellent option

for unobtrusive mic placement. RRP \$ 149.

DB-2810mni

Omni Directional in character, the DB-2810mni is another appropriate mic for boardroom and like applications with the added feature of bass cut and boost switching. RRP \$169.

DPA Condenser Mic

from d2a Pty Ltd,
+61 2 9957-5389

DPA 4041

The DPA4041 series is especially designed for everyday use in the professional recording studio where openness, brightness and clarity in soloist recordings are of absolute importance. The kit (DPA3541) contains one (1") capsule, tube and solid state pre-amp, shock mount, power supply and cable, windscreens and pop filter in a Samsonite brief case. \$7600.

DPA 4011 / 4012

The DPA 4011 and 4012 studio cardioids offer a flat on-axis frequency response together with an excellent phase response. For multi-track recording applications, classical recording or live situations, their first-order cardioid pickup pattern gives superb separation between sound sources. Since they can handle extremely high SPLs before clipping - 158db (4011) and 168db (4012) - the mics are equally suitable for close-up work. \$2740.

DPA compact Cardioids

The DPA Compact Cardioids (types 4021, 4022 and 4023) use the same capsule as the standard 4011 cardioid mics. The Compact Cardioids use an in-built, ultra-small, low noise FET preamplifier mounted directly behind the mic capsule making the overall length of the mic only 31mm. A range of accessories also allows the Compact Cardioids to be shock

mounted, as well, there are attachments for mounting directly to musical instruments or to an XY stereo adaptor. \$2250.

Compact Omni directional mics Also in the range of Compact mics are the 4051, 4052 and 4053 Compact Omni directional mics. These mics share the same size, flexibility, cables and accessories as their Cardioid counterparts but use the same pre-polarised capsule as the 4006, the industry standard omni, which made DPA world renowned for high quality recording mics. \$2050.

EV Dynamic Mics

from EVI Audio Australia
+61 2 9648-3455

Cobalt Co5

Designed for the performer/presenter who requires a mic that will handle anything from hard hitting vocals to quality speech the Co5 offers exceptional vocal intelligibility with controlled proximity effect. With the Co5 you get clarity and power when you want it. This dynamic cardioid mic has a frequency response of 50Hz to 15Khz. Never before has a mic with this performance been available at such a low price. \$99.



N/D 767A

Electro Voice were the first to introduce Neodymium magnet structures to the professional mic market. The latest N/Dym's also offer V.O.B. - Vocal Optimised Bass. This new technology in mic design results in a mic that provides optimum gain before feedback, maximum presence and punch in the mix while reducing the amount of ambient sound being picked up off axis. This

Microphones

results in the 767a being among the most engineer friendly vocal mics on the market. \$511.

N/D 868

The Electro Voice N/D 868 large format Kick Drum mic has quickly established itself in the market place as one of the easiest to use and best sounding mics in the market and a consistent winner of 'shootouts'. Designed with a coloured sound it is optimised to reproduce the essential elements of a Kick Drum. Its design allows to work best when placed on padding inside the drum just off the beater head thus eliminating the need to wrestle with a stand in a difficult to access drum. Also works well on floor toms and bass amps. \$701.

Co 4

The Co4 is the newest addition



to the Cobalt range of mics. Designed for the miking of acoustic and electric instruments as well as vocals. Features a Neodymium capsule in a unique 'floating head' construction. The capsule is encased in a die cast zinc inner housing that is shock mounted in a zinc outer

housing. Superb shock isolation. The Co4 maintains a small profile that makes it perfect for tight miking applications such as drum kits. Excellent for stage or studio, the Co4's versatility will make it a 'must have' in any m.c mix. \$199.

EV Condenser Mics

RE 200

The RE 200 is a true transformerless condenser design that provides a Cardioid response in a compact pencil style design. It will run on phantom power supplies from 12 to 48Vdc and is supplied complete with a slip on pop filter that makes it useable in outdoors as well as speech podium situations. The RE 200 is an ideal mic for Overhead/Cymbal jobs as well as stringed instrument applications. The RE 200 is also an ideal choice for the recording studio. \$667.

RE 1000

The RE 1000 is a large format externally biased condenser ideally suited for vocal use in pro studio applications. In addition it is also suitable for

DPA4065


The 4065 is a headband mounted condenser mic using a prepolarized omnidirectional cartridge element with a 5.4mm vertical diaphragm which is acoustically identical with the cartridge used in the 4061. It is specially designed for maximum performance under the often difficult conditions when mounted directly on the human body. The band is easily bent to fit any head shape, in a tight fixed position. Special attention has been paid in the design to the humidity problems that

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Microphones

often occur in theatrical applications and to the light weight construction of the headband itself. A double vent protection system, a drop stopper on the tube, together with water resistant materials inside the mic, makes it more than difficult for the humidity to cause the Headband Mic to fail. The sensitivity is 6mV/Pa to match the level of the human voice to the general input sensitivity of most wireless transmitters. The noise floor of the Type 4065 is 26dB(A) re: 20µPa and if powered correctly the mic will be able to handle sound pressure levels up to 144dB SPL before clipping occurs. A wide range of connection adapters makes it possible to use Type 4065 with most of the professional wireless systems available plus 48V phantom. \$792.

EV Miniature and Headset Mics

RE 90L

The new RE 90L is a miniature lapel capsule ideally suited for theatre and presentations where sonic accuracy in a small robust package is required. The RE 90L is available as either a fixed cable version that requires phantom power also making it suitable to clip onto acoustic instruments as well as being available with a TA4F connector for use with radio systems. The unit is supplied with both a tie clip and tie pin fittings as well as a pop filter. \$534

RE 90P Lectern Mic

The RE 90P cardioid gooseneck podium mic

live applications for Drum Overheads, Choirs as well as Orchestral. The Supercardioid design provides optimum control with exceptionally flat response and detailed, accurate transients. \$1870.

NEUMANN Condenser Mics

From Amber Technology
+61-2-9452-8600



NEUMANN KMS105

HOT SELLER

The KMS 105 brings the legendary 'Neumann sound' out of the studio and onto the stage. As expected from any product bearing the Neumann name, the KMS105 delivers superb resolution and transient detail with an extremely 'open' sound to accurately capture the finest vocal performances. But Neumann's engineers have also tailored the design to meet the unique requirements & rigorous demands of live performance. The KMS105 is perfect for use with the latest in-ear monitor systems, offers superb gain-before-feedback and special electro-mechanical filters virtually eliminate handling noise. A 132dB dynamic range, 150 dB max SPL and minimal self-noise allows the KMS105 to be used at greater distances for maximum vocal power & creativity. The unique basket assembly also features a 'foamless' multi-layer mesh design with an outer layer of hardened steel for survival on the road. Available in black or silver finishes with clip & padded storage bag. \$899.

TLM103

The TLM103 is an ideal large diaphragm, studio condenser system for anyone requiring no-compromise sound quality on a limited budget. The cardioid capsule was developed from Neumann's classic U87 and features excellent acoustic balance with exceptional attenuation of rear signals. The transformerless circuitry offers ultra-low self noise and effortless handling of high SPL's. Supplied complete with a static mount & wooden storage case. \$1,530.

KM184

The modern, lower-cost successor to Neumann's famous KM84 miniature studio condenser. The KM184 employs an advanced transformerless output design with a fixed cardioid head to provide outstanding performance at a reasonable cost. It is ideal for a host of professional applications ranging from home recording to top-end studios and broadcasting. KM183 Omni and KM185 Hypercardioid versions are also available. The KM184 is priced at \$1,095 R/R inc windscreen & mic clip.



M147 TUBE

The M147 (above) is a vacuum tube studio condenser system featuring a fixed cardioid pattern. At its heart is the K47/49 dual-diaphragm capsule originally developed for Neumann's legendary U47 and M49. With this classic capsule and smooth tube sound, the M147 is especially tailored for vocals as well as being a superb spot mic for all types of musical instruments. The M147 Tube is supplied complete with power

supply & cables, static mount and storage case. \$3,130 R/R.

Sennheiser Dynamic Mics

From Syntec International,
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Evolution E825

Entry level vocal and general purpose mic, balanced frequency response, cardioid pickup, and rugged metal construction. C/W switch. \$179

Evolution E835

Classic all round performer, suitable for any vocal requirement, punchy output with extended presence response. Cardioid pickup pattern, excellent feedback rejection. C/W switch. \$249.

Evolution E845

High quality vocal mic with distinct performance characteristics. Extended frequency and presence response, pronounced clarity. Super cardioid pickup pattern helps cut through high stage volumes. \$329

Evolution E855

Draw out the highest level of performance with this vocal mic. Extended response, super cardioid pickup pattern, and assertive presence boost. Virtually bullet proof construction. \$369



Sennheiser Condenser Mics

K6 Back Electret Condenser Mic

Self or phantom powered, the K6 power module accepts a variety of microphone heads, offering different pickup patterns. See following entries. Power module: \$484

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Microphones

is available as either a 12 or 18 inch unit with an XLR base to allow it to be plugged directly into an XLR panel mount connector. The RE 90 is supplied complete with a slip on pop filter and is ideally suited for any lectern application. In conjunction with a 311 mic clamp the RE 90P can also be mounted on a conventional mic stand for table or stage use. \$444.

EV Polarchoice

The Polarchoice is available in either 12 or 18 inch gooseneck and can be connected directly into an XLR panel mount. With the use of a 311 mic clip it could also be stand mounted. The unique characteristic of the Polarchoice is that it comes complete with four available polar plots on board accessible via a slotted switch. This facility allows for a Omni, Cardioid, Supercardioid or Hypercardioid plot to be selected as required. The polarchoice requires phantom power. \$534.

RE 90B

The RE90B is a semi cardioid plate mic available in either black or white that is ideally suited for stage and table pickup as well as for miking up pianos and also suitable for Kick drums. The RE 90B requires phantom power for operation. \$378

Shure Miniature and Headset mics

Beta 53

The Beta 53 is a headworn mic designed for live theatre and presentation applications. The lightweight unit features a capsule

ME 64 Mic Head for K6

Cardioid mic head, great for reporting, interviews, and live sound or recording. \$346.

ME 66 Mic Head for K6

Short gun mic head for K6, super cardioid, lobar pickup pattern. High directional, use for quiet signal collection. \$403

MKH 60 Capsule Condenser

Lightweight short gun mic, excellent for film and reporting



applications (above). Extremely low self noise, super cardioid / lobar pickup pattern, high directivity through the whole frequency range, switchable pre attenuation, switchable roll off filter, and switchable treble emphasis. \$2776

Shure Brothers Inc Dynamic Microphones

from Jands +61 2 9582-0909

Beta 58A

Supercardioid handheld vocal mic, the Beta 58A continues the legacy of the legendary SM58 with an updated version of the famous vocal presence frequency response. Updated features include neodymium magnet with high output, reduced handling noise,

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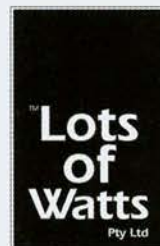


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hardened steel grille and a hum-bucking coil to reduce noise pickup. (pictured left) \$525 .

Beta 52

Supercardioid low frequency instrument mic used predominantly on kick drums and bass guitars. Handles extremely high

SPLs and has a response tailored for reproducing the impact of such instruments. Integral stand adaptor, hardened steel grille and high output (due to Neodymium magnet), rounds the package. \$595 including GST

BG 3.1

The Beta Green (BG) series was designed to deliver legendary Shure performance and reliability at a modest price point. Comprising of 6 models in the BG range, the BG 3.1 is the premium dynamic vocal mic, featuring cardioid polar pattern and a neodymium magnet. \$259 .

BG6.1

The latest addition to the BG range, the BG6.1 is a dynamic instrument mic with an integral stand adaptor and a swivelling head to facilitate unobtrusive close miking of toms and other percussion instruments as well as guitar amplifiers, brass and woodwind. \$319 .

Shure Condenser Mics

KSM44 HOT SELLER

The KSM44 is a dual 1" diaphragm externally biased side address studio condenser mic. Designed specifically for studio vocal applications, the KSM44 features switchable patterns (cardioid, omni and bi-directional), a 15dB pad and two switchable roll offs to reduce breath noise or low frequency



leakage. A pure class A preamp complements the high quality diaphragms and facilitates the mics staggering 151 db SPL capability. Another testament to the component quality of the mic is that it boasts the lowest self-noise of any large diaphragm on the market presently, a meagre 7dB (A). \$2395 .

Beta 98

The Beta 98 is an updated version of the popular SM98A miniature condenser. Handling a staggering 161dB SPL, the Beta 98 is equally at home miking drums or brass instruments. Two clamps are available - one for drum rim mounting, the other for brass instruments. Supercardioid or cardioid. \$705 .

Beta 87C

The Beta 87A condenser has earned the reputation as being the live vocal mic of choice for entertainers worldwide. The Beta 87C is a cardioid version of the (supercardioid) Beta 87A in response to users wanting the Beta 87 sound with a more forgiving polar pattern. \$895 .

MX 412

The MX Series from Shure is designed to provide installed sound solutions, the MX 412 being a 12" gooseneck version. The MX Series (consisting of boundary, lapel, hanging and gooseneck types) feature interchangeable capsules for omni, cardioid and supercardioid operation, and versions with muting and controls system integration. From \$560 .

Sony Australia Limited

+61 2 9887 6674

Sony has a 50 year long history of microphone manufacturing. Historic models have gained a reputation and are still maintained as working microphones in vintage collections - the C-37A being the most prominent among them. The acclaimed C-48 and C38B studio condenser mics; the reliable ECM Lavalier series, and the outstanding Sony F-780/740 dynamic vocalist mics.

The C-38B large diaphragm, selectable directivity condenser follows the sonic heritage of the C-37A, and the additional C-48 was before the "explosion" of use of lapel microphones on studio presenters probably the most "heard microphone" in the world.

The ECM-77, ECM-66, ECM-55 and ECM-44 Lavalier/Lapel microphones are very competitively priced in their market. The ECM-77 is maybe the most sold Lavalier in the world.

Normal condenser mics are polarised and require a high voltage and draw lots of current. This is not desirable and practicable in wireless transmitters.

Normal ELECTRET CONDENSER technology was not considered having the desired audio quality for good vocal microphones - this due to the thickness of the membrane due to the electret layer and the resulting frequency response. Sony developed a special high-polymer with a layer of metal which where applied with a long term stable electret material.

The benefits where obvious, the diaphragm could be made of "normal" materials, and low power consumption where maintained. In the 70's, Sony confirmed that the loss in output due to normal discharge of the electret was about a half dB over 5 years - also a significant improvement at the time over conventional electret condenser microphones.

The F-710, F-740 and F-780 are competitively priced, high quality dynamic microphones. These mics may be considered a 'me, too' product but when placed against the competition the F-780 is easily the better sounding microphone.

The rugged AlNiCo magnet capsule is mounted in a moulded soft-rubber body which is fitted to a diecast alloy body. This design minimises handling noise and enables the sensitive copper clad, aluminium voice coil to faithfully reproduce vocalists dynamics.

size of only 5.8 mm, an omnidirectional polar pattern, and comes with a pair of interchangeable frequency response.

MC 50

The MC50 are 5mm diameter omnidirectional condenser mics designed for theatre, broadcast and presentation applications. Available in three colours and 2 sensitivity options. Supplied accessories include freq. shaping caps and mounting options. From \$735.

MX 185

The MX Series is designed to provide installed sound solutions, the MX 185 being a cardioid lapel mic. The MX Series (consisting of boundary, lapel, hanging and gooseneck types) feature interchangeable capsules for omni, cardioid and super cardioid operation. From \$585 .

WH20

The WH20 is a lightweight durable headset mic with a cardioid pattern and with low visibility for stage appearance. Commonly found in speech applications such as aerobic instructors, the WH20 provides a balance between performance and cost effectiveness. \$289 .



Sony C48

Microphone Technology Guide

How to test the performance of a microphone

By Thomas Kyhn

Before testing microphones

Normally the manufacturer encloses a product description with the microphone. It is a good idea to read the description carefully and prepare a focussed test of the manufacturer's listed features and of the product specifications. Make sure you are using the product for an appropriate application. If no graphs or curves are enclosed with the literature do not hesitate to contact the manufacturer for this information.

Choosing a reference mic for the test

The reference microphone is often chosen for more personal reasons - "My favourite microphone", than for scientific/application comparability. Make sure the manufacturer has informed you about the purpose, application and characteristics for the test microphone and then choose the most appropriate microphone according to the application.

A more scientific approach is to also use a true reference microphone i.e. a measurement microphone, such as a DPA Type 4007 or Type 4006. The probe-like design of these microphones enables them to be positioned extremely close to the test microphone without any influence on the sound field. Furthermore these microphones have totally linear frequency and phase responses, which will help you to "calibrate" your ears in between listening to other microphones.

Positioning the test and reference mic's

It is important to bear in mind that the acoustic memory of the human being is only a few seconds, which leads to the so-called simultaneous A-B test - or A-B-C test if more microphones are to be considered. The microphones need to be present simultaneously, picking up exactly the same sound source. You need to align the test and reference microphones bringing the diaphragms as close to the same point as possible.

Note that the distance to the sound source needs to be at least four (4) times greater than the maximum distance between the centres of the microphone diaphragms. Some microphone housings and bodies are quite bulky. Use one microphone stand for each microphone in the set-up to find a position, which ensures a minimum influence



on the acoustic field around the diaphragms from the more bulky microphone bodies. Do not hesitate to use a pop-filter if you intend to test the microphone with vocals, but use one pop-filter only.

Testing microphones with vocals

The most common tests of studio microphones are done with vocals, but do not hesitate to use more complex sound sources like guitar, piano, and wind or percussion instruments to spice up your evaluation. Most microphones at least have a decent on-axis response and you will only be able to evaluate the true quality of a microphone if you also test its off-axis qualities.

Musical instruments are extremely qualified sound sources for testing both the on- and off-

axis qualities of microphones simultaneously, but you can also get a good idea of the microphone's performance when using speech or singing using the following procedure. Make sure the headphone feed is from one microphone only, as it could otherwise influence the vocalist's performance.

30 cm on-axis (Reference position)

Start here. This is more or less the normal distance to a studio microphone when used for vocals. Adjust the sensitivity on test and reference microphones to exactly the same level using voice or tone generation as the sound source, double-checking the levels with the peak meters in the console. Make sure that all equalizers are bypassed or in neutral position. Select the mic you want to listen to by using the MUTE button in the console - not by using the faders.



If you send a feed to the vocalist's headphones the MUTE function will also mute the AUX SENDS on most consoles, in these cases find alternative ways to switch the MUTE function on, again not using the faders (i.e. using the L+R routing function).

In the reference position you will probably have some kind of preference of what an uncoloured voice should sound like. Here a directional microphone (i.e. a cardioid, hyper-cardioid or a figure-of-eight microphone) will normally not exhibit any or very little proximity effect. The weighting of the lower frequencies can therefore be expected to be neutral if you are testing a directional microphone. An omnidirectional microphone will not be influenced by the proximity effect, regardless of the distance, but you will use this distance as reference anyhow.

The reference position will help you to discover any unwanted off-axis coloration when you move around the microphone later on. Return to the reference position as often as you like during your test to calibrate your ears.

30 cm 45° off-axis to the side (Off-axis coloration test)

It is extremely difficult to design studio microphones with no off-axis coloration characteristics, especially directional microphones. However, the off-axis qualities of a microphone are of the utmost importance if the aim is a clear and transparent recording. Off-axis sounds are allowed to be attenuated (if directional microphones). An increased attenuation of the higher frequencies can also be expected in cases of larger diaphragms, but an off-axis comb-effect (curtain effect) is definitely unwanted.



30 cm 45° off-axis up (Off-axis coloration test #2)

If the test microphone has a bulky design and is not rotationally symmetrical, this test will reveal any unsymmetrical coloration that might occur. "Up" means talking/singing into the microphone in an angle from the top of the protection grid provoking a sonic reflection from the base of the cartridge where the capsule is connected to the preamplifier housing - the bottom of the cartridge chamber.

A microphone, which exhibits unsymmetrical off-axis coloration, has an extremely limited applicability and is not suitable for the more demanding recordings like ambience or suchlike.

3 cm on-axis (Proximity effect and pop noise test)



If the test microphone is a directional microphone this close-up test will give you a picture of the microphone's sensitivity to pop noises even when using a pop-screen. In this position you can also expect an extreme enhancement of the lower frequencies due to the proximity effect of a directional microphone. In cases of some male voices or rock 'n roll bass drums this effect might be something you are looking for, but normally the proximity effect is an unwanted side effect - or at least something you try to use as discretely as possible.

Omnidirectional microphones do not suffer from the proximity effect and you should not be able to hear any coloration of the lower frequencies when moving close to an omni. Furthermore, omnidirectional microphones are less sensitive to pop noises than their directional counterparts.

Shouting into the microphone at close distance will reveal any possible limitation of the dynamic range of the microphone. Make sure that it is not your console or microphone amplifier that is the limiting factor in this test.

3-4 m on-axis (Ambience test)

If the recording room allows it, it is now time for the ambience test, where you move as far away from the mic as possible - preferably at least 3-4 m.



Directional mics will again reveal the unwanted proximity effect and will now sound thin with a severe bass roll-off.

Omni mics will be able to do the job better and keep an uncoloured response. The amount of sonic reflections from the walls in the recording room will now create a complex sound field at the diaphragm and the true directional quality of the mic will reveal itself. Here it is important to cross-reference with the probe-like reference microphones.

30 cm 180° off-axis (Front-to-back attenuation and coloration test)



The reason for designing a directional mic is, of course, to attenuate sounds from unwanted directions. To get a good front-to-back attenuation on a cardioid mic is quite difficult and to obtain a perfect polar pattern on an omni mic is also quite an achievement. Talking/singing directly into the mic from behind will help you to discover any possible unwanted back loops of the directional polar pattern or, if an omni any unwanted coloration of the sound besides for the expected attenuation of higher frequencies.

Handling noise

Double-check the sensitivity adjustment on test and reference mic's to make sure that levels are identical. Tap and/or rub the mic's (including the reference mic's) on the preamplifier housing and/or on the mic stand to get an idea of the mic's sensitivity to handling noise.

Generally you will find that a directional mic is more sensitive to handling than an omni. •

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Building a better location stereo mic

by Rod Pascoe

Rod Pascoe began his career at the ABC in Sydney as a sound recording assistant in 1970. He became a sound recordist at Film Australia in 1973 but moved to Adelaide three years later to work as a sound recordist and mixer for the newly-established South Australian Film Corporation.

In 1994 he moved to Queensland on the back of the growing film industry there.

Rod has recently returned to Sydney and continues to work as a freelance sound recordist. His current activities include writing about film sound, recording classical music and teaching sound at the Australian Film Television and Radio School in Sydney.



A lot has been written about recording in stereo on location. The following is an outline of some of the most common mic systems and their suitability (or otherwise) to film and broadcast applications.

When two mics are separated in space, they pick up sound at different times and their combined output will be similar to a single mic with delayed reflections. Therefore, spaced mic stereo techniques, or "AB" arrangements, are susceptible to comb filter problems. (Comb filtering is well demonstrated by PA operators who insist on mixing two lectern mics to mono.)

For the location sound recordist, a spaced pair of mics would be inconvenient in terms of combining windscreens and shock mounts into a manageable package. And, because the AB system relies on the time-of-arrival principal to achieve the stereo image, even the slightest movement of the mic pair will cause the sound image to jump around from left to right and anywhere in between.

Nevertheless, widely spaced omnidirectional mics are probably the most commonly used arrangement for recording orchestras. In this situation comb filtering is less of a problem (less noticeable) as the musicians and the mics don't move during the performance. Also, this system, while producing a very pleasing stereo image, is not mono compatible due to the comb filtering effect - something to consider especially for people working in two channel TV or radio.

A coincident pair of mics, or ones which have their capsules as close together as practically possible, don't suffer comb-filtering distortion and can be conveniently packaged into a single end-fire mic unit. This crossed pair technique, or "XY" system, employs two cardioid mics with their capsules angled at 90 degrees.

For normal two channel stereo sound this set-up is fine and the combined signals are mono compatible. Additionally, some single-unit XY packages conveniently fit into off-the-shelf shock mounts and windscreens.

A popular system among location recordists is the MS or Mid/Side technique. MS is another variation of a coincident pair - one cardioid mic pointing forward (the M or mid channel) and one figure eight at 90 degrees in the horizontal plane (the S or side channel). Although encoding and decoding the MS signal is somewhat cumbersome, the stereo image is extremely accurate and the width or spread of the image is infinitely variable, either during recording or in post. MS has found popularity with recordists using single point mic principals as they can control the ratio of direct to ambient signals by simply winding in or out the Side channel.

Most MS mic manufacturers make a conveniently packaged end-fire systems which are much the same size as a conventional short shotgun mic and fit most of the readily available shock mount/

windscreens packages and this is why it is popular among location sound recordists.

But as with any coincident pair of mics, their ability to preserve the stereo image in the final mix is the contentious issue among the film post-production fraternity. In XY or MS pairs, any common signal - or signal which arrives at both mics at the same time (in phase) - can't easily be decoded by the Dolby processing in the final mix and these in phase signals tend to collapse into the centre speaker.

There are pros and cons for all the alternatives listed above, depending on the sound track delivery requirements.

This writer is a devotee of the ORTF principal for both atmospheres and single point music recording. ORTF solves most of the problems of the other methods and can be made into a convenient single package for location work.

This mic configuration was developed as a means of producing pleasing stereo while still maintaining adequate monophonic compatibility. The principal consists of two cardioid mics angled away from each other at an included angle of 110°, with the capsules separated by 17cm.

Because two directional mics such as first order cardioids are used at this angle and spacing, the ORTF technique still provides significant intensity differences between the stereo channels.

At low frequencies, the signals from the two mics are virtually phase coherent. With minimal phase differences becoming apparent only at higher frequencies, the comb filter effects are quite tolerable, producing the pleasing "air" around the subject.

The ORTF principal seems to satisfy all the requirements for the various release print and broadcast options, from the Dolby surround cinema epic to the mono TV in the lounge room.

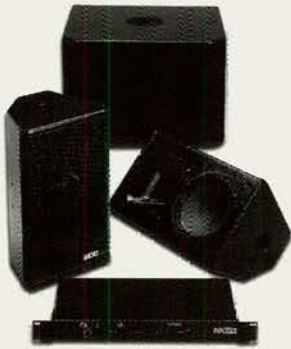
With some minor modifications to off-the-shelf Rycote or Sennheiser shock mounts, a superior all-in-one ORTF mic unit can be built in a convenient lightweight rig.

Any mic with an active cable system to the mic heads will do the trick i.e. Neumann and Schoeps. However, I prefer the Danish Pro-Audio 4021 because all the electronics are enclosed in the mic head and no separate preamp is required. There are five metres of mic cable between the mic head and the XLR connector.

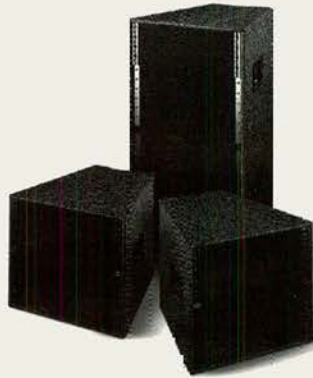
The DPA comes in three varieties. All are compact and employ the same 19mm Bruel & Kjaer capsule used in the larger studio mics. The cable is either hard-wired to the mic (DPA4021 and 4022) or there is a version (DPA4023) which uses a Lemo connector. As with any other active cable mic, the DPA also makes an ideal bug-suited for planting in props and cars etc.

With some minor modifications to off-the-shelf Rycote or Sennheiser shock mounts, a superior all-in-one ORTF mic unit can be built in a convenient lightweight rig.

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FEDERATION CELEBRATIONS

The Centenary Of Federation Ceremony, held in Centennial Park, Sydney was one of the largest performance projects yet undertaken in Australia. With this scale of project came some unusual problems requiring unconventional solutions. Richard Montgomery (Production Manager) and Patrick Buckle (Production Coordinator) took some time to reflect on the event for Connections...



The audiovisual projection component of the Centennial Ceremony played a critical role in the overall staging design concept. Images were projected onto two projection surfaces- the first being a projection screen measuring 10 metres wide by 20 metres high.

This was rigged on a large cantilevered truss arrangement, or Videotron as it was termed, that thrust out of the stage surface at a 45-degree angle and reached a full height of 27 metres from the ground at its highest point.

The projection onto this main screen involved the use of two types of projection devices 4 x PIGIs were supplied by The Electric Canvas, and 2 x Barco ELM12's were supplied by Gearhouse. The BAFCC images were inserted at video ratio within the larger PIGI generated images and created a "video/ moving image" window.

The second projection surface was the stage floor surface itself with 2 x PIGIs were mounted at the highest central point in the Videotron "head".

The major challenge for the production team was to establish the positioning and subsequent rigging of all the projection devices.

This was made all the more challenging by the creative teams need to maintain the notion through the staging concept that there were to be no physical barriers between the stage and the auditorium.

What this meant was that there were to be no major "impeding structures at the front of the stage." The only real solution to this problem was to run with concrete pre-fabricated pits and sink them into the ground at the downstage edge of the stage. These could

be ordered to our specified size and could be easily modified in such a way as to impede the ingress of rain, wind and dust.

FITS MADE TO ORDER

The pits had internal measurements of 4880mm long by 1880mm wide by 1200mm deep with a wall thickness of 150mm. Each pit weighed approximately 8 tonnes and required a substantial Franna Crane for installation and removal. From the onset Peter Milne of Electric Canvas specified that the position of his PIGI projectors within the pits was critical. He needed to maintain a 90deg angle in side elevation between the screen surface and his beam centres. The position in plan of the projectors was not as critical, however accuracy was paramount to ensure an optimum projection scenario.

With this in mind the whole development and subsequent implementation of the projectors positioning and the pits themselves was carried out with a great deal of accuracy.

The ELMs from Gearhouse were much more sympathetic to our needs given that they had a great deal of "lens shift". The video frame could easily be located anywhere on our screen surface. Computer aided crafting was utilised heavily by the Ceremony Production Management, Electric Canvas and ESS. This allowed all parties to workshop solutions collaboratively. This developmental process was driven and facilitated by the Ceremony Production Management, to ensure that accuracy was being maintained and that this component of the project was being monitored within the context of the total production requirements.

Centennial Parklands were informed early in the piece of our need to install two



Richard Montgomery



Patrick Buckle

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Production Period Highlights

Working late at night in Centennial Park reveals goings on in the Pine Grove which would be more at home in Penthouse magazine. Furry friends would also visit after dusk - the number of rabbits roaming the park during a plotting session astounded Andrew Savage (Image Coordinator). Hundreds of critters would roam around the Parade Grounds during tech periods, digging little holes. Waskals!

The park neighbours seemingly had a concern about the mobile lighting towers located around the park. After focusing these units the previous night, Patrick Buckle (Production Coordinator) returned to carry out a final check only to discover that someone had carefully removed a fuse from the starter and placed the fuse holder on the wheel arch. They must not have appreciated the noise from the generators and 6000w of light keeping them awake. Other incidents such as the mysterious turning on of units at the less populated areas of the park made the solo-buggy rides (no headlights) through the dark park around midnight a worrying trip.

substantial pits on our main stage site. They agreed to this on the condition that work was carried out in accordance with current building practices. This was ensured through the engagement of Brooks Irrigation by the NSW COF; the current irrigation contractors for the Parklands. The pits were installed with a final tolerance of around 50mm. This was sufficient given that a survey would be carried out so that the projector mounts could be referenced from the screen. To further add complexity to the challenge, air-con had to be introduced as it was feared that excessive heat would have detrimental effects on equipment and personnel.

The OP pits contained two PIGIs and an ABC TV Cameraman whilst the PS pit contained two PIGIs and two Barco ELM12s which were very sensitive to heat. Fortunately, Air Con Rentals kindly offered a reduction on an industrial air conditioning unit to service the pits. The final solution was to target the ELM air intakes with the air-con outputs, whilst at

the same time extract the heat directly from the PIGI lamp houses. Covers or lids were fabricated to not only provide weather protection and ensure positive air pressure with the air -con, but to facilitate easy access to the equipment in non-performance mode.

An elegant solution to this was fabricated onsite, much to the credit of Ian Bowie's expertise & Tim (Hedge) Henderson's' mobile workshop. This was a steel frame that was covered in a specially fabricated clear plastic cover. The clear cover idea came late in the piece and proved to be a triumph. It not only

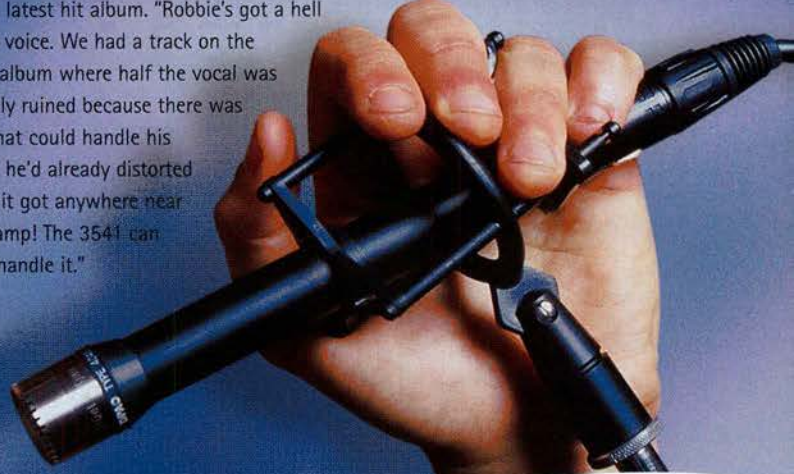
allowed technical staff to view the equipment in the pits from the outside, monitoring operating status, temperature etc, but it was a very impressive design feature.

The next challenge was the mounting of two PIGIs in the "Videotron" head. The brief from the creative team was that all efforts must be made to ensure that all rigging upon the Videotron be sympathetic to this notion. The PIGIs were not the only items to be mounted



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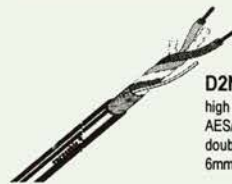
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CENTENNIAL PARK ENVIRONMENT

Working in Centennial Park had unique challenges. Set on an old reserve, the park varies between soft soil and even softer sand. Once the first patches of grass wore thin on our first day, it was not long before the first supposed "all terrain" forklift sank to its axles in the sand.

On a larger scale, ScreenCo managed to sink one of their mobile screen trucks in 2ft of dry sand at the entrance to the fields. Having failed to push them out with a 2.4t 4wd forklift an attempt was made with a 10t Roller. This resulted in the first ever Roller wheel spin, and lots of dust, but unfortunately no movement in the truck. They were finally removed using the larger 3.2t forklift.

The "sandpit syndrome" quickly became the major issue for Chris Axelsen (Site Manager) throughout our occupancy. The watering can and packet of seeds were no longer going to cover up damage to the grass before our final inspection.

The Chameleon team also experienced the joy of working in "the sandpit". Relocating roadcases (normally a straightforward procedure) proved difficult even with pro-floor laid around the backstage areas. Dave Mansfield (Chameleon) will look back on his time in Centennial Park with fond memories. I believe one comment was "I will never work on a gig without running water again".

Like Dave, the rest of the crew found it hard work in Centennial Park. With the temperature reaching 39deg on a number of occasions and the driest December in a long time, the lack of running water and dehydration was a concern. The water and irrigation system for the park is sourced from the park ponds, and unfortunately has a strong effluent aroma that is rather unpleasant.

A major concern was that the irrigation system would be turned on over night and drench the stage in this aromatic water, heating up through the day and smelling like a cesspit to all those working on it. Consultation with Centennial Park staff prevented this. Spring water supplier 'NeverFail' was kept very busy over the Christmas period with large water requirements.

from the Videotron head, with an ABC TV "hot-head camera and lighting fixtures also to be factored into the equation. It was first thought that the PIGs units might fit within the box trussing however, after many CAD sessions and an actual tryout at the ESS factory in Botany it was established that too much compromise would be needed if we wanted to keep them in the truss.

Consequently a mounting bracket was designed by Richard Montgomery (Production Manager) that met with the approval from both the creative team and Electric Canvas. This incorporated a clear weatherproof membrane and room for the projectors, power supply units and camera.

The Videotron housed the 10 x 20 metre projection screen. This screen effectively acted as a huge sail trimmed at about 5 degrees NNE. In other words the nor-easters that were commonly experienced were heading straight across our port beam, to use a nautical notion. When the screen was in position it was rated to withstand wind speeds of 30m/s; "...which is blowing pretty hard" ESS's warning that the park was to be evacuated should the winds exceed 50m/s had the production staff keeping a close eye on the wind speed for the first couple of days, and visions of the massive truss



structure rolling across the park grounds towards Randwick. The "flying squad", the team that would de-rig the screen, were on stand-by when it the wind reached 20m/s.

The rigging of the screen allowed it to be struck within 15-20 minutes if necessary. Wind speed and other conditions were monitored remotely via an anemometer mounted at the Videotron head. A sturdy unit that at one point had to endure the aggressive amorous advances of a

large white cockatoo.

Fortunately the highest the wind got whenever it was rigged was a burst at 11m/s. The substantial wire cable rigged from the top head of the Videotron back to the main towers were in place simply as a safeguard against a southerly. The Videotron frame was supported at the connection to the base of the main towers by four very important bolts and assisted greatly by a substantial quantity of ballast at their bases.

The end result was sensational and a huge credit to the professionalism of the collective production and creative teams that came together, in the heat and dust of probably the hottest December in a while, and worked diligently towards solutions to the myriad of problems that invariable rear their ugly heads.

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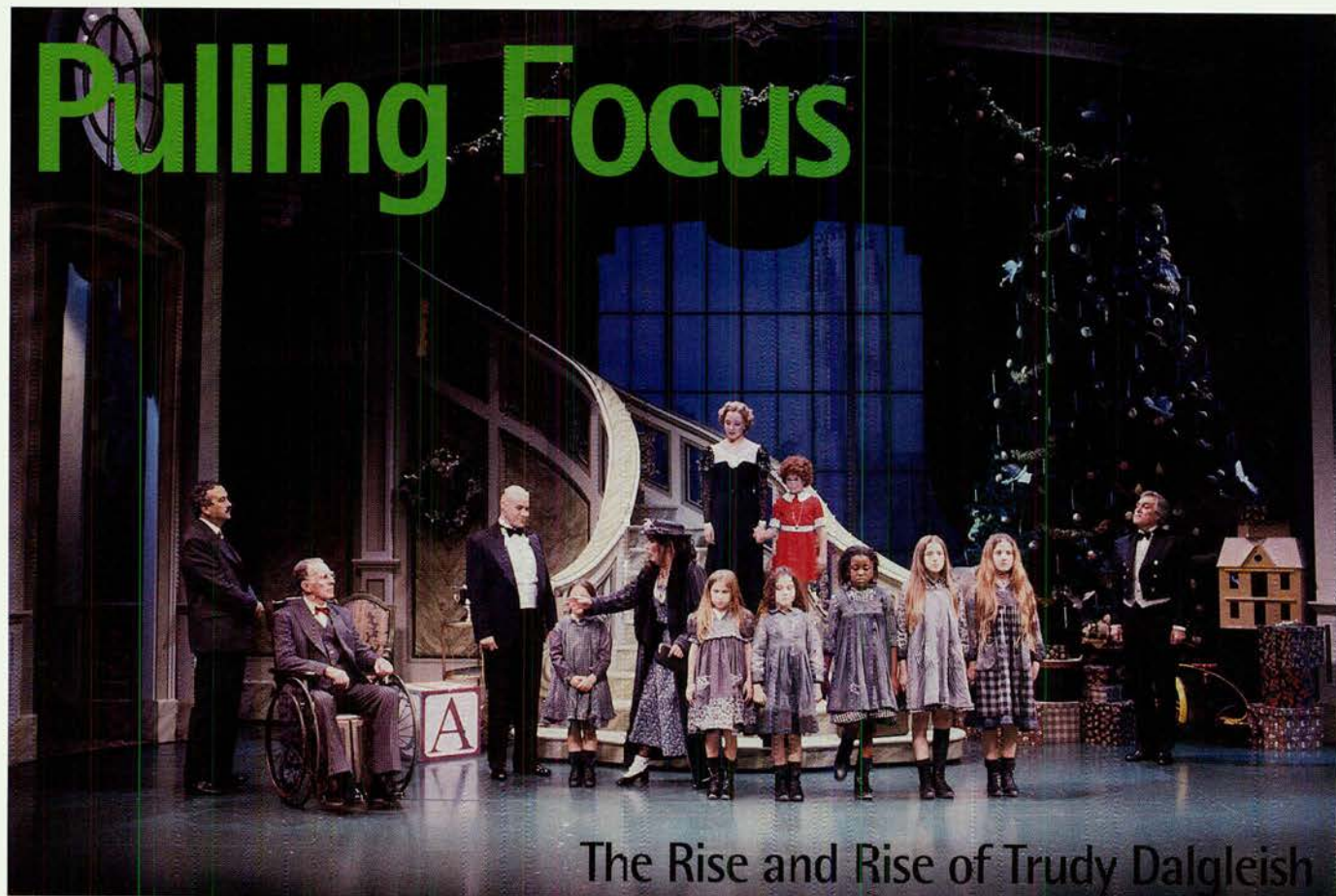
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Pulling Focus



The Rise and Rise of Trudy Dalglish

Finding a break in her hectic schedule can be difficult. However, with the relocation of *Annie* from Sydney to Melbourne complete, and just before *Shout* moves from Melbourne to Sydney, Trudy had just enough time to sit and talk about career - and what career so far. Her production credits include *Steel City*, *The Boy From Oz*, *Fame* and the currently running *The Sound of Music*.

Trudy understatedly describes *Arnie* and *Shout* as "two very different animals". One is an apple-pie fairy tale of an orphan landing in the lap of luxury, and the other is a baby-boomer rockumentary-musical on the life of Australia's music legend, Johnny O'Keefe. As the LD on both projects simultaneously, Trudy has gained lots of frequent flyer points while getting the shows running on their national tours.

While being poles apart in terms of style - *Annie* is a traditional Broadway musical & *Shout* is a hybrid of rock-n-roll and theatre - amazingly both shows are designed around the same lighting rig. The rig is one Trudy has developed over her last four shows and believes apart from slight variations for production-specific lighting requirements, it can be used for any show.

"Basically the rig is 60 moving lights, 200 Source Fours profiles with 40 scrollers, 3 followspots and a WholeHogII. It takes one day to rig and six hours to focus, which is just fantastic."

Using the same rig on two such stylistically different shows demonstrates Trudy's diverse talents. But apart from her unmistakable thumb-print on the finished design the similarities end at the equipment list.

For *Shout*, Trudy was faced with the challenge of lighting an acting area of 40 x 60 feet. The set design by Michael Scott-Mitchell consists of three huge blue walls bordering the space, a five-tonne automated revolve and riser in the centre of the space, and a huge neon clock at the rear of the stage used to signify changes in time. A fully functional set capable of major transformations, changes are achieved by sliding back panels to allow for set pieces to move on and off and to create acting areas within the set.

Using her standard equipment list of Source Fours, scrollers and 48 High End units from the Studio range, Trudy created a design that actively and effectively set the atmosphere for the scenes.

For all of the detail of Michael Scott-Mitchell's elaborate set, in many ways for Trudy it was a blank canvas. The action in *Shout* switches between re-creations of huge concert scenes and television shows into intimate family scenes, so it was up to Trudy to create a sense of place in the void.

"It was an enormous challenge to create identifiable places in the space without set pieces to help define it. But it's an interesting

Trudy Dalglish is one of the most in-demand lighting designers working in the industry today. Her production credits read like a list of recent major Australian productions - and she has no intention of slowing down.

Mandy Jones caught up with Trudy in the midst of yet another production week...

show because it's a real hybrid of rock and roll and theatre, and it's a real challenge lighting-wise because there is no set other than three blue walls, so I had to create every different set and mood through the lighting. It's totally different to *Annie* which is very traditional where you have all the set pieces for the orphanage, the mansion, the street scenes and you have the set elements to help you so you never have a bare stage."

At times, *Shout* requires an understated drama-style lighting design which Trudy achieves through static states of sidelight and backlight. Dramatic changes to concert style lighting with colour and iris chases give the High End units a real work out. It also gives lighting operator Dale Mounsey a workout



keeping on top of the 658 lighting cues.

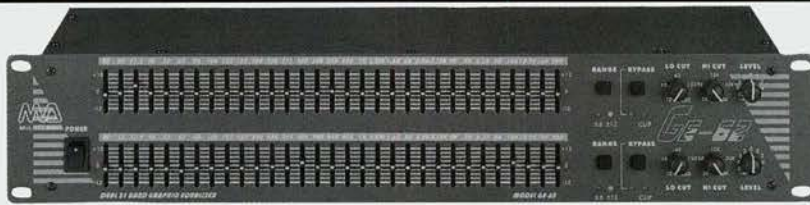
Picking up on the nostalgic feel of the show, neon features throughout the design from the central clock used in every scene, to a blinking 'Stadium' sign, and then in the final scene where a neon list of Australian musicians inspired by Johnny O'Keefe is flown in.

The lx design for *Annie* is largely dictated by the staging of the show. With enormous detailed set pieces designed by Kenneth Foy to establish each setting in the story, the lighting design is subtle and restrained. Transitions between lighting states are gentle and fluid, and through a Broadway-style layering of light, Trudy achieves a feeling of '3D' dimensionality.

"*Annie* is a very traditional Broadway show and I've lit it in a traditional Broadway way except I've relied heavily on moving lights which have been a huge timesaver. There are hardly any conventional lights behind the arch but you'd never know because you never see the moving lights move, and that's the joy of them."

Assisting with the dimensionality are 60 x 40 foot plastic photo-realism cloths with photographic images of New York buildings on them. Created by a Sydney company who make photo billboards, the pixelated images look like they are rear-projected by a large format projector.

"The best thing about them is that they're half the price of scenic painting - I know scenic painting is a wonderful art, but you'd never get the effect that you get with this process. We're using Studio Beams on the floor behind the backdrops so we can actually pick out little bits in the photos and make them stand out. I love the effect. I think Ken Foy who did the set design for this show is brilliant. It's a lighting designer's dream. We use two Pani projectors



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from the front which dissolve 30 slides during the overture and then during one of the big sequences in the show.”

Trudy explained the design process for *Annie* was interesting because the Director’s brief required an absence of colour in the early scenes, something she had not designed for before.

“The first half of the show had to be black and white, and colour could only come into Annie’s life when the Grace Farrell character comes into the orphanage to take Annie to the mansion. I’d never lit in black and white before, mainly because I just love designing with saturated colour, so this was a real learning experience for me to make colour out of intensity. I learnt a lot from the process and I’m really glad he forced me to work in black and white. The conventionals were all 201 so they were all colour corrected, but the moving lights were arc white, and the lower you go with a moving light globe the yellower it gets and the higher the whiter it gets, so I had a lot of fun with Jason Fripp programming it.”

Trudy worked closely with Ken Foy in bringing his set design to life, particularly in the second act when the mansion becomes the main set and colour is relied upon to add detail and depth. In several scenes, scrim panels are flown in and backlit in rich Wedgwood greens to create the wall colour for the set. Apart from being a clever way of avoiding painted backdrops, the scrims add extra dimension to the set by providing a diffused backlight behind the actors.

On both shows Trudy specced Studio Colors, Studio Spots and Studio Beams to make up the moving light contingent in her rig. She says the real joy of moving lights is never having to focus them, and coming from a hands-on background

of being a head electrician and technician for many years, Trudy says she loves moving lights for that reason.

“I hate focusing. For a lighting designer, life’s too short to focus. And that’s where moving lights are fantastic. Every scene is made up into a preset focus, so then it’s just a matter of colour and intensity and away you go. All of the trusses and lamps are in the same place as the last venue, so updating preset focus in this venue was really easy because we turned it all on and everything was where it was meant to be. We didn’t have to focus which was just fantastic. So basically the conventional lamps do a general wash and that’s all they do, and the moving lights do all the specials and the colours so it’s really really easy.”



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Gobos feature heavily in Trudy's designs for both *Shout* and *Annie* although they are used very differently. In *Annie* mesh and cobblestone gobos are subtly layered into the design, whereas in *Shout* gobos are used in an active way to add patterning to the set to create moods. Bold patterns such as stars, stained glass effects and varieties of break-up are used to transform the set, or with the assistance of haze, to fill the space with patterned beams of light.

"I love haze. I only managed to get haze into one scene in *Annie*, but I think it makes a lot of difference with atmosphere. Especially with *Shout* with the big open space, if you're using haze and backlight you can actually contain the stage more effectively because you're creating a wall with light that you can't see beyond. I did that a lot in *Shout* by bringing the 'family scenes' further downstage and putting a huge amount of white backlight on the scene so you couldn't see behind them.

"I'm lucky enough that when Bytecraft get the tender for my shows they actually supply me with a full set of moving light gobos of my own choice. When other companies supply, I have to use standard gobos and that's not always successful but Bytecraft really cares about the artistic end of the product so they've always helped me out. Every moving light gobo on *Annie* is non-standard so I actually specced mesh, grate, cobblestone and bar break-up gobos. The same with *Shout*.

"I think it's really important that you do pick your own gobos for every show. I also always pick my colour scroller colours so I have a standard scroll of 24 colours I use all the time. I'm actually finding the grill gobos I use in *Annie* work really well in *Shout* too which is handy. I mostly use Rosco because they have the biggest range, but the ones in *Shout* are special glass litho ones from High End and they have an almost 3D effect."

Trudy had one custom made gobo on *Shout* - in fact it was made by her Head Electrician Garion Hall by sticking broken pieces of dichroic glass into a break-up gobo to create a stained glass effect for the wedding scene.

"Poor Garion had to sit there and stick the pieces of glass into the gobo but the effect we achieved with just a conventional light was very nice, so we're very pleased with it, and I think Garion is especially proud of it."

COLOURS

Trudy has a favourite palette of colours and she's not afraid to use them. Magenta, amber, lavender and greens pop up in both designs, as does Trudy's favourite gel colour, Congo Blue.

"I'm a Congo girl! I just love it. You can do anything with Congo, I mean, Congo and amber equals pink. *Shout* is full of it because that blue set just calls out for Congo all the time. I even managed to get a bit of Congo into *Annie* - I couldn't do *Annie* without at least one Congo scene. It's just luscious, especially coming out of moving lights."

Although they are totally different shows, Trudy explained the design process was the same for both *Shout* and *Annie*.

"I'll talk to the director about their ideas for the production, after that I have to generate an equipment list because tenders have to go out, so sometimes it's really



difficult because we haven't started rehearsal and there's not even a proper set design and I have to decide my equipment list."

DESIGN EVOLUTION

Trudy says a major part of her design process is sitting in on rehearsals and watching the show evolve in the hands of the director and cast. She usually generates the final design two weeks prior to bump in.

"Designing doesn't actually take much time if you don't want to sit in on rehearsals, but I can't see how you can design without seeing the show. Plus, I love getting that vibe of being part of the process, and by the time you get to the plotting session you know where the director is taking the play. I'm very fortunate that I don't plot with directors. What I usually do is do a plotting session and plot all the cues, then the director will see it for the first time in the technical rehearsal and they will usually say yes or no.

"I find that a much quicker process than having a director giving their opinion on every cue, especially on a show like *Shout* where there are 658 cues and two days to plot, as opposed to *Annie* which has 220 cues and took 4 days to plot with the set designer. So I prefer the process of plotting without the director and then to balance afterwards. And I've never been far off the mark because I've been at rehearsals and I've heard the director talking to the cast and where he or she is going with the show.

"I usually miss the last week of important rehearsals because I'm in the theatre bumping in. I always attend the first bump in because I love doing lamp placement. Every lamp, especially moving lights, have to be in the right position for me to create 'v's in the air. Then I just walk in and do the focus and sit down and make the pretty pictures.

"My Head Electricians Peter Herbert and Garion Hall look after the rest. I don't think you need to be overly technical to be a LD, it helps if you've been a Head Electrician or technician or have at least some grounding in theatre and come through the ranks. In fact that makes you a better person with your crew if you've done it yourself you don't make people do nasty things. So I won't design lamps in nasty positions as I've been there and had to rig it and hated it, so you treat your crew well and they treat you well."

WORK PRESSURES

As much as she loves being in demand and being



busy, Trudy admits juggling three or four shows is exhausting work.

"I've found the last year a little hard. I've learnt three shows is about as many as I can do in a year because there are all the transfers to different cities as well. This year is going to be a bit of a struggle again because I've got *Shout*, *Annie*, *Singing in the Rain* and *Sweeney Todd* for Opera Australia at the Opera House. But I love it and I'm passionate about what I do. But... I'm sick of planes and hotels. Every plane and hotel is the same, but when you get inside the theatre it's all worth it because it's so much fun - and the fact you get paid for having so much fun, it's just amazing.

"I get sleep deprived at times but I'm slowly letting all my little shows go like my Premiers Concerts at the Entertainment Centre and stuff at the Opera House so I can concentrate on my major shows. And it's great to have the turnover because every show is so different that every show is such a challenge so it's always exciting and refreshing. Apart from the sleep deprivation. But then again I'm fortunate to have people like Pete who take an enormous amount of pressure off me."

Trudy confesses the other down-side of having more than one project on the go at the same time is not being able to commit her undivided attention to it.

"I still feel *Shout* isn't quite finished. I'll actually finish it going into Sydney. When we were doing the production time I had to go to Adelaide and put *Sound of Music* in, then I had to leave for New York before *Shout* actually opened so I kind of felt like I'd left a newborn baby on the roadside to fend for itself. I went for a visit and I still feel it isn't finished yet. But I'll finish it in Sydney."

Trudy is full of praise for her crews who assist her in juggling the workload, in particular Peter Herbert and Tim Newman, Jason Fripp and Garion Hall.

"This next period will be really hard because I finish with *Annie* on Thursday night when it opens in Melbourne, then Friday I'm focusing *Shout* in Sydney and going into my next production period. So it's a bit tough when they overlap like that but thankfully all my producers are really understanding so there doesn't seem to

be any rivalry between them and they allow me to go and do other things while I'm doing shows. I couldn't do it if they weren't so understanding about me flitting off to do *Sound of Music* during *Shout* or me wanting to leave *Annie* a few

days early because I have to go back to do *Shout*. So it's great that it's so give and take, but I guess it is such a small industry in Australia you have to be like that."

Talking with Trudy, it is obvious that she adores being a lighting designer. Amazingly she's been doing it since she was 13 years old and was designing for school productions.

"I think lighting design is one of those things you can do until the day you die. It's not the kind of job where you get too old to do it. I also think the older you get the better the designer you become, because you build up such an encyclopedia of what works and what doesn't. Basically all of my shows are done with exactly the same rig - it's just a different formula of how it gets plotted. *Shout* has as many lamps as *Annie*, they're just in a different configuration.

"And that's what is so great about designing two such different shows like *Annie* and *Shout*. I don't think I should ever be restricted to 'she's a musical designer' or 'she's a theatre designer'. As a lighting designer you should stay versatile and light everything, and having come from the Sydney Entertainment centre for 10 years where I had to light everything from circus, to opera to ballet I learned the value of being versatile. And it's good to have lots of equipment to play with. Basically my aim is to have an all moving light theatre rig one day so I never have to focus a conventional again in my life. I don't know if I'll ever get there, but my perfect rig would be VL5s, VL5 Arcs, Studio Spots because they crossfade colour so beautifully and a Mac 2000 to give me a oomph and zoomability down to pinspot.

"But I want to keep designing forever, or for as long as Producers will employ me to do it. I'm sure in a couple of years some young kids will come through and they'll get their chance and then I'll only be doing one or two a year. But that'll be fine. It's something I can do forever and I love doing it, as I'm sure anyone who does anything in this industry loves doing it. You've got to do it for the love of it otherwise what's the point. It's long hours, it's no pay, so you've got to do it because you're passionate about it and you wouldn't want to do anything else." •

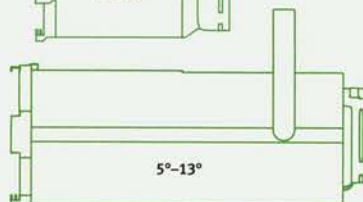


Randal Collins (Head Elec), Trudy Dalglish and Peter Herbert (Prod Elec) working on *Annie*.

SELECON

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Of course, everyone knows if you mix red with blue you get purple, however in the **PACIFIC** range tradition of pushing boundaries and breaking a few rules, Selecon have decided to make it ... green.

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So, whether you want Pacific Zooms (12°-28° or 23°-50°), Fixed Beams (20°, 30°, 40°, 50°), the new Very Narrow Zoom (5°-13°) or the Super Wide (90°), Selecon delivers a single Pacific lamp house with the widest choice of optical systems and light sources available today. Talk about mix and match!

The new reflector design from Selecon's in-house Development Team delivers as much or more light as the previous two lamp houses into all Pacific optical systems. Using the 575/2 MSR lamp the beam is more even with better peak/flat adjustment.

Further evidence of Selecon's continuing programme of product development and improvement.

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SELECON AUSTRALIA — PH/FAX 02-9664 8237
E-MAIL: seleconaus@ozemail.com.au HOME PAGE: www.seleconlight.com

DMX DEVICES

The proliferation of DMX devices in many varied and unusual forms will continue to grow as electronic components used to build them become more widely available, and demand is increased through the increasing reliance on intelligent lighting. More and more, events are requiring solutions like radio DMX, cordless control, splitting, processing etc. This demand has already expanded the available range of products. This market report is intended to be a guide to what is available.



"Designed and built in Australia, the DMXS3 splitter came to life after a fruitless search for a simple and cheap Mains powered DMX Splitter system. Now in its second version we are constantly talking to our customers to find out how we could improve our range and make their lives easier."



DMXS3 Three Way Compact DMX Splitter **HOT SELLER**

Compact Three way Isolated DMX Splitter unit, with built in Dual Mains Power Supply. Features bright LED Power and Data Indicators. Has M10 Threaded Insert to Allow Truss mounting. Available with 3 or 5 Pin XLR Connectors. Size: 165x85x60mm. Designed and Manufactured in Australia. Truss Mounting Point allows fit and forget operation on remote locations. Dual PSU allows for complete I/O Isolation of over 2500 Volts. Data and Power LED, simplifies fault finding in Large Systems.

- 3 Pin Version \$400, 5 Pin Version \$450
- Bill Coghill Design +61 2 9500 8090 www.bcd.cx

DMXS2-D Two Way Dual Pinout Compact DMX Splitter

Compact Two way Isolated DMX Splitter unit, with 3 and 5 pin Inputs and Outputs. Features bright LED Power and Data Indicators. Has M10 Threaded Insert to Allow Truss mounting. Size: 165x85x60mm. Ideal for use with mixed fixture type shows. Never run out of 3 to 5 adaptors again !! Provides two buffered and isolated outputs on 3 and 5 pin XLR connectors. Designed and Manufactured in Australia. Ideal for Hire Companies, or any one who needs a compact flexible solution.

- \$450
- Bill Coghill Design +61 2 9500 8090 www.bcd.cx

LED DMX Tester Plug

DMX Testing Plug with Bi-Coloured LED, showing presence of Data on the + and - Lines and a Good Earth. Ideal for troubleshooting Installations. Available with either 3 or 5 Pin XLR Connectors. A simple test tool is often the best. This device allows you to easily and simple identify that data is getting to / from a fixture and that there is continuity in all the conductors. Every tool box needs one!

- 3 Pin - \$15, 5 Pin - \$20
- Bill Coghill Design +61 2 9500 8090 www.bcd.cx

DMX Terminators

DMX Terminator Plugs. Often Overlooked ! Black Metal XLRs with Internal termination resistors. Labelled and sealed with clear heat shrink to prevent confusion! Available in 3 pin or 5 Pin versions.

All our DMX Termination plugs are hand built and tested before being dispatched. No more cobbled together terminators with no markings. Every rig needs one (or more !!)

- 3 Pin - \$8, 5 Pin - \$10
- Bill Coghill Design +61 2 9500 8090 www.bcd.cx

Sidewinder TM Virtual DMX Console **HOT SELLER**

Sidewinder is the perfect partner to the Figment DMX application software, both developed by Interactive Technologies. It is a handheld DMX processor in an ultra miniature package (60 x 101 x 38mm). It functions as a playback controller for Figment DMX software, while also providing DMX input and output capabilities for the Palm series of handheld computer. It can also be used to test DMX cables and collect DMX diagnostic data. Battery or plug pack powered, Sidewinder has full DMX opto-isolation at its built-in XLR jacks. All of features are controllable through the unit's standard RS-232 serial port allowing a Palm handheld or other host computer to be connected. It can be used in other situations where a show controller, media controller, PC or anything else that has an RS-232 port needs to control DMX equipment.

- \$1998
- Bytecraft Pty Ltd +61 3 9586 4553

Micro-Scope 3

Micro-Scope 3 is a small hand-held DMX512 receiver and transmitter. It can operate as a Moving Lamp tester, a Flicker Finder or as a Rigger's Remote. It is powered by an internal rechargeable battery, with a normal life of 25 hours and uses a high brightness backlit LCD screen. It is simple to operate. Turn on and you are immediately displaying received DMX512. Two key presses are all that is required to start flashing through the rig. The built in moving lamp library is used to test all the attributes of nearly 200 lamps. Just one of the clever DMX devises including dongles, data splitters and converters produced by Artistic Licence.

- \$1424.00
- Bytecraft Pty Ltd +61 3 9586 4553

Radio DMXTM Wireless DMX Distribution System

Interactive Technologies Radio DMX is a plug and play system providing wirelessly transmitted DMX signals. The transmitters broadcast an airborne DMX data link to receivers which recreate the transmitted data link, allowing multiple features to be operated from a locate location. Each RadioDMX station can be configured to transmit or receive data, with full 512 dimmer capacity. 1070 metre line-of-sight range and 150 to 460m typical indoor range and/or through obstacles. Unlimited receivers for each transmitter. Complete support for moving lights. No interference with wireless microphones or two-way radios.

- From \$7377
- Bytecraft Pty Ltd +61 3 9586 4553

MARKETREPORT

SN103 & SN104 Network nodes

SN103 and SN104 Microprocessor-based Ethernet nodes allow you to connect all the peripheral devices in your facility using easily installed, low cost category 5 Ethernet data cables. Network nodes allow cheap distribution of up to 4 DMX signals on Ethernet wiring. SN103/104 nodes feature 4 connectors. Each connector may be configured as a DMX input or output using ShowNet DMX patching software. The fourth connector on all nodes may be configured as a handheld remote port and a power supply for the handheld is included with each node. The SN103 has an internal mains power supply and the SN104 may be remotely powered by a low voltage power supply (by Strand Lighting).

- \$ 7000
- Bytecraft Pty Ltd +61 3 9586 4553

ELC Focus Brain,

Intelligent wireless remote control for full 512 channels, Selectable from 1-512 or 513-1024, Remote Aerial up to 100m from rack unit, Merge with DMX output from console in http, Memorise 30 scenes from console, Build scenes with remote, X Fade between scenes, Back lit led remote buttons, Hardware bypass of DMX via relay in case of power failure, Remote control up to 1024ch

- \$4295
- Clearlight Shows Pty.Ltd +61 3 95531688

ELC Show Store

Real time DMX show recorder and playback unit, Up to 99 shows, Up to 99 indexes per show, Up to 26 hours of storage, 2GB Hard disk, External control by PC or Parallel Contact or via DMX from a console

- \$3980
- Clearlight Shows Pty.Ltd +61 3 95531688

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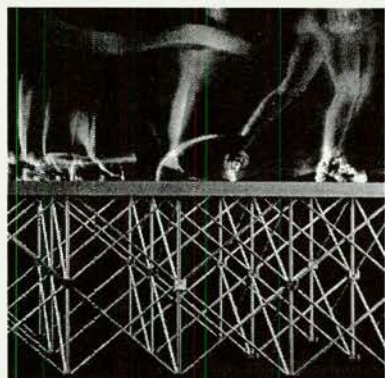
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DMX Devices



"The frustration of having to climb up and down a ladder to focus each light led to the development of the Focus 60, released in March 1999. Many people liked it but the

comments were why only 60 channels? In September 2000 the Focus 120 was released, with many new features as well as more channels. In the future Deltatronics is looking for a partner to market and distribute it worldwide (a possibly a 512ch version.)"



Jands DDX 60C
(right)



Jands DD8
(left)

ELC Dam 44

DMX Controlled Audio Matrix, Digital control of audio levels, Change audio levels, Turn Audio on and off, Assign four audio inputs into one or more outputs, DMX opto-isolated from audio, Pan/Tilt operating mode from console joystick will move sound left-right and front-rear

- \$3025
- Clearlight Shows Pty.Ltd +61 3 95531688

ELC dmXPOINT

Programmable merger/splitter, 2 DMX inputs, 6 Programmable outputs, Opto-isolated inputs & outputs, Htp (merge highest takes precedence), Lotp (Lowest takes precedence), Ltp (channel combine two input to one last take precedence)

- \$3350
- Clearlight Shows Pty.Ltd +61 3 95531688

Deltatronics - Focus 120 **HOT SELLER**

Wireless DMX riggers remote. Controls 120 channels, frequency 433.92MHz, internal antenna, channel display on remote, one scene memory. The Receiver has two 5pin XLRs, DMX In & Out, it will merge the remote with a desk (highest level takes precedence). Reviewed in Dec/Jan Connections. The Focus 120 is intuitive and very simple to use, with any combination of channels able to be left up at the same time. The small remote weighs only 150grams (with 9V battery). Because it is RF, line-of-sight is not required, there is no cord to trip over or get tangled up in and you can be virtually anywhere in the venue.

- \$704
- Deltatronics +61 2 9876 1414

Jands DD8 – DMX Opto isolated splitter **HOT SELLER**

8 x 5pin AXR opto isolated outputs. 1 x 5pin AXR input. 1ru high. Protection of DMX control from mains level faults on DMX inputs and outputs (active/neutral across DMX +/-) Isolation between outputs and chassis is 500Vac. Power and DMX indicators. Selectable power supply 120V or 240V. CE and C tick approved.

- \$990
- Jands Electronics Pty Ltd

Jands DDX 60C – DMX decoder

6 x Analog outputs D type connectors 0V to +10V. 5pin AXR DMX input. In built test software. Power and DMX indicator. LED channel select. Universal power supply 100-240VAC. CE and C tick approved.

- \$1390
- Jands Electronics Pty Ltd

ISOport

DMX512 galvanically isolated output boxes in single, dual and triple output AXR connectors providing up to 1536 channels of control at any one point. Outputs can be either parallel or series connected and a terminator is available to set the ISOport as the last on the stream. Mounted in a rugged metal mounting box, each ISOport comes with its own termination loom for connecting to the back bone network.

- From \$330
- LSC Lighting Systems +61 3 9561 5255
www.lscighting.com.au

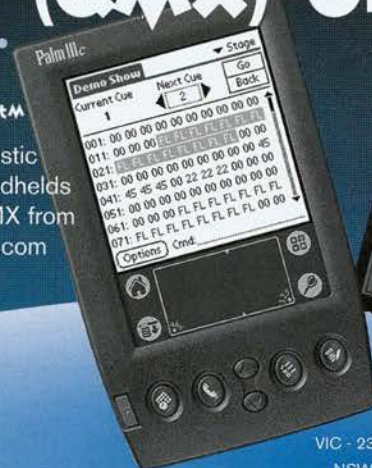
ISONode

An intelligent wall mount DMX512 inlet designed to compliment the ISOport range. The in-built electronics is able to detect activity on its input and automatically switch the down-

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sidewinder™

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stream DMX512 to the input, whilst totally isolating any upstream data that may be present. Mounted in the same style of mounting box as the ISOport, the ISOnode can be disconnected and reconnected to the back bone wiring without disturbing the data path.

- \$385
- LSC Lighting Systems +61 3 9561 5255

DMXchange HOT SELLER

An intelligent DMX512 data stream cross patch unit, that makes cumbersome and usually expensive data cable patch systems obsolete.

The DMXchange can allow for 6 different data stream inputs and patch them to 12 data stream outputs. A LCD display and function buttons enables the patch to be set-up and for the electronic labelling of the data paths. Up to 32 patch presets can be stored in battery-backed memory and recalled easily by the function buttons. Housed in a one rack unit high chassis, input and outputs can be terminated with either Krone and Screw terminals.

- \$3575
- LSC Lighting Systems +61 3 9561 5255

MULTISPLIT

Professional range of DMX512 data splitters designed to provide total isolation of all power, signal and earth connections between all inputs and every output. Available in 5 way split and 10 way split models, the Multisplit is a 3 rack unit high device that can have the output panel front or rear mounted. Input and thru connections are mounted on the front and rear to accommodate the various possibilities. A perfect device for star configuration of DMX networks, whilst providing system integrity!

- From \$1650
- LSC Lighting Systems +61 3 9561 5255

GAM Command 2

Hand held riggers control with LED channel no and level display. This versatile unit is quick to operate both solo and scene controls, and provides access to all 512 dimmers. Functions as line and console tester, automatically showing channel level information from the console. Ideal when DMX patching mysteries occur. Metal casing, battery operated. Made in Australia.

- \$620
- Showcraft +61 2 9698 3009

GAM Switch DMX

Compact automatic line switcher for DMX. Designed to provide a riggers control input to the DMX line without having to plug and unplug the DMX connectors which may lead to faults. The switch is activated by turning the power of on the riggers control, which returns control to the main desk. Provides and access socket to dimmer without having to unplug the main DMX lines.

- \$295
- Showcraft +61 2 9698 3009

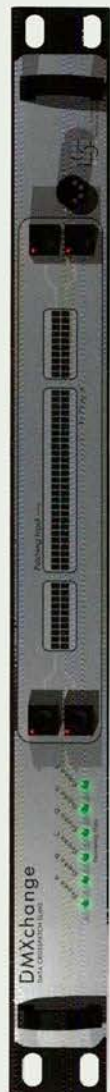
GAM Opto-Iso

Compact optical isolator and line splitter. Isolates control signal and boosts signal to provide a fully split line with no interference to the main signal. This battery or plug-pack powered unit provides a quick solution if trouble develops at the last minute. It is a cost effective solution for desk to dimmer isolation. Housed in a sturdy metal case with one 5pin input and two 5 pin outputs.

- \$255
- Showcraft +61 2 9698 3009

"LSC has been involved in producing DMX based equipment since the protocols' initial inception in 1986. During this time, adoption of DMX 512 throughout the industry has been significant and the adapting of network principles has expanded the protocols usage considerably.

Early in 1996 it became apparent to LSC that one of the main weaknesses still facing DMX512 was the cables and connectors. The DNA group of products from LSC were developed principally to reduce the amount of cable and connectors used in a system, and to provide a failsafe network that protects the equipment using the network. Central to the DNA system is the DMXchange. It is the central hub, by which all data streams are connected through. It effectively replaces large and expensive cable patch systems, that can end up as birdsnests that are very difficult to track through. The DMXchange provides a neat, compact solution that allows a venues network to be totally reconfigured in seconds. No external PC is required – the unit is self contained! Others have tried to mimic the DMXchange – but none have bettered it."



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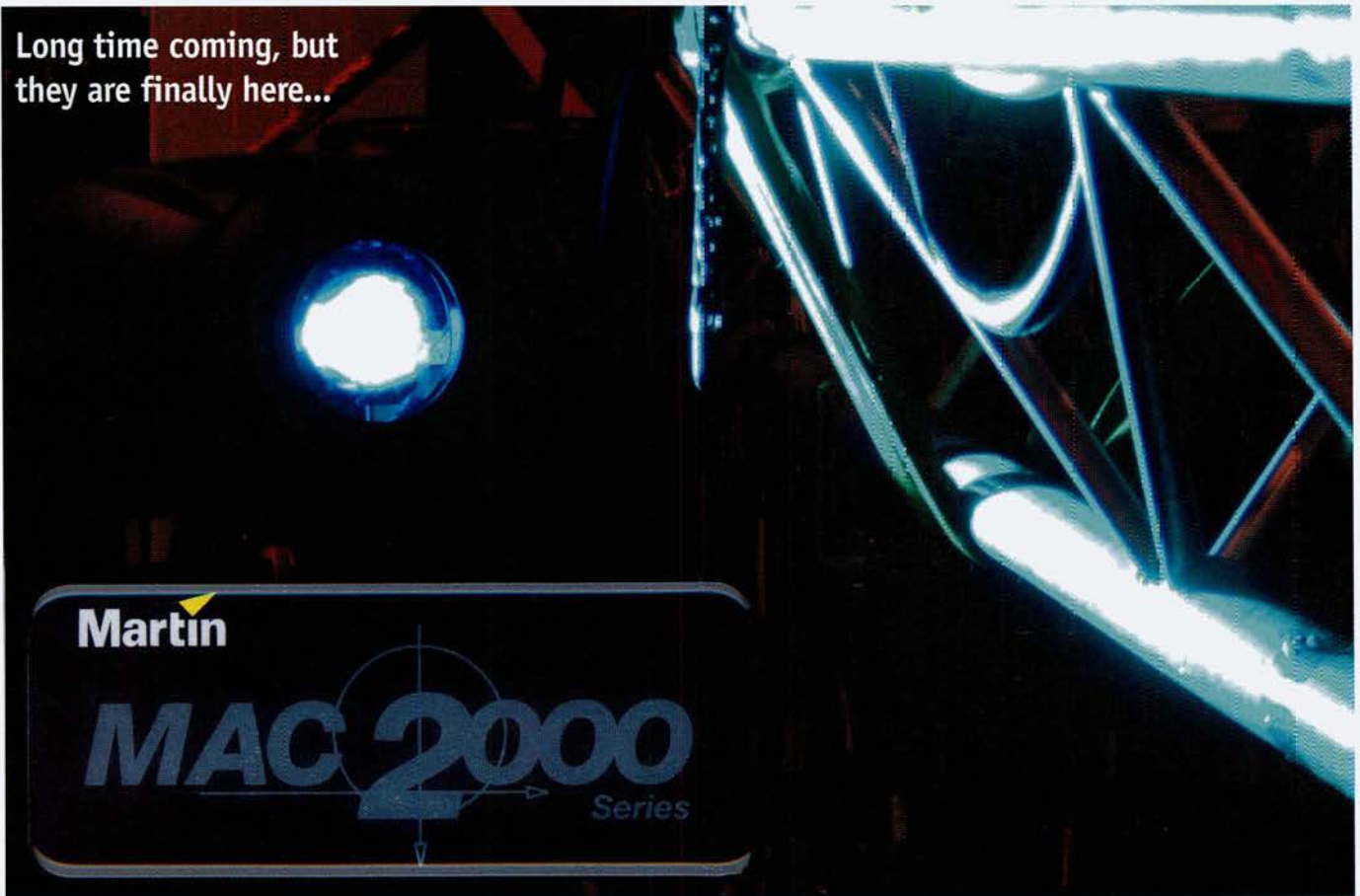
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Long time coming, but they are finally here...



Martin released its Mac 2000 fitting several months ago, and now the units themselves are finally being produced in volumes that now allow for quantities of the units to be shipped into the country. Hire companies like Chameleon Touring Systems have pre-ordered numerous of the lamps, and not only because overseas designers have been specifying them in their designs. With thanks to Chameleon, John Grimshaw had the opportunity to look over one of the first four units sent into the country.

The category of the 1.2x moving head profile has plenty entrants, so the Mac2000 has an established field of competition to fight. The question is, how much market share will its features and price bring?

The Mac2000 has a comprehensive range of features, designed to whet the appetites of television, stage and concert lighting designers. In broad terms, the unit is a 9 to 28 degree zoom profile that uses the Osram's double-ended HMI1200 lamp. This zoom ratio can be optionally widened to 15 to 40deg by simply replacing one of the slots on the Effects Wheel with an inexpensive lens.

CMY colour control is complimented by the expected fixed colour options (the standard colours supplied are red, green, blue and UV), as well as a special colour correction wheel. This wheel provides graduated control of the colour temperature, ranging anywhere from 6000K to 2900K. Not only would this feature be useful for matching tungsten sources in film and television, but it would also allow precise matching of any colour

temperature variance cause by an aging HMI lamp in the fitting.

The designers at Martin have also modified how Gobos are loaded, implementing a rotateable gobo holder that is easy to remove. While some might consider this simply another element to lose, the ability to change gobos outside of the fixture will have many service and rental technicians very happy.

The Mac2000 uses a unique motor design for pan and tilt control. Called 3-Phase Motor Technology, there are two motors for pan, and two for tilt control. These motors use the principle of AC power phase control to precisely control forward and reverse motor direction. This is used in reference to the typical single-phase stepper motor (as used on other moving heads) to create fast and accurate movement.

With a surprisingly small head, the interior of the unit is densely packed with the controls, motors and wheels. However, Martin have simplified the process of changing the standard 'E' sized gobos and colours by providing disc shaped gobo holders that

Thanks to Simon Crow and Luke Radin from Chameleon



can be easily removed without tools.

Martin have also addressed the problem of noise generated by moving lights. While not so much of an issue in concert production, theatrical designers have long complained about the noise that some moving lights make. The Mac2000 was designed specifically to reduce the ambient noise. This is achieved by careful design of the cooling system, so that in normal operation, fan noise is as low as possible. Also, some noise suppression was included in the movement motor design.

The lamp is accessed for changing via a rear panel door. This door also has screw trim/peak controls for precise positioning the HMI lamp.

Martin has gone to great lengths to ensure the Mac2000s that leave the factory are well protected in the hard world of touring/hire lighting. Their custom built roadcase is designed to house two Mac2000s (you can try to buy the fixture without the case, but



don't expect to be too successful). The roadcase opens at both ends, allowing either unit to slide out on heavy-duty runners. Sitting on this custom designed shelf, the Mac2000 can be run up and tested with full pan and tilt without lifting out of the case.

The case was designed like this so that a single person can do testing of the unit. This is a very good thing considering that at 47kg, it requires two people to safely manoeuvre the fitting out of its case.

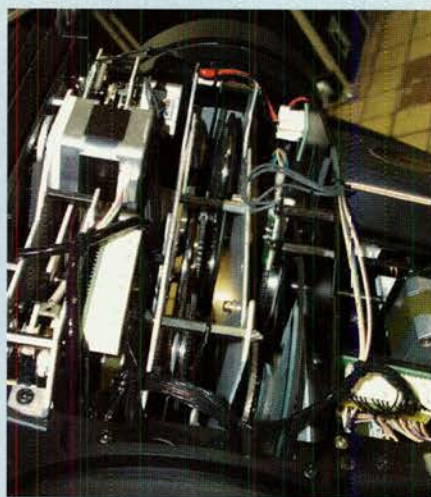
Another item aimed specifically at increasing the unit's lifespan are the dust exclusion features. The front lens is sealed to prevent air movement, and air intakes all have simple filter pads. While some may complain that this is just something else to service on the unit, increased useful life and less time-spent cleaning/overhauling should easily offset any increase in service time.

The price for one Mac2000 is \$18,999 (trade price inc tax). You can buy two of

them for \$38,000 (trade price inc tax) – and that includes the roadcase, lamps and clamps.

The Mac2000 has a great deal to live up to after the Mac500 and Mac600s reputation for robust reliability. Much of the proven technology has been reused in the Mac2000, with a large number of refinements. With the features and pricing the Mac2000 has to offer, it will not be surprising to see this fixture start to appear in many shows and tours around the

country. Martin clearly want to tempt people who have not bought or used their products previously.



This picture shows the very compact configuration of the interior of the Mac2000. There is little room to add any more. This is hardly surprising given that the overall size of the unit is surprisingly small.



CMY Colour Mixing

All CMY colour mixing fixtures have difficulty reproducing very saturated versions of the primary colours for light – Red, Green and Blue. This is caused by the nature of 'subtractive' and 'additive' colour mixing for light. To explain:

If you have a separate red light shining on the same spot as another green light, the resulting colour would be yellow. The yellow light is a combination of both the red and green light frequencies – this is called 'additive' colour mixing.

The same is true for Red and Blue to produce Magenta. If you then take a Magenta filter and put it in a light source, you are allowing the red and blue frequencies to pass to produce the colour. If you also place a yellow filter in the same light path, only red light would come out as only this frequency of light is allowed to pass by both filters – this is called 'subtractive' colour mixing.

Because CMY fittings use the 'subtractive' method to filter the light, pure Reds, Greens, and Blues cannot be achieved because the frequencies of the pure colours are irrevocably shifted as the CMY filters come into play.

DMX Control

The 20/24 channels of control effectively describe the broad range of effects available:

- 1 SHUTTER, strobe, Reset, Lamp on/off
- 2 Intensity
- 3 Cyan
- 4 Magenta
- 5 Yellow
- 6 CTC Colour correct from 6000K to 2900K
- 7 Colour/Gobo wheel
- Gobo Wheel 1**
- 8 - gobo and function
- 9 - position/velocity
- 10 - fine position (16bit mode only)
- Gobo Wheel 2**
- 11 - gobo and function
- 12 - position/velocity
- 13 - fine position (16bit mode only)
- 14 Effects Wheel/Macros
- 15 Effects Wheel – position/velocity
- 16 Iris
- 17 Focus
- 18 Zoom
- 19 Pan - coarse
- 20 Pan - fine (16bit mode only)
- 21 Tilt - coarse
- 22 Tilt - fine (16bit mode only)
- 23 Pan/Tilt speed
- 24 Effect Speed

C H A R T S



SONG TITLE: Roll On
 ARTIST: The Living End
 PRODUCER: Nick Launay
 ENGINEER: Nick Launay
 ASSISTANT ENGINEER: David Davis
 STUDIO: Sirg Sing Studios, Melbourne
 MIXING: Andy Wallace at Soundtracks, New York.
 ASSISTANT MIXERS: Steve Sisco & Josh Wilbur
 MASTERING: Howie Weinberg @ Masterdisk Corporation.



SONG TITLE: Retaliate
 ARTIST: The Mark of Cain
 PRODUCER: The Mark of Cain, Andy Gill & Phil McKellar
 ENGINEER: Phil McKellar & Andy Gill
 ASSISTANT ENGINEERS: Steve McMillan & Patrick McGovern
 STUDIO: Megaphon Studios, Sydney & The Beauchamp Building, London
 MIXING: Phil McKellar @ Margrove Recording Studios, NSW
 ASSISTANT MIXER: Blair Simmons

SONG TITLE: Since I Left You
 ARTIST: The Avalanches
 PRODUCER: Bobby Dazzler
 ENGINEER: Bobby Dazzler & Tony Espie
 STUDIO: Sirg Sing Studios, Melbourne
 ADDITIONAL INFO: Recorded at Soft Light Bistro

SONG TITLE: Crucifix
 ARTIST: Lo-Tel
 PRODUCER: Keith Cleversley
 ENGINEER: Keith Cleversley
 STUDIO: Festival Studios
 MASTERING: Greg Calbi @ Sterling Sound, New York
 MIXING: Keith Cleversley @ The Playground, Chicago

NATIONAL TRACKING GUIDE

New South Wales



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ARTIST	PRODUCER	ENGINEER	SESSION
A#Sharp Jeff Cripps +61 2 9153 9988	24 Track Analogue - 32 Track Digital		
Rumblefish	Jeff Cripps	Jeff Cripps	CD
Sydney Full Gospel Church	Jeff Cripps	Jeff Cripps	CD
Hank Koopman	Jeff Cripps	Terry Hearne	CD
Donna Marie	Jeff Cripps	Terry Hearne	CD
The Bellhops	Jeff Cripps	Jeff Cripps	CD
Bush Traks Recording & Multi Media Ruth Miller +61 2 6689 1290			Album
Red Eyed Frogs	Red Eyed Frogs/Dave Highett		
Damien Gerard Studios Marshall Cullen +61 2 9555 1710 2" 24 Track Analogue/Pro Tools Digital			
Noogie	Paul Palmer/Ted Hutt/Trauma	Russell Pilling/Nathan Johnson	Album
Vocabularinist		Kristian Hill	Album
Elysium		Kristian Hill	
Teddy Sexuals		Marshall Cullen	Pre-production
Lowride		Russell Pilling	
Electric Mountain Studios Greg Clarke +61 2 9280 3766			
Billy Thorpe	Billy Thorpe	Greg Clarke	Album
Festival Studios Suzanne Hill +61 2 9395 8070			
Ultimate Army of Prawns		Adrian Donadei	
Whatever Productions	Steve Alkins	Justin Share	Bass Has Got Me Moving -
Mixing			
Brooke McClymont	Mike Wanchic	Mark Thomas	Demos
Element		Anton Hesop	Drum Tracks
Festival Mastering Suzanne Hill +61 2 9395 8070			
Shane Murphy		William Bowden	5 Track EP
Christine Anu		William Bowden	Single
Macross		William Bowden	4 Track EP
Gerling		William Bowden	New Album
Andre Kaman		William Bowden	Single
Fishtank Studio Suzanne Hill +61 2 9395 8070			
Culture Connect		Murray Cray & Richard Austin	Single/
Album			
Amiel Daemon	Josh Abrahams	Josh Abrahams	Album
MJ Cole	MJ Cole	MJ Cole	Single Remix
Moulin Rouge	Josh Abrahams	Josh Abraham	Post-Production
Megaphon Studios Shane Fahey +61 2 9550 6576 24 Track 2" Analogue recording, 3 great rooms, digital formats also avail.			
Matt Walker	Matt Walker	Brent Clark	
The Necks	The Necks	Shane Fahey	Album
Jacky Orszaczky	Jacky Orszaczky	Shane Fahey	Tracks
The Backsliders	Dom Turner	Guy Dickerson	
Ashtray Heart		Shane Fahey	Album record/mix
Nu-Town Studios Greg Hopping +61 2 9516 3306 Complete Recording & Production Facility			
Kelly Starr	Greg Hopping	Mark Worrall	Album
Hammerhead	Hopping/Deveaux	Mark Worrall	Single
Supanova	Greg Hopping	Sofie Loizou	Demos
Southern Outpost	Patric & Sofie	Sofie Loizou	Single
Q Recording Paul Conroy +61 2 9212 4851 Recording Studio			
The Vines	Greg Wales	Greg Wales	Tracking
Art Phillips	Art Phillips	Adrian Boland	Tracking
The Peppertones	John Vossen	Jarad Salmon	Single
Tankstream Quartet	Paul Conroy/Tankstream	Paul Conroy	Album
On Inc.	Phill McKellar	Phill McKellar	Tracking
R & R Recording Rob Zimola +61 2 9672 4494			
Dom O'Leary	O'Leary/Zimola	Rob Zimola	Album

CHARTS



SONG TITLE: Hey Driver
 ARTIST: Motor Ace
 PRODUCE: Craig Harnath & Motor Ace
 ENGINEER: Craig Harnath & Chris Dickson
 ASSISTANT ENGINEER: David Coulthart-Clark
 STUDIO: Sing Sing Studios, Melbourne
 MIXING: Chris Sheldon @ the Church, London.
 MASTERING: Chris Blair @ Abbey Road Studios, London.



SONG TITLE: Please Stay
 ARTIST: Kylie Minogue
 PRODUCE: Richard 'Biff' Stannard and Julian Galagher for Biffco Productions.
 ENGINEER/MIXING: Ash Howes
 PRO TOOLS: Dave McCracken
 ASSISTANT ENGINEER: Alvin Sweeney
 STUDIO: Studio 2, 20 Ringsend Road, Dublin.

Jargon Rob Zimola Album
 Raine & Horne Rob Zimola Rob Zimola On-hold

Rockinghorse Studios Jim Arnold +61 2 6688 4005 48 Ch Neve V Series Console with Automation Pro
 Tools Mix Plus, Premier Mix Studio for Northern Australia.
 Peter Murray Anthony Lycenko/Band A. Lycenko Album
 Glockenspiel Jeff Lovejoy J Lovejoy/J Arnold EP
 Front End Loader Magoo Magoo/J Arnold Album
 The Ten Tenors Brendan Morley A Lycenko Remixing
 Junkbeats D Brammah/A Lycenko A Lycenko/J Arnold Mixing (UK Vinyl)

Smokin & Jokin Recording Studio Adam Barns +61 2 9437-9217 32 Track Analogue/8 Track Digital
 Recording
 Khemist Khemist/Adam Barns Adam Barns Tracking&Mixing 8 songs
 9:00 No James 9 NJ/Adam Barns Adam Barns Tracking album
 Midnight Swim Midnight Swim/Adam Barns Adam Barns Tracking & Mixing album
 Unpaid Debt Unpaid Debt/Adam Barns Adam Barns Tracking & Mixing album
 Leon Dalton Leon/Adam Barns Adam Barns Bizarre techno/metal tracking & mixing

Sound Level John Soane +61 2 9552 3200 24 Track Digital & Hard Disk
 Jim Heselntine Jordan Brebach Jordan Brebach Live to Disc
 LOG Jordan Brebach Jordan Brebach Tracking & Mixdown
 Pip Duffy Jordan Brebach Jordan Brebach Tracking
 John David Jordan Brebach Jordan Brebach Album
 Colin Bloxsum Colin Bloxsum Jordan Brebach Album Trilogy

Soundwarp Meredith Brooks +61 2 9905 7144 Mastering <http://soundwarp.com.au>
 John Townsend John Rix Meredith Brooks Album
 Unpaid Debt John Rix Meredith Brooks Album
 Porcelain Ben Richards Meredith Brooks Album
 Miasma Tom Meredith Brooks Mini Album
 Johnny O'Keefe David McLean Meredith Brooks Album

Studios 301 Sharnee +61 2 9698 5888 SSL G+, Neve, Genelec Monitoring (5.1), Sony 48, Pro Tools
 Jimmy Oedin Richard Lush Richard Lush Great band from Noumea
 Carla Wesner Carman Rizzo (USA) Louie Mitchell Engine Room
 Miss Radio Tom Misner Rockin' Jocher
 Mark Lozette Mark Opitz
 Glance Greg Stace Jam Records

301 Mastering Jaquie Espie +61 2 9211 7301 CD Mastering Facility
 Wendy Matthews Matt Fell Don Bartley Album
 Jimmy Barnes Dave Nicholas David Macquarie Single B Sides
 Skunkhour Steve James David Macquarie Single
 Danielle Spencer Vince Pizzinga Don Bartley Single
 You Am I Steve Smart Steve Smart Single B Sides

Top Cat Recording Studio Brad Wann +61 2 6628 0233 24 Track Analogue & Pro Tools Mix Plus
 Loadstar Band/Brad Wann Brad Wann EP tracking
 Elevait Scott Aplin/Brad Wann Brad Wann EP tracking/mixing
 Sujana Brad Wann Brad Wann EP mixing
 Silencer Christian Hutton/Brad Wann Brad Wann EP tracking
 The Henchmen Stewart Kent/Brad Wann Tracking

Troy Horse Studios Mickey Levis +61 2 9319 1799 Recording/Mastering/Pro Tools (All networked & tie line)
 Fell to Erin Golightly/Levis Danny Golightly Album
 Bracode Band Danny Golightly Album
 Blacksmith Hopkins Nick Hopkins-Smith Mark Worrall EP
 Arcade Cruikshank Mark Worrall EP
 Korotki Adam Kendall Danny Golightly Training CD

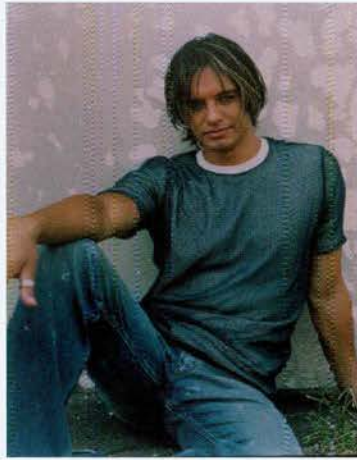
Velvet Sound Recording Studios Dave McCunn +61 2 9267 2915 24 Track Analogue & 64 Track Pro Tools systems
 Abortus Abortus Adrian Grigorieff Album track & mix
 Sevenlives Sevenlives Daniel Clinch Album track & mix
 Parkway Paul McKercher Paul McKercher Album Mixing
 Wayne Cornell Jr & the Bad Boys for Love Dave Wilkins Tony Wall
 Album track & mix
 Sneeze Nic Dalton Wayne Connolly Album Tracking

Queensland

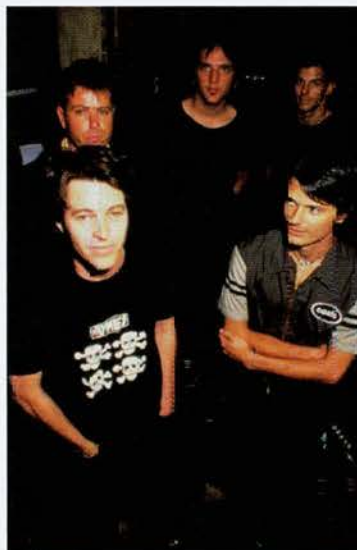
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Domenic Sound Shane Hughes +61 7 3216 5187 Tascam M5000 Console, Pro Tools, ADATS
 Dean Vegas Elvis Tribute Dean Vegas Shane Hughes Album
 Andrew Pashley Andrew Pashley Shane Hughes Demos
 Tony O'Rourke Tony O'Rourke Shane Hughes Demos

CHARTS



SONG TITLE: Take Me Away
 ARTIST: Tony Lee Scott
 PRODUCER: Kalju Tanuma
 ENGINEER: Kaju Tanuma
 PRO TOOLS: Chris Corby
 VOCAL RECORDINGS: Mark Mun'ro @ Grooveyard Studios, Brisbane
 STUDIO: Sing Sing Studios, Melbourne
 MIXING: Tim Palmer @ Mangrove Recording Studios, Sydney
 MASTERING: Stephen Marcussen at A&M Mastering, Los Angeles



SONG TITLE: Like A Dog
 ARTIST: Powderfinger
 PRODUCER: Nick DiDia & Powderfinger
 ENGINEER: Nick D-Dia
 ASSISTANT ENGINEER: Matt Voight
 STUDIO: Sing Sing Studios, Melbourne
 MIXING: Nick DiDia @ Studios 301, Sydney
 ASSISTANT: Anton Hagop

ARTIST	PRODUCER	ENGINEER	SESSION
Richard Stonehouse Preece Marketing	Richard Stonehouse Shane Hughes	Shane Hughes Shane Hughes	Single Jingle
OPM Studios Daniel Seymour +61 7 3374 0066	ADAT's with Logic	Audio and Mackie Console	
Hekawis	Band	Daniel Seymour	Demo
Open for Inspection	Band	Daniel Seymour	Drum Tracks
Timbrel	Band	Daniel Seymour	EP
Hollow Point	Daniel Seymour	Daniel Seymour	Demo
Fabian Foley	Daniel Seymour	Daniel Seymour	Albums
Stargate Music Productions Dash Mclvor +61 7 3260 6294			
Kathy Lee	Dash Mclvor	Dash Mclvor	EP
Hot Toddy	Canning/Mclvor/Twine	Dash Mclvor	Album
Arch	Arch/Dash Mclvor	Dash Mclvor	EP
Mark Tempany	Dash Mclvor	Dash Mclvor	Tracking
Super QRIS	Dash Mclvor	Dash Mclvor	Jingle
Taramalin Sound Allan Lahey +61 7 3208 9736	32 Track Digital/16 Track Analogue, Pro Tools		
Mark O'Keeffe	Mark O'Keeffe	Allan Lahey	Demo
Joe Fish & the Chips	Alan Blow	Allan Lahey	Demo
Sid Muchow	Sid Muchow	Allan Lahey	Album
Chimera	Chimera	Allan Lahey	EP
Magda Henia	Gordon McDowell	Allan Lahey	EP
Vandersound Studios Eric Vandersande +61 7 5546 8100	Valve + Digital, Training, Mastering		
Cheezecake	Eric Vandersande	Joan Ellwood	Tracking
Xylem	Eric Vandersande	Glen Gorton	Mix & Master
One Cruel Cycle	Eric Vandersande	Chris Champ	Tracking
Freefall	Eric Vandersande	Lauren Rogers	Mix & Master
Closure	Andrew Hines	Andrew Hines	Tracking

South Australia

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Disk-Edits Catherine Linke +61 8 8340 1377	Audio Mastering 7 Post Prod. CD & Cassette Manufacturing		
Special Patrol Group	C. Vallejo/Band	Neville Clark	Mastering/CD Manufacture
32 Zion Street	Band	Neville Clark	Mastering/CD Manufacture
Wone	Band	Neville Clark	Mastering/CD Manufacture
Mixmasters Productions Mick Wordley +61 8 8278 8506	24 Track 2" / Pro Tools		
Kate Battersby	Ray Smith	Mick Wordley	Album
Pornland	Pornland	Mick Wordley	Finish album
Loaded	Jed Palmer	Jed Palmer	Mix EP
Brown Brothers	Troy	Jed Palmer	Rhythm tracks
EarSight Steve Fieldhouse 0407 970 425	ProTools mix plus Production/Tracking/Editing/Mixing/Consultancy		
Indeeka	SteveFieldhouse/Indeeka	SteveFieldhouse	EP Mix
Skintilla	SteveFieldhouse/Skintilla	SteveFieldhouse	Album Mix
Ramshackle Jack	SteveFieldhouse/John Oldman	SteveFieldhouse	Album Mix
Peter Gelling	Peter Gelling	Steve Fieldhouse	Album Tracking
Snap to Zero	Shari Kempe/Greg Mates/Band	Shari Kempe/Greg Mates	EP Mix

Victoria

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Audrey Studios Craig Pilkington +61 3 9415 8599	Analogue, Digital + Hard Disk Recording.		
Lucksmiths	Craig Pilkington		Album
Sodastream	Sodastream	Craig Pilkington	Piano Tracks
Crystal Mastering Joe Carra +61 3 9326 2318	CD Mastering Facility		
Superheist	Band	John Ruberto	Mastering Single
Plasticine	Henwood/McKenzie	John Ruberto	Mastering EP
Down To Size	Band	John Ruberto	Mastering EP
Mnemonic Ascent	Band	Joe Carra	Mastering Album
Jebediah	Band	Joe Carra	Mastering Remixes
Edensound Mastering Martin Pullan +61 3 9682 9066	Focusrite 'Blue' Mastering Suite		
Tina Arena	Paul Wiltshire	Martin Pullan	Demo

Superheist	Shock Records	Martin Pullan	Compilation
Roma Waterman	Roma Waterman	Martin Pullan	Album
Mach Pelican	Shock Records	Robbie Adams	Compilation
The Fauves	Shock Records	Martin Pullan	Single

Sound Around Trevor Cronin +61 3 9531 3891	Mobile & studio recording		
James Morrison	Sainbar	Trevor Cronin	Live Webcast
Nehemiah	Band/T Cronin	Trevor Cronin	CD
Lisa Warley	Adam Friedman	Trevor Cronin	Advertisement
David Jones	Phillip O'Brien	Trevor Cronin	Drum Loop CD
Paul Dempsey	Sony Music	Andrew Birch	Live CD

Studio 52 Paul Higgins +61 3 9417 7707	Recording Studio/Multimedia		
Tunari	Willy Quiroga	Mitch Kenny	Album
Anti Cancer Council		Mitch Kenny	Voice Overs & Editing
Keith Glass	Keith Glass	Mitch Kenny	Mastering
Nancy D'Agostino	Trevor Carter	Trevor Carter	Single & Dance mixes
At What Cost	Band	Mitch Kenny	EP & Sampler Track

True Form Recording Neil Gray +61 3 9391 0907	24 Track Analogue/Digital/Hard Disk		
Coindrop	Neil Gray	Neil Gray	EP
Red Letter	Neil Gray	Neil Gray	Single
Eddie Would Go	Neil Gray	Neil Gray	EP
Klinger	Paul Backerra	Simon Banko	Demos
Jasper	Neil Gray/Band	Neil Gray	Demos

Wombat Rd Recording Studios Barrie Clissold +61 3 5145 4204	24Tr Digital/Digital Mastering & Duplication		
Fluctuation	Band	Barrie Clissold	Album Tracking CD
Eleanor Ayres	Ayres/Clissold	Barrie Clissold	Demo CD
Fluctuation	Clissold/Band	Barrie Clissold	Demo Cd Mastering
Jim Taylor	Taylor/Clissold	Barrie Clissold	Remixing
John Couzens	John Couzens	Barrie Clissold	Cassette Duplication

Western Australia

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Planet Sound Studios Trevor Spencer +61 8 9382 2211	2 Studios - Pro Tools		
Dave Hole	Dave Hole	Les Williams	Album Mix
Royal Philharmonic Orchestra	Kevin Peek	Les Williams	Mastering
Black Eyed Peas	Wil	Les Williams	Record/Mix
Corroboration	Friendly	Friendly	Recording

Revolver Vic Manfrin +61 8 9272 7505	32 Track		
Dragwire	Band	Ben Glatzer	Channel V CD
Showbag	Band/Ben Glatzer	Ben Glatzer	CD
Flagship	Band/Ben Glatzer	Ben Glatzer	CD
Kingpin	Band	Vic Manfrin	Demos

Satellite Recording Studio Darren Halifax +61 8 9470 4003	ProTools Mix Plus		
Dave Hole	James Hewgill	James Hewgill	Album
George Vegas	George Vegas	Darren Halifax	Album
Young Guns	David Hyams	Pete Granderson	Album
Airs Technology	Brad Coombe	Darren Halifax	Training CD Rom (Pilots)
Waste of Space Waste of Space	Darren Halifax	Demo	

Sonic Lab Mark Whitehouse +61 8 9375 3902	www.procopy.com.au		
Spencer Tracy	Band/Ben Glatzer	Mark Whitehouse	Editing EP Master
Revy Lugg	Band	Mark Whitehouse	Editing/Mastering CD
Cactus	Trevor Hammersly	Mark Whitehouse	CD Mastering
Greenroom	Phil Judd/Ben Glatzer	Mark Whitehouse	CD EP Mastering
Mad Era	Paul Florenca	Mark Whitehouse	CD Mastering

Other/Film/TV/Post Production

Metropolis Audio Sally Rodrigues +61 3 9696 2111	Fairlight MFX3+ / 48 Track Digital SSL Room		
Cold Play - Cold Live at the Chapel	MCM Entertainment	Brian McMahon	TV & Webcast
Motor Ace - Cold Live at the Chapel	MCM Entertainment	Brian McMahon	TV & Webcast

Trackdown Digital Mike Duffy +61 2 9550 6890	64 Track Digital/Post Audio		
Tabaluga 2	YGross	T Lista S Ryan D Candusso	Post - TV
Flipper 2	Y Gross	D Candusso S Ryan T Lista	Post - TV
Arnotts	Arizona Productions	T Lista	TVC - record & mix
Moulin Rouge	Bazmark Films	Tim Ryan	Film - Music, Editing
Old Tom	Y Gross	B Chesterman S Ryan	Post - TV

CHARTS

SONG TITLE: Satellite Blues
ARTIST: AC/DC
PRODUCER: George Young
ENGINEER: Mike Fraser
ASSISTANT ENGINEER: Dean Maher
STUDIO: Warehouse Studio, Vancouver
MASTERING: George Marino @ Sterling Sound, New York
TECHNICIANS: Richard Jones, Geoff Bank & Rick St Pierre



SONG TITLE: Busted
ARTIST: Joanne
PRODUCER: George Papapetros
ENGINEER: George Papapetros & Maxim Kourilos for Blue Panet Productions
STUDIO: Dance World Recording Studios, South Melbourne
MASTERING: John Ruberto @ Crystal Mastering

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South Melbourne, VIC, 3205
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HUGE ONLINE AUCTION THIS MONTH

At the Cannon Sound Huge December Online Auction some of the items that sold included:

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 - Galaxy Audio Hotspot Speakers (pair) - NO RESERVE!
\$99.00
 - Yamaha MS202 Powered Monitors (pair) - NO RESERVE!
\$136.00
 - JBL UREI 7110 Compressor Limiter - NO RESERVE! \$395.00
 - UREI 546 Parametric Equalizer - NO RESERVE! \$795.00
 - JBL E140 8 Ohm Speakers (pair) - Starting at \$1 - NO RESERVE + FREE
- FREIGHT AUSTRALIA-WIDE! \$401.50

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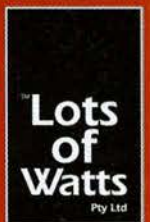
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Soapbox Rebuttal

Paul D. Bauman, the Director of Technical Support at L-ACOUSTICS takes the time to take issue with Sid Kidman's Soapbox last month on line array systems...

With all due respect to Mr. Kidman's article entitled "Selective Science" I believe that he has misunderstood the fundamental principles regarding how the V-DOSC system and what we term Wavefront Sculpture Technology (WST) work. I take issue with Mr. Kidman's grouping of V-DOSC with conventional systems and his statement that the same interference problems exist in the vertical plane for V-DOSC as for conventional systems in the horizontal. Of course interference occurs, but for the case of V-DOSC it is largely constructive within the intended coverage pattern of the array due to the satisfaction of WST criteria. Even the title of the article implies that V-DOSC is a product based on marketing techno-speak and nothing could be further from the truth. V-DOSC is a system that evolved from the theoretical development work of two physicists and there is serious science behind it.

For the record, the publication referred to by Mr. Kidman is: "Sound Fields Radiated by Multiple Sound Source Arrays" (Dr. Christian Heil, Professor Marcel Urban) preprint #3269, presented at the 92nd Audio Engineering Society Convention, March 1992.

Continued on next page, right hand column >

JUMP IN HIS CAR

Ted Mulry benefit resurrects 1970's rock

On Friday 9th and Saturday 10th of March, the cream of 70's Australian Rock scene, will gather at City Live Night Club at Sydney's Fox Studio's, to perform a benefit for their



friend and contemporary Ted Mulry (pictured left, in better times) who is seriously ill.

Acts include John Paul Young, Billy Thorpe, Richard Clapton, Ross Wilson, Russell Morris, Gina Jeffreys

with members of the Angels, INXS, Tim Freedman, Sherbet (pictured in the buff below, who are reforming for the event), Rose Tattoo, Autumn, the Radiators, Mental As Anything, Noiseworks, and Adam Brand.

Ted took ill prior to a tour of Victoria in July 2000. The Doctors discovered a



disease that connects to a tumor of the Aprenal gland. After surgery Ted fell ill again and more tests discovered a tumor on the brain, more surgery was needed to remove this. Unfortunately more cancer has been discovered and Ted keeps on fighting.

A portion of moneys raised will go to the late Peter Kekel's family who passed away last year. Peter was keyboard player for Swanee and Jimmy Barnes.

Tickets from Ticketek.



Here's **Bruce Johnston**, reigning ENTECH Best Live Sound Engineer, pictured before The Living End kicked in at a recent support gig for AC/DC. Bruce survived the famous Oasis tour on Europe last summer.

TAG GOLF CLASSIC TAMES MASSEY PARK

19 Audio and Lighting types strode onto the links of Sydney's Massey Park to participate in the 2nd annual TAG Classic in early February. The winners were Bruce Wheatley (ABC), Bill Walker (Atlab), Paul Scott (Uni of Newcastle) and Keith Pollard (University Of Sydney). Other competitors included Clive Lippman (MAD); Rhetta Motague-Dufty and Peter Olzic (TEN); Dave Clark-Duff (Maquarie University); Philby Lewis and Carey Leghorn (Lots of Watts); Steve de Fina, Michael Browning, Martin Bengie and Peter Blyton (Studios 301); Wayne Hindson (University of Newcastle); Tony Oldham (Atlab); Glen Phimister (Haven Productions); Maxwell Twartz & Alistair Dewar (TAG).

Needless to say a great day was had by a.l and already the score cards are filling up for next years event. To complain that you were not invited to participate, contact Maxwell Twartz at TAG +61 2 9810 5300 or Maxwell.Twartz@tag.au.com



? Helpline confidential

Plug a mic into PC? How?

Well, there is the cheap way, or the good way. The cheap way is to buy a line matching transformer (and a couple of adaptors) from Dick Smith/Jaycar/Altronics. That'll match a dynamic mic into your 3.5mm mic input nicely.

If your mic requires phantom power, that get ready to shell out a few more bucks. A good solution is ARX's ePre. It's designed to load into a spare CD bay, and has connections at the front. It is specially designed for this job.

When show lights dip unexpectedly, how do you know if it's the desk or the power to the building?

Find out if something not related to your lighting desk dipped as well. If something did dip, it was definitely the electricity supplier's fault. That being the case, you should call them to find out what happened, and if it will happen again.

Also, check to see what happens if the DMX is unplugged with an lx state up. If the dip occurs, maybe it is a faulty DMX path. Also try turning off equipment at various stages in the data chain.

If all else fails, stop reading a book on the desk during a show, as resting it on the 'Kill' button is not very wise.

Do you recommend anything for an itchy crack?

If this is what we think you are asking, try using gloves! But (!) seriously, many crew apply baby powder, moisturiser or lotion.

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Laughed out of the industry

I agree totally with Graeme Harrison's comments [Feb, 2001 pg 42] about the powered box test [from] Feb 2000. Any reasonably competent tech should have a pretty good idea that a tone control knob with a zero mark at 12 o'clock (have a look, it is there) will give cut and boost. Really, if punters with home hi-fi's can work it out...

As for the set up of the test, a fine example of comparing apples and oranges. We've found that all Zeck active devices have relatively lower input sensitivity and thus require higher input signals. It's not a problem, it's just the way they are. If you were testing cars and compared performance by measuring the speed when the accelerator pedal was depressed 25 mm, you'd be laughed out the industry.

As for the subjective loudness test, I truly thought your April First edition had been released early. Perceived loudness is the result of many factors. One of the most interesting phenomena is that a clean, undistorted output doesn't sound as loud as the harsh, offensive noise from an under-powered 10 inch box 60 watt box distorting its guts out.

But then again, the whole exercise was another flag waver for your founding advertiser and a further crippling blow to your tattered credibility.

Ron Polglaze, Blue Mountains NSW

Ed: In both speaker comparisons, we carefully gain matched everything so all listening was done at the same gain level.

Speaker Test

I enjoyed your speaker review and tests, as I did the previous one last year. I need to know as much as possible about speakers to make a wise choice when purchasing. However, I am slowly becoming more and more confused and frustrated about my ability to select a pair of speakers. I can't even make out if the speakers you were testing are being used for DJ or live sound, which I believe to be rather different.

Please tell me how these experts or judges, can tell what speaker is better than another for live sound, by using compressed programmed music. I can't do that. How do they do that?

Sure, I want every thing I do live to sound as good as my flat Hi-fi system, and I strive for that even though some bands and performers concepts of sound don't always allow for that. More bottom end please?

My biggest problem has always been that when I test a speaker with a CD and it sounds OK, then when I plug in a microphone, be it a 58 or whatever, it needs change. I then have to EQ and assist the speaker to sound as flat and natural as possible, without any peaks returning through the microphone, which is never a problem with programmed music. For live sound I like the speaker to sound the same as my voice will sound acoustically in that room, or to sound the same as the instrument or vocal I am reinforcing.

I believe that peaks and colour in pro-

grammed music can differ, as it depends on who and what monitors were used in the studio for the final mix down. So does that mean that one CD may sound better on one pair of speakers than another? I know that is the case with microphones. Most brands and models are different. I have just purchased a pair of EV SX500PI+ and they seem to be very flat and natural with microphone, much to my surprise. The bottom end is not big with programmed music but the real test: will be when they are run live, and then how much Double or Guitar Bass they can handle at a certain level. Is it not better to have less bottom end response (that will hold together) than a big bottom end that falls apart under higher levels? How do you test that with programmed music?

My job seems to be getting harder and harder the more I learn. I think I survived better with less knowledge.

Richard Autenzio, Show Biz Sound Productions, Brisbane

On ya, Walne

I am writing to express my appreciation regarding Mr Graham Walne's monthly articles. I look forward to receiving your magazine each month to catch up on all the new toys and gossip. I especially look forward to Graham's articles. He writes with so much wisdom and experience.

It's exciting to be inspired again. Working in this industry, you somehow become "robotic", losing the initial passion that drove you into it. Graham shares his knowledge freely within the industry.

Through [his] overall experience in the industry, we are able to understand a clearer definition of the major obstacles that we all face at sometime or another. My admiration extends for - mostly for the man himself, Graham Walne. Secondly, to Connections magazine for publishing such an informative and inspirational article.

T Macfarlane, Melbourne Lighting Designer

Engineer needs help

Hi my name is Claude. I come from Switzerland and I sound engineer from more than 30 years. It's now 3 years that I try to live in Australia and work with the Australian music, but is so hard to find some people who want make some serious thing in the recording business.

I don't know if you can help me but I try. I had work in Mountain Studio at Montreux with Dave Richards on the album 'Miracle' with Queen and Freddie Mercury and I learn so much. I [have] worked every year [for the last] 33 years in the big Montreux Jazz Festival - in [live] sound and in the studio. In Switzerland, I had my own studio and all equipment is now in Sydney in my garage. I send lot off e-mail to the recording business but never I receive an answer. I just looking to make something with nice people in this nice country but I think the Australian engineers don't want collaborate with overseas engineer or maybe don't like to sponsor me for a visa.

When I find someone who want make some serious business with me, and my stuff (\$300,000)? Claude Frieder. claudemidi@idx.com.au

Vdosc SOAPBOX REBUTTAL

(continued from previous page)

I would invite interested readers to consult this reference for the hard science behind WST - there is nothing "selective" whatsoever about this preprint.

In fact, it contains all the theoretical details that have caused a major paradigm shift in this industry which today sees virtually all manufacturers jumping on the line array bandwagon. But it is important for the pro audio consumer to understand that there is a big difference between a variable curvature line source array (WST) versus a line array and to make an informed, educated decision. So check out preprint #3269 but be warned, the math is a bit heavy going...

For an easier-to-understand version of the information contained in the 1992 AES preprint, I would also invite readers to visit www.l-acoustics.com and download the latest V-DOSC or dV-DOSC manuals. While pool ball analogies are well and good in describing interference phenomena, I think you will find that the Fresnel approach to analyzing this is a very powerful and intuitive way of looking at things. The details of Fresnel analysis are too involved to go into within the scope of this article (size of this soapbox?) as are the full details behind WST, but the information is available for the interested reader on our website.

Again, nothing selective here - in fact, we are making an honest attempt to educate the industry as much as is practically possible. However, any time a new, complex scientific technology is introduced it is important to develop not just a rigorous mathematical derivation but also the words and terminology that properly describe how and why it works. To this end, we're currently working on a sequel WST preprint for this fall's AES Convention in New York.

To sum up, WST is another way of thinking and V-DOSC is another way of sound reinforcement. Since it's introduction 7 years ago, V-DOSC has proven itself in the field and there are scientific reasons for this. I invite the interested reader to investigate these reasons further, hear the results for him- or herself, and form their own opinion.

by Duncan Fry

MP3 - Music For Free

Götterdämmerung* for the Record Companies?



From the 1920's through to the early 60's, a major record company must have truly been a licence to print money, for two main reasons. Firstly, and generally speaking, the artists had no concept of the legalities involved in their contracts, and signed anyway, just in the hope of becoming a star. The only lawyers involved in the signing process were on the record company's payroll; most artists belatedly getting a lawyer only when they wanted to get out of the contract.

But all that is small potatoes when we come to the second reason: if you wanted a copy of a particular artist singing or playing a particular tune, you had no alternative but to buy the record, whether it was an Edison cylinder, a 78, a 45 or a 33. Tape it off the radio? On what? Tape recorders weren't invented until WW II (that's World War 2, you young folks, not a web address) and even then were very expensive and for professional use only.

Make a copy on a cassette? Not until they were invented and in general use in the late 60's. In fact, right up until the CD era, buying the actual record was the only way of getting a true 'Hi-Fi' version. Digitised versions of analogue recordings could have been on sale quite a lot earlier, but the record companies uniformly stuck to the rapidly ageing vinyl format for one reason only - control.

If you wanted to physically manufacture a record, it wasn't something you could have the computer do in the background while you work on more mundane tasks. No, you had to have a pressing plant, which required major capital expenditure, and there are no prizes for guessing who controlled the pressing plants!

The availability of cheap reel-to-reel tape recorders in the 60's, followed by the compact cassette, initiated the first of many cracks in the companies' facade of control. Now people could record their (and others) LPs, singles, radio programs and live performances onto this useful and economic medium and have a pretty high quality sound.

For record companies, the advent of the CD was a bit of a double edged sword - on the plus side, they could charge a premium price for music on this clean, simple, crackle and pop free medium (when an LP was \$6.95, a CD was \$20+). However, music consumers could make a good cassette copy of one for a couple of dollars.

When recordable CDs came along a few years later, with the ability to make identical clones of pre-recorded CDs, the alarm bells should have rung incessantly at record company HQs all round the world. Of course, they didn't. If the major record companies have one thing in common (apart from greed, naturally) it's a lack of foresight bordering on the terminally myopic.

Luckily for them, though, the .WAV file format of music on CD is exceptionally space hungry, creates massive files and is hard to distribute, except on a CD, and as long as blank CDs cost more than recorded ones there wasn't that much of a problem. About twelve years ago Australian industry figure Greg Simmons used to offer a 'low cost' CD recording service for musicians who wanted to hear how their latest work would sound on CD. The price? \$80 a time! Now a blank CD costs less than a dollar, while a decent blank cassette costs over \$5! But worse news was down

the track (pardon the pun) for record companies.

When smart people realised you could squeeze up a WAV file using the MPEG compression algorithm developed for managing video files, the bean counters at Engulf and Devour must have corporately shit themselves. A 30-mega-byte file could now be shrunk to 3 megabytes and still retain enough sound quality to keep everyone except chronic audiophiles happy. More importantly, and potentially worse still, it could be easily distributed from person to person via the Internet's World Wide Web.

If anyone involved with the majors had any hint of foresight, they would have said "Hey, what a great way to deliver our recorded content to customers. Virtually no cost to us, we could charge a couple of bucks a song; bingo - money in the bank for sweet F.A."

But no, they kept on with their corporate heads-in-the-sand approach, keeping CD prices artificially high (after all, they know how much people are prepared to pay) and successfully shot themselves in the corporate foot by paving the way for something like Napster to come along.

And if they had got in first, with a legitimate file 'downloading for dollars' system, then that would have become the norm. Music customers would be used to paying per song downloaded, instead of going to a 'song-swapping' system like Napster. And, let's make no mistake about it, shutting down Napster won't make a blind bit of difference, since typing 'MP3' into any WWW search engine will bring up more download info than you can handle in a lifetime!

What's to stop Napster Jnr (Nipster?) setting up offshore, in a country that isn't a signatory to the International Copyright Convention, and is ideologically opposed to Western ways? Not much, really, since all you need are electricity, computers and good phone connections. It is, after all, a World Wide Web, accessible by anyone with a phone line and a modem.

BMG, Napster's massive music conglomerate shareholder/de facto owner agreed to drop their court case against them in exchange for a chunk of the company. I say de facto owner, because if Napster doesn't do as they say, then it will just go back to suing them. But here's their problem: at any one time they can have millions of people logged on, people they know like music, want music, listen to music. BMG sell music, and while they've got these consumers by the mouse-tails, how can they get a slice of that potential revenue? If they slam the bag on Napster, those people will just go elsewhere. Unfortunately the die has been cast; those people now expect free music. Once it's been MP3'd, it's out there & it's anyone's.

Forget the Secure Digital Music Initiative with 'water-marking', forget about copy coding, and forget 'streaming only' formats; why would any music consumer voluntarily switch from a free and easy MP3 format to a heavily controlled non-portable rigidly protected music format.

They wouldn't. The record companies must yearn for the good old ultra profitable days of the 78s, because it looks like in the future, to paraphrase the car rental clerk in the *Planes, Trains and Automobiles* movie - "They're fucked!"

*Götterdämmerung - The Twilight of the Gods.

Like to comment on this? Email me - dunk@cunkworld.com

by *Graham Walne*

What's in a name?

Australia's multi-cultural society has a rich mixture of influences but our performing arts culture comes predominantly from the UK and the USA. With this comes the basic structures of our theatre but thankfully as Australia grows then its independence helps it to be selective and turn these foreign models into what works the best here. Job titles are an example.

In the UK the person responsible for the stage in a touring theatre used to be called the 'master carpenter', although in recent years most wouldn't have had the woodworking skills so the title has become 'resident stage manager'. Even this is misleading because in some venues this person handles all the information about an incoming show, including the lighting and sound, not just the stage and its sets. Thus 'technical manager' is perhaps more appropriate and widely used here. The US equivalent, 'technical director', is now used in some Australian theatres but this suggests a higher level of skill or responsibility even though the dictionary definitions of 'director' and 'manager' are confusingly close.

In stage management the Australian pattern was originally based on that of the UK where, until the Thatcher years, the positions were governed by an employer-union agreement that a minimum of 3 stage management had to be engaged on all productions outside those in very small venues (which were covered by a separate agreement). Thatcher introduced legislation making it illegal to refuse employment on the grounds that a person was not a member of a union. In reality, or in the theatre, (not quite the same thing) little has changed as a result.

This was perhaps because the 3 SM positions had their own logic, the 'company stage manager (CSM)' looked after the business (and frequently reproduced the lighting), the 'deputy stage manager (DSM)' looked after the cast and sat on the prompt copy cueing the performance, and the 'assistant stage manager (ASM)' ranged from props to sound and occasionally to pyrotechnics. Not that long ago companies also engaged 'acting ASMs', small part actors or understudies who were required to handle simple stage management duties.

In Australia whilst several tiers of stage management do exist in the big companies, smaller companies simply can't afford three stage managers and tend to dispense with the DSM renaming the CSM just 'stage manager'. Often this person is a real jack (or Jill) of all trades, operating the lighting or sound in addition to running the corner and handling props. Thus stage management training traditionally provides a broad base in these skills, as well as running rehearsals and the corner.

When developing vocational qualifications for stage management in the UK some years ago discussions focussed on the responsibilities of SMs because of their relationship with crew who could be installing equipment to the SMs' instructions. One view held that legally SMs were not the line managers of the crew and

thus they could only explain what needed to be rigged and it was up to the crews' line management to instruct and choose the method of installation. This keeps the line of responsibility for safety very clear. Consequently these discussions also centred around whether the SMs should be able to use tools in the normal course of their work. (For example tools are unlikely to be required in rehearsal, but clearly the construction of props would require them). The term 'technical ASM' came into use in the UK to indicate that this person is able to install sound systems, headsets, lighting effects and pyro - and again this influences the training these people receive. This person was called an ASM to meet the 3 minimum agreement but in reality was a touring technician.

It's worth noting that not all forms of live performance require a stage manager in the sense that one person controls the performance. In cabaret, revue, variety (and sometimes pantomime) traditionally each technician took their own cues and the staff for these events tended to remain in these genres so that they became not only familiar with the artistes and their needs but also highly specialised. Even in more formal work in some continental European companies the rehearsal period is extended so that instead of plugging in the technical aspects to work by the performers, all can develop and experiment together. In such cases technicians can take ownership of their contribution and often feel they can time their activity better than a stage manager. In many big European venues the 'stage manager' literally does that and has little to do with the production, leaving that to the performance staff.

The world of live rock music has also evolved from a somewhat spontaneous show where lighting was operated by the designer (and audio by the engineer responsible for recording) to one in which the introduction of the theatrical (typically in terms of scenery and dance) requires that a stage manager is now involved.

Until the advent of show control and other similar systems, some productions have hitherto been too complex for stage managers to cue completely and they have had to be content with triggering sequences which are then left to different departments to undertake on their own. There have been and will perhaps always be managements which explore ways to reduce staffing costs by linking the SM desk to other controls for lighting, projection, sound effects replay and machinery. Now SM desks have touch-sensitive screens the range of services which can be accessed from this position increases enormously and with it the skills of the SMs.

The need for Australian crew to be multiskilled conflicts with simple job titles which cannot encompass the range of abilities or responsibilities involved. Bureaucracy also requires that people are clear about the boundaries of their role and an accurate job title can help both the holder of the position and those with whom they have to deal. The Martians' 'take me to your leader' is a good example of an old title that still works!

"...stage management training traditionally provides a broad base [of] skills, as well as running rehearsals and the corner."





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THE ULTIMATE
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Is there a lack of A-list producers and engineers in Australia?

by Richard Muecke

An Aussie Producer/Engineer,
ex-Studio Manager etc, etc.

I had to chuckle seeing the issue of Aussie engineers and producers cutting the mustard come up again, especially after one outrageously slanderous editorial appeared not so recently in another publication. So what is an A-list producer or engineer? What style or styles of music are we talking about? Is it rock, pop, techo, rap, country, jazz, classical, what? The craft of producing and engineering in each area is a very specialised skill, often using very different techniques that take years to develop.

If we consider the top players in each genre of music, yes we could see some Australian names included, however the vast majority would be from overseas. So if you want the best producer or engineer (or studio for that matter) money could buy, then you probably would have to look overseas. In terms of the top Australian professionals, as in other industries, many are forced to work overseas as the incentives to stay and work in Australia do not exist.

I have been in the recording game for almost twenty years and overseas personnel, particularly from the U.K. and U.S., have always been brought into this country. Projects have always gone overseas, either in full or at various stages in their production for completion. This has happened at all levels. This will always happen and we should get used to it as a fact of life.

I believe many acts reach a period when the absolute cream producers and engineers should get involved and the money spent can be justified. The problem these days is that record companies seem to tripping over themselves in order to get any overseas person involved. Many of these imports, as stated, are truly good at what they do & the knowledge that they can pass on invaluable, however many too are simply average. We must remember that in markets as big as the U.K. and U.S., your ability, as a producer or an engineer, to clock up album credits with recognisable names on them is a hell of a lot easier than in Australia. Imagine finding out your expensive overseas producer or engineer was little more than a gofer or tape-op in their hometown.

I once did a session where a highly credentialed 'producer/engineer' admitted he had never put a 2" tape on a machine, nor did he look comfortable at the console. It turns out that he was a programmer, which is fine, but probably did not qualify him to be involved at the level he was on that particular session. I agree with Steve DeFina, from 301, in that there is an abundance of talented local music producers and engineers - living on or below the poverty line, or having to diversify in order to survive. Many locals have the potential to become, or even should be regarded internationally as, cream professionals.

While recognising the talents of many of the overseas people we must also remember that there is nothing mysterious or svengali-like about how they work. Generally when an overseas person is hired you can bet that the budget is much, much higher than that given to any local producer or engineer. Import people from

overseas, give them five times the amount of recording time, all the out board gear they need, pay them five times the amount, slap them on the back, tell them great job, then send them back to a mix on as SSL J9000, 9098 or a well maintained Neve with every piece of outboard gear you could possibly hope for at your disposal. Then take a few cracks at mastering, a re-mix here, a re-record there, another mastering session or two - no worries, sounds great! And so it should.

A fact also worth noting is that the 'music business' is not really about music; it is about product sales and marketing. If record companies think that they will get a marketing edge by importing producers and engineers from overseas or recording and mixing overseas, then they will do it. Pity the poor band members who in the end, have to pay back all the costs involved. If you can successfully sell your product overseas then that's great and all the more to you but if you are reduced to selling your product in Australia, with the parallel import laws the way they are and the limited market that is Australia, then good luck.

This is where it all falls over for the humble Aussie recording dude. I am one who believes - 1. Start with a good song; 2. Have a good arrangement; 3. Have the right artists perform the song; 4. Use the right equipment for the job you are doing and cut it in the right environment (home/studio); 5. Get the right producers, engineers and programmers - in that order. Unfortunately, that is not always enough!

For all those touting that we do have world class recording studios, there is not one J9K, 9098 or any other console of similar standard in Australia. Check out a few overseas studios on the web and see what they have in their equipment inventories. While 301 and Mangrove are streets ahead of anything else in Australia, if someone decided to import a console like an SSL 9K, then more of our dollars would stay here and our guys would gain more experience. Pity about the current standing of our Aussie dollar, as these things aren't cheap! Is there someone out there with a bit of disposable income? Would such a studio, if it existed, be full of Aussies or imports? Would it make money? I think it probably would. Either way it could not be a bad thing!

Australian producers and engineers do it tough in more ways than record company execs realise and yet still come out with great sounding product. It is probably about time that they get some credit for the dedication, professionalism, stamina and quality of work that they do. Given that, bring on the Studio Master Classes with Mike Wanchic and Ross Hogarth as it is a great opportunity for us to learn more about what we do and how to improve. Knowledge is power they say and if someone thinks they know it all, then, it's probably time that they moved on. These guys are obviously the biz and I am personally very interested in attending the seminars. The question remains however; will knowledge of this type translate into more jobs for Aussie producers and engineers?

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You are encouraged to make Soapbox submissions - the ones that get printed we will pay for!

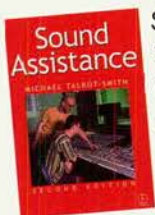
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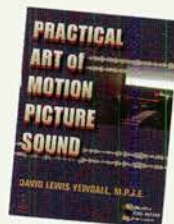


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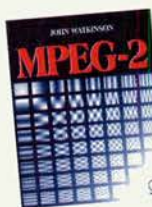
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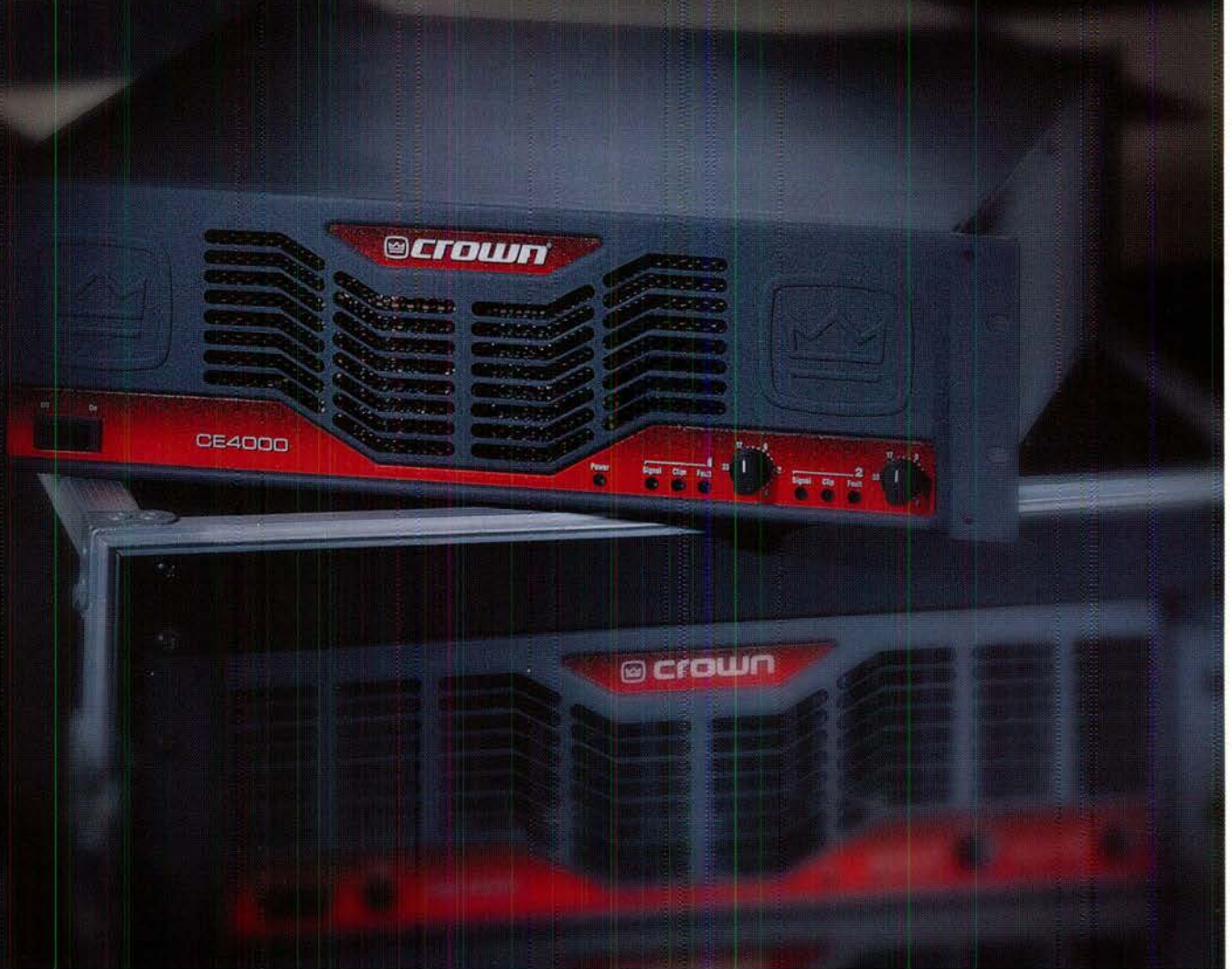
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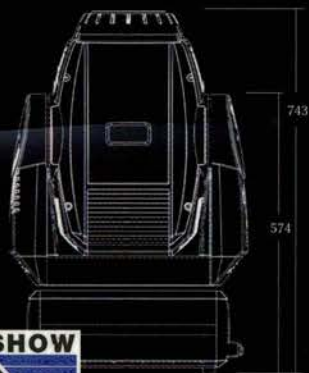
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