

Connections

THE ENTERTAINMENT & TECHNOLOGY MONTHLY

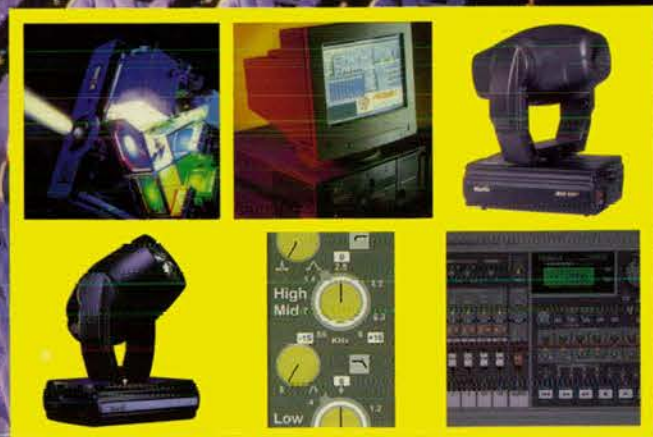


IN EAR MONITORS:
The Systems Overviewed

PRO SURVEY:
Your Favourite Studio Mic

BUYERS GUIDE
Recording Equipment, Scrollers

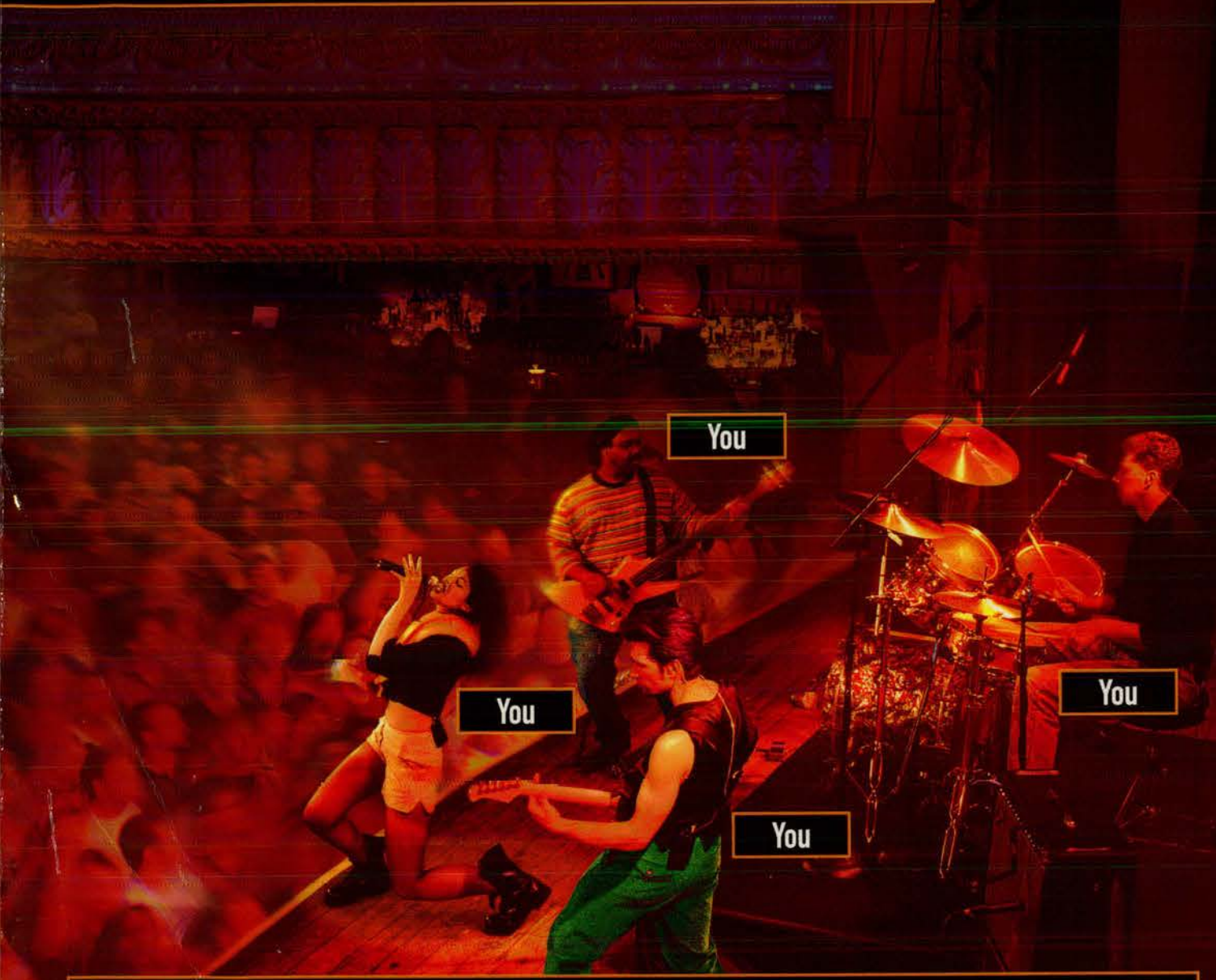
PRODUCT REVIEWS
Roland VS-840, Media Matrix, Paragon Monitor, Hughes JVC Light Valve. The Big Macs: Martin take on Vari*Lite



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Connections™

DECEMBER 1997 ~ JANUARY 1998. Number 50

THE ENTERTAINMENT TECHNOLOGY MAGAZINE

* Video and Lighting head for a shotgun wedding

DIGITAL LIGHTING

EXCLUSIVE REPORT BY CAT FORCER, BUCK FREEMAN AND JULIUS GRAFTON

Lighting as we know it is about to undergo a revolution which will make the DMX transition look like a minor event. Recall what excitement DMX generated, when designers could make a moving light do what a Vari*Lite already did.

Think about where lighting is today, with control over movement, image and colour - and new moving head fixtures taking over the upper level of the business that Vari*Lite have dominated for the past decade.

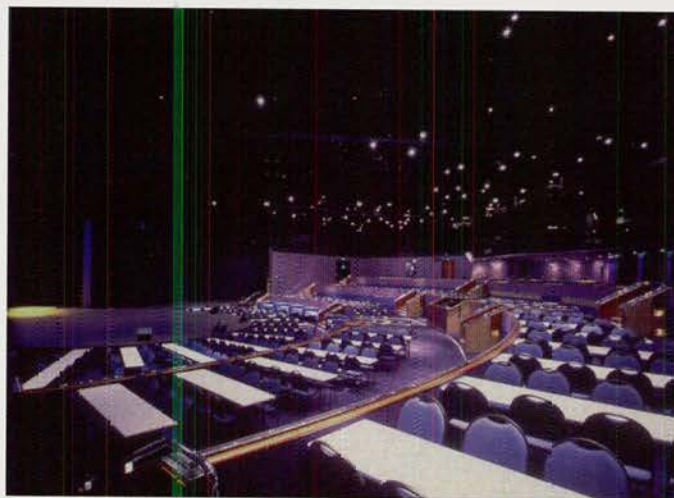
Today you can actually buy a moving head wash or profile fixture which does everything that a product from Vari*Lite does. The difference is that Vari*Lite have, as a company, been elite, aloof and alms: always ready to take ambitious legal action against com-

petitors. It's cost them goodwill.

The competition for Vari*Lite started with the Studio Colour from High End Systems, and now includes Martin Mac 500, Mac 600 and new models from Clay Paky.

But while designers are flexing new muscles and specifying the fixtures they only could dream about a few short years ago, a major revolution in lighting is under development.

For a while now we at Connections have been hearing of mysterious new technologies under study at both Vari*Lite and arch competitor, LSD. Still more rumour came from other research facilities. We have now pieced together the puzzle and discovered the technology exists. Now it has a name, we call it **Digital Lighting**. > (Fully detailed on page 64)



Star City Showroom

Is this Australia's best multipurpose venue?

When Ross Cunningham started as entertainment director at what was then the Sydney Harbour Casino, he inherited a half built building with a very fixed entertainment regime.

At one end is a 2000 seat lyric theatre, equal to anything of this genre. At the other a 900 seat showroom which was being built

to house a Lido Follies style show. The Follies are the ultimate review, staged in Paris at the Lido. The spec required that the Showroom have some unique features.

Despite these Lido friendly features being already designed and built, Cunningham argued that if the facility offered just two big (Continued over page)

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BRANDS &
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DIRECTORY

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Baby VS
8 tracker
from Roland

BIG GUN
How Hughes
JVC get more
light out!



MAC
attack
Martin MAC 500/600
set to bother Vari*Lite

20
stereo
sends
from ATI
Paragon



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Cover: inside the Lyric Theatre at Star City

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Ex Bose chief talks about hi-fi vs pro audio

"I spent years telling people anything bigger than four and a half inches is a waste". David Bell was very senior at BOSE for 17 years, but now is very senior at JBL. He is an Australian who was crafted by Bose after an impressive performance at Bose Australia.

The inches analogy is, of course, reference to the Bose philosophy of utilising arrays of small speakers in their products.

These days Bell is hyped up and enthusiastic about a renaissance of sorts that is sweeping through JBL. "For years JBL confused folks with choices about components, without giving them what they needed. Imagine you go to buy a refrigerator and the guy says 'well, what sort of compressor do you like? Then you choose a cabinet, a vegetable container, ice trays and then he puts it all on a pallet and you take it home to build it!"

JBL have been weak in complete speaker cabinets, according to Bell.

But times have changed, as JBL have an entirely new range of products underneath the recently launched HLA.

JBL have been top of the pile in the USA in terms of component sales. The top three touring audio firms in the USA have mainly used JBL components for over 20 years, a situation Bell is not comfortable with.

Because it's hard to cling to this kind of market share.

Harman International owns JBL, Harman is a US\$1.4 billion company who only do audio. Other Harman entities include Turbosound, dbx, Digttech, Allen & Heath, Soundcraft, AKG - and the list goes on.

"The company I had worked for so long was a hifi company. It was driving some angst in me".

"When I arrived, the manufacturing at JBL was done by the consumer group - with everything built together. That struck terror in my heart, because that was what I'd come from. Pro always lost at my old company"

18 months later things have changed. "Today at JBL we have a factory that thrums along building nothing but pro audio".

Bell was in Australia to address a regional meeting of JBL dealers from Asia and Australia. Many new products were previewed, with ENT-ECH next April to be the venue for the public launch. •

Showroom (continued)

permanent shows - the Lyric would feature long running musicals - audiences would not respond in sufficient numbers. So the Lido Follies got the chop for now.

Instead the Showroom features all kinds of musical artists, bands, caberet and shows like Steel City. Quick change means up to 19 diverse performances a week. The opening schedule is probably, in our view, too tough on the crew.

Production Manager Cameron Hipwell now has the very best Showroom in which to work.

The room curves around a thrust stage, with a proscenium about one third of the way back. Behind this is a fly tower with 55 lines of double purchase counterweight, and five motorised lines. By the nature of the room sightlines are limited to the rear back half of the stage.

There are four stage lifts, two behind the proscenium and two in the forestage. One of the forestage lifts will lift 70+ tonnes, this was designed to lift a glass swimming pool for the Follies.

The stage lifts are by Spiralift and were supplied by Glantre Engineering. The Spiralift is itself very clever and requires less vertical space for the motor than virtually any other lift. Each lift measures 3m x 9m, and the four lifts can work together or independantly.

Theatre designer Gordon Richmond has finessed the Show Room. Problems were potentially many, and forseable, at the start of the project. So Richmond called

a meeting with the builders and foremen very early on.

"Picture the scene" he told me, "here I am in black standing in front of a group of builders telling them I needed feather clearance. If you have a six foot five showgirl in six inch heels with three foot of feathers on her head, then you need three metre clearance in the dressing rooms, and the halls".

Months later the meeting paid benefits as different builders and trades sought out Richmond, to consult on various minor points. "They had the big picture from the beginning", he said.

Richmond works for Vision Design Studio, and was also the consultant down at the other end of the building on the Lyric Theatre. (See cover photo)

But although somewhat smaller than the Lyric, the Show Room is where all the action is for now. There is a flying beam, which of course is what you need when you have the best Casino Show Room. Visitors to Vegas or Paris will be intimate with this, it is - a flying beam. Basically it is a carefully crafted steel box girder which travels on rails from front to back of the auditorium. It has a travelling hook which can lower into the first stage lift and raise one tonne.

Production facilities are extensive, and contemporary. An AMEK Recall audio mixer features, with EAW KF 650 speakers. 16 foldback sends come from a 56 channel Crest Century monitor console.

Lighting control is from a Compulite Super Ovation console, and around 200 lights make up



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(Unrelated to 'Graftons Sound & Lighting')

NEWSAGENTS DISTRIBUTION: NDD

DEADLINES:

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



Star City Technical team - from rear left: Phil Washington (lighting), Gordon Richmond (theatre consultant), Craig Martin (lighting), Stacy Stamboulidis (audio), Cameron Higwell (production manager), Brett Graham (lighting), John Grimeau (mechanist)

From front left: Normal Yennery (lighting), Troy Mackreill (mechanist), Michael Harding (mechanist), Peter Dale (mechanist), Nerida Woods (stage manager).

Not present: Bicki Henderson (stage manager), Elizabeth Guinie (production assistant), Paul Kennedy (audio engineer), Ned Landers (mechanist), Maria Pierce (mechanist).

PA People win Olympic PA tender with BOSE

SYDNEY: The PA People will install the sound system at Stadium Australia, the primary Olympic arena. The hotly contested tender specified EAW loudspeaker products, but the winning tender now uses BOSE Panaray speakers.

The specification for the system was originally very tightly written by New York consultants Flack + Kurtz around EAW products, as reported in *Connections* (October '97).

It is understood The PA People offered two quotes, one based on the EAW specification and a non conforming tender based on Bose. The PA People, a Sydney based firm were successful. Ironically their head office is very close to the Homebush stadium site.

At press time an official statement was a few days away, but *Connections* has learned that The PA People were instrumental in convincing the design team, which included representatives of Flack + Kurtz, local consultant Robert Fitzell, and builders Multiplex Constructions, that the alternative design was 'more than equal' to the original design. A team from EAW were on hand while listening tests were conducted on certain components.

The PA People chief Chris Dodds would not comment, stating non disclosure clauses in the contract. This is the largest public address project in Australia, and it is scheduled for completion late in 1998.

The decision is a major blow for EAW, who had been very confident of success.

• **More on this in a forthcoming issue.**

the house system. Moving lights will be outsourced for each show, and four followspots are supplied.

Allied with all the other facilities, house power, access and backstage facilities like dressing rooms are all first class

The only outstanding issue is whether management has decided to subsidise entertainment or operate it as a profit centre. Run with a subsidy and less shows the venue will work.

NO JANUARY

issue, see you in February for our

5th birthday special!

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and re-open at 9am

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(Cat Forcer drew the short straw!) can be reached by email at:

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~ PEOPLE ~



• **Rob Harris** joins Audio Sound Centre in Sydney as an audio product specialist. Rob was at Syntec for many years. ASC recently won a small business award, congratulations Geoff Griost and team! +61 2 9901-4455.



• **Simon Pavone** (the drop dead gorgeous chap above) has joined Metropolis Audio (Vic) as engineer/producer. +61 3 9696-2111.

~ AGENCIES ~

• **Meyer Sound Australia** is a new venture which has Meyer Sound USA opening an office in Brisbane to act as exclusive distributors for Australia and New Zealand. The office is operated by Harley Richardson and Steve Devine, whose other firm Richardson and Devine continues. Call Meyer Australia on +61 7 3252 4493, or Richardson & Devine on +61 7 3252-4433.

• **Martin Professional Lighting Australia** is a new venture for Show Technology who distribute Martin Lighting products in Australia. Call +61 2 9898-1111.

• **Numark Industries** announces that Show Technology will now distribute Numark disco mixers and DJ products. Show Technology say they have a serious commitment to the DJ market and are impressed with Numark. +61 2 9898-1111.

• **PRISM SOUND** is a new product line for Digital Sound Systems (Aust) Pty Ltd, who also handle SoundScape and P&G. Prism make high end studio audio, including converters and data recorders. Call +61 2 9386-1043.

• **KAM** audio mixers and DJ products are a new line for Universal Lighting & Audio (ULA). Kam products range from mixers, turntables, CD players, amps to speakers, made in the UK. ULA are seeking dealers, call them on 1-800-648-111.

~ MOVES ~

• New premises for **Video Replay Systems**, find them in the Technical Directions Co building at 14B Hordern Pl, Camperdown 2050 NSW. Call +61 2 9516-3122, fax +61 2 9516-5477.

• **Lighting Across the Board** has moved, call +61 2 9386-1908, or PO Box 3068 Bronte 2024 NSW.

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• **Sunshine Studios** has moved from West End (QLD), the new phone number is +61 7 3245-7535.

• **Rockinghorse Recording Co** has moved office, now call +61 2 6685-6500, fax +61 2 6685-7400.

• **Audio Rep Australia** have also moved, call +61 2 9873-1600 or fax +61 2 9873-1554, PO Box 2357 Carlingford Court 2118 NSW is the postal address.

• **United Crewing Services** have expanded. National bookings and quotes, call Tricia Cumner on +61 7 5443-3099, or Mat English (NSW) 0412 426 085, Glenn Appleton (QLD) 0411 884 410 and Bill Pesi (ACT) 0412 469-114.

WINNER!

VAUGHAN EMERY from Corporate Theatre Productions in Perth is our SUBSCRIBER CONTEST winner this month. Vaughan wins a return Business Class QANTAS ticket to ENTECH next April! are The Connections financial team, Lou Shanahan (left) & Jenny Royal, (who gave birth to Jeremiah John another Connections baby at presstime!). They pulled Vaughan's name from The Winners Box, then tried in vain to think of ways to disqualify him due to cost!



• **Subscribe & enter our competition..... call 1-800-635-514**



MAJOR TRADE SHOWS

- **NAMM 1998**, Jan 28 - Feb 1, LA Convention Centre. Ph. +1 619 438-8001
- **LUMINAIRE ASIA '98**, February 19-21, Singapore. Ph +65 431-2293
- **MUSIKMESSE**, March 11-15, Frankfurt. Fax. +49 69 7575 6433
- **SIB**, March 29-April 1, Rimini, Italy. Fax +39 541-711225
- **NAB**, 5 - 9 April, Las Vegas. Fax +65 291-8922
- **SHANGHAI PLASA**, April 14-16. +44 323 410-335
- **ENTECH 1998**, April 22-24, Sydney. Fax +61 2 9876-5715
- **NSCA Expo '98**, April 27 - 29, Las Vegas. Fax +1 319 366-4164
- **AES 104th**, May 16-19, 1998. Amsterdam. Fax +1 212 682-0477.
- **LightFare International '98**, May 27-29, New York. Ph +1 404 220-2215
- **PALA**, July 17-19. Singapore. Ph +65 227-0688.
- **PLASA 98**, Sept, London. Call +44 323 410-335
- **AES 105th**, Sept 26-29. San Francisco. Fax +1 212 682-0477.
- **LDI** Nov 13 - 15, Phoenix. Ph +1 212 229-2965
- **SMPTE**, 13-16 July 1999. Sydney, Ph. +61 2 9977-0888.



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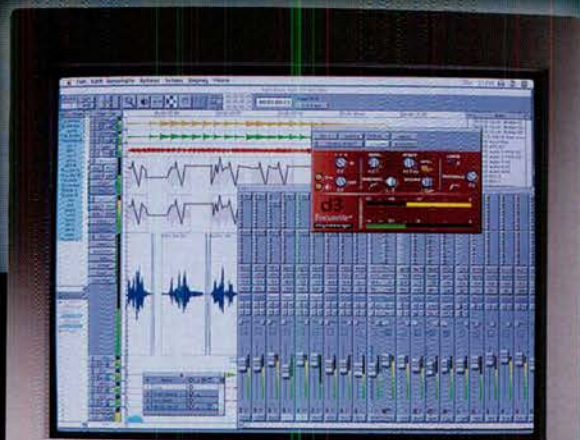
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The noise gates on the ACP-22 give control over threshold, variable attack and release and

switchable gate range (-60dB/-6dB). The Low Pass Filter eliminates cymbals and other higher frequency range instruments from opening up drum and/or vocal gates without affecting the audio output. Independent Gate Key Side Chain is included for external triggering and precise filtering. LED's on the gate show gate position open or closed and gate range (-60dB/-6dB).

Inputs and outputs are either XLR Balanced or 1/4" TS Unbalanced. *Suggested sell is A\$895*

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data. The Fostex D-160's editing capabilities are impressive and include full random access editing functions and the ability to cut/copy/move and paste across all 16 tracks. Up to 16 tracks of ADAT information can be transferred across all 16 tracks and edited.

Sampling rate is either 44.1 kHz, or 48 kHz. The Model D-160B, in addition to the above features, offers D-sub 25-pin balanced I/O functionally for professional console interface. Model D-160TC goes a step further, offering an additional time code option.

www.fostex.com
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Syntec: +61 2 9417 4700

Neumann Large Diaphragm Mic: TLM 103 is just \$1,395

The TLM 103 is a large diaphragm microphone with cardioid polar pattern, equipped with a new capsule and a new circuit board in hybrid technology. (The mic was incorrectly referred to in these pages last month as the TLM 193)

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Expected Retail Price: \$1395.00

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Mountable RGB Interfaces



Extron introduces two new 200 MHz mountable interfaces: the RGB 400 and RGB 402. These interfaces mount right into a wall, podium or conference table.

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ter to large screen display product. Similarly, the RGB 402 is a three gang mountable interface that connects both video and audio signals. Both the RGB 400 and RGB 402 are combatable with computer-video signal frequencies between 15-150 kHz.

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Alan Howarth, Sound Designer on such films as Bram Stoker's Dracula, Stargate, The Mask, Die Hard II.

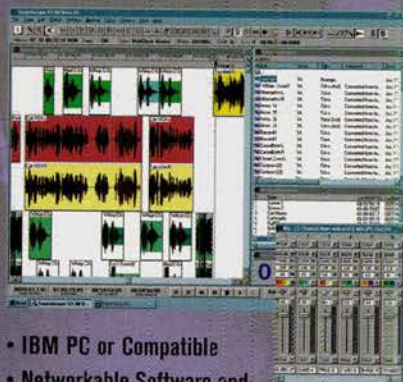
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*Frank Seratino,
Sound Designer on
Star Trek, Virtuosity,
Lawnmower Man,
VR5, Hunt for Red
October.*



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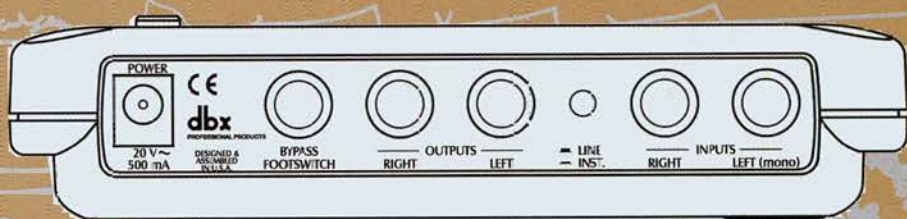
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Max Input level:	Line: +16dBu bal. or unbal. Instrument: 0dBu unbal.	Dynamic Range	Instrument: <-108dBu, unw. >113dB
Max output level:	Line: >+15dBu bal. or unbal. Instrument: >-1dBu	THD+Noise:	0.009% at -10dBV, 1kHz, unity gain, <0.5%, any amount of com- pression up to 30dB, 1kHz
Frequency Response:	<1Hz to >100kHz +0/-3dB		
Noise:	Line: -97dBu, unweighted		
			Specifications subject to change

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Write in Reader Service Number: 116



**MONITOR 8
more from less**

RCF's Monitor 8 is a small PA system in one box, or a nearfield studio monitor. It depends which way you look at it. The outcome is a lot of sound from a small enclosure.

It measures 430mm tall, is 290mm wide and 260mm deep, which is as small as you can visibly go with a 200mm woofer. The high frequency component is an actual compression driver, on a 110° x 80° horn. Many smaller systems use a piezo for high frequency.

The black or white (you choose) cabinet is made from a high density polystyrene, and it has mounting provisions at rear and on top. The weight is just 9.8kg. As to power handling, RCF claim 500w long term IECm and sensitivity is 98dB, one watt at one metre.

An internal crossover does the work, RCF say it is a LICC, which means 'low impedance compensated crossover'. Conventional passive crossovers (coils, mounted

within a speaker cabinet) have about 180° phase shift between the woofer and the tweeter. In other words, at the 'crossover point', which in this case is 1800hz (or 1.8kHz). This makes a hole in the sound at the crossover point, best heard by using a sweeping tone generator - which is not a common auditioning tool!

The LICC solution involves low inductance values, says RCF, to drastically reduce phase shift between the woofer and high frequency horn, and improve transient response.

Frequency response is smooth from 50hz and is just 2dB down at 23kHz (23,000Hz) which is impressive.

More bass response comes from an optional subwoofer, the MSW 8 is a heavy duty dual load reflex design with a 300mm woofer in-built. This box can stand tall or lay flat - size is 800 x 298 x 508mm. It operates from 120hz down, produces maximum thrust between 50 and 100hz, and is still working down at 20hz.

Prices: Monitor 8 A\$1045

MSW 8 A\$1080

• RCF from Group Technologies +61 3 9872-5000

PARIS SHIPPING

Ensoniq's PARIS system is shipping. This 24 bit PCI card based recording/DAW system will operate on Mac or PC, and is set to give Pro Tools a run. Packages start at A\$6000, interface options and a unique Control surface make an interesting product. Call Electric Factory, +61 3 9480-5988

SID'S MIC CASE

Shure BG 1.0 - Is it good value ?

The BG 1.0 is mat black in color, and is similar in size and weight to an SM58. At the junction of the grill and the barrel, the BG's diameter is a few millimeters larger. A nice touch is the "sure" (pun intended) feel added by short longitudinal grooves at the top of the barrel. "On/off" switches are either liked or loathed, but Shure solve the problem by giving the BG a slightly raised switch at the top third of the barrel. This switch has a good positive action.

This BG has been in constant use now for twelve months, (on vocals), and apart from the decorative green rubberized ring around the grill having parted company from the mic at some unnoticed moment, it still looks new. Two small dents in the grill are hard to see, and it appears this mic will be as durable as the SM58 (15 years in the case of the 58 used for comparison).

The BG1.0, at around \$90, is inexpensive, which was the no. 1 reason for purchasing it.

So how does it compare?

Up against the SM58 the differences are not obvious. "Check one two" sounds similar enough to fool even experienced ears. Subtle differences are discernible with careful testing. The ability to reject



feedback in the 2kHz. to 4kHz. region, is reduced about 20% with the BG, against the 58.

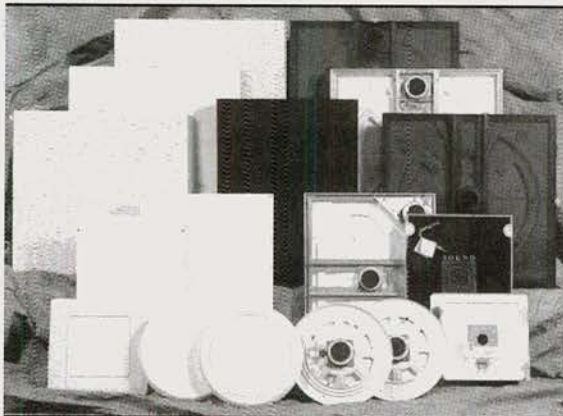
Lightly tapping the top region of the grill with a finger causes the BG to almost produce a note with a strong component around 130Hz, that is quite undamped, compared to the 58 which (similarly tapped) produces a much tighter note with equally predominant frequencies of 250Hz. and 500Hz.

In the live situation, the BG1.0 performs admirably, but just may leave that deaf rock singer wanting a little more foldback.

In conclusion, this mic represents good investment value to an operator, for budget productions, which are prevalent in this current financial climate.

Sid Kidman is a Connections reader, keyboard player, microphone fetishist and PA operator in Brisbane.

e-mail: g.kidman@qut.edu.au



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FEEDBACK FINDER

Designed to help musicians and sound engineers cure their feedback woes is the new Peavey MENTOR. This unit uses Peaveys patented FEEDBACK LOCATING SYSTEM which can isolate and detect which frequency feedback is occurring at.

The Mentor features two rows of 31 LED's which are positioned at standard ISO centres. When the unit detects feedback it will light up the LED closest to the frequency and allows the user to adjust the EQ to eliminate the feedback. It will work with dual 31 band or dual 15 band graphic EQ'S and is in a single rack space.

Retail: \$699

•Australis +61 2 9698-4444

Eurocable Multipair

The latest addition to the Eurocable range of multipair cables is the foil-screened LKSSA series, in 2 to 48 pair configurations.

LKSSA multipair cables overcome the three common disadvantages of other foil-screened cables. Where many foil-screened multipairs have potential electrical contact between the shields of individual pairs, each pair of LKSSA conductors is individually insulated with a transparent Mylar sheath for complete isolation. This coating also protects against the loosening or unravelling of the foil screen. A numbered tape between the foil and the Mylar identifies each LKSSA pair

The Resource Corporation
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Roland VS-880 now direct to CDR

With the latest upgrade for the popular VS880 8 track recorder, any owner can now transfer a final audio mix directly to recordable CD. The package includes a JVC QPS CD recorder- which can be used without the need of any kind of additional PC processing.

The upgrade package includes the following: S2 software, a JVC OPS CD recorder, , Toast 3.5 mastering software for Mac, Easy-CD Pro 2011 pre*-mastering software for PC, 1xGold on Gold CDR media and a SCSI cable and manual.

The VS-880 CDR upgrade package retails for A\$1495.

•Roland Corporation
Ph +61 2 9982 8266

Soundscape debut TC Electronics plug-in

Soundscape and TC WORKS, TC Electronics new Plug-In company have announced a Reverb Plug-In for the Soundscape Digital Audio Workstation.

The Plug-In will utilise the DSP capabilities of the new SSAC-1 accelerator card and version 2.0 software delivering TC quality reverb for Soundscape users. The plug-In features an intuitive user interface with a graphical approach to parameter control. Graphs display the current settings and make it faster and easier to get the desired reverb.

Ralph Schluenzen, Managing director of TC Works said, "Soundscape is on of the premier solutions for hard disk recording on PC, so we were intrigued by the new Plug-In possibilities in their version 2.0 system, and are very happy to participate in creating a complete production environment for their users. We are looking forward to the exciting collaboration".

Anthony McKenzie, Sales Manager for Digital Sound Systems Australia adds, "TC have always produced great sounding effects and have rightly become very well respected for the sonic quality of their reverb algorithms. The TC Plug-In for soundscape Version 2.0 is something that our exciting users have been waiting for and it looks set to be a winning combination. It's the first of several such collaborations to be announced this year and is a major endorsement of Soundscape DAWs and Windows 94/NT for high end audio applications".

The TC Works Plug-In is scheduled for release around now and will be exclusively distributed in Australia by Digital Sound Systems

• Digital Sound Systems
+61 2 9386 1043

Asian Entertainment Technology Projects Boom Despite Economic Hit

KUALA LUMPUR: Increasing activity in Asian countries by Australian suppliers, designers and technicians is under threat as the Asian economic crisis bites.

Kuala Lumpur is a fine example of the current boom. Apart from the new Malaysia National Theatre about which no doubt Bytcraft will soon be reporting, Total Concept Productions have been installing moving lights and systems in shopping centres. The new Petronas Twin Towns building houses a new 850 seat Concert Hall being technically directed for IMG by Rob Mitchell, ex the Geelong Performing Arts Centre.

Now Theatre Consultant Denis Irving of Entertech Pty Ltd reports that in collaboration with project lead Consultant Bill Passmore of Inspiration Sydney, he is working on the design and specification of stage machinery and related works for the reconstruction of the Genting Theatre restaurant. This is part of the Genting Highlands complex on a mountain near K.L.

It involves complete rebuilding from floor slab upwards of the old Chinese restaurant into a new cabaret theatre seating either 914 at silver service tables, or 1550 for

conventional seating.

The whole job is made more exciting by being on the top floor of a fully occupied hotel, with no cranes available to hoist large pieces. Not only that, instructions to proceed with serious design and site works were confirmed in early July- for completion by the end of January. 6 months for what in Australia would take more like 3 years.

What's more, it looks well on the way to being achieved.

There are 56 counterweight sets, some with 80' battens, and 26 winches of varying size, plus a 36' diameter two ring revolve. These and a high speed small lift in the middle of the seating area to bring in the tigers are being supplied and installed by Glantre Engineering from UK.

They are using various sub-contractors, including Stagecraft from Perth, and Jands from Sydney. The latter are providing 3 large grey roll down projection screens each side of the auditorium, behind which are side galleries for performers, gobo or lighting wash and sometimes overflow audience (who would have to be unselfconscious).

Lighting specification is undecided until the first major show is designed, but infrastructure is planned to have 600 outlets, dimmer per outlet, with a comprehensive DMX distribution network using output devices from LSC in Melbourne, though the Genting staff are finding it hard to understand the full advantages of DMX. Up to now, they still happily use 3 pin AXR and mic leads for it, so gentle education still proceeds.

Sound systems are designed in KL by AV Technologies, the only known elements so far are the Nexo Alpha loudspeakers and the latest Midas XL4 automated mixer, so one can see more training still coming up.

As if all that isn't enough, the owner, Resorts World Berhad, is simultaneously constructing a 6000 seat concert venue with a fabric roof, and re-building parts of the theme park and animal enclosures alongside. This last by the way, will have a special high speed lift up to the showroom floor at the top of the hotel, so that tigers, small Malaysian elephants and their friends can be used during the shows.

GR1 "I don't know of anything on the market that does what this unit will do."

Richard Simonton - Island Systems & Design

DR128 - New for '97 and a "first" for installers. This Digital Mix Processor combines mix, gain, gates, levels, compressors, EQs and more - all in a stylish 2U box.

12 inputs and 8 outputs are configured as a cross point mix matrix for ultimate flexibility. PC setup software included.

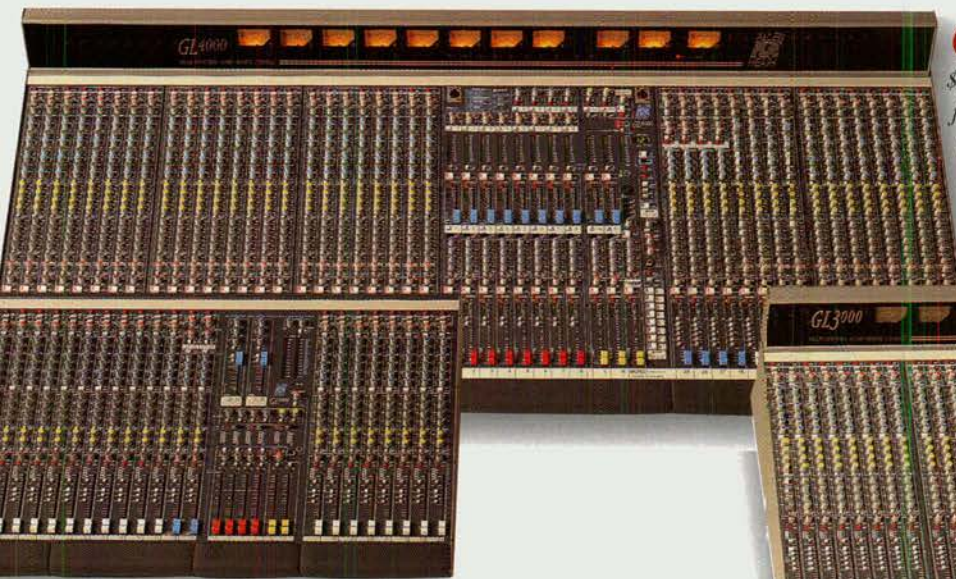


This

... is an advertisement for Allen & Heath mixers - with real people giving their opinions.

The aim is to show you what we make - and for you to decide that you could really use any one of the great mixers we produce.

Then we hope you'll buy it, simple really. Perhaps we ought to mention that we've been at the cutting edge of mixing technology for over 25 years - which might explain why we're rather good at it. Most importantly, our mixers sound superb, they're built to last and they've got all the best bits of modern technology. So which one would you like?



GL4000 "I thought it would be around the \$50,000 - \$60,000 range. I am blown away by all the features, especially the stereo channel's dual purpose (if I use it as a mic or line input, I can still use the stereo input as an effects return). Unbelievable at the price!"

Tim Weatherford



GL2000 "Even with just a few hours experience I was instinctively reaching for the correct controls"

Mike Sokol

GL3000 "For their features, I'm surprised that Allen & Heath doesn't charge more than they do for these consoles"

Armando Fullwood - Audio Ethics

MixWizard Series

New for '97, all with 4 band EQ, 6 auxes, 100mm faders the MixWizard Series provide the proof that small is beautiful. Desk or rack mount, from stage monitor mixing to band PA, keyboard submixing to studio recording, the MixWizards are truly professional consoles at a great price.



WZ20:8:2

WZ16:2



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control rooms – so they deliver the correct sound for the application. They also deliver spring clips for quick ceiling mount, covered connector panels, rotatable design, optimal 1/4 and 1/2 space placement, and built-in overload protection.

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FEWER SPEAKERS MORE PROFIT!



Roland VS 840 8 track recorder



By Julius Grafton

Roland's VS-880 won an ENTECH Award in 1997 and the Whitlams recorded some of their new album on it. Roland have sold 50,000 so far. The cassette-box recording solution became an acceptable format, and now Roland have a baby sibling, the VS-840.

This looks very similar, but it's different. Whereas the VS-880 needs a hard disk drive, the VS-840 records direct onto a removable 100MB ZIP drive. The ZIP is probably the hardest, toughest, and most reliable media around. It is the best of the bunch of types we use here at The Magazine. A ZIP disk costs about twenty bucks and it fits in your pocket. It resists hassles.

BASICS

This is an 8 track recorder with a basic mixer, neat editing controls including a big vari-pitch wheel, and an internal stereo effects unit. It is a 20 bit unit, which means the analogue to digital (A/D) converters on the way in work at 20 bits, and likewise on the way out. This is very acceptable in a world which is mostly currently working at 18 bits, towards 24 bits in the future.

VS-840 plays back 8 tracks from a possible maximum of 64 tracks. They call them 'virtual tracks'. This is how it works. You can record up to 64 tracks, but not all at once. The limit is four tracks recorded simultaneously at one time. But with your maximum of 64 tracks, you can only replay any eight. So you choose the tracks you like, and use them.

In practice, track one may be a vocal track two a guitar, tracks three and four a sequencer, and so on. You'd make multiple vocal and guitar tracks, and mix back different ones. Then you would choose the eight tracks you like. You could bounce different tracks around too, mixing six tracks down to two, and bouncing different combinations of the six tracks.

The VS has a neat control surface with a little (32 x 136, same as VS-880) LCD display. Six 45mm faders control the mixing for channels 1 - 4 and 5/6, and 7/8 together. There are four 6.5mm jacks for inputs to channels 1 - 4, and a guitar input for channel 5/6.

Always sensitive to local customs, the nice Roland people have introduced a feature called 'EZ Routing' which beggars further humour, but essentially gives icons on the display.

TIME AND SPACE

Like all digital recording systems, recording space (and thus time) depends on how much track time is used. A track time variable is the choice of sampling rate, either, 44.1kHz or 32.0kHz. The Sample Rate choices are reasonably simple, 44.1kHz is for product likely to end up on a CD, whereas if you were making radio commercials the 32.0kHz sample rate would be OK.

The main difference is frequency response, 44.1kHz allows 20Hz to 21kHz, whereas 32.0kHz allows 20Hz to 15.5kHz.

Roland have four recording 'modes', called Multitrack 1, Multitrack 2, Live 1 and Live 2. These use different data algorithms and so offer different recording times. We were unable to figure out why this is so! This is

one way to say that recording time on the VS-840 is a variable factor. It will store 12 to 50 minutes (4 tracks used) on one 100MB ZIP, or 6 - 50 minutes if 8 tracks are used. Obviously stacking up virtual tracks eats time. It has a thing called 'Dynamic Memory Allocation' which'll do house keeping to optimise recording time.

A song list of up to 200 can be created for each ZIP disk, useful if you were recording lots of little sound effects. Which could all, of course, be instantly accessed - which is why digital recording is so wonderful in the first place.

SIMPLE BUT DEEP

Anyone doing audio production will be happy with the VS-840. Roland's big market is the house bound musician, we also see our readers doing audio production for anything from dance music to audio visual presentations. You can all use this box for these jobs.

If doing it full time then you would want something with more display and waveform editing.

But that aside, this is a great tool, and it's easy to see the VS-840 taking sales from that new wave of low cost 4 track digital recorders which use a mini-disk (MD) as the recording media.

Digital audio has come a long way, and products like the VS-840 are now audibly indistinguishable from systems costing a severe magnitude more money.

Price - target is under A\$2,750, hopefully A\$2,500.

• **Roland dealers in Autumn. Info: +61 2 9982-8266.**



Here's the 'EZ Routing' window. We all need this! Neat, eh?



Audio Toys Inc Paragon Monitor

Mega in-ear monitor console with 20 stereo sends (or, 36 mono with 2 stereo!)

by Buck Freeman

If you need a really sophisticated mixing console for theatre, concerts or mixing film sound, there are many. If you need a large format mixing console for mixing stage monitors, you've got choices. But if you need to mix to a lot of in-ear monitor systems, you compromise. Until now.

ATI make the Paragon, which is possibly the last of the large concert mixing consoles from the USA. Paragon was created in the late 1980's when big touring budgets and even bigger egos had the major audio firms happy to spend big. Paragon was a mixed blessing for ATI, who nevertheless push forward to this day as a niche manufacturer of ultra top end live audio processing products.

There is a local connector for your readers down there, because Tasmania boy Shane Morris (*pictured with the console, looking tired. Where is Tasmania anyway?*), is chief design engineer at ATI, he originally worked for Soundcraft in the USA when the Series Four mixing console needed some hasty field modifications - and so became a large console lad. He works at ATI in Columbia, USA.

IN EAR, SO WHAT?

The issue is stereo mixes, and lots of them. Until ATI launched their Paragon Monitor Console at the AES in New York, no other console could deliver 20 stereo mixes.

In ordinary stage monitoring, mixing a lot of different sends simultaneously is an art form which revolves around a lot of understanding of what different combinations of monitor speaker components do in different positions. And then what they do all together.

When the in-ear monitor thing started to take off, monitor engineers suddenly needed to create stereo mixes, with everything in the mix. This is because the in-ear monitor stops most of every

other noise including audience acclamation and suggestions. Sometimes it's better not to hear what they yell at you, in case it's a gem, like 'there's a taxi waiting outside for you and your buddies!'

But as soon as the first rock star stuck the first ear moulds into the canal, the audience mix became standard. Two or many more microphones, often referred to as 'ambients', are faced out to the people and mixed back, usually on cue at the end of the number. Then effects were required too, because the whole mix sounded dry. And the star now expects the monitor mix to sound like The Record.

Our monitor engineer has been reborn, and can negotiate a much better contract! Usually there are still some conventional monitors used in a show for drum fill or sidefill or somewhere, so a recording engineer can't hop onto the monitor mixing console. But if there are just a few conventional monitors which are not critical, then a recording engineer could mix monitors more successfully than main noise.

This is because recording engineers make notoriously bad FOH engineers. Reason? The studio is a controlled environment. But now with in ear monitors everywhere, that is a kind of controlled environment too. So move over monitor engineers.

I guess it comes down to artists agreeing to pay studio engineer rates of pay for monitor engineers!

ATI PARAGON MONITOR

This is one large collection of knobs and faders, engineered in size as tightly as Shane could, because everyone knows if you build a mixer as big as a Soundcraft Europe it will not fit into anything. Paragon measures in at 88 inches wide, well under 2.3m.

(continued over page)

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Mackie's MicroSeries 1402-VLZ features 6 mic/line inputs and 4 stereo line inputs. It delivers high headroom and ultra low noise, thanks to its VLZ very low impedance architecture, first introduced on Mackie's acclaimed 8•Bus consoles. And it's just as rugged, with all-steel construction, thru-hole-plated fibre-glass circuit boards, gold-plated interconnects and sealed rotary controls. The MS1402-VLZ is a distinguished sibling.



Other features include 60mm log taper faders, 3-band EQ, 2 Aux Sends per channel, 2 Stereo Aux Returns, Mute Alt \pm -4, Low Cut Filter, Balanced inputs and outputs, Stereo in-place solo with globally switchable PFL, Separate Control Room output, Control Room/Phones switching matrix, Balanced XLR main outputs, EFX to Monitor, VLZ Very Low Impedance...plus heaps more! You won't find a more feature-laden mixer with Mackie's legendary sonic performance in the price range. (\$1495 RRP)



M•1400 AMPLIFIER

There were good mixers around before Mackie started making them. They just cost too much. Until now a really good reliable amp was by definition expensive. Just as Mackie's mixers redefined the mixer market by combining high performance and great value, Mackie's FR Series amplifiers set a new benchmark for sound reinforcement amplifier value. In terms of specs, features, durability and build quality the M•1400 is a "more is no object" amplifier. Yet in terms of "watts per dollar" it is far better value than comparably priced stripped-down models. Features include 1400 Watts into 4 ohms bridged, 700+700 Watts into 2 ohms stereo, Built-in electronic subwoofer crossover, sweepable low cut filters, Sweepable CD horn compensation & "Air" EQ, Subsonics stabiliser, Constant T-design cooling, plus Audiophile Sound Quality. (\$1695 RRP)



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Audio Toys Inc Paragon Monitor

(Continued)



This is a 72 input frame, which allows 48 standard inputs (each with dynamics) and the output section in the middle with an additional 12 stereo effects returns. $48 + (12 \times 2) = 72$.

The idea is to be flexible, so the engineer has two different personal monitoring outputs - one for in-ear's, one for wedges. Solo signals can be assigned to either or both monitoring outputs. Each output has variable solo level. Input signal pre fader and post fader also have solo level.

There are 18 dual concentric pots, the top pot does the level, the lower does left/right balance. These are sends 1-16, and two additional to act as either additional sends or as auxiliary 'effects' sends. The channel signal can also be assigned to two main mix outputs. This makes 20 stereo pairs. Sends 9 through 18 can be selected globally for stereo or dual mono operation.

On the upper racks section is the input module, which has all manner of dynamics - like a noise gate and compressor, for each input. This has never been done on a monitor console before now.

The EQ section has full four band parametric equalisation with shelving on each band. A direct output can be selected for stereo or dual mono operation and can be switched pre or post fader, this is real keen way to get signal out.

The stereo direct output usually feeds an effector, where you have a singer whose voice is the only thing effected. Or, use for a multitrack tape output. Or, at a pinch, use for a one-time direct send output.

SUM OF THE WHOLE

Yes, this is a conventional console and there are no really rad new tricks. What makes this a likely seller is the whole approach.

For example, some engineers actually use a high impedance volume pedal with their personal wedge send. Why? To balance the gain between each mix when they switch to listen to them. So Paragon has an insert point for this before the wedge output!

Then there is the Pad switch, or lack thereof. I asked Shane about this one, recalling one modern mixing console where the lack of pad means you can't damp the input enough.

"The mic amp provides a plus and minus 48 volt transistor array at the front end" he told me. Which of course I understand like I



Up the very top of each input is the EQ and dynamics module. This has a Noise gate, Compressor Limiter, and EQ section. The EQ has four whole bands of full parametric EQ and a top and bottom shelf / rollout thingy, whereby you can 'shelve' or completely cut all frequencies above (or below) a preset point. At the bottom of this module are Direct Out gain and pan, and Insert send & return gain. Comprehensive, yes?

know about how my car engine works.

"Pad switches are noisy, because they are made up with resistors. If not designed properly, an input pad will change the resistance of the input. Then when the pad is switched out, the front of house signal will increase suddenly", Shane said. Of course the monitor engineer can get a mic level change when a front of house engineer switches out a pad too. Shane says the Paragon is headroom city.

"It's a market specific console. You can't balance two traditional mono mixes properly to make one stereo mix" says Shane, referring to the compromises people make.

OUTPUT WORLD

In the middle are the outputs, and above them 12 stereo effects returns, which can also be used for the ambient mic inputs.

Eight stereo group master faders are below 16 mono/stereo group faders. This way the first 8 sends are at hand, the next 8 stereo sends are above them (with 16 faders) and are also suitable for mono or mixed mono/stereo use. Along side these are four more faders for the two stereo (or four mono) auxiliary outputs.

Eight VCA masters sit to the right of the main 8 send master faders, these allow subgroup control of any combination of input channels.

With all this routing, one is given to wonder how unreal the sound the musician with the implants is hearing. It bears no relation to the front of house, but of course a monitor wedge doesn't either

Shane relays the story of a customer who uses a conventional ATI Paragon FOH console, he had Shane make a foot switch for his mic so he could bypass FOH and talk back through the monitors - direct to the band.

The monitor engineer on the Paragon can switch talkback to any output. You now get this weird world where musicians have the monitor engineer capable of talking back direct into their ears only, and then the performers being able to talk back to each other. Without the audience being involved. The possible uses? Use your imagination! Like: "Check the jock in the tank top stage left!" Or: "Umm, Rod, Rachel says stop scoping the hooters in the halter"

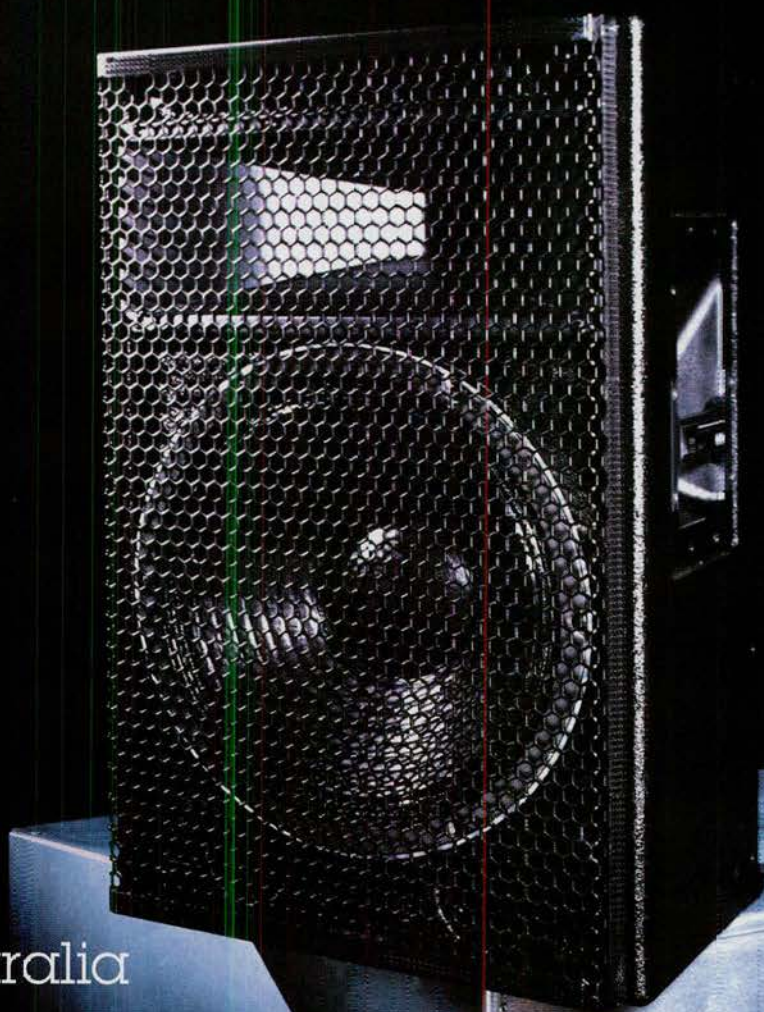
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Bottom module on the input side, has 18 sets of sends, plus the left/right and mix 1 or mix 2 output selections. VCA group switches are beside the P & G fader, each send can be switched pre or past the master channel fader.

Up the very top is the EQ and dynamics module (see right).

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Write in Reader Service Number: 185

ATI Paragon Monitor

(conclusion)

THINKIN' FRILLS

Shane has done his homework. Over at the monitor master are two different outputs from the Solo bus. Any monitor engineer will tell you that 'listen' monitoring is essential. Wedge gives you a stereo pair to your floor wedges, while in-ear goes to those devices.

The cleverest thing at this part of the desk is the Mono switch. Why? Because it allows you to listen to the combined signal to detect any phase imbalance that a stereo pair may mask.

Although your input is usually comprised of single microphones plugged into single channels, it is quite possible to get phasing problems when using external effects processors. A reverb signal may come back out of phase, so requiring switching the phase on

the reverb input. Only by mono summing an output will you sometimes detect this.

Finally the actual architecture of the desk makes ergonomic sense, and the arrangement means you don't need a cable tray on the back of the console. The rear overhang will allow all your cabling to remain patched, with a few multipin connectors only needing hookup each show. Other consoles with flat vertical rear faces need extra road case depth for this.

It's always fun to review a serious, major audio product. ATI have done a superb job with the Paragon Monitor, and hopefully they will sell all they can build. The first five will be out there by March.

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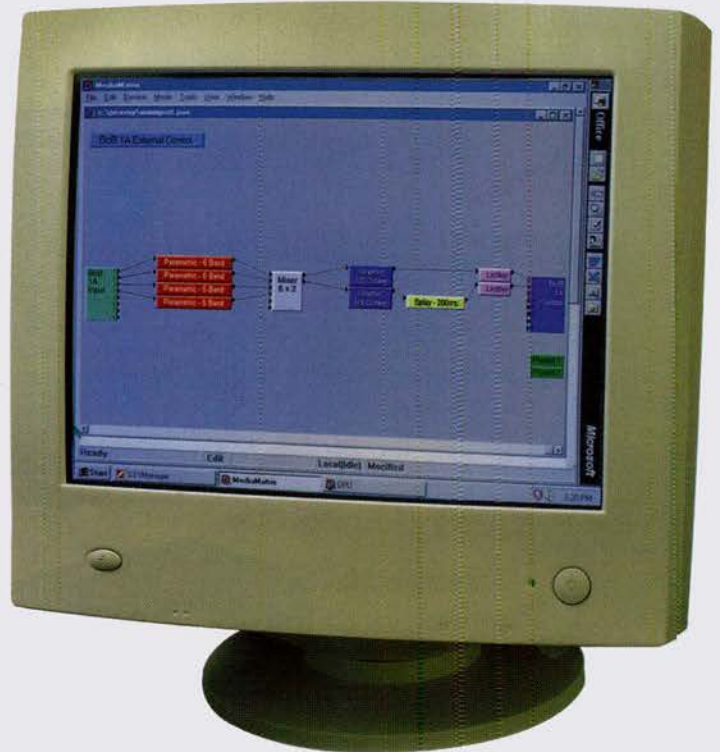
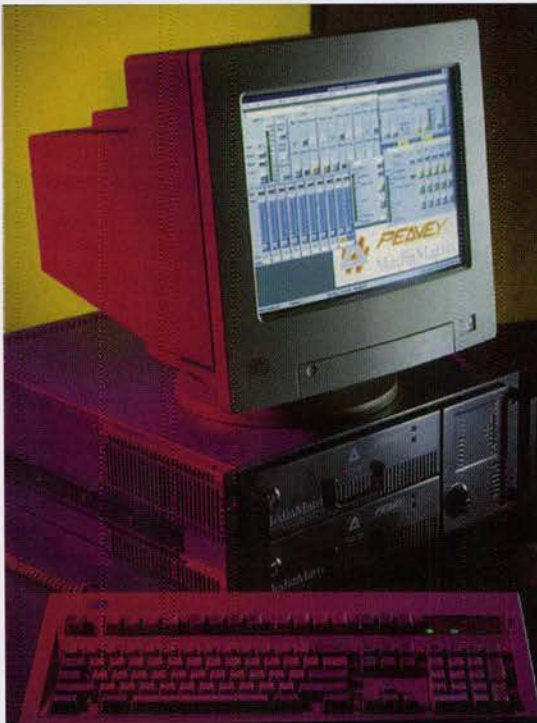
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Write in Reader Service Number: 141

Peavey Media Matrix

The often misunderstood but really comprehensive complete PA system signal processing solution. Has it earned its stripes yet?

By Jul us Grafton



Viewed with a mixture of collective suspicion and sheer collective ignorance when previewed in 1993, the Peavey Media Matrix system soldiered on to become well established in the past eighteen months or so. Being a totally new concept, and utilising a computer for dsp control of audio, it took some mindset adjustments to embrace. Australia and Asia took to Media Matrix before Peavey's home market in the USA, a fact lamented by Hartley Peavey in a recent meeting with Connections.

OVERVIEW

Media Matrix is used in audio where there are more than just two stereo outputs to a PA. This represents most jobs these days, where distributed and point source PA systems need time alignment, equalisation, compression and input source management. Touring sound firms also are taking to Media Matrix as it offers 'tailor made' signal processing, changed on the run.

The conventional way to design such a system will require a lot of fixed wiring and rack mounted processors. Once installed it is all fixed in place to handle the one system configuration.

Media Matrix converts all audio inputs into digital code via an 18 bit analogue to digital (A/D) converter on each input. Inputs are physically present on a thing called a BOB - Break Out Box. This two rack unit tall device has eight balanced inputs, and eight balanced outputs. The outputs are also analogue audio outputs, with the digital to analogue conversion (D/A) also done inside the BOB.

A BOB is then serial wired to a card in a Media Matrix Processor

Frame, which is a Peavey engineered rack mountable PC. You can wire as many as 32 BOB's up to one Processor Frame. This is a modular system where you start with a Processor Frame, at least one card, and at least one BOB. This gives you 8 audio in, and 8 audio out.

The Processor Frame hooks up to a keyboard, a mouse, and a standard monitor. Using Peavey's 'MWare' software you then configure the system.

CONFIGURE THEN COMPILE

Usually you know how many inputs and outputs your system requires, so you buy enough BOB's to cope with this. On site you hard wire the inputs and the outputs to the BOB's, they have a Phoenix (strip) connector for this.

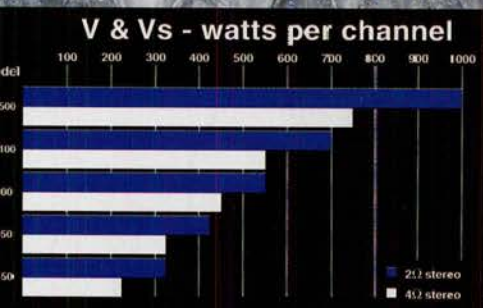
Assume your install has 24 inputs and 12 outputs. You need 3 BOB's (3 x 8 inputs + 24) and you will use just half the available outputs. If your inputs are raw microphones, you'll also need a mic preamp to zap the level up to line voltage for BOB to digest.

On the Processor Frame screen you will then have the system do an initialisation where it determines how many BOB's are connected. Then you can start with the fun part, which is to 'virtually wire' the PA. A menu of virtual audio devices is available, so first you would show your three sets of eight microphone inputs from the three BOB's.

You can now put 24 compressors, 24 gates and for complete overkill 24 parametric equalisers on screen. Drag wiring to and from these devices, and then to a 24 input mixer you've also put on

(continued over page)

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Peavey Media Matrix

screen. From the mixer run the 16 outputs through time delay, equalisation, and limiting, back to any of the 24 BOB outputs on screen.

This is what Media Matrix is all about, and a reasonably simple application where the system replaces all these analogue devices:

- 1 x 24 channel mixer,
- 24 x compressors,
- 24 x noise gates,
- 24 x parametric equalisers,
- 16 x delay lines,
- 16 x third octave equalisers,
- 16 x peak limiters,
- Real estate: two tall equipment racks,

... and the HEAP of signal wiring between all the above, which I estimate comprises 120 cables which would take about 20 hours to make. Get the picture?

But don't get confused, you still have 24 conventional inputs (microphones, CD players, tape decks), and then 16 analogue outputs needing amplifiers and speakers. What you've replaced is all of the signal processing and the mixer.

Every one of the devices, and indeed the mixer itself, can be accessed on screen and indeed customised. You can build and adapt each device, and drag out single faders or knobs to make a customised control screen.

You can also run remote control (like a channel fader or an on/off switch) of any part of the system, wired to the in/out switched part of each BOB. (Each BOB has eight analogue control inputs and 8 digital control outputs).

Even more wild, you can make a screen interface for the customer or operator with as little or as much control as you like. You can even drop a bitmap photo of the stage onto the screen and then put little fader controls over the microphone positions!

Each file is called a .PAV file, and of course you can sit on a beach with your laptop and create a 'virtual' system, save it on disk, or even modem the thing off to the site.

The device list is a long one, of course it includes crossovers, and you can user define a device if Peavey haven't thought of it yet.

TECHNICAL

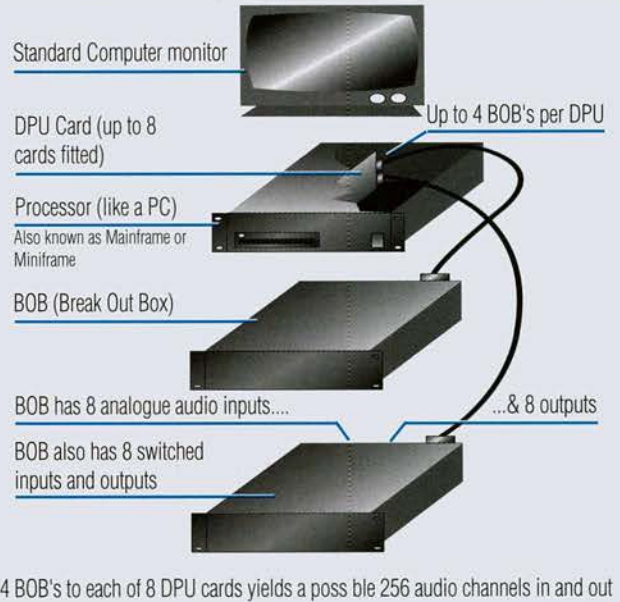
The big advantage is the MATRIX part of the equation, meaning you can change the system wiring and topography anytime. Extra devices or mixing or routing is just created on screen, as long as you have enough inputs and outputs on BOB's, then away you go. With one caveat. You need enough DSP power on the DPU cards inside the Processor Frame. More on this later.

Knowing that each BOB is essentially doing analogue to digital and digital to analogue conversion, with some extra frills (each BOB has 8 switched outputs and inputs too), how does the processing happen?

The Processor Frame (usually known as a 'Mainframe' in Peavey-speak) is essentially an industrial strength PC, pre loaded with enough RAM and hard disk space, and running Windows 3.11. Users do not concern themselves with these usual PC variables because Peavey follow a sensible approach by packaging the PC and selling it 'complete' in this fashion.

Actual DSP (digital signal processing) is handled on one or more 'cards' installed inside the Processor Frame. Each card has four Motorola 56002 DSP chips on board, nominally each chip runs one BOB. So up to four BOB's are connected to one Card. And up to eight cards are installed in one Processor Frame, although there are smaller models which have less cards.

Hardware Layout



The Card is dumb, but once instructed, it handles everything it is told to do, until told again. This means the Card is programmed by software commands from the Processor Frame, and holds commands indefinitely in flash-ROM, irrespective of whether mains power is present.

If you have sufficient operator privileges to re draw the system design on screen, the actual changes do not happen until you order the system to 'Compile'. This is where the DPU cards are instructed to change mode, and while this happens the system will not pass audio.

A decision regarding what sampling rate (ultimate frequency response) you require from your system must also be made when purchasing, as there are three different BOB's. They are all priced alike, but have different converters to deliver 32kHz, 44.1 kHz, or 48kHz sampling rates.

The higher the sampling rates, and the more 'virtual' devices you use in your system, the more dsp power you need on the Cards. According to Peavey, most people elect for the 44.1 khz BOB, which delivers 20Hz to 20kHz, plus or minus one half a dB. The 32kHz unit does 20Hz to 16kHz but at plus or minus one dB.

The rule of thumb says each DPU card will work four BOB's, but when you Compile your system the actual processing requirement may see less four BOB's on each card.

IN USE

Some confusion existed in my mind regarding the Compile function and Presets. A Preset is where a whole lot of system settings can be stored and recalled from an on screen preset button or a remote switch closure.

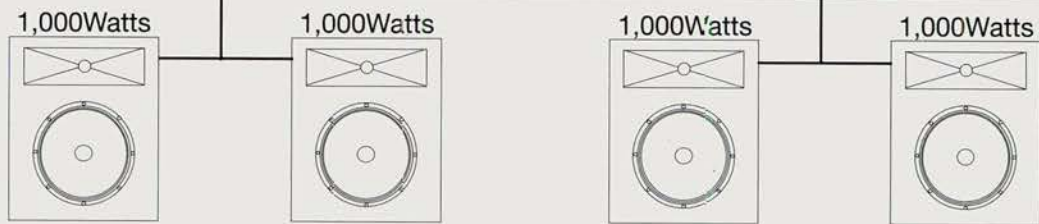
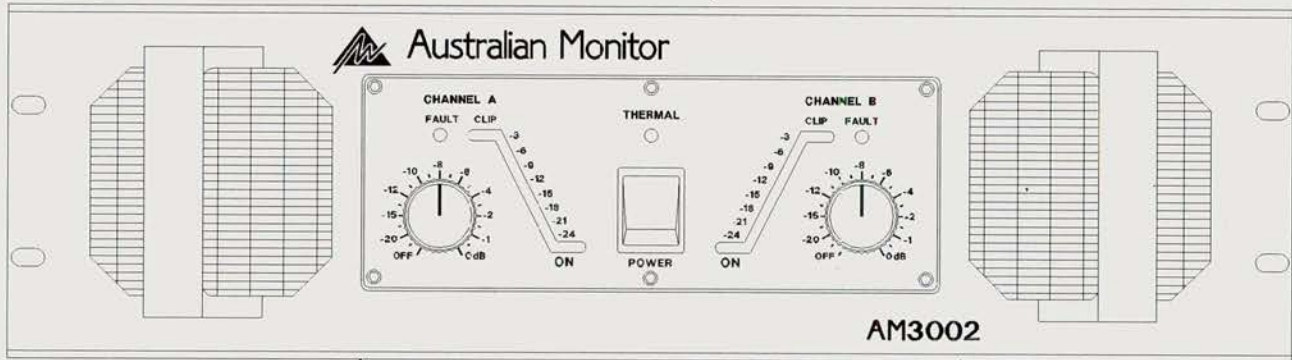
Provided the system configuration doesn't change, then there is no need to ever Compile after the first time. A 'Compile' should be regarded as a 'rewire' of the system, even though it can include complete re-creation of new, different and additional signal processing devices.

To validate this Review we called on a typical installation, in this

(continued over page)

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KR1



KR2



KR4



KR8



KR10



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Write in Reader Service Number: 168

CELESTION

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Peavey Media Matrix

case at the NSW Parliament, where a Media Matrix system handles all the media feeds out of the Legislative Assembly Chamber.

Cameron Wade from The PA People was kind enough to show me the system, which was installed in March 1997 when his firm upgraded the camera system. With new vision the Engineering staff wanted better audio too, so the Media Matrix was chosen.

In the Chamber is an old PA which dates back to the early 1980's, with 12 microphones around the place. Each mic is split (isolated) to both the existing house PA, then out to the Media Matrix system. This supplies feeds to the television channels, the library, and various places around the complex.

Virtual compression and automatic mixing is essential, to bring widely variable microphone levels into acceptable listening range. Also the ability to redesign the system weighed heavily in its favour, according to Cameron.

"We're about to change format of system. Because we can"! he joked. Presets will be added, to allow for operation when an operator is not present. An AMX system will also control the Media Matrix, it is primarily currently used for vision control.

Then the house PA will be replaced with a Media Matrix system, possibly with up to four Processor Frames linked together.

ISSUES

You can call the system via a modem, to see what is happening. With the (optional) Peavey amp controller and IA amplifiers, you could read the impedance on the speaker lines to see whether the load is actually working. Or just dial in, and make changes. You could have a spare amp standing by to 'virtually' rewire in, if amplifier redundancy worries you.

Once up and running, a Media Matrix Processor would probably be best left turned on always, to avoid bootup delays and to keep that hard disk ticking over. It's how we manage our computer network here at The Mag, we just switch off the monitors each night. If you have a power interruption then you WILL suffer a 70 second delay before the system will pass audio. If this is a problem, consider designing an emergency bypass function like one microphone connected direct to an output, or look at alternative mains provision.

A very good thing about the system, according to Cameron, is: "No knobs, no panel control. We lock people out of it, that is big plus in this environment. Then you can't do any reconfiguring

without a password".

I am trying to get Cameron Wade to give me some negatives about Media Matrix. So what about the COLOUR, Cameron? "The colour grey suits the rack very well!" "Come on, give me a negative" I say. "Thinking.... thinking..... thinking..... sorry. Not much wrong with it!" he says.

End of transmission.

• Media Matrix is a Peavey Architectural Acoustics product, made by Peavey in the USA.

• Prices depend on configuration, but use this as (retail price) guide.

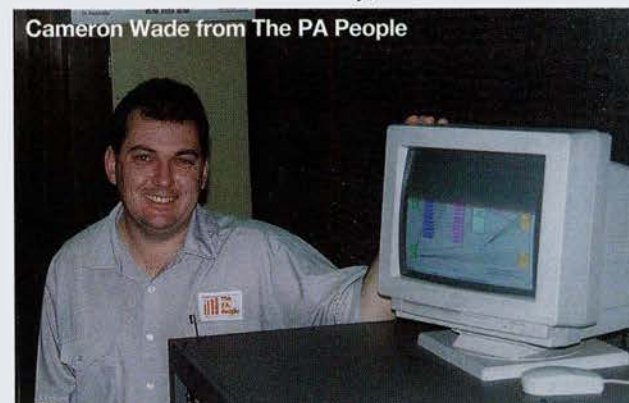
(a) A MiniFrame 108 system comprises one BOB and a Processor frame capable of 8 inputs and 8 outputs. Cost A\$18,710. In 16 x 16 format the cost is A\$22,982.

(b) A MainFrame 740 system loaded with 1 DPU cards and with one BOB costs A\$37,900.

(c) Extra BOB units cost A\$4047.

(d) There is a cheaper solution, a new box called 'X Frame' is about to land, it has 2 in and 4 out (plus 2 AES digital inputs and outputs) with a Processor all combined in one 2 r/u rack unit, address and compile using your external laptop, and run an additional BOB. Watch 'NEW PRODUCTS' in Connections for more on this.

• **Contacts:** Australia - Audio Telex, phone +61 2 9647-1411
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Back view of a BOB, showing processor connection point. 8 switched in/outs, audio connections are off to the right.

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Sensitivity (1W/1M): 99dB

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Hughes JVC light amplifier technology

Inside the Image Light Amplifier (ILA) or 'Light Gun' projector

By Julius Grafton

In 1994 I saw the first Hughes JVC video projector in Singapore, and it caused waves. It was, and still is so far as I know, the brightest thing. It is a product of the cold war, when NORAD needed to project the doomsday scenario down in the big rock room under the mountain, they did what the American military are best at. They commissioned someone to build them their very own video projector.

Before they were done, Gorbachev sunk a million careers and pulled down the wall.

Hughes Aerospace did what every conglomerate with a budget larger than your average third world nation will do, they went outside to find markets in the free world. So the spooks were re-interviewed and some found themselves trying to be salesmen.

I indeed recall a weird and doomed attempt by an un-named defence contracting goliath to find a market in some weird synthetic voice modelling technology. This spawned a large, attractive and ultimately irrelevant exhibit at a pro audio show in the USA earlier this decade.

We do have a lot to thank the cold war for, and the Hughes JVC Technology consortium is but one small part. That first Hughes video projector, the Series 300, was even originally demonstrated by at least one former spook. The guy I met in Singapore was a displaced soul whose security clearance (he showed me his old spy pass) was now redundant. He fantasised about satellite delivery of movies direct to third world countries, where the censorship board would become the electronic distributors. Projectionists would be obsolete, because the big Hughes-JVC projector would do the job.

In the USA last year the major movie distributors expended €00 megabucks just shipping film reels around. So Hughes reason a video projector is a better way to show film. You can fire all those pesky unionised projectionists and run the show from the multiplex manager's luxury office suite. Or even from headquarters!

Film aficionados will scoff, as the commonly held view is that video falls way short of 35mm film in terms of contrast, resolution and brightness.

CAN VIDEO EQUAL FILM?

Almost, claim The Consortium. It is a proposition Hughes-JVC just stop short of making publicly, but their ILA (Image Light Amplifiers) perhaps come closest so far, due to a proprietary technology.

To understand why, you need to analyse how video projectors work. There are three other technologies out there, the original approach was to use three Cathode Ray Tubes (CRT's), one each for RGB (red, blue and green). Known loosely as the '3 gun' projector, this gives good replication of a moving image but doesn't get terribly bright. RGB is the standard colour mixing solution for full colour video. (But in printing we mostly use Cyan, Magenta, Yellow and Black).



Some years ago the LCD projector was born, whereby a conventional light source such as a halogen lamp is used. The beam is split into three and shines through three LCD panels, one each for red, blue and green. Then the beam is re-combined. Each LCD panel shows thousands of tiny pixels, each of which opens and closes to let light through. LCD projectors work extra well for graphics which are created on computer, which itself displays pixels.

The third technology is based on the new DMD (Digital Mirror Device) chip from Texas Instruments. This promises a lot as it is potentially extremely optically efficient - but these are early days. It can be found in DLP (DMD) projectors right now. Like an LCD projector, it is pixel based.

* For more on DLP/DMD see the lead story in this issue, page 3.

Hughes say the Moving Picture works best when originated from a CRT, but that the CRT itself doesn't enjoy working hard. Tube failure is a given, and the eventual light output from a CRT is finite.

IMAGE LIGHT AMPLIFIER

The Hughes approach guarantees more lumens per lamp watt than anything released to this day. At the heart of the ILA system Hughes use a CRT which idles along at a reasonably low output, which causes less stress, and lengthens life. This projects onto a solid state liquid crystal light valve which has a photo-conductive layer which transfers images from a low level CRT onto a layer of

(continued over)

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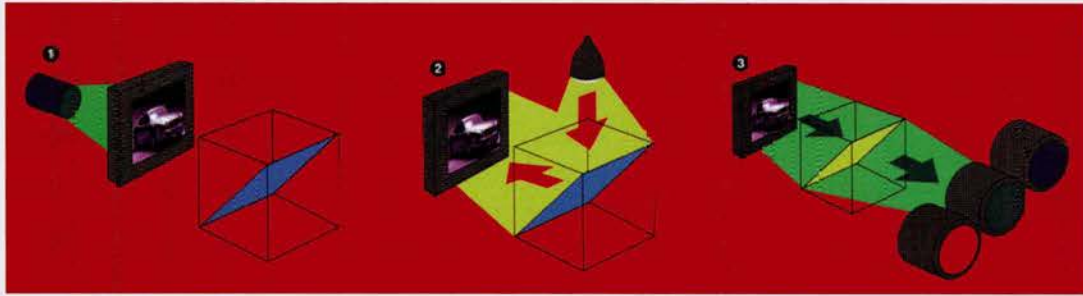
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Hughes JVC light amplifier technology



ILA system. The Light Valve is the panel (2), which takes writing light from a CRT tube on one side, and projection light from the other. Pixel artifacts are eliminated.

(continued)

liquid crystal. This layer rests inside the ILA and forms the filling in an electro-optical sandwich.

Three sets of ILA are required, one each for Red, Green and Blue (RGB). The projector electronics separate the signal from the source, which is video, data or computer graphics, into RGB. It passes them individually through a high resolution CRT (see item 1 in illustration above).

Each resulting image is then converted photo electrically and illuminated by a beam of light generated by an arc lamp. When the beam hits one side of the ILA sandwich, (see 2) the complete image is reflected back through the filling. Each of the R, G and B elements pass through the projector's optical chain and are converged at the screen (3).

Hughes JVC claim not only more light output but also better contrast than any other projector. The ILA system is primo for moving images, but with graphics there are occasions when an LCD system appears better. This is related to pixelisation, which is how any computer graphics image is shown, whether on your 21" monitor or through an LCD or DLP video projector.

THE PROJECTORS

Now that Hughes JVC have a growing range of models, the market has opened up. They recently unveiled the 12k projector, which delivers 12,000 lumens, equal to most follow spots!

At the big but not huge projector end of the market, (Around A\$120,000 including tax, no lens) is the Model 230, a recently released single lens unit. The RGB outputs of the ILA are internally converged to the lens. Larger models use three lenses. The light source in the 230 is a 1,600 watt Xenon arc lamp. This produces 2,400 ANSI lumens.

It looks reasonably innocent, like any projector, has a nice strong chassis and the hood opens up neatly so you can do whatever you do inside.

Resolution is 1,600 x 1,200 and video resolution is 1,000 TV lines. Standard you get one RGB input card, there are a total of four input slots. 2 RS ports are provided, indeed the projector can be totally controlled by laptop, so you need not use a remote control.

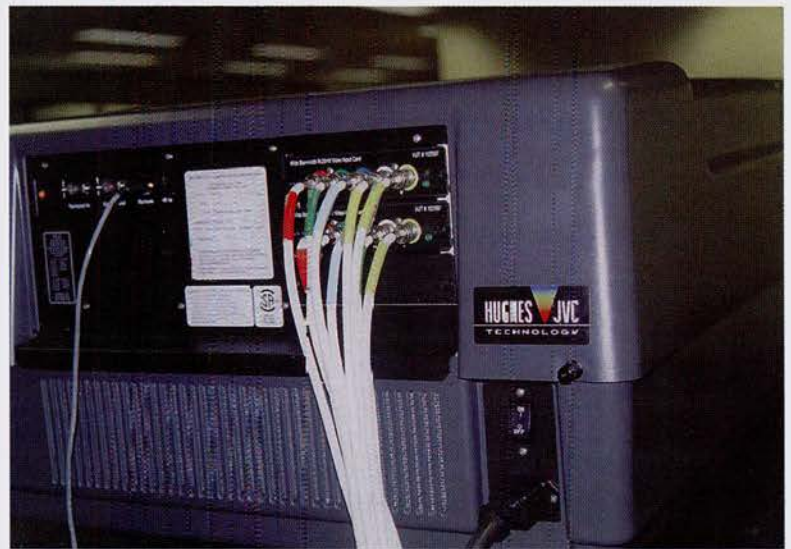
The 230 measures 1262 x 409 x 614mm and weighs 118kg.

Hughes JVC have an even smaller ILA projector coming, the Model 100 Super Graphics. This uses a new smaller ILA with a 750w xenon lamp, for 1,500 lumen output. It is targeted at the \$60,000 price area.

INFORMATION:

- **Australia:** Hagemeyer, Bill Dougall +61 2 9370 8888
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Up back on a series 200 ILA projector, with dual RGB input cards and optional slots for more input cards



Bill Dougall, Hughes/JVC manager at Hagemeyer, shown for scale against a Hughes/JVC series 200 ILA projector

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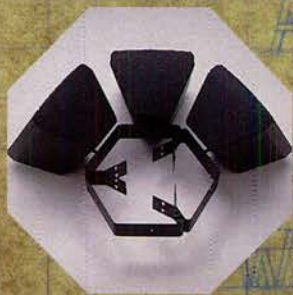
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IN EAR MONITOR SYSTEMS

The Battle For Your Ears : Swords Drawn In The IEM Market

By Mark Cunningham (Editor, SPL Magazine, London)

If 1989 was the year in which in-ear monitoring (IEM) as we know it began to filter into the mainstream of live music, then 1997 will be remembered as the year that this growing niche area of professional audio technology realised its true commercial potential.

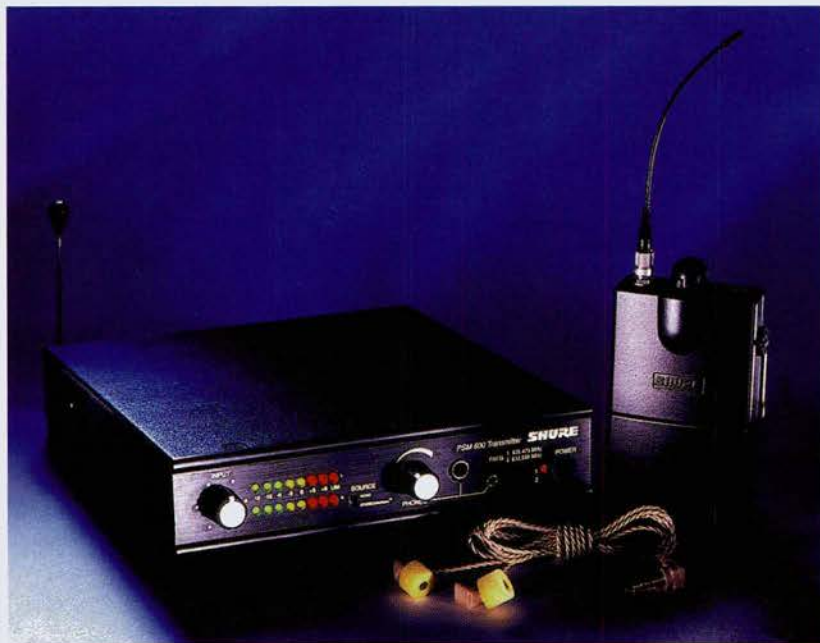
For the last eight years, **Garwood Communications** (which was formed in 1992 after trading as Personal Radio Systems for four years) has maintained its position as the world leader in IEM, not least because its founders, Chrys Lindop and Martin Noar, were the first to bring this technology to the fore. This UK company (which has its three-year-old American base in Pennsylvania) has continued to develop on its original wireless product theme and introduce a string of quality IEM packages, including the breakthrough IDS system. Resting on laurels, it seems, is not on Garwood's agenda.

Until now, the only manufacturers even remotely capable of queering Garwood's pitch have been **Circuits Maximus**, **Futuresonics** and **Nady**, although it is widely regarded that their achievements in this field have rarely held a candle to those of the North London innovators whose roll call of international artist users reads like a contemporary who's who.

As IEM has become increasingly accepted as a viable and highly practical form of stage monitoring, however, the interest in jumping aboard the technological bandwagon among rival manufacturers has grown from quiet, cynical acknowledgement to a desperation to grab a slice of what is now a very

substantial pie. And, surprise, surprise, in most cases it is the companies who have enviable backgrounds in radio microphones and headphones who are making the biggest in-roads.

Of the bigger contenders, **Shure**, **beyerdynamic** and **RCF** all have systems available now, whilst **AKG** and **Sennheiser** promise to release their first generations of IEM products in January 1998. It is further expected that other manufacturers, including **Audio Technica**, will be introducing systems



within the next six months. Announcements and early sightings of several of these products made impacts of varying proportions at this February's Frankfurt Musik Messe, with the promise that they would provide the industry with real alternatives to currently available systems.

Having keenly observed progressions in this technology over recent years, my curiosity was rudely awoken, particularly as it was one of the most common topics of conversation on the audio stands at PLASA recently. Interestingly, the companies now involved are evenly split between those who are making efforts to improve on the fidelity and user-friendliness of existing systems, and others who are more interested in giving semi-pro musicians access to the technology. **HZ International** also have a low-cost VHF system, squarely aimed at bar band singers—a mostly untapped area of the market which many believe will play the biggest part in the future development and success of IEM. Game on, as they say.

(continued on next page)

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IN EAR MONITOR SYSTEMS

The AKG Solution

It was during a short trip to Vienna in June that I received the low-down on AKG's first foray into IEM. Fittingly, I chose to drop by during the week of the company's 50th anniversary - naturally everyone including Product Manager Walter Ruhrig was in a flag-waving mood, particularly as he was nearing the end of pre-production field testing of the EMS-1, a system he is convinced will quickly make an indelible impression in live music.

Inspired by existing AKG consumer technology and the genuine needs of musicians at large, Ruhrig took it upon himself to drive through his idea for a new type of IEM system, with the proprietary binaural Individual Virtual Acoustics (IVA) environmental simulation software at the heart of the specification.

Whilst wireless IEM as a concept provides the performer with a number of major advantages, such as the ability to move about the stage freely and still experience constant high quality stereo sound, Ruhrig believes that to date there has been one disadvantage that has led to some musicians' resistance to the technology. It was this factor which led to the evolution of the EMS-1. He says: "The musician is traditionally accustomed to working with loud SPLs on stage, but

as soon as you work with IEM you immediately lose the live, open room feeling. When listening through most types of ear or headphones, the sound no longer comes from the outside, from a speaker, and there is no room ambience involved. There is the feeling that the sound source is positioned somewhere in the middle of your head, which is why we call this psycho-acoustic phenomenon 'in-head localisation'."

When listening through most types of ear or headphones, the sound no longer comes from the outside, from a speaker, and there is no room ambience involved. There is the feeling that the sound source is positioned somewhere in the middle of your head, which is why we call this psycho-acoustic phenomenon 'in-head localisation'

I argue that the large numbers of musicians now performing successfully with IEM systems might suggest this is not a worrying obstacle. Ruhrig replies: "Well, there is an increasing number of performers who are not so satisfied with the technology but have not had an alternative IEM system choice. While the systems out there at the moment are very good, AKG feels that there is an opening in the market to introduce something which provides some new features designed expressly for the musician's comfort. Four years ago I was discussing IEM with Mick Whelan, the

Electrotec engineer, who said that his company had received complaints from musicians about the isolating nature of the systems. As soon as I returned to my office I met with our technicians to see how we could address this problem."

By employing its new IVA software, AKG has been able to

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IN EAR MONITOR SYSTEMS

simulate the acoustic characteristics of a live stage and inject this 'feeling' into the user's in-ear mix. Interestingly, what AKG has done with the sound processing approach is very similar to what a number of consumer hi-fi manufacturers have been doing for several years, with the inclusion of preset EQ/reverb/delay functions labelled as 'Arena', 'Stadium' or 'Jazz Club'. However, as Ruhrig points out, the technology goes much further.

"With this system we are able to simulate not only a room but also the speakers within that room. Although the user will continue to wear the in-ear pieces, we 'move' the sound source out of the musician's head. The musician has the feeling that there are wedges and sidefills positioned around him, and we add various parameters of ambience (from intimate jazz club to open air stadium) which give the impression of space and sound reflection. These can be adjusted to suit the venue in which the artist is performing."

It was eight years ago that AKG developed its consumer hi-fi binaural processor, its features based on sophisticated measurements carried out on thousands of individuals in order to gauge a range of typical head and hearing curves. As everyone hears sound differently, it was vital to accurately simulate a range of head shapes, and external and internal ear shapes, before giving the listener the impression of an outside sound source. This technology forms the basis of IVA, but for obvious practical reasons, AKG narrowed the simulation options of its EMS-1 system to a range of average curves which Ruhrig says will work for 98% of potential users.

"Our IEM system offers nine generic head curves, but we will also have the possibility to get users' heads and ears measured for custom purposes and have one's personal head curve added to the nine presets already available. Anybody can take advantage of this service to achieve a 100% satisfactory result."

The measurement session, which can take place either at AKG Vienna or with mobile equipment in a studio environment, involves having a tiny measurement microphone placed into each ear channel whilst sitting in front of a pair of speakers. The sound picked up by the microphones is then analysed by a proprietary computer-based measuring program. This test is repeated several times, with the subject moving around 30° on each occasion, and the personal head curve is based on the findings.

When Ruhrig and his technicians realised the potential for AKG's binaural technology in IEM, the first step was to consult a



Forthcoming Sennheiser system ear pieces and beltpack receiver

bunch of high profile live sound engineers as to its value. This hurdle was overcome in the summer of 1995 when Rod Stewart played a stadium show in Vienna, and Ruhrig invited Lars Brogaard, David Eryson and Robin Fox to AKG's HQ. "I got the guys over to hear a binaural processor demo in order to get the first professional opinion and the reaction was 100% positive. It was at that point when AKG decided to pursue IEM without reservation."

Various prototypes of the EMS-1 have come and gone, and Ruhrig continues to carry the latest version with him at all times "you never know who you'll meet on your travels!"

Finally, after around 70 tests with PA companies around the UK, Europe and the Far East, AKG is approaching the official launch and is committed to shipping the first units by the end of this year.

Ruhrig comments: "In parallel to these final stages of customer field tests, we also did some live tests just to find out if we heading in the right direction and fortunately all these tests have been more than just positive. So the whole situation appears to be extremely promising."

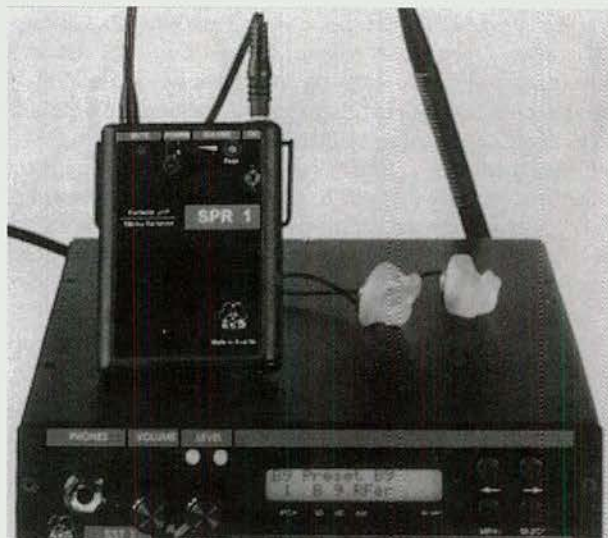
So just how fierce is the manufacturers' battle for the ears likely to be? "I think AKG will be a strong and aggressive competitor to Garwood," says Ruhrig. "However," he adds, "I don't think Garwood needs to be too concerned just yet, because they are several generations ahead of us in product terms. Their IDS system is a masterpiece and a wonderful idea. But they also have a dedicated theatre system (LV1) as well as lower-cost solutions. We are at the very beginning of our involvement with this young and growing market, but the future looks very exciting for us, and probably all of the other manufacturers who have decided to jump aboard."

"The market is potentially much larger than we can appreciate at this moment. Being such a new field of technology, the cost of systems has inevitably been high, but we are now seeing those costs decreasing and systems becoming more accessible to the lower levels of the industry. Semi-pro performers are just beginning to consider IEM as an attractive option and that can only lead to an enormous number of would-be users in the next few years. Before long we hope to see clubs buying IEM systems as part of a full sound rig installation, which can only mean good news for bands who have endured inefficient monitoring - or in some cases no monitoring - for far too long."

A Shure Thing?

Over the course of 1997, Shure has been quietly infiltrating the touring world with its attractively priced PSM600 UHF Personal Stereo Monitor systems which mark its entry into the IEM market. Each system features proprietary E1 earpieces which combine the advantages of custom moulded and universal designs. Replaceable foam surrounds slip over the audio carrying tube, and

(continued over page)



IN EAR MONITOR SYSTEMS

the foam is squeezed and inserted into the ear where it slowly expands to form a snug, tight seal. This ensures good isolation and holds the earpiece firmly in the users ear.

The system incorporates body pack functions which afford the performer direct access to volume and balance control, and Shure's exclusive MixMode facility, which HW International's Alan March hails as one of the system's major selling points.

"This facility allows the user to personalise his/her own stereo balance by, for example, having the band mix in Channel A and his/her lead vocal in channel B. This is all achievable by adjusting the balance control on the side of the body pack. For drummers who use click tracks, the MixMode is a real boon - the drummer can move the click track to one channel and have the sound of his kit in the other." All of the features of the wireless system are available on the hard-wired alternative.

Alan March commented: "Shure may not always be the first manufacturer to enter a new market, but the results often speak for themselves. The company takes its time and gives an enormous amount of thought in the R&D process before being confident that it has designed something that will make a difference. And we are certain that our entry into IEM will."

Shure's PSM600 has already impressed Engineer Roger Lindsay who, although not a monitor man, is constantly persuading artists to consider IEM over wedges. Most recently, Lindsay played a key part in George Michael's switch from his existing system of four years to Shure. "The immediate thing I noticed about the Shure system was that it is significantly quieter and the audio performance is in another league. I have George's personal system at home and it was easy to A/B test them - the difference in audio quality was quite amazing. George was using his previous system last year for 'MTV Unplugged' but he wasn't very happy with it. When used in conjunction with a Beta 87 for vocals, the in-ear sound was very sibilant. So I got him to try out a bare-looking wired prototype of the PSM and he preferred it. A few months later, in May, I was doing a one-off gig in Acapulco with Mark Owen and we used the wireless version for the first time. I noted that very little, if any, of the quality was missing from the translation, and immediately after the gig I was asked if I could get a personal system for Mark."

Unconfirmed reports also suggest that the Rolling Stones have taken on the product for their current tour. If there is substance to this story it will no doubt have dramatic implications on the widespread acceptance of the product.

Lindsay added: "I think it's going to be hard for a lot of smaller companies to compete with Shure and AKG, not only because of the integrity of their products, but also because these companies have such great dealer networks. The next 12 months will be very interesting."

The Garwood Response

The heat is most definitely on and as the IEM newcomers turn up the temperature, Garwood will be finding new ways of maintaining its position as market leader. One thing is for sure, as AKG's Ruhrig identified, the rival manufacturers have a lot of catching up to do.

Already, Garwood has available no less than six wireless and two hard-wired products in its range of UHF systems, at the top of which is its Radio Station IDS - a fully-synthesised frequency-

agile processor that offers outstanding benefits to professional users, not least a portfolio of over 50 frequencies between 510-865MHz, grouped by international territory. Frequency selection is simple: using front panel buttons, one scrolls through country codes until the correct territory is found and the unit presents up to 15 appropriate options. These frequency portfolios have been selected to work together without intermodulation, which is essential when using multiple IDS units. This system operates with a proprietary Active Antenna which receives processor data via cable. The Antenna can be sited up to 75 metres from the processor without restriction and will transmit in excess of 100 metres to the receiver worn by the artist.

The 'classic' wireless Radio Station, which lies at the heart of Garwood's success, has received several upgrades over its eight-year history. Featuring on-board compression, limiting and noise reduction (all of which may be disabled), the system operates with crystals to generate the operational frequencies. It is switchable between two adjacent operating frequencies between 380-910MHz, and is capable of complying with all international RF

regulations. The Radio Station family also includes the hard-wired Outstation which the original Radio Station audio circuitry built in, an HF compensation switch, an on/off switch and a volume pot. Garwood's other hard-wired solution is the M-Pack beltpack receiver which is widely used by drummers, keyboard players and other normally 'static' performers.

Last year, Garwood introduced the LV1, a system designed specifically for the theatre. The LV1 super-compact receiver is a lightweight, body-worn unit weighing just 65g, with an integral aerial as well as the usual on/off and volume control. This single frequency device,

which can be ordered on any frequency in the range 510-900MHz, can be used with any Garwood transmitter and operated in either stereo or dual mono mode. Further down the range is the System family of products which are single pre-set frequency units, presented as a package of transmitter, receiver and generic earpieces. They currently number the System 3 and entry level System 2.

With such a well-established portfolio, Garwood MD Chrys Lindop feels comfortable with the impending competition. He says: "There was a risk that the pro sound market would dismiss IEM as a fad, although that chance has receded as more and more of the big acts adopt the technique. Now that we see well-known companies like Shure, Sennheiser and AKG getting in on the act, and climbing on the bandwagon, it gives staying power to IEM. Also, their marketing muscle will go a long way to expanding the market, and we hope that will be good for Garwood. Obviously, when you've had the market to yourself for eight years, it's a bit dispiriting when all these big players suddenly start challenging for a piece of your pie! However, it's up to Garwood to stay ahead of the field.

"With our long experience comes a couple of big advantages. RF is a notoriously tricky technology, made more complicated by international legislation. We have worked with so many artists, using gear in so many different configurations, and in so many different places, that we feel we've got a very honed customer support lifeline for IEM users. All of that experience has been fed into our R&D, enabling us to produce really engineer-friendly products like the frequency-agile IDS. We were the first to introduce frequency agility, but we are moving towards building

RF is a notoriously tricky technology, made more complicated by international legislation.

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all our IEM products with this functionality, as it is an important feature for users building up multiple wireless systems with lots of radio mics and instrument transmission systems."

The first sign of that commitment was seen at AES in New York in September when the company revealed two new frequency-agile products: the Radio Station TS (Territory Specific) and System PLUS 2. Whilst its big brother, the IDS, is aimed at international touring, the TS meets more local demands for several frequency options in a single territory. The TS is supplied with 16 on-board UHF frequencies, between 518-900MHz; users have a choice of four separate frequency packages, each configured for legal use in different international territories. With its ability to transmit in two-channel mode, the TS IFB version also has potential in broadcasting and communications.

The System PLUS 2, meanwhile, is the first unit the low-cost System range to utilise synthesiser technology for its transmitter instead of a crystal-based design. It is a 1/2U rack-width stereo UHF unit which allows the user to select between two on-board frequencies.

Chris Lindop is aware of how the market will be focusing on Garwood's future strategy. He comments: "The Radio Station TS and PLUS 2 are the first part of our 'response', if you want to call it that. We prefer to think of it as ongoing development and product enhancement."

We are discussing the matter with a UK specialist company which manufactures deep ear canal moulds. That is a completely different area of the marketplace which demands a particular type of skill. When you have something that sits off the ear drum by a millimetre or so, you have to know what you're doing.

Sennheiser 3050 Series

Given its long history in RF technology, it is hardly surprising to find Sennheiser among the new names in IEM. It was back in the summer of 1995 that Professor Jorg Sennheiser told me of his company's aim to design its own IEM solution, although he did not believe it would be released into the market until the end of 1997. His prediction was not far out, as January will witness the release of Sennheiser's wireless UHF 3050 Series channel switchable IEM system.

The EK 3052-U is a miniature, lightweight (130g including batteries) UHF stereo receiver system, featuring PLL-controlled switchability over 16 frequencies. Sennheiser's proprietary HiDynplus noise reduction circuitry provides a high quality 110dB SNR specification, whilst the on-board volume control incorporates a cover to prevent accidental adjustment. LCD status indicators include low battery power warning.

The SR 3054-U is a single channel stereo UHF transmitter and the SR 3056-U a dual channel stereo transmitter, both for use with the Sennheiser EK 3052-U stereo miniature receiver belt-pack. Both units are designed around Sennheiser's PLL-controlled RF frequency switchability and incorporate the same renowned RF operational reliability, robust construction and ease of operation as any Sennheiser radio microphone system.

Sales Manager Rob Piddington said that Sennheiser will be "attacking the Garwood end of the marketplace" with an IEM equivalent to its EM-1046 theatre microphone system which was introduced with new synthesis technology five years ago.

"For Sennheiser, including that technology in this new product was the easy part, whereas for some other manufacturers it would have proved a huge challenge. We've had a few setbacks recently which have been the result of us being extremely critical of the RF performance and with our reputation we cannot afford mistakes. Those wrinkles have now been smoothed out and we are looking at having samples ready for evaluation within the next couple of months. The system will be delivered with normal mini-headphone ear pieces although we are discussing the matter with a UK specialist company which manufactures deep ear canal moulds. That is a completely different area of the marketplace which demands a particular type of skill. When you have something that sits off the ear drum by a millimetre or so, you have to know what you're doing. The

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interest from broadcasters has been equal to that in rock'n'roll and I'm confident we will be designing an alternative version with specific broadcast features."

How will pricing be pitched? "The pricing will be competitive to Garwood," said Piddington, "but we are waiting until the product is ready for its January introduction before we commit ourselves in that respect."

RCF Goes VHF

Since RCF introduced its TX 501 system in Europe in May, it has become a best-seller in Germany, with an average of 250-300 units sold per month, the company claims. The VHF version of the product has just been released in the UK and interest at PLASA was reported to have been high. RCF MD Arturo Vicari joined the company 18 months ago, and drew on his long experience with his own RF specialist company, AEB.

Vicari said: "I decided that RCF should benefit from AEB's know-how as a successful OEM wireless microphone manufacturer and diversify into in-ear monitoring technology. Having been a sound engineer for years I understood the problems which happen with stage sound and conventional monitors, and I became intrigued with the whole concept of IEM from the beginning. Garwood has done a good job of educating the market, and we are trying to do something different. They made systems for the top stars, but we wanted to make a system for all singers whilst reducing costs. We believe we have achieved a product which has all the specifications that a good IEM system needs, such as no residual noise, clear reproduction and a powerful level (120dB) that is limited to preserve the user's hearing.

"Considering we have mostly been selling to just the singers in bands, our level of business with this product has been quite astounding. Although IEM is being championed by the world's greatest performers, the future of this technology now rests on its acceptance by singers and musicians at ground level - those who play on the club circuit. This is why it is so important that manufacturers like RCF produce affordable systems." A UHF version of the system has been produced.

Hz Excels With Midas

Designed by Dave Roberts and distributed by Adam Hall Limited, Hz's new Midas RS100 wireless VHF IEM system was seen for the first time anywhere in the world at PLASA in September, one month prior to delivery. Predominantly aimed at the pro musician market, it may also prove of interest to rental companies seeking to find the most cost-effective methods of providing IEM to clients.

The wireless receiver belt packs have two channels or stereo, with an operational distance of up to 30 metres. A hard-wired, phantom-powered belt pack option for static users offers the same channel facilities. The IU rack-mountable transmitter station operates between 49.82-49.98MHz in the UK. Available in various combinations, the system includes special high sensitivity ear pieces (108dB) which can be self-moulded by dipping the surrounds in warm water to make them pliable and easy to fit. The transmitters are made abroad for Hz, after which the company packages the systems with its own PCB which has a built-in limiter set at 0dB to ensure user protection.

Roberts, a gigging guitarist who plays an average of 120 shows a year, developed his product purely as a means to achieve improved monitoring for his band, and then found that he had a genuinely marketable product on his hands. "I've been using the system over the past six months and the guys in the band are absolutely knocked out with the quality it has brought to our sound. After trying it out for the first time we sold our wedges and haven't looked back. Stage feedback is thankfully a thing of the past." beyerdynamic Getts In On The Act

GETTS is the name of beyerdynamic's VHF entry product which features a wireless belt pack receiver, a line level transmitter, two types of antenna - a rigid helicord-type or wire - and a pair of Lemo-connected DT-22 in-ear phones. The system comes fully flight-cased and the option exists for an audiologist to make a custom mould of the ear canal, into which the transducer will fit.

Marketing Consultant Mark Terry commented: "This is aimed at the MI market although it will have wider uses. The demand came from musical equipment retailers and our company sales representatives asking us to adapt existing products in our range to this specific application, and we have come back to them with an attractively-priced proposition." But what is the significance of the GETTS name? Terry said: "It was simply formed from the prefix of all the model numbers of the package's individual units."

• For details of distributors, see Brands and Products directory, this issue. Garwood have a good website, www.garwood-radio.com

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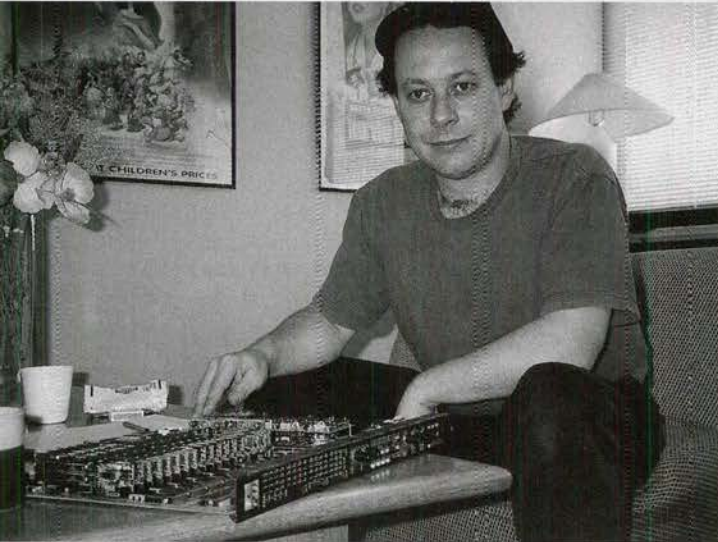
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The Psycho Acoustic Effect of Ian McLoughlin

The Pan pot tweaker, by Madeleine Murray



Ian McLoughlin is a film sound mixer, and a director of Soundfirm, Australia's leading sound facility. McLoughlin, who has an office with more manuals and specs than I've ever seen in my life, knows his stuff. At Soundfirm, he helped develop Editracker, a non linear digital audio workstation, and Edi-Assist, and Editron, a studio synchronising editing computer. Soundfirm have mixed many films including *Romeo and Juliet*, *Dark City*, *Strictly Ballroom*, and *Shine*.

The mixing system

McLoughlin spent an hour with me, discussing film sound formats, mixing and the Harrison console. "We mix a 6 track discrete," McLoughlin explained. "The differences between the systems are very minor. Basically SRD and SDDS are identical. The big difference is that SDDS is capable of eight channel sound. On a big action picture, eight channels can be magnificent."

The six channels in the cinema are left, centre, right, and boom or sub bass, all in the screen, and one channel for each side of the room, coming from a series of surround speakers along the wall, and perhaps one at the back. The side speakers are all in line, and are fed the same information. "I can make the audience feel that a chopper is going down three speakers, and then across," McLoughlin said. "By panning to the left surround, a little bit to the left front and a little bit to the left centre, the psycho acoustic effect places the sound space somewhere over their heads. You have the sensation there are a dozen channels down the wall."

You have to be thorough and systematic to mix a film. The film mix begins with a series of raw tracks. There could be as many as 400. They are broken down as dialogue, foley, spot effects, atmos, and music. McLoughlin explained that, "In a big film, I'll take my dialogue raw tracks, and submix those to six or twelve submix channels. So I've cleaned up and organised that. If I've got loop group, or reverbs, I've panned them into a left, right, centre split surround format. Most dialogue, except for offscreen lines, comes from the centre speaker. I tend to put a lot of reverbs left and right. In *13 Monkeys*, they panned voices all around the room for an effect.

"In the opening of *Shine*, Geoffrey Rush is panned across the screen, his voice in the 6 track version moves across with him. That was a very dramatic effect that worked quite well. He was extremely large in close up, and that matched the ability to pan. If he had been in a medium shot, it would jump too much.

"So I have my dialogue submix, and I mix effects down to six tracks, and the foley down to six tracks. Out of the 22 or 40 tracks of foley records, I will make a submix of feet, spot moves, body moves, all onto separate strands. I've got control of the tracks. Then I hang the atmospheres, and submix them to a 6 or 12 format. I play the dialogue against the effects as I mix them. When I mix the foleys, I play the dialogue and effects against them. By the time I get to do the atmospheres, I'm playing the dialogue, foley and effects against them.

"You end up with 64-80 submixed channels. Some will already be placed and pre panned. We have pan pots that go left, centre, right, surround, or whatever organisation you want. We have multi tap pan pots that can do eight channels, not just two. For example, I'll do a left, centre, right car pass, on tracks 1, 2 and 3. On my fourth channel, I might have mono car horns, so I can keep them separate in the final mix. I don't tie them into the car passes. On 5 and 6, I might have a large underground car park reverb. On track 7, as a centre track, I might have tire screeches, so that we can play with those in the final.

"It's like a pyramid. The numbers vary, but for example, 400 raw tracks are mixed down to 64 tracks of premix, down to a final 24 or 32 track master mix. Then out of that, we make a six track master, which goes for the distribution print. Also, out of that, we create a 'fold in', where we fold down the sub bass, fold in the split surround, and create a 2 track version.

"In the case of DTS and SDDS, we deliver a Digital Audio Stationary Head (DASH) 3348 master, or a DA88 master, which represents a 6 track. There are very subtle differences between the two, in terms of the sub bass levels, and the way the surrounds work. We go through

(continued over page)

SURROUND FORMATS

Three formats are currently available for 6 track digital sound-

Digital Theatre Systems (DTS) a disc based system, which gives a 6 track discrete digital sound track in sync to the picture. It began with the backing of Spielberg, and Universal Studios.

Dolby Spectral Recording Digital (Dolby SRD) digital audio is between the sprockets of the film, blocks of information between each perforation.

Sony Dynamic Digital System (SDDS) sound encoded on the outside of the perforations, on the edge of the film

All three formats are currently in use worldwide for mass distribution of sound prints in 6 track format. Films can be made with all three types of sound track, but there are studio allegiances. Five years ago, when it first came out, films would be released in one of the three digital formats. Now there is a duo print, with an SRD and an SDDS track, or a tri print, with all three. Unless it is a specific DTS print, the Dolby SRD and Sony DDS is the most common format. That means a print can be played anywhere from a topline first release cinema, to a suburban theatre running SR, to a mono hall in Broken Hill.

All three formats are being aggressively marketed, and there is no one leader, at the moment.

the three runs to master the three separate formats. You do a little tweak from the master mix. With DTS the boom level is slightly higher, so we pull our boom channels back. The monitoring system changes, but it's all stored in the computer. The SRD goes down to a Magneto Optical Disc (MOD), which contains a six track, plus a two track. The two track is Dolby 4:2:4 encoded. That represents left, right, centre, surround encoded into a left total and a right total, to be then decoded back out into an Left Right Centre Surround in the theatre. The 2 track in Dolby takes 4 channels of audio information, encodes them in two on the optical track on the side of the film, and then decodes them back out for a four channel replay."

The Harrison

One of the wonders of McLoughlin's world is the Harrison automated mixing console. Harrison is based in Nashville Tennessee. "We were one of the very first users of the Harrison SeriesTen, and worked on the software design with them for the user interface for film mixing," McLoughlin said. "They are an incredibly responsive company to working in cinema sound. The SeriesTen, brought out 11 years ago, was the world's first fully automated mixing console. Every knob has totally dynamic automation. You just have to pick it up, and you'll overwrite. The SSL had automation on mutes and faders. The SeriesTen brought out automated mute, fader, panning, EQ, compression and dynamics and assignment control.

"It's a virtual console. Instead of having 32 knobs to look after auxiliaries, EQ, compressor limiters, whatever, it's brought down to five knobs, which are virtually whatever you want to use them as.

"Soundfirm bought the third console to come out of the factory, the first in Australia. It was ostensibly built as an automated music mixing console, but we felt that it had better application in film. So

we worked with them designing the software to be able to use it for cinema.

"More recently we've added on sections to the SeriesTwelve mixing console. Melbourne has two, and we're putting one in here. It has a lot of additional routing systems. The SeriesTen was based around four channel panning. We can do six channel panning on it adequately. The SeriesTwelve has come out with eight channel panning. It also has a very hefty automated routing switcher, and inbuilt monitoring matrix, which saves us a lot of real estate. They've put what would have been the entire patch bay for a studio into a box, with a touch screen. So instead of having to reach over, grab a piece of wire, and send output 1 to track 1, I touch the screen, and I make a connection between output 1 and desk connection 1. That is all automated on a computer. So I can patch up an enormously elaborate system today, save it, recall something a month ago, and I instantly get back the entire studio setup, in terms of monitoring room levels, sends to the amplifiers, routing of all devices in the studio. So we no longer use patch cords to patch up audio. It's done with a router. It saves a lot of time.

"The other built in feature is a 32 in, 8 out mixing console. So instead of tying up channels on the desk to return my submix master, we take that straight into the monitoring matrix in the router. My console here has 64 automated inputs, plus I've got 32 channels of monitoring matrix. So I've got a 96 input desk.

"They're come a long way. The new generation of consoles are better constructed, better designed. Harrison are about to release their first fully digital routing switcher, and digital mixing console. It's basically a control surface with a whole bunch of electronics outside, a long way away in a machine room. In the SeriesTen, all the electronics and the signal were in the desk itself.

"The whole concept behind the original Harrison automated analogue console, was that they didn't go down the Rupert Neve path of trying to make a fully digital console. The Capricorn, built by Neve ten years ago, was an enormously expensive digital desk. The technology just hadn't reached the plug and play point where you could economically do it. Harrison came up with a very different approach. They built an analogue desk which is digitally controlled. They got the control that was needed, with the analogue sound, and the cheapness of building an analogue. Just doing this very nippy little trick of controlling the analogue with digital.

"That got the jump on a lot of manufacturers, and Harrison are now the leading makers of cinema consoles in the world. They've just sold a huge amount into LA, which is traditionally conservative. But the industry has leapt at it. It was helped also by Sony/Columbia, who ordered about \$8m worth. They have some huge consoles there, with 900 input desks.

"Harrison is based around touch screen. You can access any part of the console on the touch screen. You can use the screen to pan things, or equalise, or change compressor settings.

"Film mixing is much more elaborate than music mixing. We are dealing with a far vaster amount of inputs, and raw tracks. The process of getting there is a complicated path of premixing, submixing, to get the end result. The new consoles have 8 channel panning desks, which could have 128 outputs. It's getting larger and larger, but with virtual console design, the surface area of the console is reduced. The way we look at mixing changes as the technology changes.

"Sound has been changing dramatically in the last ten years. Now you can get 32, 64 monitoring channels up. You can be listening in an editing room in high quality, to the way the whole track will evolve. You waste less time, you're not guessing what something will sound like. You're not laying up 15 alternatives to hear how they will sound. Digital pictures is the next big move."

So there you have it, six good reasons to go to the cinema, instead of renting a video.

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What is a dB?

The real reality explained, by Richard Freeman

Here is a question for you. You are doing a gig, and someone runs in saying "I am from the EPA and you are exceeding the permitted noise level, as we are measuring in excess of 100dB outside", how do you respond? Do you say:

- A) Sorry I will turn the system down;
- B) It is not up to me you will have to speak to the Promoter;
- C) You have got to be kidding this system couldn't reach 100dB at 1 metre - let alone outside;
- D) "WHAT? YOU WILL HAVE TO SPEAK UP!"
- E) Turn to the individual, look blankly and say "dB? dB what?"

Although answer A is probably the safer and more *politically* correct answer, E will probably be the more *technically* correct answer.

You see dB (contrary to popular belief) is not actually a measurement of anything, dB merely refers to the fact that the measurement is a ratio that has been scaled logarithmically. Because the value contains a ratio we need to know the reference as well as the value. This is why you see dB being used in all sorts of measurements from Voltages (dBV) to power levels (either in milliwatts dBm or Watts dBW), from apparent loudness (dBA) to dB relative to something (dBr) or Volumetric Units (VU) for (dBu). The letter after dB tells us what we are measuring so that with more information, we can tell what the reference (0dB) point is.

To give you an idea of how dB's work let us start with dBV. Get your calculators ready- yes, those ones that you haven't used since school...

With dBV the V tells us that we are measuring Voltage and we need to know that the reference point (0dBV) to which the ratio is scaled is 1 Volt. To convert voltages to dBV we use this formula:

$$\text{Voltage level} = 10 \cdot \log(V/V_{\text{ref}}) \text{ dBV}$$

where $V_{\text{ref}} = 1$ Volt. Because of this we can simplify the formula to

$$\text{Voltage level} = 10 \cdot \log V \text{ dBV.}$$

If for example we take 2 Volts and enter it into this Formula, the level for 2 Volts is $10 \cdot \log 2 = +3 \text{ dBV}$.

(Make sure that you use the logarithms to the base 10, that is **log** and not the logarithms to another base ($e = 2.718$), these are usually found as **ln**.) If we try 100V, we get +20dBV while 1000V gives +30dBV and so on. Please note that we use +dBV because when the values of V are less than 1V we end up with negative results eg 0.5V = -3dBV etc.

Since the amount of power being delivered into a load (traditionally assumed to be 600 for Line level) increases with the ratio of the square of the Voltages being placed across the load, we can convert easily from Voltage level in dBV to dBm (dB with Reference to 1mW) without having to convert Voltage to Power and then to dBm. For our reference power of 1 mW over 600 we have a voltage of 0.775 V, thus we have our reference voltage for 1 mW. Using the formula for power levels ($P = V^2/R$) we must write

$$\text{Power level} = 10 \cdot \log(V^2/0.775^2) \text{ dBm}$$

but the theory of logarithms allows us to write

$$\text{Power level} = 20 \cdot \log(V/0.775) \text{ dBm}$$

in effect we use the same formula, except instead of multiplying by the factor of 10 we use 20.

Since modern equipment no longer contains the number of transformers as did early equipment, 600 is no longer the standard input or output impedance and the practice of measuring line levels in dBm has become more rare. The most convenient item the manufacturer of your mixing desk (tape deck, compressor, EQ. etc) can use with any accuracy for a level meter measure is still the voltage. This is of limited use when trying to monitor how much power your amps are pushing

(unless you don't mind squaring your meter readings every time you look at them). Manufacturers of equipment soon came up with a measurement which gives a good indication of power level using the accuracy of voltage measurements. Thus we have the dBu. This uses a measurement of voltage but gives the power that voltage would deliver if it was connected to a 600 load. The reference of 0dBu (usually considered to be 'line' level) is still 0.775V which would deliver 1mW into a 600 load. The +3dBu level which would deliver 2mW into a 600 load is found at 1.095V, the +10dBu level which delivers 10 mW is found at 2.45 V. This is why your level meters don't have a linear scale, they measure Volts but have been scaled for dBu.

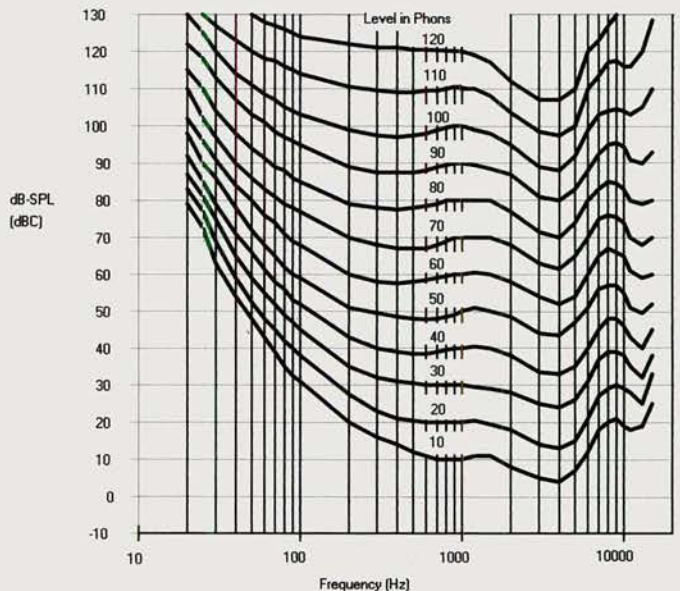
The same problem happens to Amplifier manufacturers who have two problems the first is that the load on the outputs can be almost any impedance from 16 down to 2 (or sometimes even less) and the second problem (although this is not always fully addressed) is that most amplifiers can deliver more power for a short duration just after they have been idle than if they have just been running hard.

Amplifier manufacturers usually use an indication of dB to clip or dBr, in both these cases the meters are indicating power ($dBr = 20 \log(V/V_c)$) and the reference V_c is the level at which the amplifier goes into clip. Because your levels are (usually) below V_c , the VU meters usually indicate negative dB with the highest level (clip) being 0dB.

What happens with negative values of voltage? (You may have found your calculator doesn't like to be asked for negative logs.) Since the signals we are measuring are AC we normally use RMS measurements (unless we are talking about a dishonest hi fi sales man trying to pretend he is selling a 'Real amp'). Since RMS values have been squared, we never end up with a negative value, so we always take the log of a positive number even though the result may be positive or negative.

If we want to refer to negative gain in a system we would do better to talk about a signal being 180 out of phase.

In the case of lower gain or loss through a system we have the



(Continued over page)

WHAT is a dB?

negative level. For example, a gain of $V/V_i = 1/2$ becomes -3 dB.

So why use a Logarithmic scale? Fortunately Human hearing is logarithmic, When you consider the range of Sounds we are Subjected to and can easily hear from a pin hitting a hard surface to a 747 taking off or an AC/DC concert at 100 paces if our hearing was linear that is twice the power sounded twice as loud we would have either died out in prehistoric times due to a failure to hear approaching carnivores (or in more modern times cars) or we would soon become profoundly deaf due to the intense SPL's to which we are often subjected. Fortunately God (or nature if you prefer) smiled upon Human kind and made our hearing Logarithmic this promptly upset humankind and slowed down all their plans for world domination until the invention of the pocket calculator.... anyway back to the story decibels are actually a tenth of the main unit which is a Bel named after Alexander Graham Bell the inventor of the Telephone. This measurement was soon adopted to scale electrical measurements relating to audio transmission and ceased to be a measurement of sound especially as it was discovered that measuring loudness was a whole lot more complicated than it first appeared.

So when is dB a measurement of Loudness? just to add to the confusion already caused by the existence of dB there are no fewer than Four common measurements of loudness all measurements refer to the change in Air pressure caused by the sound.

the first two are dB-SPL aka SPL dB (Sound Pressure Level) and dBC (C 'weighted') these two measurements are reasonably straightforward as they relate directly to Sound Pressure Level. The 0dB or reference point for dBC and SPL dB is 20 micro pascals or 10 picoWatts/Meters. I suspect that when most people who bandy around the term dB as though it was a measurement of sound are possibly referring to dBC or SPL dB but then again who knows with the ignorant??.

The drawback of measurements like dB-SPL and dBC is that they do not take into account the frequency response of the human ear. However another measurement called the phon attempts to take the frequency response of the 'average' human ear into account. To really confuse matters the phon also takes into account the fact that the frequency response of human hearing changes depending on the loudness of the sound being listened to. A phon is the level in dB SPL of a tone at 1Khz of the same perceived loudness as a sound of any frequency being listened to.

Since the equipment required to measure phons would be rather complicated (although with modern DSP's such a task would probably be quite feasible) we use dBA or dBB instead, this allows us to measure the approximate perceived loudness and is accurate enough for most purposes. The measurement of sound in dBA is a measurement affected by an 'A' weighted filter network, that is a Filter network that approximates the Frequency response of human hearing at a level of 40 phons. The measurement of Sound in dBB is a measurement affected by a 'B' weighted filter network, that is a filter network that approximates the frequency response of human hearing at 70 phons.

The reference (0dB) point for dBA and dBB is 20 micro pascals at 1Khz. The most common genuine measurement of sound appears to be dBA.

Finally some useful dB values you can quote casually as though you can do logarithms in your head :

-3dB = half,	-30dB = one Thousandth.	
-6dB = quarter,	+3dB = twice,	
-9dB = an eighth,	+6dB = four times,	
-10dB = a tenth,	+9dB = 8 times,	+20dB = a hundred times,
-20dB = a hundredth,	+10dB = ten times,	+30dB = a thousand times.

To find values not listed here such as 16 times (which is 2^4) add 2 times to 8 times (+3dB + +9dB) which gives us +12dB.

So as you can see from this all the so called EPA inspector at the beginning of this article was telling you is that he was measuring 10,000,000,000 but since I am sure any genuine EPA inspector would quote dBA he is most likely not a genuine EPA inspector.

Thanks to Dr Terry Freeman From Macquarie University's dept of Maths & Physics for his help with this article



HAZE & ALARMS

The AV dept. at Segaworld has been subscribing to your magazine for a couple of months now & we were impressed to see reviews on Cyberlights, Dataton Trax & the Jem Hot 2000 Hazer, all of which are in constant operation on site. I thought it worth mentioning that the hazers are very compatible with our smoke detector network whereas we have run into problems using standard foggers and ZR fluid. We'd like to hear other people's stories on smoke machines and fire alarms and interesting (legal) solutions.

Pete Gordon
A/V Manager Segaworld
peterg@segaworld.com.au

1001 uses for Gaff

Last issue Braham Ciddor foolishly offered a prize (a mixed box of Gaffer tape) in exchange for the best Gaff story. They are rolling in, here are a few. Send more, winner announced next issue!

.....

Well, this should get you started.... I found this list on the Internet some time ago:

- Holding the Universe together
- A gag for an annoying director
- Taping up sound crew. Preventing them going over to check out the make-up crew
- Holding up a skirt if the elastic breaks
- Removing hundreds of baby ticks from your legs
- Taping Rubber Chickens to lighting pipes so that chickens hang on stage
- Taping cable ties to upside down plastic cups to make little springy people (and then taping the cable ties to the desk) during 4 year breaks between Qs
- Gives the Theatre Manager another thing to bitch about (this costs 11 dollars a roll) and so on!

Roderick van Gelder, email.
Roderick sent the whole 100, we picked the above for you. -Ed

1001 uses for Gaff::

#1 Place vertical strips on your white t-shirt when attending Collingwood football matches.

#2 Wrap around tennis ball so it hurts more when playing "brandings".

#3 Use in lieu of wax for those impromptu exfoliation experiments.

#4 Use it to plug the exhaust pipe of support band's Tarago.

I hope I have been of some use. I doubt it though.

clem@curly.starnet.com.au

.....

Ah yes, the mighty Gaffa Tape! One day I received an urgent phone call to replace a colleague on an audio job some 200kms away. Time was certainly not on my side so a super quick pack of essentials and I was on my way.

The first set was my "baptism by fire" as the band struck up the first chords of the opening number all hell broke loose. Not one but two cymbal stands collapsed, the lead guitar amp billowed out, huge amounts of smoke and the lead singer accidentally stood on his mic cable and dropped a brand new SM58 off the stand onto a concrete slab in front of the stage.

As I quickly bent over to find my trusty roll of gaffa I felt a parting of the ways at the back of my jeans which I soon realised was a split about 6-7" long down the back of one leg.

My embarrassment was the least of my worries at the time so I grabbed the gaffa and repaired the cymbal stands enough to finish the set, secured the power lead into the back of the Marshall stack thus stopping the short circuit and found another SM58 for the singer but had to gaff it onto the mic stand as the clip had disintegrated in the fall.

Returning to the F/B desk I tore off a long strip of Gaffa Tape and proceeded to mend the tear from the inside of the jeans. It must have looked a strange sight, me with my jeans around my ankles with my bum facing the band!

Peter Scott, P.C. Scott Audio Productions. Tamworth

DSP not O2R reliant

Your interview with Martin Kubitzky entitled 'Review- Sonic Solutions Studio' (Connections November) may be a little misleading for your readers. In the article, Martin, who had recently purchase a Sonic Solutions System, makes the statement, "I nearly purchased DSP- but for the fact that it relies on the Yamaha O2R desk".

The facts are that the DSP system can be used with any console, Digital or Analogue!

Two of the most profitable Radio stations in the country - PM/FM and 94.5 Perth use Soundcraft Analogue consoles with DSP.

I think Martin hit the nail on the head when he said that the DSP system was faster!

Two of the best Hard Disk Recording Systems in the world are DSP and Fairlight, both Australian products. They are being sold all around the world and winning awards all over the place - despite the lack of support by some Australian Companies such as 5ADFM.

Those Production Managers (Radio/ Post/ TV) that really do their homework generally end up with one of the Australian systems and then follow this up with valuable input into further development of these systems.

I was proud to read your articles in the same issue about DSP & Fairlight ('DSP takes Postation to the World' and 'Fairlight dominate AES New York')

And what do we get from Adelaide? A two page article on a guy at a local radio station who says, 'DSP was faster, but I didn't like the little screen on the Yamaha mixer'. Pathetic!

Rob Scott, Kosmic, Perth, WA

Sledging in Review

I rather dislike your inclusion of negative comments about Turbo Sound in the EAW review (Connections November). What did this sledging have to do with the story? Obviously Turbo don't advertise in your mag and you are angry with them.

Name withheld, NSW

We always love to respond to conspiracy theorists. Our approach is that in the course of a review we currently ask product users to nominate why they purchased the product in preference to another. Sometimes their reasoning is questioned (see letter re DSP). We are running an honest publication, and simply write it as it is presented to us, which is why we publish letters like this. -Ed

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RAISED BY WOLVES

Raised by Wolves is one of those productions that leaves you pondering the big questions - Is there hope for the future? When does art become commercialism? and Where the hell did I leave the car?

Performed in Shed 14 on the end of the Victoria Docks, *Wolves* was Handspan Visual Theatre's entry in the Melbourne International Festival, and is moving on to Adelaide Festival next year.

Based loosely on the legend of the founding of Rome, and inspired by Petronius' *Satyricon*, the production dealt with themes of innocence and corruption and the pressures and influences that face artists, in a unique and striking way.

Featuring alternative rock band Regurgitator and the gothic/industrial composition of Shinjuku Thief, *Wolves* is a collage of images communicated through diverse mediums.

Bigger and more daring than the usual Handspan project, *Wolves* is an indication of the direction new Artistic Director David Bell wants to see the company move into.

Mikkel Mynster, Production Manager of Handspan explained what it was all about.

"The whole idea of the show was to put on a lot of elements within a space and let the audience choose what they wanted to participate in. It had to be a big space because of the number of elements we had going at once and because of Regurgitator."

Shed 14 was chosen for its size and reputation as a popular rave venue. Two times the length of the average football field, the shed posed unique challenges in staging, lighting and audio. Power was also a problem with extra generators having to be brought in, and the existing power acting up.

Bump In and Fit Up took place over eleven intense days with a crew of up to fifty including cast and office staff getting the show together.

"A lot of the visual concept of the show came out of a sense of homelessness in the streets and issues of urban Australia."

To create this feel the designers drew on recognisable and practical symbols to define the space. The set included shipping containers, scissor lifts, a tower of untuned television monitors, programmable roadwork signs, and a bank of glowing Coke machines.

"The street signs gave us an opportunity to broadcast all sorts of messages, and they're such a part of Melbourne with all the major roadworks going on."

The result was a multi-dimensional, multi-media event in which roadwork signs relayed messages like 'Live in the World' while coloured fluorescent tubes arranged on the wall illuminated to reveal the words 'LIVE' and 'DIE'.

27 shipping containers were used as stages - 24 for the main stage, 2 for Regurgitator, and 1 for a smaller stage. With room for up to 3000 people in the shed, the audience stood and moved around for the duration of the performance, free to choose which elements they wanted to see.

Scissor lifts moving through the audience became an integral part of the look and feel of the show. The idea came from the lighting designer who needed so many followspot positions to cover the expanse of the space that moving scissor lifts following the action became the way to do it.

Projection was used more as a lighting tool by using graphic images projected onto plastic sheets behind which puppeteers performed shadow work.

Pyrotechnics were also a big feature of the show under the direction of Jack Moeller from **Show Factory**. Jack used Marine Flares on revolving motors to create the eyes of one of the



monsters. The effect was like an extremely bright catherine wheel. Among other effects Jack built a huge fire sculpture of a screaming face. The kerosene soaked paper rope was ignited by two LPG flame cannons.

Lighting Designer Ben Cobham's brief was to create an urban feel through lighting. David Bell wanted a feel of sodium lights, a street light effect that bleaches colour out of everything. From there it developed. Ben Cobham is really interested in using non-theatrical fixtures in a theatrical setting and also in using theatrical fixtures in not necessarily a theatrical way."

The total budget for *Wolves* was \$280,000 of which a great deal went into wages for the fifty people working on the show. Other major costs areas were Set - \$40,000; Lighting and Sound at around \$15,000 each; Projection - \$5000; Crew - Bump in, Running and Bump out costs at around \$30,000; and \$6,500 on materials for the puppets.

Audio

Lachlan Carrick from **Cyren Sound** was the Sound Designer for the production. The main audio system was operated by Lachlan and Byron Scullin from two mix positions. Three main speaker stacks were hung, and the middle stack in the shed was shared between the two FOH systems.

Audio equipment was supplied by Sydney company **Audio and Recording Australia**, and the set up included FA-C40 series speakers as well as Meyer MS1 2's and UPA's. Audio and Recording's own make of Quad amps; Crawler compression; Richardson Audio PL5's for EQ; Lexicon reverbs; Peavey delays; Shure UHF radio mics with AKG Madonna mics.

The show audio was mixed on a DDA 32 channel board, while Regurgitator was mixed by Nick Marson on a TAC SR9000 40/16.

-By Mandy Jones

Raised By Wolves is a feature of the 1998 Adelaide Festival of the Arts.



Key Production Personnel

- Director:** David Bell
- Designer:** Bill Haycock
- Lighting Designer:** Ben Cobham - Blue Bottle
- Sound Designer:** Lachlan Carrick
- Production Manager:** Mikkel Mynster
- Stage Manager:** Julie-ann Willems
- Pyrotechnics:** Jack Moeller

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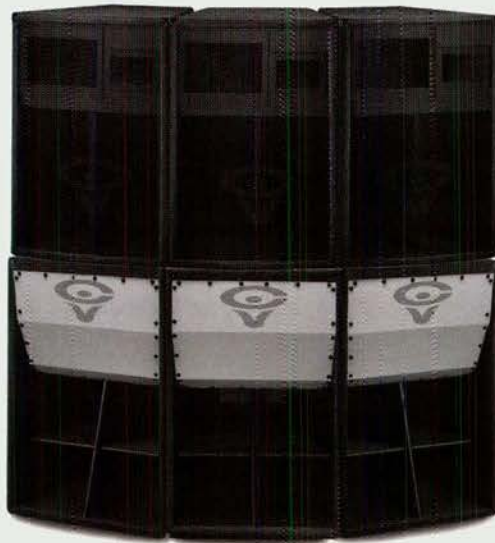
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Video by night

By Philip McShane

Melbourne International Festival approached Haycom Staging with a simple request. They wanted the opening of the 1997 festival to be projected to an expected audience of around 50,000. Oh, and by the way, the show is on the river with the viewing public spread along one side of the Yarra, the other side of the river is being used for part of the action, there will be the usual conflagration of fireworks, spotlights etc. - and it's in October (for those unfamiliar with the vagaries of Melbourne weather - the windiest and wettest time of the year) - no problems?

Yeah sure - maybe we could project onto the surface of the moon !!! (wait a sec - that's not such a bad idea. Next year.....).

After waiting in vain for the punchline, we realised they were serious and got down to work. A quick reconnoitre of the site determined that the best spot for the screen would be the footbridge that crosses the river near to where the action would be - so far so good. A meeting with Tiny from Showtech determined that a 11m x 8m rigging frame could be set on the bridge for the screen and a projection tower placed on the Southbank side of the Yarra - getting better. So as to create a screen that would be somewhat 'wind-passive' and would stand up to likely wind speeds, we tested a number of surfaces and settled on white shadecloth.

The next hurdle was to establish the load created on the bridge by the screen and to ensure this load was within the limits of the bridge - simple. Poor misguided fools we were to think that the words "dealing with structural engineers" and "easy" would belong in the same sentence!

After going through three different engineering bodies - the rigging designers, the bridge designers and the Melbourne City Council - and after endless enquiries, claims, counter-claims, pleading begging and cajoling we finally (the week before the show!) got the okay to proceed. We were given a wind limit of 25 knots, beyond which the screen would have to be taken down to prevent the bridge being picked up and deposited somewhere downwind.

Telling riggers that they have to dismantle a screen in winds of over 45kmh perched 20m above the murky depths of the Yarra is preferably not something you do face-to-face - more like a long-distance telegram. Luckily the guys at Showtech were typically understanding (or just plain crazy) and we went into action with contingency plans organised.

The rigging was set on Tuesday night and screen surface put in place on Wednesday afternoon in preparation for Wednesday nights rehearsal. We decided to take the screen surface down after rehearsal in case the wind picked up and planned to put it back in place on the day before showtime.

On the day of the show the trusty weatherman forecast gale force winds to be developing at around 6.00pm - just in time for the opening of the show! Things were looking decidedly shaky and when the storm hit at 3.00pm the whole opening project looked to be going down the gurgler. Fortunately it proved to be a case of "if you don't like the weather in Melbourne, just wait a minute, it will change", because by 6.00pm the skies began to clear. With the wind at a sufficient level for Showtech to do their stuff with the screen, and the opening put back to 8.00pm because of the storm, we began beaming out the festival logo followed by live coverage at 7.00pm.

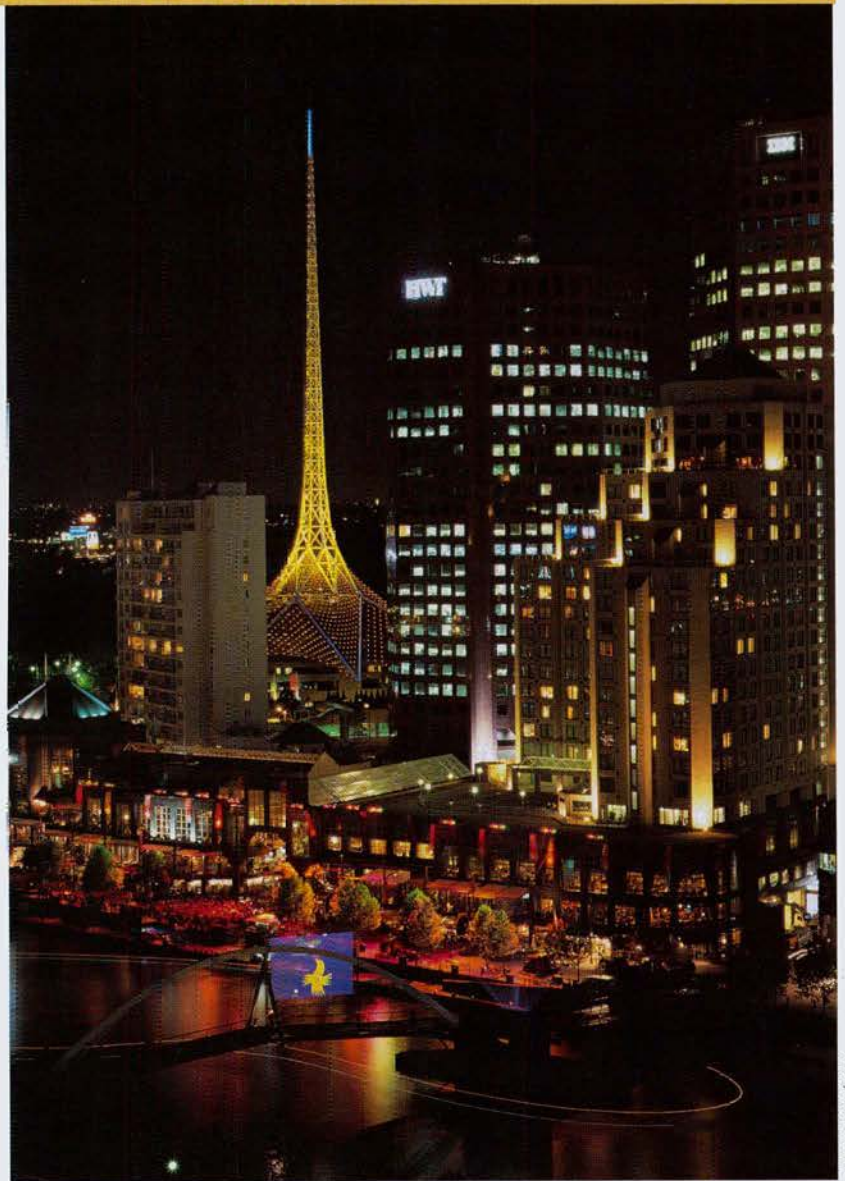


Photo by David B. Simmonds

Two Hughes projectors, doubled, took live feed from Channel 9 coverage of the event, and projected it onto the screen, some 85 metres away. With all the lights on the river from the show and from the city skyline in the background, and with a screen surface of shadecloth, the Hughes showed their real class and confirmed their place as the best video projectors in the business by projecting sensational images of the festival to all and sundry.

By 8.30pm it was all over and with ecstatic Festival directors, Channel 9 crew and general public all raving about the quality of the images we were left contemplating about next years gig.....

Haycom Staging would like to thank all the staff at Melbourne International Festival, most notably Kay Jamieson and Emma Anderson, for their assistance, and Tiny, Gary, Robyn and the rest of the crew at Showtech who put body and soul on the line and produced the goods - as always.

Key Production Details

Projectors: Hughes JVC 540 Super High Contrast (x2)

Screen: 7m. x 10m, White Shadecloth

Projection Throw: 85m.

Crew:

Hughes Projectionists:

Mark Williams, Wayne Neitz

Video Assistant: Rod Marrison

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

Stage Design and Properties

\$29



By Michael Holt.

A comprehensive guide for those involved in theatre design, set construction, workshop techniques, models, props, painting etc. Simple and clear ideas presented with illustrations make this book a must, especially for anyone keen to learn the many facets of theatre production or who need new ideas. 128 pages, 1993.

Projection for the Performing Arts

\$69

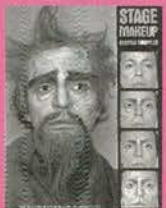


By Graham Walne.

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

Stage Makeup

\$34



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

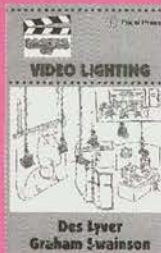
NEW!

\$35 **ETA**
Ethernet Guide

Published by the Entertainment Services and Technology Association (ESTA), this guide contains the recommended practice for Ethernet cabling systems in entertainment lighting applications. The book addresses practices for determining cable lengths, labelling, system identification and specific elements of commonly used Ethernet hardware.

Basics of Video Lighting

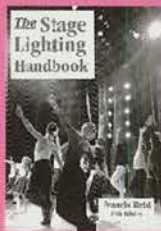
\$25



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

Stage Lighting Handbook

\$39



By Francis Reid.

Fit Edition. This standard illustrated guide incorporates recent advances in technology in areas such as light sources and instruments, including remotely-focused spotlights and computer-aided design. In 1974, Corrections editor Julius Grafton read the first version of this book and went out to successfully light a professional stage play. It can be done! 224 pages, 1996.

Set Lighting Technician's Handbook

\$75



By Harry C. Box.

This book provides students and budding professionals with practical hands-on information about standard practices, equipment and tricks of the trade essential to the motion picture set lighting technician. Covers electrical distribution and regulations, HMI and arc light operation plus set protocol. Includes more than 150 illustrations and 100 tables. 377 pages, 1993.

Basic Stage Lighting

\$17



By Mark Carpenter.

Written in 1982 primarily as a first text, Basic Stage Lighting provides answers to many of the lighting problems which occur in drama productions. Teachers, amateur lighting and production managers together with students of drama will appreciate the detailed and informative diagrams which reflect the author's wide experience in stage lighting. DMX and moving lights not included. 113 pages.

Effects for the Theatre

\$34.50

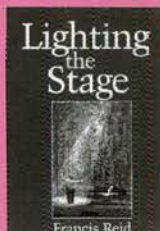


Edited by Graham Walne.

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

Lighting The Stage

\$36



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

Concert Lighting

\$94



By James Moody.

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

Recommended Practice For DMX 512

\$19



By Adam Bennette.

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

CONNECTIONS SHOP

Sound & Music for Theatre **\$44**

By Kaye & LeBrecht.

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



Professional Lighting Handbook **\$95**

By Verne & Sylvia E. Carlson.

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



Lighting and Sound **\$29**

By Neil Fraser.

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



Practical Studio Techniques **\$40 WITH CD**

By Tom Misner.

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



Music & Technology **\$29**

By H.P. Newquist.

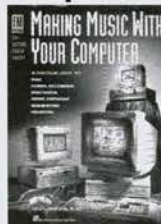
An excellent introduction to new music technology for today's active musician affected by the digital revolution. Includes simple guidelines on how to use the technology and provides explanations on MIDI, computers & music software, digital keyboards, drums, guitars and winds; sequencers and samplers;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



Making Music with your Computer **\$39**

Edited by David (Rudy) Trubitt.

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



Tech Terms **\$19**

By George Petersen & Steve Oppenheimer.

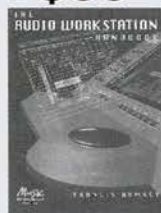
A practical dictionary of audio & music production terminology, written for the musician of the 90s. It provides a quick, accurate definition on 300 of the most commonly misunderstood words and phrases in the field of studio recording, digital audio & electronic music. 50 pgs, 1993.



The Audio Workstation Handbook **\$55**

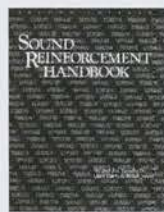
By Francis Rumsey.

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



Sound Reinforcement Handbook **\$69**

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



Live Sound Mixing **\$35**

By Duncan Fry.

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



Hums & Buzzes Explained **\$9**

By Laurie Nethercote.

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



Concert Sound **\$48**

By David (Rudy) Trubitt.

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



Effective Audio-Visual **\$65**

By Robert Simpson.

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



Making the Ultimate Demo **\$49**

By Michael Molenda.

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



Sound for Picture *Edited by MIX Magazine.*

\$39



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

Music Producers *Edited by MIX Magazine.*

\$39



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

Electronic Projects for Musicians

\$39

By Craig Anderton.



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

The Best of Duncan Fry

\$12



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

Lighting Stencils

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NEW! MIX Test CD **\$49**



Produced by MIX Magazine, this **NEW DELUXE EDITION** contains more than 70 audio reference tracks, including: Audio Test Tones, Sine Waves, Guitar Tuning Notes, Triangle Waves, Stereo Channel Identification Bands, LCRS Matrix-Encoded Surround Sound Playback Checks, SMPTE Time Code, 1/3 Octave Equalization Zones, Pink Noise... AND MORE! A must for the muso, recording pro, live, concert sound engineer, audiophile - anyone interested in achieving top-notch audio performance!

Control Systems For Live Entertainment

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By John Huntington.



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

Studio Seconds

\$19

By Tom Lubin.



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

Music Business

\$49

By Shane Simson & Colin Seeger.



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

MIDI Systems & Control

\$55

By Francis Rumsey.



2nd Edition. Provides a comprehensive coverage of the principles of MIDI control and how it can be implemented in practical systems. Useful for those interested in design devices with numerous diagrams and illustrations. Deals with MIDI in studio, musical and lighting equipment, mixer automation plus information on the latest additions to the MIDI spec. 222 pgs, 1994.

Modular Digital Multitracks

\$49

By George Peterse.



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

Modern Recording Techniques

\$49.50

By Huber & Runstein.



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

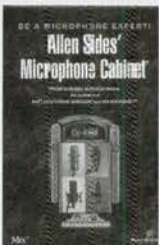
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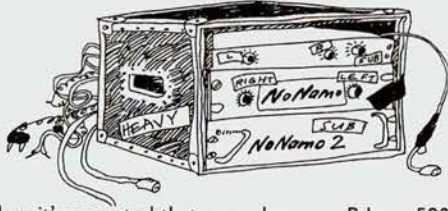
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Phone: (02) 9898 1666 Fax: (02) 9898 1222
13-15 Bridge Street, RYDALMERE NSW 2116
Email: showtech@showlighting.com.au
Web Site: http://www.showtech.com.au
Managing Director: Emmanuel Ziino
Sales Manager: Peter McKenzie
Service Manager: Vince Haddad
Firm Established: 1994 **By:** Rod Salmon, Emmanuel Ziino Show Lighting Australia is the official Distributor for Aust & NZ for Clay Paky Professional Show Lighting.
Clay Paky Lighting Effects

Show Structures

Phone: (08) 9470 4707 Fax: (08) 9470 4794
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The Smoke Co. Budget Smoke Machines
Constella Lighting Effects (Disco)
NJD Electronics Control, Promotional Advertising & Disco Effects
Powerdrive Audio & Lighting Stands

Show Technology Australia

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13-15 Bridge Street, RYDALMERE NSW 2116
Email: showtech@showtech.com.au
Web Site: http://www.showtech.com.au
Managing Director: Emmanuel Ziino
Sales Manager: Anthony Raad
Service Manager: Vince Haddad
Firm Established: 1994 **By:** Rod Salmon & Emmanuel Ziino
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Email: shrape@ozemail.com.au
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Managing Director: GM:Howard Shephard
Sales Manager: Ward Hansford:Broadcast, Simon Becker:Prof
Service Manager: Allan Robinson
Product Specialist: Garry Rhodin: Broadcast Audio Products Manager; James Waldren: Professional Audio Products Manager; Peter Strohkorb: Broadcast & Professional Audio
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Email: roderick@stagesafety.com
Web Site: www.stagesafety.com
Managing Director: Roderick Van Gelder
Sales Manager: Roderick Van Gelder
Service Manager: Roderick Van Gelder
Product Specialist: Roderick Van Gelder
Firm Established: 1996 **By:** Roderick Van Gelder
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Service Manager: Steve Marsden
Product Specialist: Andrew Scott: Digital
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PORT MELBOURNE VIC 3207

Email: tascam@teac.com.au

Managing Director: Gavin Muir

Sales Manager: Travers Falkiner

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BRANDS

How to use this guide: starting below is our A to Z of Australian product distributors. If not listed, look at the end on page 12 for those who were late or didn't respond. A complete alpha list of BRANDS starts on page 13

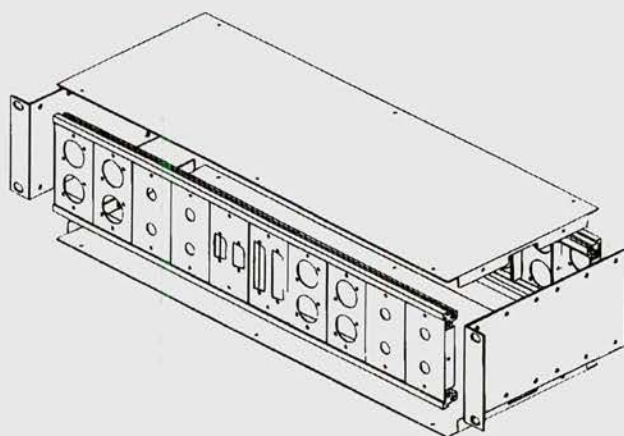
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DAR	Syncrotech Systems Design	Glensound	EAV Technology	Laser Studio	Coemar DeSisti Australia Pty. Ltd
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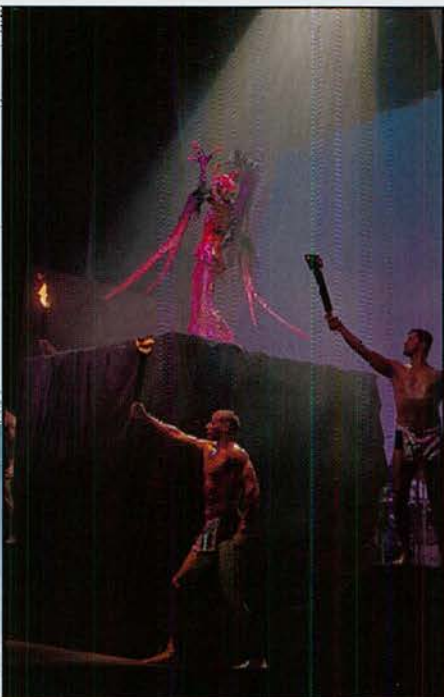
Annual IT Convention one of the largest :
Technical Direction Co at work in Brisbane

SAPPHIRE 97 is a very large convention with an attached trade exhibition, held November at the Brisbane Exhibition Centre. It is the jewel in the calendar for Technical Direction Co, the Sydney AV firm whose expansion has matched that of the client - SAP Software.

The event this year was exponentially larger than last year, next years SAPPHIRE will occupy most of the Melbourne Exhibition Centre. It is the most AV intense convention I have yet seen, aside from Infocomm which is actually the AV industry convention itself.

SAP stage SAPPHIRE each year with Technical Direction providing a quasi event production role, acting as event managers which is something Technical Direction managing director Michael Hassett does not apologise for.

The role structure of a major event like SAPPHIRE would usually see an event producer working between the client and then contracting the audio visual. But SAF have a very pro-active and savvy events manager on staff, Geraldine Shire, who knows what SAP wants.



SAP make software which drives enormous corporations, combining all the divisions and satellites so that things are more efficient than before. To do this they insist the corporation must re-engineer its practices, and suggest a torrent of communication.

Technical Direction Co. (TDC) normally work for event producers, so Michael is aware of the potential conflicts. He passed over working for another large software company recently, where the concern regarding a conflict of interest is normally an issue for an events producer, not an AV company.

DATELINE BRISBANE

As four 40' semis are unloaded by 60 crew, the clock is ticking down the hours, three days towards opening. More than half the load is lighting from Chameleon Touring Systems, whose MD Tony Davies has deemed the event serious enough that he will personally act as lighting crew Chief.

TDC have almost their entire video inventory on site, a convoy of new grey Cadillac road cases each contain new NEC 29" data monitors. There are more than 20 video projectors, including 2 new Barco Realities, currently the beast of favour in the AV production world where big images are desired.

Audio has come from Norwest Productions, also a Sydney firm. Their EAW rig is run from a Soundcraft Europa console which the loaders eye with loathing due to the 400+ kilo weight and 3m length!

Local firm Stagecraft provide backup support because you always need a friend on the ground when away from HQ. The setup commences.

AN EVENT MAP

When the delegates arrived on Monday morning, stage manager John Hoenig called 'doors open' in the Grand Ballroom at 9am prompt. 2,000 SAP users filed in and sat before the scrim hung in front of the large stage.

Lighting Designer Gavan Swift had lit this with an intense rainbow of colour, it was very welcoming. At 9.15 on the nail, the house lights went out and the opening opened. For three minutes after the front scrim dropped, the stage was alive with dancers, light and audio visual. A pyro display and a huge maroon ended the segment and the voice over announced the keynote speaker.

Suitably impressed the audience sat back in the spacious auditorium and watched either the two identical screens with data projections or a circular centre screen onto which was projected the presenter.

The house lights had trickled up just enough that one could write notes. The lectern microphones and EAW PA were tuned so that you could hear every word. The stage lighting state was warm and ensured you focussed on the presenter. The video was crisp, bright and perfectly cued by Ray O'Sullivan, the vision mixer.

Leaving this keynote plenary mid morning, the delegates got some value from the \$1,500 they had each paid to be there, because in the foyer was morning tea with literally mountains of muffins.

The trade exhibition opened, so for the next muffin munching hour the 60 or so SAP supporters could demo their wares,

things like computer networks and support services. These exhibits occupied about 6,000m2, and were all of a very high standard - bearing in mind the average SAP site has invested well over one mega buck!

Back in Grand ballroom a turn around was under way for the Gala Dinner, to be held the next night. The lighting rig would be re-configured, the stage rebuilt.

LD Gavan Swift headed back to hotel for some sleep, to return that evening to program and focus the 60+ moving lightings, Light Curtain, 60 channels of dimmed lighting, Data Flashes, and all the other stuff that ate up 863 channels on an ETC Expression 2X desk.

"I'm more involved with the production" he says, explaining the difference between corporate theatre or 'industrials', as they call them in the USA. "The show goes in fast and is done once. A theatre show can have a three week lead time, so I don't worry about how many Weilands they need".

LOTS OF SPACES

Delegates are splitting up now, there are eight different Session rooms, seating up to several hundred. Each room has a complete AV system and a technician.

Down on the trade show floor, the first SAPPHIRE Cinema show is about to start. This is held in a boxed in area seating about 120 people. The show lasts 10 minutes and is repeated throughout the day. It is an AV extravaganza.

A very wide screen has some Tiger Scan gobo projections of suitable SAP icons scrolling about colourfully when you walk in. Wireless infra red headsets wait in each seat, put these on and you have a nice, soothing orchestral soundtrack.

The show starts with six ASK DLP projectors lined up across the width of the screen, fed by seven Betacams. The scrolling gobos have all obediently parked in line up top of the screen. The video settles you down while a human presenter enters stage left. He reads a live spiel from his flash cards, a light catches his position on stage, then another video adds visuals.

The presenter and the AV work tag team with some neat visual tricks. A truck drives the width of the screen, with each of the six DLP projectors sequenced by the Dataton Trax software running the show.

Audio operator Kelvin Banks eases up the music bed behind the presenter at this, the first session - because the presenter's lapel mic is picking up a lot of ambient noise. Ordinarily your ear rejects noise away from the source you are focussed on, but with the headset you are denied the usual aural rejection of background noise. A noise gate is called for.

Lighting and vision operator Toby Waley is pausing the Trax timeline every time the human presenter fluffs a line, which is often during this first session. But it's sparsely attended.

The whole presentation uses light, colour, movement and information to deliver the message, which is just a reinforcement of what SAP can do for your multinational conglomerate. As if you didn't already know!

Michael Hassett explains the SAPPHIRE Cinema was used at other

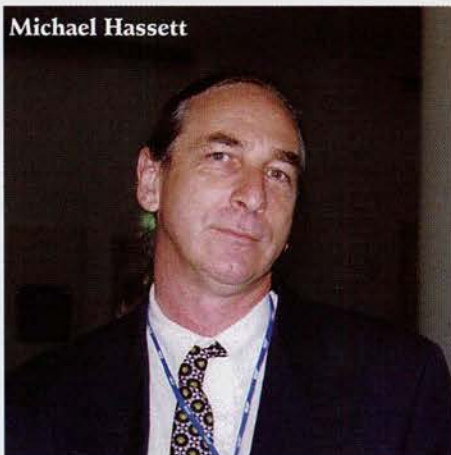
SAPPHIRE conventions around the world. Would you believe that SAP run one of these every month somewhere? TDC got the master tapes and re worked the Cinema for local consumption.

VIDEO AND VISION

This is TDC's speciality, they can create and edit whatever is required. During the event they have an Avid Audio Media 100 suite hard at work in the convention nerve centre, editing up summaries of each event.

The opening was taped, with images from the three floor cameras and audio available for future use.

Throughout the whole show TDC have audio visual equipment everywhere. Many of the exhibitors have hired data monitors, video



Michael Hassett



LD Gavan Swift



Vision mixer Ray O'Sullivan

walls, projectors and screens. Setup day involved an endless set of cable swapping, aligning, positioning and powering.

Whatever TDC didn't have they subhired, so there were plenty of AV company crews on the site. Vision is the big ticket item at any convention, and TDC had 90% of this covered with their own resources.

LIKE A CONCERT TOUR BUT COMPRESSED IN TIME

Shows like these are so very unforgiving. Thousands of hours work went into the three minute opening session, if any aspect

of this went wrong the client would think seriously about renewing its relationship with TDC.

Despite the huge stakes, I was totally impressed with the lack of drama exhibited by the TDC crew and contractors. I am only too aware of the tension surrounding a show, and have myself been asked to leave a production area beforehand.

But TDC had all the bases covered, and appeared to have a contingency plan for anything that may fail. The atmosphere of constructive co-operation between departments was in stark contrast to what I see too often at other events where 'old rock and roll' mentality produces demarcation and unpleasantness.

THE TRUCKS ARE LOADED

Three days later it is all over, the delegates all return to their corporations with a few extra kilos under their belts.

TDC return to normal operations from their Sydney base, which include the full array of corporate work, product releases and conventions. Next years SAPPHIRE event is already broadly sketched with the space at the MEC booked. The planning starts.

• Julius Grafton flew to Brisbane courtesy of Technical Direction Co

Duncan Fry

All is quiet on New Years Day



Should old acquaintance be forgot, dah de dah dah old lang syne

No wonder people sing Auld Lang Syne on New Years Eve - it makes about as much sense as anything else they might say after many hours of solid drinking!

Just about every culture and religion celebrates the start of the New Year. They might not agree on when it is - the Chinese New Year is usually some time in February - but they all seem to agree that it's an occasion for getting horribly shitfaced and having a good time.

My nephew's birthday is on New Years Day, and I'm sure that for the first few years of his life he thought that Uncle Dunk had some kind of dreadful debilitating disease that caused him to fall asleep in the soup bowl every year during his birthday lunch, and then wake up with a start yelling 'Holy hot camel shit, Batman, did we pack the mic kit?' or other such indicators of sleep deprived paranoia. It's odd how the combination of 24 long hours of back breaking work and no sleep makes you somewhat drowsy. And then to be forced to sit there and be polite to relatives as well - Jeez!

To digress for a second; One night I finished a gig at Ritchie's Nitespot, a beer barn in Preston, a northern Melbourne suburb, packed the truck, drove home and went to bed. About two hours later I sat bolt upright in bed in a cold sweat, a persistent image in my head of leaving 2 boxes of bullet tweeters (rings) in the car park. I got dressed, got in the truck and drove back to the gig. As I pulled into the car park, sure enough, there they were, gleaming in the headlights, neatly stacked on top of each other waiting to be packed in the truck. About \$1200 worth!

Anyway, one year my trusty assistant Jim and his brothers decided that they would cut out the middle man and organise their own outdoor New Years Eve gig, with their own band, on a farm called Hurricane Hill down in Phillip Island.

The thing was a real family affair. Jim was the guitarist, his brother organised the gig and played bass, and his other brother played guitar and sang. (This is mah brother Darryl, and this is mah other brother Darryl...)

I would supply the system for a low price and mix his band; I would put together a support band, and Jim would mix. We would all share the profits, and make enough to retire on. Yeah right!

The local police were all in favour of this gig, and eased the regulations in order for it to go smoothly. After all, they figured, if it kept a few hundred falling-down-drunk revellers off the streets of San Remo and Cowes, it would certainly make their job a whole lot easier.

Naturally the gig was to be an overnigher, so we packed up the truck with wives, girlfriends, spare clothes, food, bottles of squirt, doonas and pillows, and off to the island we all went. Col and Dave had sent their systems out on driveway hires, and were at a loose end, so the scene was set for a fun time for all.

Putting everything together took a little longer than usual, as the place was full of willing helpers who were already half pissed. Consequently everything they did had to be done again by someone who knew what they were doing

"Put that case over there on the left...no, the left...no, look, this is the hand that you write with, and the other one is...left. Got it? Never mind, leave it there I'll do it later"

Anyone who's ever had the benefit of such willing but incapable hands knows what I'm saying!

But eventually it was all done and we sent Col into town to get some

more neck oil, our supply having mysteriously disappeared while we were setting up.

He came back with some beer for us, and a couple of bottles of what most people would call paint stripper, but for some unknown reason was labelled brar.dy. He then proceeded to demolish them at a great rate, while roaming around the place dispensing alcohol and advice. We had to assign someone to keep him away from naked flames!

Unlike our Mildura gig where the road crew were pressed into service as an emergency support act, on this occasion we'd had the opportunity to actually rehearse some songs. On drums I had Chris, a friend of Jims, and on bass was a young chap called Trevor Cronin, who later graduated from my 'How To Get Through The Night And Not F**k Up Too Badly' school of audio. He went on to mix many UK bands, and is now back in Australia as engineer to the cognoscenti. (*Is that an Italian band, Dunk? Ed*)

So we did our set, and it seemed to me that the front of house sound was a little erratic, going up and down quite irregularly. I looked towards the mix position in the back of the truck, and I saw Jim and Col grappling for control of the console (the semi-legendary Gigmaster MkII). I don't know who won but at changeover time most of the faders were jammed up at the +10 mark! Thank heavens for a limiter tucked away in the amp rack was all I could say!

I'd had a few drinks myself by this time and was becoming quite tired and emotionally drained, as they say. While Jim's band played their hearts out on stage, down in the mixing truck we decided that their vocals needed some beefing up. So we plugged in an extra mic, stuck it on a spare mic stand and, much to the surprise of the band, did back up vocals from inside the truck! I was doing a basic one send monitor feed from Front of House, so we sent our vocals down to the band's wedges so they could enjoy the glorious four and a half part harmonies as well. After repeated requests from the band (to f***king shut up) we eventually tired of working under such pressure, and passed the mic into the audience so they could sing along too!

At midnight it started to rain, not that anyone noticed as they gathered around the stage and sang Auld Lang Syne (rather appropriately since Jim's surname was Lang!)

Suddenly a ghostly figure climbed to the top of the left hand speaker stack and stood there for a few moments, waving a brandy bottle in his hand, then gracefully dived off the top into the audience. Unfortunately he missed and landed face down in some hay bales, and remained there for some time!

The rain got steadily worse, and about 4 am we pulled the plug on things. Roz (my wife, bless her tolerant little heart) laid out a doona and some blankets in the back of the truck and went off to water the horses, while I went and put tarpaulins over the speaker stacks and tidied up the stage.

In the interests of good taste I've refrained from describing the toilet conditions. They were pretty basic; so basic in fact that there weren't any! So it took Roz a while, and we bumped into each other on the way back to the truck

When we reached the truck there was a wonderful surprise waiting for us. Someone soaking wet had discovered our nice dry bedding and passed out on it. We felt like the three bears - "Someone's been sleeping in my bed and he's horribly pissed!"

Sure enough, it was Col!

Have a happy and safe holiday season, and I'll be back with more of this incisive and thought provoking stuff in the New Year. If you'd like to revisit any of my earlier stories, there's quite a few up on the Live Sound Mixing web page: <http://world.net/~dunkfry>

WHICH IS YOUR FAVOURITE STUDIO MIC?

THIS MONTH we asked our Pro Talk-ers these three questions: (1) WHICH vocal microphone is the best in the world, (2) which one do they actually use, and (3) which is the cheapest vocal mic they tell friends to buy? Naturally they all disagree on some....

Kim Horne from PowerHouse Recorders in Adelaide says: 1) A specially hand made valve mic from Ross Giles Audio, or a Sanken CU 41 with modified electronics, or...or...or... 2) What mic do I use? One that fits the singers voice and the song. 3) The cheapest: anything from a Shure 58 to a high grade condenser.

Harry Williamson from Spring Studio, Melbourne: The best: a valve Neumann u47. Why? - warmth, sharpness, wide field, nice colouration or distortion. What I use... Neumann FET u47. Great clarity, punch and range, and impressive bass response. I sometimes use one or more additional 'air' mics- eg AKG451 - which are good for exaggerating breath and capturing ambience. The trick is to cancel the natural phase error which can sound strange if you're not careful. Cheapest would have to be the Sure Beta 58.

"I think it is impossible to say which is the worlds best mic", says **Marshall Cullen**, from Damien Gerard. "In my experience I would pick 4 microphones: a Neumann M49 (now replaced with the 149), a Neumann Fet 47: the richness from this mic outdoes the U87, AKG C12, either the original or the new reissue VR are amazing mics. The SHURE SM7 is the only dynamic I have included but a great one. Condensers are not always better, a particularly ssssy vocalist often suffers from the top end enhancement from most condensers and the change to a high quality dynamic can fix this. We have four main vocal mics at DG's for various applications; Neumann KM86, CAD Equitek 200, Rode NT2TL and the Shure SM7. I would recommend either an NT2TL or ATM 4050 for home recording. The absolute cheapest: the Shure SM58, pref. a Beta.

Velvet Sound **Tony Wall** says: "My current favourite is the AKG 414 EB for a bright radio friendly sound, while the Neumann U47 or M49 mic's give me a nice dark, rich sound."

Bek Varcoe from Jets Studios (Bundoora): 1. I love the Neumann KM84 for vocals and use it whenever I can. 2. Our studio uses AKG C3000 because it was the best for the price we could afford. 3. The cheapest? The SM58: the best quality for the price.

C'est Ca, **Norman McCourt**: 1) Probably the Neumann TLM 170; 2) TLM 170, Neumann U67, E.V. RE20 for raucus Male vocals. 3) Without a doubt a shure SM58 even though I personally prefer the SM57.

Sound Australia, (Spring Hill) **Peter Ferrier**: 1. Neumann MI49 tube. Why? Superb definition across entire vocal range. 2. Neumann MI49 tube- sounds fantastic. 3. Rode NTII

Jim Taig from Studios 301 says:

1. AKG C12: open transparent top end, warm vocal sounds, the best value mic available in Australia: 2. Neumann U47 valve microphone- warm fat vocal sounds. 3. Cheapest round vocal mic-Neumann U87 2nd hand \$1,200- anything cheaper, don't bother- vocals are the most important things you would ever record.

Tiger Recording: **Andrew Host** says "If my favourite voice-over microphone is of any interest to you: It's a Neumann TLM-170. There's a slight EQ lift in the upper-mids, but smooth, so no sibilant distortion, and very warm bottom end. I would recommend to a friend that a cheap vocal mic will never be any good, so save up and get a decent mic".

Sky Lab Studio (Surry Hills), **David Russell** suggests the cheapest Microphone for home recording is a Shure 58. He uses Value Neumann U67's Neumann U87's AKG 414's AKG C3000's & Shure Beta 58's. "There is no one best microphone. A Neumann U67 or any good tube mike is great for the Elvis sound. A Neumann 87 is good for most vocalists and brighter punchier mikes like an AKG 414 or the Newer C3000 are good for crisp female voices. Many good singers can deliver a great performance using a Shure Beta 58 live from the control room, no headphones, with the big monitors cranked.

Feral Studio (ACT) **Jon Robertson** says:

1) Neumann U87 has a clean + warm sound. 2) For most jobs we now use a ATM4033. 3) For home studio's a shure Beta 58 is great.

At Rockinghorse (NSW), **Zubin Henner** says "some of the best mics I've used include Neumann U87, 67 value + AKG C12, however I'd like to hear the new TLM 103- apparently it is far superior to the 170 + comparable to the U87. Normally I use a U89 or a C12. The U89 gives warm, rich tones, with the C12 is crisp + clear, especially good for female vocals. Cheap? The SM58.

Greg Dixon from Aplet (Sydney): The Groove Tubes MD3a is the best vocal mic. It has the smoothest, silkiest response I've heard. I use either a U87 or a groove tube MD1a depending on the singer. The Rode NTI is probably the best value for a semi-serious home set up, although you can always get a great sound out of a SM57 or 58. If you want to spend more money to new Groove Tube MD5SG Fet mics sound smoother then an NT2 for around the same money.

Stockport Sound Studio, (SA) **Bob Charman**: The best is the RCA B77. I personally use a Steanes Sound Systems, 'sss! Ribbon mic, similar

to the RCA 44, but made in Melbourne in the 1950's. Cheap? You couldn't go past a Rode, even an early NTI. And, the good old SM58

JMF Recording Studio (NSW) **Ralph Esther**: The worlds best microphone will be the one for voice being recorded is concerned. Value for money: nothing beats the RODENT. The Shure SM58 has also stood the test of time.

Wombat Rd (VIC) **Barrie Clissold**:

The U-87 is the best that we have used so far. The Rode "classic" is also very nice, even a Rode NT-2. Both the Rodes are a little bright and can emphasise any silence present in a voice. The U-87 is very detailed and yet still has a nice warm character which seems to suit most vocals! The cheapest mic I would suggest for recording would be an Audio-Technica 3000.

At Domenic Sound in Old, **Shane Hughes** says: "There is simply no such thing as the best vocal mike in the world! I, like many, have always believed the Neumann U67 or U87 condensers to be the finest vocal mikes in the world, up until about four years ago, when a very confident sales person brought an Audio Technica AT-4033 condenser in for a demo".

A # Sharp (NSW) **Jeff Cripps**: I use Rode NT-1 on lots and lots of things, it does most things pretty well. I'd rather work with the worlds best vocalist with any old mike rather than have the best mike with an average singer!

Angelwood (NSW) **Peter(Fash) Sheedy**: Most of the vocalists that I record like the Neumann U87. The cheapest vocal mic I would suggest a friend purchase for recording would be an SM58.

David Lawrence, from David Lawrence Music Productions (NSW): "I use an Audio Technica 4033 Condenser for vocals, the best vocal mic is the one that best suits the project eg: Jimmy Barnes used an SM58, hand held in the control room for some 'Cold Chisel' tracks. Some great Demos have been done on 4 tracks with inexpensive mics while the best mic in the world can be abused by ears that don't know what it should sound like.

AJ Audio Art (Vic) **Allan Neuendorf** suggests:

1) AKG C12 - The C12 is the most natural sounding mic I have used. It has a warm, musical quality with excellent presence making it perfect for vocals, acoustic guitar etc.
2) I usually use Neumann U87's - mainly cause we have them, but they are still very clean + fairly natural sounding.
3) Rode NT1.

• Thanks to everyone who assisted!



BASF National Tracking Guide

ARTIST	PRODUCER	ENGINEER	PROJECT	ARTIST	PRODUCER	ENGINEER	PROJECT
New South Wales							
# Sharp Recording Studio	Jeff Cripps (02) 9153 9988. 24 Track 1"			Arizona Productions	Peter Kaldor	David Hemming	Commercial
Zec Da Trip	Jeff Cripps	Jeff Cripps	CD	Psikore	Badn	Jason Lea	Album Tracking
Nathan Tasker	Jeff Cripps	Jeff Cripps	Chrisitan CD	Lee Kernaghan	Garth Porter	Ted Howard	Album Tracking
Beverly Hills Anglican Church	Jeff Cripps	Jeff Cripps	Xmas CD	John Montgomery	John	Jason Lea	Tracking
Kathy Sport	Jeff Cripps	Jeff Cripps	Movie Theme	M.A. Productions	Martin Armiger	Michael Stavrou	Film Score Tracking
Angelwood Studios	Peter (Flash) Shedy (067) 689 161. 2" 24 and 16 Tk, Valves, Nuemans Flying Faders.			Paul Bryant Mastering	Paul Bryant (02) 9748 0222. Mastering Suite		
Percy & Louise Hanson	Percy Lou/Flash	Flash	Album-Record/Mix	Nathan Tasker	Jeff Cripps	Paul Bryant	CD Album
Brett Dallas	Brett/Flash	Flash	Album-Record/Mix	Ruth Buchanan	Rob Specogna	Paul Bryant	CD Album
Rex Dallas	Dirtwater/Flash	Flash	Album-Record/Mix	Judy Pinder	Peter Hicks	Paul Bryant	CD Album
Low Downs	Low Downs/Flash	Flash	Album-Record/Mix	Nifheim	Skardi	Paul Bryant	CD Album
Larry Hughes Time Band	Band/Flash	Flash	Album Record/Mix	Ice Jupiter Groove	Mark Southern	Paul Bryant	CD Master
Aphek	Greg Dixon. (02) 9876 8170. 16 Track Analogue			John-Glenn	Steve Zitkus	Paul Bryant	CD Master
Barney	Band	Greg Dixon	Album	Rockinghorse Recording	Grant Hilton (02) 6685 6500 Neve	Sturder 24Tk & Digital	
Trudy Yeoman	Greg Dixon	Greg Dixon	Demo	Aim Records	Zubin Henner	Zubin Henner	Mastering
John	Band	Greg Dixon	Album	Sir Star Pants	Jason Buchanan/Lirhazel Evans	Zubin Henner	EP
Charing Cross Studio	David Sykes (02) 9387 8362. Neve 8000 Series, Mackie Ultramix-Studer			Rebekah Brown	Zubin Henner	Zubin Henner	Demo
Anyones	Martin Rotsey/Wayne Connelly	Wayne Connelly	Album Tracking	Ragadol	Jimmy Willing/Zubin Henner	Zubin Henner	Album Mixdown
Something for Kate	Matt Maddock/Steve Foster	Matt Maddock/Steve Foster	Album-Mixing	Tightrope	Band/Zubin Henner	Zubin Henner	Album
Ben Lee	Peter Jones	Peter Jones	Demos	Marcus McBain	Marcus Sean McBain	Zubin Henner	Single
Linedrivers	Lachlan Mitchell	Lachlan Mitchell	Tracking-EP	SkyLab	David Russell (02) 9310 4774 Analog 24 Tk & Digital	32 Tk	
Pollen	Greg Wales	Greg Wales	Album-Track/Mix	Rock Cat Rock	Band	David Russell	Album
Sonic Plasma Production	Andy Wilson	Steve Foster	Album-Mixing.	Sirocco	Bill O'Toole	David Russell	Album
Damien Gerard Studios	Marshall (02) 9660-8776. 16, 24, 32 Track Analogue			U2 Show	Band	David Russell	Demos
Desert Boot	Tim Whitton	Marshall Cullen	Album	Lisa Jentz	Mark Marriott	David Russell	Single
Propaganda	Band/Russel Pilling	Russel Pilling	Album	Paris Dumper	Mark Marriott	David Russell	Album
Crank	Band	Russel Pilling	Album	Marc Hunter	Mark Marriott	David Russell	Album Track
Elia Bel	Band/Marshall Cullen	Marshall Cullen	Album	Soundwarp-CD Bureau	Meredith Brooks (02) 9905 7144 Mastering		
Fendahlene	Band	Russel Pilling	Album Demo's	Rita Hunter	Artist	Meredith Brooks	Album
Other Mind	Dave Renolds	Jamie Carter	Album	Melancholy Angels	Matt Jaynes	Meredith Brooks	EP
Darling Harbour Studio's	Ike Brunt. (02) 9211 1474. 24 Tk Analogue.			Crankcase	Smurf	Meredith Brooks	Album
Charlie McMahon	Artist	Ed	Album	The Wash	Mike Stavrou	Meredith Brooks	Single
Myriad	Fush of Suction	Fush of Suction	E.P.	Bob Barnard	Artist	Meredith Brooks	Album
Up	Mark McEntee	Suckerfush	Singles	Bernie Lynch	Artist	Meredith Brooks	Paris '97 Fashion Show
Lovecraft	Band/Fush	Suckerfush	Demo's	Studios 301	Jim Taig/Jacqui Espie (02) 9211 7301. Mixing & CD Mastering		
James Gifford	James Gifford	Fush of Suction	E.P.	Regurgitator	Magoos	Steve Smart	Mastering-Album
Kelp	Ike Brunt	Suckerfush	E.P.	The Cruel Sea	Phil McKellar/Daniel Deholm	Phillip McKellar	Mxing-Album
David Hinds Recording Studios	David & Lyn Hinds. (02) 6581 1235. 16 Track Digital			Tumbleweed	Phil McKellar	Phillip McKellar	Mixing-Album
D & L Hinds	D & L Hinds	D & L Hinds	Lighting Network Jingle	Died Pretty	Wayne Connolly	Don Bartley	Mastering-Album
Turner & moore	Colin Turner	D.Lawrence	Album	Rani	Pete Hemsley	Don Bartley	Mastering-Single
David Lawrence	D.Lawrence	D.Lawrence	Album	Skunkhour		Oscar Gaona	Mastering-Single
Crimson Star	Band	D.Lawrence	Demo	Top Cat Recording Studio	Brad Wann. (02) 6628 0843. 24 Tk Analogue 1" CD Mastering & Burning		
PaceFaint	Band	D.Lawrence	Album	Krazelna	Ross Ward/Brad Wann	Brad Wann	Album/CD
Don Astin	Don Astin	D.Lawrence	Album	Waldo Knight	Ross Ward	Brad Wann	EP/CD
Various Ad Jingles				Cored	Brad Wann	Brad Wann	EP/CD
David Lawrence Music Productions	David Lawrence. (02) 6559 8766. 24 Ch, Dig 8 Tk, Midi Sequencing			Grassrootes	Brad Wann	Brad Wann	EP/CD
Turner & Moore	Colin Turner	D.Lawrence	Album	Plastic Smash	Band/Brad Wann	Brad Wann	EP/CD
David Lawrence	D.Lawrence	D.Lawrence	Album	Aff Cope	Alf Cope	Brad Wann	2nd EP/CD
Crimson Star	Band	D.Lawrence	Demo	Trackdown Digital	Geoff Watson (02) 9550 6890. 3x Trk ProTools/32 Trk-Adat		
PaceFaint	Band	D.Lawrence	Demo	Junipe Film	James Wilson	Tim Ryan/S. Leadley	Doco Audio Post
Don Austin	Don Austin	D.Lawrence	Album	New Artist	Polyphony Records	Torei Lista	Album Tracks
Various Advertising Jingles				Various	Narrowcasters	Katrina Schiller	Talking Guides
Feral Studios	Jon Robertson (02) 6299 3224. 16 & 32 Track			Skippy	Yoram Gross Village Roadshow	Tim Ryan/Leon Horricks	Television Series
David Pine	Jon Robertson	David	Mixes for Album (NZ)	Bouganville	Wayne Cole-James	S. Leadley/Leon Horricks	Doco Audio Post
Toy Molto	Jon Robertson/Band	Ram Khan	Mastering EP	Verclian	Jasmine Guffond	Jasmine Guffond	Band Demos
J.D. Brothers	Jon Robertson	Jon Robertson	Tracking	Turtlerock Mastering	Rock O'Neil (02) 9358 4955 Sonic Solutions Apogee UV-22 Super CD Encoder		
Exhibit A	Jon Robertson	Jon Robertson	Demos	Golden Rough	Wayne Connolly	Rick O'Neil	Album
Crying Game	Jon Robertson	Jon Robertson	Demos	Atone	Andy Fitzgerald	Rick O'Neil	Album
Festival Mastering	Catherine Knapman (02) 9395 8070. Sonic Solutions			A.J. Tigers	Rick O'Neil	Rick O'Neil	Album
Jackie Orszaczky	Jackie Orszaczky	William Bowden	Master Album	Mudhead	Gary "Gary" Beers	Rick O'Neil	Album
Backsliders	N/A	William Bowden	Album	Superscope	Dom Marini	Rick O'Neil	E.P.
Pollen	N/A	William Bowden	7 Tracks	Hector Pascal	Peter Blyton	Rick O'Neil	Album
Elia Bell	N/A	William Bowden	Album	Velvet Sound Recording Studios	Dave McCunn (02) 9264 3420. 32Ch Automated, 24Tk 2"		
Craig Newling	N/A		Album	Pleasureground	Tony Wall	Tony Wall	E.P.
Eric Rasmussen	N/A		4 Tracks	Universe	Steve Balbi	Tony Wall	Album
Festival Studio	Catherine Knapman (02) 9395 8070. Studer MCI Analogue or Mitsubishi D'gtal			Craig Newling	David Price	David Price	Mixing
Lee Kernaghan	Garth Porter	Ted Howard	Album	Waldo Fabian	Waldo Garrido/Frank	Frank Kerestedsjhan	Album
The Wiggles	The Wiggles	Chris Brooks	Album	Apostophe	David Price	David Price	E.P.
Mescaline	Jason DeWilde	Mark Thomas	Album	Kilter	Band	Tony Wall	E.P.
Humungus Recordings	Steven Stucci. (02) 9569 3572. 24 Tk Digital, CD Burning.			Queensland			
Ihuza	Artist/J. Nowland	Jeremy Nowland	Ihuza "mute"	Digital Paradise	Ian Peters (07) 5527 0722. 32 Trk Digital		
Rumblefish	Artist	Jeremy Nowland	Rumblefish	Various	Brian Cadd	Ian Peters	Demo Tracks
JMF Sound Studio	Fran Esther (02) 9790 4097. 32 Tk. Digital, 24 Tk. Analog			Devolved	John	Ian Peters	4 Trk EP
Majähr	Band	Guy Saminaden	Album Mixing	Feel	Kurt/Sean	Ian Peters	4 Trk EP
Marscom	Brother Oswin	Guy Saminaden	CD Album	John Vallins	Artist	Ian Peters	Demo Tracks
Drive	Peter Murray	Ralph Esther/Simcn Meil	Demo	ManPower Aust.	Billy Cross	Ian Peters	Asian Tour Show
Robert Wolfe	Robert Wolfe	Ralph Esther	Album	Jay-Jay	Lee Conway	Ian Peters	Demo Tracks
Jeff Stevenson	Jeff Stevenson	Ralph Esther	Demo	Domenic Sound	Shane Hughes. (07) 3216 5187. 24/32 Tk ADAT with 48 ch. Soundtracks Console.		
Ian & Ben	Ian & Ben	Mike Ward	Demo	XAVR	Shane Hughes	Shane Hughes	Album-Rock
Lucinda St. Recording	Rick Mostyn (02) 4229 1169.			Satin Mist	Shane Hughes	Shane Hughes	Album-Metal
Fuzz Monkeys	Rick Mostyn	Rick Mostyn	Demo Tracks	Jenny Balmer	Shane Hughes	Shane Hughes	Album-Country
Awakening	Rick Mostyn	Rick Mostyn	C.D.	Les Chrichton	Artist	Shane Hughes	Album Compilation
Foliate	Rick Mostyn	Rick Mostyn	C.D.	Shane Hughes	Shane Hughes	Shane Hughes	Album-Rock Contemporary.
Lone X	Rick Mostyn	Rick Mostyn	C.D.	Grevillea Studios	Malcolm Jacobson (07) 3262 8422. Analog & Digital Recording, CD Mastering		
Organs of Corti	Rick Mostyn	Rick Mostyn	C.D.	Diana Woods	Phil Ross	Tony Byrne	Album
Phail	Rick Mostyn	Rick Mostyn	C.D.	Findelskin	Band	Malcolm Jacobson	CD Mastering
Nu-town Studio	Greg Hopping (02) 9516 3306. 16 Anna/64 Virtual/8 Dig			Rare Earth Victims	Phil Ross	Phil Ross	Album
Tracy Arbon	Greg Hopping	Greg Hopping	Single	Rare Earth Victims	Phil Ross	Phil Ross	CD Mastering
Sonny	Greg Hopping	Greg Hopping	Single	Tantrum	Band	Malcolm Jacobson	E.P.
Jade	Jade/Mark Worrall	Mark Worrall	EP				
Daydream	Daydream	Mark Worrall	Single				
Lisa Wass	Greg Hopping	Greg Hopping	Demo				
Paradise Studios	Jason Lea (02) 9357 1599. Custom Mixer, Studer A800, MCI JH114 2" Analogue						
Matthew McMahon	Band/Matthew	Mark Roberts	Tracking				



BASF YOUR MUSIC IS SAFE WITH US



BASF National Tracking Guide

ARTIST	PRODUCER	ENGINEER	PROJECT	ARTIST	PRODUCER	ENGINEER	PROJECT
OPM Studios Daniel (07) 3374 0066. 24 Tk. ADATs, Mackie Console				Andrea Savage	Ben Hurt/A.Savage	Ben Hurt	Album Tracking
Propane Joe Malone Joe Malone EP				Jon Gilchrist	Ben Hurt/John G	Ben Hurt	Album Tracking
Jetson77 Band Daniel Pre-production				Nelson		Ben Hurt	Jazz Demo
Bravura Band/Daniel Daniel Single				Petrophonic Productions Petros Georgiades (03) 9553 0176. 16 Tk. Digital Recording/Midi Suite			
Flint Band Daniel Album				Caulfield Grammar School Petros Dual CD/School Production			
Soul Addiction Band/Daniel Daniel EP				Dr. Jan Hall Petros/Jan Hall Petros Senational Sex Series Audio Tape			
Gods own Bullet Band Daniel Single				The Breakers Petros/Band Petros C.D.			
Suite 16 Audio Productions Murray Lyons (07) 3369 8733. 24 Tk. Analogue, 16 Tk. Digital.				Crocodiles not Waterlilies Petros Seminar Audio Tapes			
Greville Patterson Garry Smith David Champion Album				Brad Tonini Petros Seminar Audio Tapes			
Toyota Camry Garry Smith David Champion TV Commercial				Mark Joseph Petros Petros Debut CD			
Vandersound Studios Eric Vandersande (07) 5546 8100. All Digital & Valve, HDR, ADAT/XT, O2R, CDR				SAE Technology College Bruce McDonald (03) 9534 4403. 24 Trk Analogue (2*) + 8 Trk Pro Tools			
Gypsy Eric Vandersande Eric Vandersande Album Tracking				Smokin' Joker Neil Goudge Neil Goudge Album			
Crush Eric Vandersande Eric Vandersande Album Tracking				Yolk Band Andrew Broadhead CD EP			
One's Power Eric Vandersande Eric Vandersande E.P. Tracking				Goodbye Sideburns Forever Band Andrew Broadhead			
Defilde Eric Vandersande Eric Vandersande E.P. Tracking				Severquake Bruce McDonald/Band Bruce McDonald EP			
Ian Francis Artist/Ian Eric Vandersande Album Tracking & Editing				The Shine Don Stelle/The Shine Fiona Piell EP			
Scott Patterson Artist/Eric Scott Patterson Album Tracking				Studio 52 Paul Higgins (03) 9417 7707. Studio A: 32 Trk, B: 24 Trk ADAT			
South Australia				Farnham Band Lex Trevor Carter One-off Song			
Agro Fish Studios Julie Raynes (08) 8223 7211. 20 Tk. Video Sync, HD Recording, Sequencing				Music Men David Brooks Rowan Jarl Demos			
CFC Tim Power Ray Erzinger CD Production				Sam Fowler Sam Trevor Carter EP			
Humphrey Bear Wilson Main Andrew Bayfield TV Show				Marco Goldsmith Marco Trevor Carter Mastering			
Creative Forest Productions Mike Forrest Andrew Bayfield Jingles				Jazz Aust. Mark Mayle Trevor Carter Mastering			
OmegaTrends Rob Pippin Andrew Bayfield Anthem				Miray Trevor Carter Trevor Carter Album Tracks			
Globe Recording Studio David Grice (08) 8370 4277. 16 Trk Digital Hard Drive.				Toyland Studio Adam Calaitzis (03) 9482 2111. 24 Tk. Analog & Logic Audio			
Talking Loud Band/David Grice David Grice Demo				Marc Tenstria Marc Tenstria Adam Calaitzis Album			
Joy Farrington Artist/David Grice David Grice Single				Real Life Adam Calaitzis Adam Calaitzis Live Album Mix			
Andrew Cooper Artist/David Grice David Grice Album				Rangewar Adam Calaitzis Adam Calaitzis 2 Singles			
Blackwood Church of Christ Mark Drilling/David Grice David Grice Album				Held on Hold Joan Held Adam Calaitzis On Hold Message			
The Fab Four Band David Grice Demo				Archilles Yiangoulli Archilles Yiangoulli Adam Calaitzis Film Soundtrack			
Reynolds & Love Recording Studio Nick Love. (08) 8410 3044. 16-24 tk Digital, 16 tk Analogue				Ikon Chris McAtthen Adam Calaitzis Single			
Temporal Lobe Nick Love/Band/The Walrus Nick Love/The Walrus C.D./E.P.				True Form Music Services Neil Gray (03) 9391 0907. 24 Tk. Digital, 12 Tk. Analogue			
William Keyte Nick Love Nick Love/The Walrus C.D Album				Dr. Herbert Band/Neil Neil Gray E.P.			
Unstrung Nick Love Nick Love/The Walrus C.D./E.P.				No Grace Band/Neil Neil Gray Mix E.P.			
The Rippers Nick Love/Band/The Walrus Nick Love/The Walrus C.D./E.P.				Sulk Phil Noble Neil Gray Demo's			
Rob Guest Carl Doy Doug Jane C.D./Album				Whiskey Dogs Band/Neil Neil Gray E.P.			
Captain Pyjama Artist/The Walrus/Nick Love Nick Love/The Walrus C.D./Album				Spank Band/Neil Neil Gray Demo's			
"The Fridge" Nigel Sweeting (08) 8231 3588. 16Trk Non-linear Digital; 16Trk Analogue				Wombat Rd Recording Studio Barrie Clissold (03) 5145 4204. 32 Tk. Digital, 16 Tk. Analogue			
Vincenzo Andreacchio Band Nigel Sweeting CD				Misanthrope B.Clissold Barrie Clissold Demo Tracks			
Pure Harmony Band/Nigel Nigel Sweeting CD				Jill Meehan J.Meehan Barrie Clissold Album Tracking			
Ratatouille Band/Nigel Nigel Sweeting CD				Gidgee Rock R.Stewart/Clissold Barrie Clissold Album Re-mix			
Habitat Band Nigel Sweeting Demo				Pam Bennett P.Bennett Barrie Clissold Demo Tracks			
Samba Suave Band Nigel Sweeting CD				Noelene Legge McLead/Legge Barrie Clissold Demo Tracking			
Dogwater Band/Nigel Nigel Sweeting CD				Val Wilson V.Wilson Barrie Clissold Album			
Victoria				Western Australia			
Big Beat/Equinox John "Shadow" Both Fax (03) 9898 5815. 16 Tk. Analog, 8 Digital, Midi/Mastering				Bonsai Recording Studio Tom Thorpe (08) 9246 4408. 24 Track			
Streetjam Fund Raiser Toth/Borgeest/Williams Borgeest/Williams CD				Kay Redman Tom Thorpe Tom Thorpe Jingles			
Slavemaster Pan/Waldron Williams/Borgeest CDs				The Zins Tom Thorpe Tom Thorpe Demo			
Akaysha Band Williams/Borgeest Demo				Studio Trax Tom Thorpe Tom Thorpe Demo			
Serenade Band Borgeest Demo				Redgate Tom Thorpe Tom Thorpe Demo			
The Rehearsal Band Williams/Borgeest Demo				Ian Kenny Tom Thorpe Tom Thorpe Mastering CD			
Stainless Steve Toth/Williams Williams Demo				Poons Head Rob, Sam, Bush (08) 9339 4791. 32-48 Track			
Bread & Butter Recording Studios Richard Sievers (03) 5881 7112. 16Tk/Midi Suite				Alton Tebbutt Rob Grant Rob Grant Album			
Berrigan Bush Drivers Richard Sievers Richard Sievers CD Album				Graham Dickenson Rob Grant Rob Grant Album			
Paul Greene Richard Sievers/Artist Richard Sievers Demo				Perry Dound Rob Grant Rob Grant Album			
Hissteria Richard Sievers/Band Richard Sievers CD Album				John Roberts Rob Grant Rob Grant Single			
Cheap Katz Richard Sievers/Band Richard Sievers CD Album				Berbermerkin Rob Grant Rob Grant Album			
Boneshakers Richard Sievers/Artist Richard Sievers Demo				The Sonic-Lab (at Prp-Copy) Mark Whitehouse (08) 9375 3902. Sonic Solutions CD Mastering Facility			
C'est Ca Recording Norman McCourt (03) 9419 1506. Automated Digital 24 Tracks				John XXIII College Toni Strong Mark Whitehouse Comp CD Editing/Mastering			
Circus Oz Carl Polkie Norman James McCourt C.D.				Danny Mark/Paul Kelly Chaz Garnett Mark Whitehouse Mastering CD EP			
Footscray/Yarraville City Band Norman James McCourt Norman James McCourt C.D.				The Badge Steve Susnjar/Band Mark Whitehouse Mastering Album			
Australian Music Abroad A.M.M.A. Norman James McCourt Export Samples				Stingray Steve Susnjar Mark Whitehouse Mastering CD			
Misguided Angels Norman James McCourt Norman James McCourt Demo's.				The Hedonists Steeve Collett/Band Mark Whitehouse Editing CD Mastering			
Crystal Mastering Joe Carra (03) 9326 2318. Sonic Solutions/Apogee UV22				Hurricane Mary Band Mark Whitehouse Editing CD Master			
Rhonda Burchmore Artist/R.Cockle John Ruberto Mastering Album				Northern Territory			
Three RRR John Ruberto Mastering Compilation				Kakadu Studios Mat Cunliff (08) 8941 1344. 24Tk Digital, Hard Disk Mastering			
Madeline Band Joe Carra Mastering EP				Crocodile Tears K.Hutton/Band K.Hutton Album			
Adam Said Galore Kenny Lopez Joe Carra Mastering Album				Thayak K.Hutton K.Hutton Album			
Kenny Lopez Artist John Ruberto Mastering Album				Sunrize Band K.Hutton/B.Pascoe K.Hutton Album			
Fiendish Band/R.Norton John Ruberto Mastering EP				YOUR BASF TRADE SALES OUTLETS:			
Dex Mastering Adam Dempsey (03) 9372 2266. 2 Suites, Sonic Solutions, Custom Converters.				NSW: Audio Visual Designs (02) 9281-2444,			
Domingo Pin Rada/Sand Adam Dempsey Album				Silver & Ballard (02) 9439-5355,			
Frenzi Band Adam Dempsey Album				Independent Tape Services (02) 9436-0666			
Gasp Band Adam Dempsey 6 Trk EP				VIC: CATS (03) 9529-3177, Chapple Tape (03) 9580-6620,			
Janette Geri Janette Geri Adam Dempsey Album				DEX Audio (03) 9372-2266, MTA & Assoc. (03) 9819-6455			
Ade Kelly Ade Kelly Adam Dempsey Live Album				SA: Adelaide Tape Duplicators (08) 8212-7111,			
Jim Cooper Jim Cooper Adam Dempsey Album				Pro Media (08) 8276-6793			
Edensound Productions Martin. (03) 9682 9066. Mastering				WA: Ausmag (09)314-1953, Pro Copy (09)375-3902			
Dave Steel Dave Steel Martin Pullan Album Mastering				QLD: Musiclab (07) 3862-1633, Tek (07) 3239-4000			
Rebecca's Empire Lawrence Marbly Martin Pullan Single Master				YOUR MUSIC IS SAFE WITH US			
Creature Seed Simon Segal Martin Pullan Single Master							
Kev Carmody Kev Carmody Martin Pullan Album Master							
Brill Brian Conham Martin Pullan Album Master							
H-Block Band Robbie Adams Album Master							
Kiss Music Recording Studio Paul Kosky (03) 9827 1500. 48 Tk Digital/Analogue-SSL Console							
Sisterella Band Doug Bradey Album							
Killing Heidi Paul Kosky Paul Kosky/Andy Baldwyn Album							
Happy Gas Store Kal Tonuma Kalbaby Album							
Tism Band Lawrence Maddy Single							
Newmarket Studios Ber. Hurt (03) 9329 2877. 24 Tk. 2' Analogue							
Newmarket Studios Pat Chris Corr Jazz Albums							
Bernadette Robinson Ben Hurt Additional Tracks							
Gary Young Paul Ben Hurt Mixing							

Recording Equipment

BUYERS GUIDE

RECORDING SOFTWARE ALONE

BIAS INC

Sound Devices (02) 9283 2077

Peak V1.6 is a 2 channel hard disc recording/editing software for Mac with Adobe premier plug-in support and non-destructive editing. \$799.

Peak Le is a cut down version of Peak 1.6 with basic record/editing functions. \$169.

CREAMWARE

Major Music Wholesale (02) 9545 3540

Peak digital audio editor/processor software for all Macs (PowerPC Native). Offering fast full-featured, non-destructive sound design and processing. \$799.

Ostris realtime sonic restoration for all Creamware products. De-noising, de-clicking, de-cracking, exciter, sub bass enhancer and spectral analyser. \$749.

FireWalkers eight additional realtime effects modules for TDAT16, tripleDAT and MasterPort by Creamware eg. chorus flanger, pan modulation, signal generator, 8 band EQ, transposing, FFT analyser, VU meters. \$649.

EMAGIC

Electric Factory (03) 9480 5988

Emagic Micro Logic PC + Mac entry level sequencing package that gives you unlimited Midi tracks with scoring and matrix editor. Also has ability to play audio files. \$179.

Emagic Discovery PC + Mac semi-pro to pro integrated sequencing, notation and audio recording. Effects processing for audio tracks. Unlimited sequence and notation tracks - many various editing environments. \$499.

Emagic Logic PC + Mac high end Midi sequencer with comprehensive scoring features and unlimited number of staves. Hyper EDX facility allows drawing of controllers and notes. Full mix au-

tomation plus environments to customise to your own needs. User definable screens and key commands and easily upgradable to a complete audio package. \$649.

Emagic Logic Audio PC + Mac complete professional (audio, Midi, scoring) package. A no compromise attitude to writing, recording and scoring your music. Enough features to satisfy the most demanding musician. From \$999.

STEINBERG

Music Technology (02) 9369 4990

Cubasis AV complete digital music studio for the entry-level and home studio. Combines audio and MIDI features as well as intergrating playback of Quick Time movies. Up to 8 audio tracks might be played back simultaneously and EQ and effects can be added in realtime. \$295.

Cubasis VST 3.5 high-end professional digital workstation. Includes professional audio recording, automated mixing, EQ's and plug-in effects, MIDI sequencing and full support for multiple I/O hardware devices and a complete internal bus system. Score printing as well. \$795.

Cubase Audio DAE/VST 3.5 for Mac high-end professional digital audio workstation that works with Digidesign's Pro Tools systems. Includes professional audio recording, automated mixing, EQ's and plug-in effects, MIDI sequencing and a complete internal bus system. \$1295.

Wavelab 1.6 for PC mastering software has DSP features eg. pitch shift, crossfades, batch processing, compression, EQ's etc. and now also incorporates CD-Burning and support for a large number of CD recorders. It can run up to 6 ActiveMovie plug-in effects simultaneously in realtime. 24-bit, live input. \$995.

RECORDING SOFTWARE WITH PC HARDWARE

CREAMWARE

Major Music Wholesale (02) 9545 3540

TripleDAT professional digital audio solution - card and pro software. Realtime effects, 256 tracks, CD writing all included as standard. \$2695.

MasterPort pro audio card for all digital audio applications. Includes 'lite' version of tripleDAT software with realtime EQ and pro effects suite. \$1399.

TDAT16 2 x ADAT 1/0 - 16 channels on a single PCI card. Comes complete with an extended version of tripleDAT software. \$3495.

EMAGIC

Electric Factory (03) 9480 5988

Emagic AW8 - Studio Kit Emagic Logic Audio Discovery bundled with their AW8 PCI card featuring two inputs and eight separate outputs with a S/DIF. \$1399.

Emagic Project Kit - PC + Mac perfect for beginner or project studio set up. Emagic's award winning Discovery software combines with Ensoniq's new audio PCI card giving you a powerful combination of high quality audio card + solid music software. \$649.

Emagic Studio Kit - Pro (PC) top end music production made easy with Logic Audio and the Audio WERK-8 car. Real time effects, audio editing, scoring and Midi made easy within a user friendly environment. Education and academic prices available. \$1999.

Emagic Studio Kit - Pro (Mac) integrated Midi sequencing, scoring and audio recording with complete automation, editing and effects bundled with AW8. \$2099.

ENSONIQ

Electric Factory (03) 9480 5988

PARIS 1 - Starter version of the new 24 bit integrated PCI based system which runs on PC or PowerMac, comprises software,

card and Interface 2, a basic 2 channel interface with 2 in, 2 out and expansion connections. 16 channel control surface included. From \$6000.

PARIS 2 - Core system, 16ch control surface and Interface 442 with 4 inputs, 4 outs and one S/P DIF digital in and out, with external sync input. From \$7000.

PARIS 3 - Core system, Control surface and interface modular expansion chassis. TBA

SONIC SOLUTIONS

Syncrotech Systems Design (02) 9879-0800

SonicStudio Post (from \$9,499) designed for audio post, based on Mac, up to 64 ins and outs, with digital video integration and NoNoise restoration.

SonicStudio On Air (from \$9,499) provides radio broadcasters with multichannel simultaneous record and playback, with real time editing, TimeTwist, VariSpeed, sample rate conversion and machine control.

SonicStudio Master (from \$9,499) CD Mastering suite for 24 bit 96khz recording and editing.

Sonic DVD (TBA) comes in two versions, DVD Audio and DVD Video.

SPECTRAL

Australian Audio Supplies (02) 4388 4666

Express one card PC system. Simple 2-screen interface designed for broadcast and dialogue production. 8 tracks simultaneously recording. On-board synchronisation full on-board DSP functions. \$6295.

Producer one card PC system. 8 tracks simultaneously recording. Editing features include 4 layer tracks, cross fade editor, automated mixer with 2 parametric EQ and 4 aux sends, plus more

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Recording Equipment

BUYERS GUIDE

RECORDING SOFTWARE WITH PC HARDWARE

features. \$6995.

Studio Tracks XP fully featured post production interface, designed specifically for edit intensive film and video post applications. Features include machine control, automated mixer, drag and drop sound librarian plus more. \$7996.

STEINBERG

Music Technology (02) 9369 4990
Cubase Score VST 3.5 includes all the features of Cubase VST 3.5 (see *Recording Software Alone*) plus a score printing/publishing section. Has hardware support with Lexicon, Event, Sonorous, Lucid Technology, Digidesign, Korg, Terratec and more. \$995.

Cubase Audio VST 3.5 includes all the features of Cubase VST 3.5 and Cubase Score VST 3.5 (see *Recording Software Alone*) PC version has support for Akai DR 8/16, Creamware and Yamaha CBX. Mac version includes Timebandit free. \$1295.

Cubase VST 3.5 has hardware support with Lexicon, Event, Sonorous, Lucid Technology, Digidesign, Korg, Terratec and more. For more info see *Recording Software Alone*. \$795.

Wavelab 1.6 for PC see *Recording Software Alone*. \$995.

WAVE FRAME

JMC Sales (02) 9281 2444

Wave Frame 408 digital audio workstation. Pentium PC based 8-track recorder and editor for post production in film and TV. Expandable to 24 tracks with AES I/O. Supports OMF, on-board syncing. \$25,000.

STAND ALONE RECORDER, MDM OR FIRMWARE BASED SYSTEM

AKAI

Australis (02) 9698 4444

DR8 8 tracks, no data compression, 16 channel digital mixer, full editing, wave form interface option, EQ option, Cubase/logic support. \$4995.

DR16 16 tracks, no data compression, 16 channel digital mixer, full editing, wave form interface option, 16 channel ADAT card for O2R connection, 5 takes, automatable mixer. \$6995.

DD8 8 tracks, DA88 pin compatible OMF compatible. Use DLI500 for full editing, Track, Slip and Nudge, RS422, Biphase and SMPTE conversion. \$POA.

DD1500 16 tracks, full wave form editing for film/video applications. Auto conform, network with DP8 mixer, clip EQ, digital EQ, time code conversion. \$POA.

ALESIS

Electric Factory (03) 9480 5988

ADAT XT - Stand alone 8 track MDM which is the largest selling single digital multitrack recorder, can be slaved with other ADAT's to give 24 tracks. \$5400.

Big Remote Control - for multiple ADAT's \$2550.

M-20 24 bit high end recorder from Alesis with backward ADAT commonality. TBA

EMU

Music Technology (02) 9369 4990

Darwin digital audio hard disk recorder has the features of a DAW style recording/editing capabilities, tape based system and also has support for SMPTE and DSP cards. Features includes internal digital mixer via MIDI controllers, sample accurate punch-in and out points, the ability to store locate positions during playback and supports the new 1/4" QIC tape drives for backup. Can also sync with

ADAT's and up to 4 units for 32 tracks. \$4995.

FAIRLIGHT

Fairlight (02) 9975 1211

MFX3 Plus latest generation Fairlight digital audio workstation with new CPU and graphics engine, PCI bus support, fast networking, modular software and new controller/keyboard. From \$24,000.

MFX3 Plus Mini as above but limited to maximum of 8 channels. Fitted with compact mini tower electronics rack. From \$20,000.

FOSTEX

Syntec International (02) 9417-4700

DMT 8VL 8 track stand alone hard disk 'portastudio' type recorder/mixer, the one that Stevie Wonder liked so much he bought two - one for himself and one for the sales guy in the shop! \$2,499

D90 8 Track hard disk rack mount recorder with 3.2GB drive (larger drive options available) \$3,499

D160 16 Track hard disk rack mount recorder with 3.2GB drive (larger drive options available) \$5,499

MARANTZ PROFESSIONAL

A.R.Audio Engineering

(02) 9810 5300

PMD502 stereo cassette recorder, rack mount, 2-head, auto reverse, serial remote, variable output, 15% pitch control, Dolby B/C and balanced input/output option. \$995.

PMD510 stereo double cassette recorder, rack mount, 2-head, two completely independent cassette decks each with its own (optionally balanced) stereo inputs, serial or cascade recording with other PMD510's, serial remote, variable output, 15% pitch control, Dolby B/C. \$1895.

PMD101 portable mono cassette recorder with built-in speaker, 2-head, internal microphone and 6.5mm jack input, normal or half speed recording/playback, +/- 20% pitch control, automatic level control (ALC), low battery indicator, 3 digit tape counter, RCA line input/output, tone control, headphone out, cue and review facility. \$695.

CP430 portable stereo cassette recorder with built-in speaker, 3-head, internal microphone and two 6.5mm jack input, two illuminated VU meters, +/- 20% pitch control, Dolby B and dbx noise reduction, MPX filter etc. \$1595.

OTARI

Amber Technology (02) 9975 1211

DX-5050 portable 2-track MOD recorder using latest 3.5" 640MB magneto-optical disks. Features 'WAV' file data format for direct file exchange via SCSI. No data compression, on-board editing and monitoring, jog/shuttle and instant start. \$6500.

PD-80 8-track random access disk recorder using latest 3.5" 640MB magneto-optical disks. Extensive editing capabilities inc. reverse play, scrolling wave forms, time comp/expand and pitch shift, optional internal HDD, SCSI port, inc. remote controller. \$13,650.

Radar 24-track random access disk recorder. Compact 4U case with 'plug and play' set up (operates same as multi-track tape machine). Includes remote session controller and 'radarview' graphics for extensive editing facilities. \$35,000.

ROLAND

Roland Corporation Australia (02) 9982 8266

VS-840 brand new companion to the VS-880 (released Jan 98) fea-

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Recording Equipment

BUYERS GUIDE

turing 8 tracks, 64 virtual tracks, built-in zip drive and effects plus large Icon-based display. \$TBA.

VS-880-CDR software/hardware upgrade package which now allows VS-880 owners to transfer mixes directly to CD without needing a computer. The package includes the JVC QPS CPR and all appropriate accessories. \$1495.

SONY

Sony Australia (02) 9887 6672

PCM 800 8 channel digital audio recorder. Balanced analogue audio I/O. AES digital I/O, auto punch in/punch out, varispeed playback, timecode chase and video synchronisation. \$10,370.

DAT MACHINES

FOSTEX

Syntec International (02) 9417-4700

D-5 DAT includes optical input and output, ID editing function, AES/EBU interface \$1995

D-15 DAT A professional machine with advanced features \$3999

D-25 DAT with synchronisation, 16MB RAM, RS422 and parallel interface. \$6,329

D30 II DAT with chase sync \$11,299

OTARI

Amber Technology (02) 9975 1211

DTR-8S cost effective DAT recorder for professional applications. AES/EBU and SPDIF interfaces, 300X high-speed search, selectable sample rates, balanced XLR in/out, 1/R remote. \$2540.

PANASONIC

Studio Supplies (02) 9957 5389

SV3800 2 head rack mount balanced adjustable analogue output. AES/EBU - SPDIF - optical digital in/out. Error rate indicator, shuttle wheel. \$3699.

SV3900 2 head rack mount. Serial control for automated control applications. \$4799.

SV4100 2 head rack mount balanced analogue outputs. AES/EBU SPDIF in/out. Error rate indicator, shuttle wheel. RAM start. 5 mode external sync (word, video or digital data). \$4999.

SONY

Sony Australia (02) 9887 6666

PCM-7040 timecode DAT recorder, AES digital I/O, memory start, 4 motor direct drive transport, 4 head, timecode chase sync, RS232 and RS422 9 pin remote control ports. \$10,736.

DTC-A8 rack mount, rugged 4 motor transport with roller guides, unbalanced analogue I/O, SPDIF and optical digital I/O, super bit mapping, headphone O/P with volume control, 44.1, 48KHz and LP modes, footswitch remote, IR remote. \$2695.

PCM-R500 rack mount, rugged 4 motor transport with roller guides, shuttle control, balanced analogue I/O, SPDIF and AES/EBU digital I/O, super bit mapping, headphone O/P with volume control, 44.1, 48KHz and LP modes, footswitch remote, IR remote. \$3696.

PCM-R700 rack mount, 4 heads, rugged 4 motor transport with roller guides, shuttle control, balanced analogue I/O, SPDIF and AES/EBU digital I/O, super bit mapping, headphone O/P with volume control, 44.1, 48KHz and LP modes, footswitch remote, IR remote. \$5267.

TASCAM

Teac Australia (03) 9644-2442

DA38 \$6,150

DA98 \$11,000

MINIDISC RECORDER INCLUDING 4 TRACK

DENON PRO

AWA Distribution (02) 9898 7666

DNM1050R MD: fourth generation Atrac for better sound. One step editing, keyboard (PS2) control + titling, full pro digital and analogue interfacing, jog/shuttle, 3 playlists programmable, SMPTE/Sony P2 and sample rate conversion options, 20 hot start option. \$2919.

DN990R MD: broadcast model, full editing, RS232 and parallel ports, headphone out AES digital I/O, analogue balanced I/O. \$4255.

DN045R MD: replicator for minidisc with no quality loss. 74 disc copies in 22 minutes. Discs are also 'defragmented'. \$5389.

SONY

Sony Australia (02) 9887 6666

MDS-ES5 professional MiniDisc recorder, unbalanced I/O, optical I/O, full editing and titling features, rack mount, remote controllable, V3.5 ATRAC, headphone O/P with volume control. \$1279.

MDS-B5 broadcast MiniDisc recorder, direct duplication link for digital copies, 10 track Hot start, RAM-TOC editing, mono recording, AES/EBU and SPDIF digital I/O, balanced XLR analogue I/O, QWERTY keyboard, varispeed, headphone O/P with volume control, jog/search dial. \$5356.

MDS-B6P broadcast MiniDisc player only, 10 track Hot start, RAM-TOC editing, mono reply, AES/EBU and SPDIF digital out, balanced XLR analogue out, QWERTY keyboard, varispeed, headphone output with volume control, jog/search dial. \$3648.

MDM-X4 MiniDisc Multitracker, Inputs: 2 balanced mic/line, 2 unbalanced mic/line, 1 stereo line, 2 stereo aux returns, 2 aux sends, 4 buss, 4 track MD Data recorder, V3.5 ATRAC, track, song and disc based editing, bounce forward,

MIDI out, footswitch remote control, varispeed, records and plays stereo Audio MiniDisc too, mono recording. \$2295.

TASCAM

Teac Australia (03) 9644-2442

564 mini disk portastudio \$2,995

YAMAHA

Yamaha Music Australia (03) 9699 2388

MD4 4 track MD-Data format recorder/mixer; 3 band channel EQ; aux send w/stereo return; song repeat, cue list and program playback; stereo ping-pong; MTC out. \$1,895

PROFESSIONAL CD BURNER/ RECORDER

HHB

AWA Distribution (02) 9898 7666

CDR800 synchronised recording with DAT, MD and CD players. Solid platter for less jitter and improved bass response. Laser faces down for better dust protection and longer life. Professional interfaces. \$4629.

MARANTZ PROFESSIONAL

A.R.Audio Engineering (02) 9810 5300

CDR/RC 620 new generation CD recorder featuring comprehensive input/output interfacing: AES/EBU, SPDIF, XLR analogue in/out, sample rate converter, digital audio delay and auto indexing from CD, DAT, DCC, MD, SCS1-11 interface for CD-ROM (XA), PHOTO-CD, CD-1, Video-CD and CD-DA and high speed copying. \$9995.

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Connections TRADER

Your **NATIONAL** selling machine!

EMPLOYMENT WANTED:

FREELANCE LIGHTING TECH looking for work perhaps an apprenticeship-style agreement. Have been in industry for 2 years as an assistant. Looking to be trained in professional Lighting Design. Call anytime. Have references. (02) 9997 1245.

POSITIONS VACANT:

ARE YOU BETWEEN 21-25 years old, have a keen interest in lighting and sound equipment and want to work with industry professionals every day of the week? You are the person we want! We are looking for someone to work with us in a newly created position of internal sales. You'll be talking and working with dealers around the nation and across the pacific every day, conducting product demonstrations, sending quotes and processing orders. You need to be vibrant, well groomed and willing to learn, but we can provide on the job training if you don't see yourself as the master salesman. There are plenty of growth opportunities for the right applicant as you'll be a part of a dynamic and fast growing distribution company representing the worlds leading brands. Salary is negotiable, and the role may involve interstate travel. All applicants should apply in confidence by forwarding their resume to the Managing Director, Show Technology Australia Pty Ltd, PO Box 480, RYDALMERE NSW 2116.

AUDIO ENGINEER: Young, Enthusiastic Audio Engineer required for growing audio hire/sales business. Send CV to: "Audio Link" P.O. Box 147, ASHBURTON VIC 3147
HIRE/PRODUCTION CO-ORDINATOR: Australian Concert Productions are

seeking an experienced Production Coordinator to work with their Production team in Brisbane. A proven track record with client liaison and an extensive knowledge of current Audio Equipment and Logistics management would be a distinct advantage. Please send your resume to: General Manager, Australian Concert Productions P/L P.O. Box 480, Fortitude Valley QLD 4006.

SALES - Belden Audio/Video Cables. New position, based in Warriewood, to market/sell the Belden range of cables to the Broadcast and ProAudio/Video market throughout Australia. Applicant Should have proven Sales experience in this market, be self-motivated and have the capabilities to grow the business. Maser is a leading supplier of Broadcast Equipment. Reply in writing to: Gareth Jones, Maser Technology Group Pty Ltd, PO Box 162, NARRABEEN NSW 2101.

STUDIO For SALE:

RECORDING STUDIO with live room and Three rehearsal rooms. Tascam 24 Track one inch machine and Mackie 32/8 Buss. Mikes and outboard gear and loads of other stuff. Excellent Condition. 5 minutes form Melbourne Central. Contact 0417 566 076.

STUDIOS For HIRE:

CAPTURE the Magic of a Live Performance in an acoustically Purpose built studio on the World's Leading Hard Disk Recording System - "ProTools". Satellite Recording Studio. Perth. (08) 9470 4003.

VELVET Sound 24 track recording studios. 36 mics. 20 fx units. 20 + outboard gear. Baby grand piano. 7 synths. CD burning. Editing. Mixing. Master-

ing. Great rates. Limited space available. Ph: (02) 9264 3420

For SALE:

4 x JBL 4890 ARRAY WEDGES \$8000.00 LOT. Cannon Sound (02) 9550 3828 or 1800 804 994.

8 X CLAIRE SLP WEDGES - E140 & R/H 2" DRIVER ON FLARE IN ROADCASES \$9000.00 LOT. Cannon Sound (02) 9550 3828 or 1800 804 994. For latest specials list email cannon@ptm.com.au.

8 x JANDS AP30 BINS \$16000.00 LOT. Cannon Sound (02) 9550 3828 or 1800 804 994.

13 RACK UNIT WOODEN RACK/ROADCASES \$100.00 EA 5 IN STOCK. Cannon Sound (02) 9550 3828 or 1800 804 994.

50 x CHASSIS MALE & FEMALE CANNONS (NEW) \$75.00 THE LOT. Cannon Sound (02) 9550 3828 or 1800 804 994. For latest specials list email cannon@ptm.com.au.

ABSTRACT PRO FUTURE SCAN III M33 LIGHT. DEMO STOCK IN NEW CONDITION - 1 ONLY \$600.00. Cannon Sound (02) 9550 3828 or 1800 804 994.

AKG CK451 W/CK1 CAPS \$350.00 EA QTY 4. Cannon Sound (02) 9550 3828 or 1800 804 994.

AKG D12 MIC \$100.00. Cannon Sound (02) 9550 3828 or 1800 804 994.

AKG D310 MIC \$60.00 EA QTY 2. Cannon Sound (02) 9550 3828 or 1800 804 994.

ALTEC 15" wedges, concentric type

(1" horn within speaker), lovely sound \$600 each (02) 9799 7219

APOGEE speakers AS-3200, (300W 10" & horn) x 8, plus 2x P-3200 Processors, plus 2 x CN-850 power amps 425+425 & 2x CN-1250 power amps 625+625. The speakers come complete with flying yokes and speaker cables. This is an ideal system for Theatre, Fashion parades or any gig where vocal clarity and power are a priority, the complete package is available for \$16,000 ono. Phone (07) 5571 1400 or 015 766 078 Richard.

ARX EQ-60 GRAPHIC EQUALISERS \$1000.00 EA 2 LEFT. Cannon Sound (02) 9550 3828 or 1800 804 994.

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AND THERE WAS

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AND THE LORD SAID "LET EVERY MAN AND WOMAN GO FORTH INTO THE WORLD AND DIAL

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AND HE SAW IT WAS VERY GOOD.

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ratio controls, coupled with a two part meter; and a PeakStopPlus limiter that represses unwanted transients from blowing drivers while minimising the distortion common to many "hard" limiters.

Also standard with the processor are +48V phantom power, a 20dB pad, phase invert switch and classic dbx bakelite custom VU meter. The mic pre can also be used independent of any other processing, via 1/4 inch and XLR mic pre 'out' connectors on the rear panel.

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Creston's ProCam Pan/Tilt Heads

Creston Electronics announces its ProCam line of pan/tilt heads. These offer network camera con-

trol with "whisper quiet" operation. Network camera control performance is unprecedented when interfaced to the Cresnet™ II control network (using the CNCAMI interface). Use up to 252 cameras on a single network.

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Write in Reader Service Number: 168

BYTES

• **Dataton** has just concluded the Australian leg of its 1997 Wizard World Tour. A Dataton Wizard is a factory trained dataton programmer of world standard.

Sixteen Australian Wizards spent 3 days of intense training at Dataton Australia HQ at Lindfield, lead by Mike Fahl, Head of Natation R&D.

Wizards included Kevin Beacham, Peter Carter, Scott Davis, Lee Heyward, James Horton Tony Lilleby, Adam Milwright, Steven Nletz, Mal Padgatt, David Palmer, David Primmer, Dean Stevenson, Ted Sullivan, and Toby Waley.

• **24 BIT** recording requires more hard disk space, amplifying the issue of hard disk reliability. A hard drive works harder doing audio (or video) than at any other task. Buy only 'AV' version drives recommended by your system supplier, & consider the issues!

• **Headspace Inc.** has announced that Netscape Communications Corporation is bundling Headspace's Beatnik Plug-in with the final shipping versions of Netscape.

V3.01 Beatnik is the first plug-in to enable sound effects.

The Beatnik Plug in manages the playback of audio files encountered in Web pages, including RMP, MIDI, MOD, AIFF, WAV, and AU files. The Beatnik Plug-in sounds great on all supported platforms (currently Macintosh PowerPC and Windows 95/NT) and doesn't require a soundcard.

• **Hitachi Australia Ltd.** has announced the availability in Australia of their 2nd generation DVD-ROM drive featuring 2 times normal speed operation. Hitachi also announced that local company, Verbatim Australia Pty Ltd has incorporated the DVD-ROM drive into a complete multimedia kit suitable for PC applications or TV playback.

The Verbatim activeMEDIA Double Speed DVD-ROM Upgrade Kit will be available early September 1997 for a retail price of \$1199. inc tax.



RAVE: ROUTING AUDIO VIA ETHERNET

QSC Audio have introduced a digital routing system which allows multiple channels of uncompressed 20-bit digital audio and control/monitoring signal to be routed in real-time over standard Ethernet network systems.

The six QSC RAVE (Routing Audio Via Ethernet) units introduced so far are 1RU multiplexer modules providing the audio inputs and outputs to the network.

In the system two RAVE units can be connected directly to each other to replace, for example, a conventional multi core. For more complex systems, and those requiring on-going expansion, the RAVE units can be routed via an inexpensive Ethernet 100base TX hub.

With the hub configuration, the size of the system is limited only by the number of ports on the hub with further hubs being added to

facilitate larger networks.

Six 1RU RAVE's handle various digital/analog in/out options:

- RAVE80
- (16 Digital Channels Out),
- RAVE 81
- (16 Digital Channels In),
- RAVE 88
- (8 Digital Ch In/8 Dig. Ch Out),
- RAVE 160
- (16 Analogue Channels Out),
- RAVE 161
- (16 Analogue Channels In),
- RAVE 188
- (8 Analogue Ch In/8 An Ch Out).

CAT+5 unshielded twisted pair cable is used for distance between RAVE units and hubs under 100m with optical fibre and standard Ethernet Media Converters recommended for distances over 100m.

Connection is via 3-pin XLR's for the digital ins and outs, detached terminal strip for the analogue and

standard modular RJ-45 jack for the Ethernet.

Each RAVE unit monitors and displays network diagnostics and operation activity via a bank of eight LED's.

For level matching, input and output sensitivity is internally adjustable and tamper-proof!

RAVE made a very high profile introduction as the primary signal transmission for the half time entertainment at Super bowl XXXI in the USA. Closer to home RAVE has been selected by the Sydney Opera House for the Stage Managers paging/control systems. A full story on this major project will appear soon in Connections.

Retail price of, for example, the RAVE 88 is A \$7,500

AR Audio Engineering represent QSC in Australia, call +61 2 9810 5300.

C Tick: EMF regulations in effect now

Almost one year after new regulations came into effect which require new products be tested before being placed on sale in Australia, we have received a news release from the Government!

To deal with the problem of Electromagnetic Interference (EMI), the Australian Communications Authority (ACA) has introduced the Electromagnetic Compatibility (EMC) framework to protect Australia's radiofrequency spectrum. On January 1, 1997, this framework became mandatory.

To achieve EMC, the ACA has established a framework introducing technical limits for unintended emissions from electrical/electronic products and communications services under the Radio communications Act 1992.

To establish compliance with the EMC framework, suppliers need to comply with standards relevant to the products they market. The standard AS/NZS 1053, based on international standard CISPR 13, specifies the limits and methods of measurement of radio Interference characteristics of sound and television broadcast receivers and associated equipment.

As the EMC framework is now mandatory, it is important that suppliers understand the methods and regulation of compliance with the WMC framework rests with the supplier who must take responsibility for products placed on the market.

To assure compliance with the EMC framework, suppliers must

satisfy four basic requirements.

They must establish sound technical grounds for product compliance; make and hold a Declaration of Conformity; prepare and keep a Compliance Folder; and label the product with the 'C-tick' mark.

Once these basic requirements are fulfilled, the product can be offered for sales on the Australian market.

To keep the regulation simple, the supplier is only required to register one application with the ACA to use the C-Tick label.

• Aust Communications Authority Purple Building, Benjamin Offices ACT 2617. Ph: 02 6256 5451 or 02 6256 5520, Fax: 02 6253 2424

Website: www.aca.gov.au

O N T O U R

blur



Photos: Cat Forcer

Loud and frantic, *Blur* exploded onto the stage at the Hordern Pavilion. Sound engineer Matt Butcher has been with *Blur* for four years and also works for *Roachford* and *The Sundays*. For the Australian tour the sound equipment was supplied by Australian Concert Productions and Matt was more than happy with their service.

"I'm using the Turbosound Flash/Flood system, there's enough of it and I get it flown wherever I can!" he said. "It goes in very easily, is well packaged and is reliable. In England I prefer to use the German-made DMB4C2 PA system supplied by Entec Sound."

The PA system comprised of 20 x 21" subs, 8 Flashlights a side, 4 Floodlights as outfills a side, a couple of underhanging fill boxes and a couple of more Floodlights for the infill. Monitors were run by Simon Higgs who coped very well with the mayhem on stage using a Midas XL3 desk.

"I'm using a Midas XL4 for FOH which is just fantastic," enthused Matt. "This is my second tour using it and you can do so much more with it - you can do changes

very fast so if they throw the odd song into the set, providing you know what number it is you're off. It makes life a lot less stressful. There is usually a set list but occasionally they'll do something unannounced which keeps me on my toes.

"Effects are not very interesting - three SPX900's or 990's, some sort of DCL, an H3000 and a PCM80. The last three are mainly for vocals.

"The band are very loud on stage and equally loud out front. They get very into the shows and it gets quite chaotic, even violent in places then sweet and serene in others."

As well as the main band, there were two keyboard players and two brass players (expanded to four for large shows). The two brass players were having a good trip only having to play for two of the songs every night.

Blur have an endorsement with Sauer for the microphones and so there were the stock SM57's and SM58's being used. SM98's were around the kit, with an SM91 in the kick and SM81's on the hat and overheads. For the brass there were a couple of Beta 57's.

"Demica is very happy with the SM58 as it's a good weight for him and sounds good with him," said Matt. "We did try Beta 58A's but they tend to break when Demica gets a bit excited."

The Hordern Pavilion show in Sydney followed two nights at the

Metro, a gig chosen because the band wanted to play small venues. All very well but it did cause a frenzy went tickets went on sale.

"The Metro shows worked out quite well," Matt said. "We took in the control and the monitors but used the house system with 6 Floodlights subs in the side. We've done some very small venues like pubs which only hold 100 people. It's all part of the 'interest' though, isn't it?"

Lighting designer Dave Byars has been winning awards for his wicked light shows both for *Blur* and *Pulp*, although the show we saw here in Australia last month was fairly toned down compared to some of the extravaganzas Dave has produced in the past.

The tour started last January and is due to finish in December.

"We've done America three times this year," said a tired-looking Dave. "They're really getting popular there. The last tour was so over the top and kitsch, we're really trying to get away from that now and keep it as simple as possible. That's why this tour just has some drapes to tidy up the stage a bit as opposed to all the flying scenery we had last year."

On the night I met up with Dave, things were not going smoothly and it was difficult to find time to talk to him.

"I'm having problems with one of the de-multiplexers, it went down so we're having to do a bit of patching and reprogramming," explained Dave. "Also we've come out of the two small shows where we couldn't get all the stuff in and now it's been added it means more reprogramming."

One of the main elements of the rig were the 12 Clay Paky Super Scan Zooms although Dave usually uses Stage Scans. Added to these were 12 Martins, par cans,

continued over



TOUR NEWS

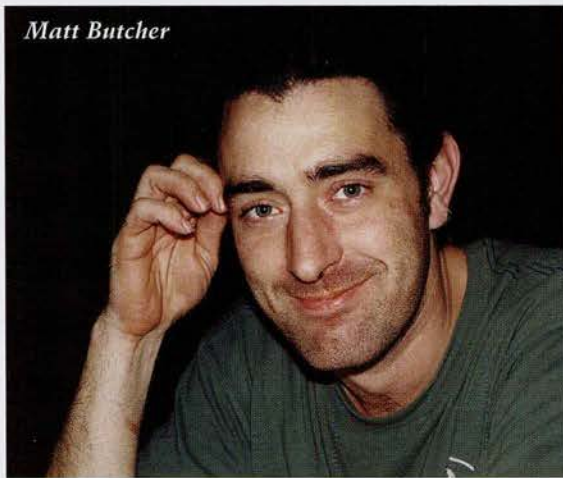
molefays, strobes, and ACL's.

"The new Blur album is a lot darker in mood so instead of using pastel shades like on the last tour, I'm using rich colours," said Dave. The back of the drapes is a sharks-tooth with stripes painted on in UV paint, the same colours as used on the album sleeve. Camouflage netting in brown, amber and auburn material hangs from the drapes.

"It's just a matter of dressing the stage," said Dave nonchalantly. "With two-dimension and UV you can have fun playing, projecting on to them and stuff."

Dave was using an Avolites Diamond III desk, a desk he likes so much he bought one.

"There were a couple of times last year when I got stiffed on desks and as it's the way you interface with your show it's the most important piece of equipment there is," he said. "After not getting the desks I wanted, I decided that I'd make sure there was always one available. I'd been using the Diamond II for a long time when the Diamond III came out, it does exactly the same thing but is affordable. It's basically 60 faders wide with 20 faders in the memo-



Matt Butcher

ries whereas the Diamond II is 90 faders wide with 30 faders in the memories. The desks perform the same functions, the Diamond III is just smaller in size which in many ways is a good thing. You're not limited to a number of channels either, there are five pages of 60 and each one of those channels can either be an individual dimmer or an actual instruments as well."

The moving lights were operated by Andrew Emmerson on a Wholehog as Dave has not yet tested the moving lights capabilities of his desk.

★ Cat Forcer

★ **Tina Arena** begins her national tour this month playing Entertainment Centre size venues. Entech award winner Steve Scanlon is again running Front of House and Kaze Cebrano's lighting designer Kurt Wagner has come on board.

★ **silverchair** also hit the road this month. Lighting designer Hugh Taranto is using a system supplied by Chameleon.

★ Before the death of Michael Hutchence, lighting designer Sean Hackett, better known as Motley, was due to tour the country with **INXS** using a system supplied by Bytecraft. Motley has just found out that he will be designing next year's **Savage Garden** tour, a job hotly contested.

★ Gavan Swift, known for his lighting design in theatre, is taking his first foray into rock'n'roll by designing the **Jimmy Barnes Soul Deep** tour.

★ Rumours are still rife as to who has been appointed the jobs of lighting designer and sound engineer for next years much hyped tour by the reformed **Cold Chisel**. Apparently several people are claiming to already have these positions!

★ Troggie is again doing the lights for the **Hoodoo Gurus** on what will be their final tour ever. Colin Ellis is the sound engineer using a system from Revolver. Lights are supplied by Chameleon.

ROUGH RIDER

I heard about a rider just recently with a clause that really made me laugh. It comes from the rider of one of the obscenely successful American supergroups where each member earns a million dollars every time he blows his nose in a public place. Anyway, the amusing clause stated that the lead singer of the group liked to personally get down on his hands and knees and scrub the stage floor the night before the first performance of each tour.

Yeah Right!

Not exactly a cool look for a rock star walking around with a scrubbing brush and a bottle of Ajax hanging out of the back pockets of his designer ripped jeans. That would be a photo worth risking life and limb to get. I can just see it on the front cover of Rolling Stone with the headlines screaming *Rock Stars reveal what really gets them going the night before a big gig.*

There'd be the obligatory sex and drugs tales and then there'd be the

floor scrubber who'd say something like "I like to scrub the stage until my hands are raw and the floor is spotless." The stunned interviewer would have a frozen smile on their face waiting for him to get to the kinky bit but instead he says "I like to use hot water and metho for your standard wooden floor though if its a black surface I find that nothing beats Ajax and I like to give it a good hot mop first and"- and on and on it goes. Not exactly going to excite the fans into a frenzy - though it has possibilities.

I can just imagine the opening of the show; fans screaming, stage half a metre deep in fog, a frenzied beat coming from the drums. The *Lead Singer Rock God* walks out onto stage and is immediately knocked unconscious as 10,000 scrubbing brushes are flung at him by adoring fans. Tom Jones and his knicker throwing fans could have a lot to answer for. Scrubbing brushes just don't quite have the same appeal

as lingerie though do they?

Now if I was a Rock Star with a fetish for clean floors this is how I would do it. I'd strut out onto stage and find some git dressed in black, working for \$12.80 an hour and say, "hey you, the floor needs cleaning". I'd wait until they turned around and were looking straight at me, then I'd spit on the floor and tip my beer on it, look the git straight in the eye, smile and walk away. Now that's how a Rock Star should behave!

I think this particular Rock Star should have kept quiet about his obsession with clean floors and just asked for all the normal things - champagne, big dressing room, purple limo etc. Next thing you know he'll be asking for minimum wage and wanting to fly economy!

Yeah Right!

Rufus B.

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Write in Reader Service Number: 167

LIGHTING

December/January 1998

MONTHLY

Edited by Catriona Forcer

DIGITAL LIGHTING

the next revolution awaits

Video and lighting are about to enjoy a shotgun wedding, and it isn't vapourware

A Connections EXCLUSIVE report by Cat Forcer, Buck Freeman and Julius Grafton.

Lighting as we know it is about to undergo a revolution which will make the DMX transition look like a minor event. Recall what excitement DMX generated, when designers could make a moving light do what a Vari*Lite already did.

Think about where lighting is today, with control over movement, image and colour - and new moving head fixtures taking over the upper level of the business that Vari*Lite have dominated for the past decade.

Today you can actually buy a moving head wash or profile fixture which does everything that a product from Vari*Lite does. The difference is that Vari*Lite have, as a company, been elite, aloof and almost always ready to take ambitious legal action against competitors. What really rankles is that Vari*Lite have consistently refused to host educational seminars at ENTECH.

But while designers are flexing new muscles and specifying the fixtures they only could dream about a few short years ago, a major revolution in lighting is under development.

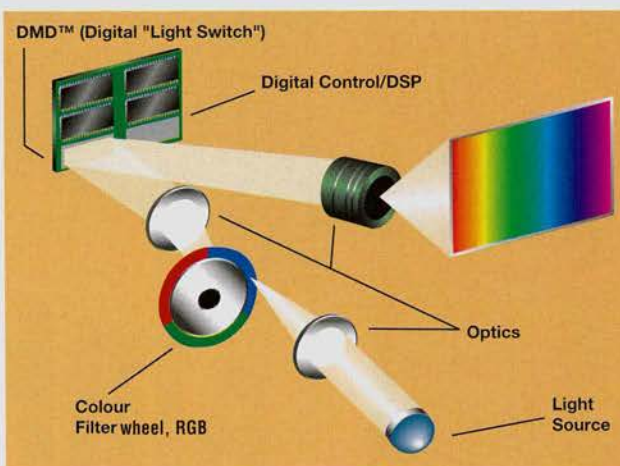
For a while now we at Connections have been hearing of mysterious new technologies under study at both Vari*Lite and arch competitor, LSD. Still more rumour came from other research facilities, and some touring designers told us things were happening.

At PLASA in September Caroline Grafton reported on a new lighting device from Lamba, called Pixelscan. (See page 69, October Connections). The information we ran was extracted from the Lamba press release, and at the time it didn't make a lot of sense to us.

Pixelscan offers rotatable imagery generated by a PC based imaging tool, and so does not have inbuilt gobo's or colour changing devices. Lamba said the Pixelscan will

do 3D video projection. We were intrigued.

Also hidden away at PLASA was a new fixture of a similar kind from Lampo, the Leader 2000. Our colleague Karl Ruling (Standards officer, ESTA) thought it was



based on an LCD video system, and that it could hook up to a video camera or video effects generator. He was almost right.

Last month at LDI the whisper became a storm, and the cause can be traced back to 1994 when Texas Instruments released the Digital Micromirror Device (DMD). It was aimed at the video market, and is now incorporated in about ten different video projectors, from half a dozen vendors. Many others are working up projectors and video walls using the DMD in a format called Digital Light Processing (DLP).

The DLP system has a conventional light source, then an RGB (red, blue, green) colour wheel is used to project a full colour image. The colour wheel spins at 60hz to give 180 colour fields per second.

The colour wheel is synchronised with the DMD, which itself is a large chip, the surface of which is made up of over 500,000 microscopic mirrors. Each mirror sits atop a switch, which can tilt the mirror to bounce varying degrees of light, or none at all. This switch action happens at the same speed as the colour wheel turns, or 1870 times per second.

LXbizzBITS

NEWS

MARTIN'S NEW DISTRIBUTION ARRANGEMENT IN AUSTRALIA

Effective 9th of November 1997, a totally new division of long time distributor Show Technology Australia Pty Ltd will handle all Martin Professional sales and marketing. The new division will be known as **Martin Professional Lighting Australia** and its formation brings Martin's image into line with all major markets worldwide. Whilst still utilising the substantial resources of Show Technology, Martin Professional Lighting Australia will have its own unique identity with a product manager, an annual conference, new corporate imagery, dedicated dealers, Martin Global Network Partners and affiliated resellers.

Show Technology's experienced technical team will continue to be responsible for Martin support, as will other departments such as accounting and stores. Martin Professional Lighting Australia (02) 9898 1111

SELECON NEWS

The Mackay Entertainment Centre in the Far North has just taken delivery of 24 **Arena High Performance Fresnels** supplied by **Kennedy Amplifier Services of Mackay**. Caloundra Civic Centre have recently upgraded their lighting system with **Selecon Aurora Cycs, SF 1200s**, and **Zoomspot 1200's**. London outlets of Mothercare and Guess have **Selecon Astral metal halide Fresnels** lighting their principle display windows. The new Museum of Modern Art in Stockholm, Sweden will have a rig of 500 **Selecon Acclaim Fresnels** lighting the exhibitions when it opens this month. Call Selecon +64 9 360 1718.

STRONG SUPER TROUPER II's Chameleon Touring Systems have added **Strong Super Trouper II** followspots to their rental inventory. These new units feature electronic reporting of lamp current, elapsed time, lamp number and arc voltage. Two units are to be supplied for use on the Melbourne season of Phantom of the Opera at the Princess Theatre. Call Chameleon (02) 9310 5222.

LDI'97



All that Glitters is not Gold

by Cat Forcer

When the colour wheel hits a new colour, the DMD chip resets. So each of the red, green and blue colours are reflected from the chip, 180 times per second - and each pass over the chip can have the chip mirrors configured in a unique way.

The human visual system integrates the red, green and blue information and sees a full colour image. Using a projection system, the image formed on the surface of the DMD can be projected.

Now the video and the lighting device have converged, because they both use a light source, both have an optical chain, and in the case of a profile or hard edge lantern, a lens. Increasingly remote controllable lights have elaborate gobo projection and colour changing systems, all of which require motors and sophisticated control. DMX as the controlling medium is stretched to the extent some systems use two DMX channels for one function to gain better control resolution. With 16 or more DMX channels feeding one moving light, DMX is fast approaching saturation.

With the DMD chip and the DLP system, what is today a video projector is tomorrow an incredibly versatile lighting product. The major issue is control, because a DLP system simply wouldn't work with DMX.

DLP is a high resolution video projection engine, and this is what the forthcoming next generation lighting product will contain. The image you need you will generate the same way you would make the image on a computer monitor. Scan it, draw it, or shoot it on video. Video effects generators, video replay, and X-Y-Z movement controls will be the key elements in the next generation of lighting controllers.

Control is an issue that is likely to be causing considerably more angst than the actual fixtures. As we said, Vari*Light and LSD are advanced with fixtures using the DLP. We understand LSD have code named the project 'Medusa', and Vari*Lite may have designated their fixture as VL-10.

Control systems can easily continue to use DMX to handle core tasks, like X-Y-Z movement, and indeed control conventional dimming and lighting. But the actual imagery projected from your DLP based fixture will originate from your PC and video. Colour and gobo use will be dreamed up from an infinite number of possibilities. As to how these signals are run to each fixture - that is an issue. Look to how a videowall works for a clue.

So while you start to enjoy the latest moving head luminaires and the freedom that they provide, keep an eye open for the next wave. The Moving Head DLP units (MH-DLP) that the manufacturers would prefer you knew nothing about, just yet.

Las Vegas. In your mind's picture you see neon and lights, lots of lights. What better place to hold LDI'97? Okay, you also see fat, aging Americans in ill-fitted shorts and trainers (and that's the evening attire too), entertainment wannabees and the usual sprinkling of Japanese and German tourists.

A glowing blemish erupting from the beautiful Mojave desert, Las Vegas is a town you either love or hate. But even if you hate it and all it stands for, you have to admit it is pretty awesome.

Choosing an evening of entertainment is a little like being a kid in a chocolate factory. During the few days I was there, the Entertainment (with a capital E) options were mind boggling which is probably why I'm in my motel room writing this. Harrah's hotel and casino is having a grand opening tonight with fireworks and Harry Conick Jr playing, the Stratosphere is premiering its new lighting display - a promised 3 million light beams spreading out from this Vegas version of Centrepoint into the already saturated night skies. Being a pilot here at night must be mighty confusing.

Tomorrow night the Artist Formerly Known as Prince plays a mega-concert followed by Fleetwood Mac the next night. Tom Jones has just taken up his regular stint at the Hollywood Theatre. There's also a host of other acts you would like to see. Yes, I'm afraid Siegfried & Foy are still here, as are a lot of other magicians/illusionists/prats. Who enjoys these shows?

Only in Vegas is there a hotel called New York. New York cunningly sculptured into a replica of the New York skyline but somewhat dragged down by the massive rollercoaster embracing the architectural wonder. Next to it is the Excalibur hotel & casino a pseudo-Camelot style building complete with Medieval adornments. Then there's the famous Luxor with its pyramid and Sphinx.....I guess you get the idea.

Take a tip from me - when in Vegas escape the Virtual Reality to Actual Reality by taking a

trip into the desert.

The tradeshow at the Sands Expo Centre was busy, on the first day 10,021 registrations were taken. Last year, LDI'96 drew a total of 9,600 over the whole three-day run. 390 exhibiting companies occupied 107,500 net square feet of exhibit space. This represents an increase of 50 companies and 12,100 square feet versus the 1996 show at Orlando.

There were some innovative products but mostly it was enhancements and copies. Over the past two years, American companies have had to sort out their standards like in Europe so maybe they've been putting their money there rather than in new developments.

There was a lot of anger directed towards the unions at the Sands Expo Centre with many tales of frustration. Union Hell it was quoted as. Whereas usually the union crews are very knowledgeable apparently they were not in Vegas so not only did you have to deal with the union but a union that wasn't capable of the job. On one stand the truss was supposed to be up by 1pm on the Wednesday but it wasn't up until 6pm the following day. The crew didn't turn up until 5pm on the Wednesday and then after one hour, demanded overtime. You have to pay or you don't get the job done, there is no option. Some people I spoke to were hoping to get compensation.

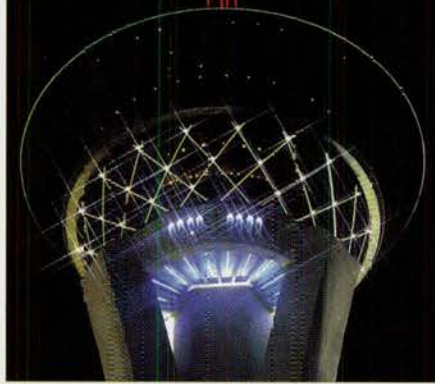
There were the usual rumours and the parties hosted by the giants - ETC, Vari-lite, Group One, High End - some of which started off more rumours! I was told that Fleetwood Mac were paying at the High End party but instead we were given a band comprising of High End employees - hmmm. However, maybe it was the free drinks but they were actually quite good.

As I checked out of the hotel, I passed a man telling the bellboy how he was going to have to book two extra seats on the plane home. Why? He had bought a rather large Tweety Pie and a Tasmanian Devil and he wanted them comfortable on the way home. Only in Vegas.

Next year LDI'98 will be in Phoenix, Arizona.

architainment

Stratosphere Tower, Las Vegas



apparently Xenotech got the order on the 15th of March and delivered the product exactly one month later.

The tour carries five of the fixtures with four being used in the show. It has been described as 'a gnat on steroids' which is quite apt. The head has continuous 3600 pan and tilt and has 7000W.

"The spec was extremely tight, they wanted a resolution to be calculated at under 0.1 of a degree to point them straight up," a Xenotech representative told me. "Then they wanted to be able to track a mirrorball which comes up and down a runway which again is only a movement of arc of 2 degrees. Then they decided between the mirror ball track, they wanted them to come off the mirrorball, spin round for five minutes and then come back down on the mirrorball without slipping any position at all as well as running at about 60 rpm when they were doing it. It was quite a challenge."

LSD wrote special software for their Icon to control the Razorheads.

Contact Xenotech +1 818 255 0620

TIR Systems is a lighting technology company that provides innovative lighting products to architectural and design, machine vision and traffic safety markets worldwide.

Their **Light Pipe** offers easy maintenance, high quality illumination, long life and all weather performance. An example for all to see at LDI was the lighting on the Stratosphere Tower, Las Vegas.

An Irideon AR500 is located inside the bottom part of the Tower and through holes in the concrete are little collars that connect to the Light Pipe and once the light is in the Light Pipe it is guided along the tubes. The light comes out uniformly, and in this case the tubes are 6 metres. They're programmed to change colours and match the other lighting on the tower

TIR also manufacture luminaires specifically

designed for the tubes. The tubes require that the light comes out at a certain angle so that the light bounces down the tube properly and is extracted uniformly along the length. The principle is like fibre optics but it's different in that fibre optics tends to drop off where as a single lamp source can stretch 44 ft down a tube with the same output at the end of the tube as in the beginning.

TIR Series 4000 Luminaire



TIR were also showing their **Series 4000 luminaire** for the first time at LDI. It is available in many anodised or painted colours, uses 70W, 100W and 150W metal halide lamps for indoor and outdoor applications. It features a specially designed reflector maximising the amount of light entering a 4" light guide, easy relamping and a simple two-piece track mounting system. Call: TIR Systems, Canada 6C4 294 8477.

Strategic Resource Solutions launched the **Ionlight** controller which is a protocol translator allowing a built in automation system to talk with a DMX theatrical type lighting fixture which may be installed in a building.

"It means you don't have to have a built in automation system and a lighting system," said Mike Carver of SRS. "You can run both of them from one interface. I think people really want to integrate theatrical lighting into commercial buildings and therefore they're going to want a built in automated system that can work with theatrical lighting."

Call SRS Lighting 1-888-575-7878.

Remote Source Lighting International offered a variety of products for remote source illumination systems including illuminators, splitters, couplers and fixtures that it manufactures. Their 150W metal halide **Light Pump** is a fibre optic illuminator which is

continued over



Ionlight Controller



RSLI Light Pump

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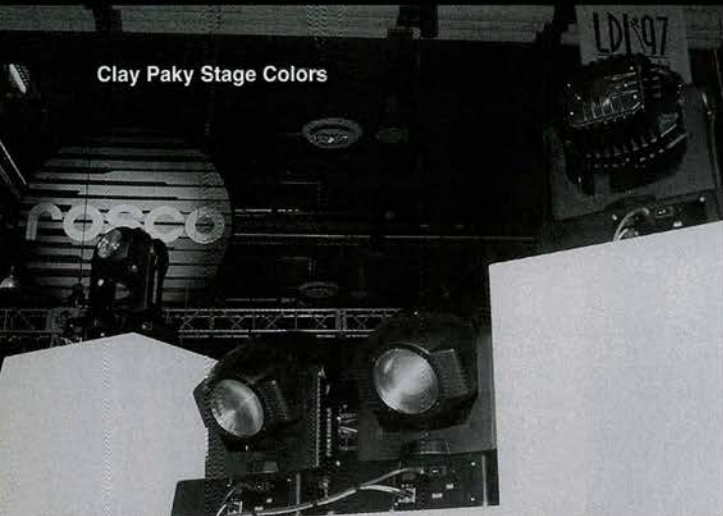
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lights

Clay Paky Stage Colors

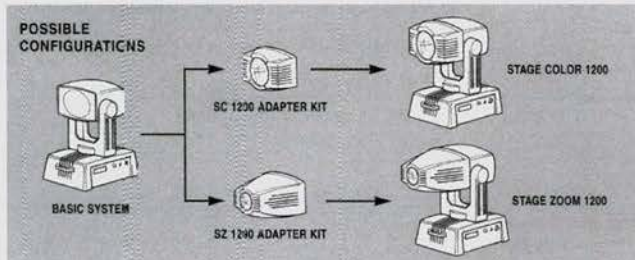


Clay Paky held a press conference at LDI to launch their much-anticipated range of moving body luminaires. The family consists of three wash lights - **Stage Color 300**, **Stage Color 1000** and **Stage Color 1200** - as well as one effects projector - **Stage Zoom 1200**.

The Stage Color 300 is a compact, lightweight washlight which uses a HTI 300 lamp and is designed for discos, display lighting and sales outlets as well as maybe theatre and television. The Stage Color 1000 is equipped with a 1000W halogen lamp and it's designed specifically for the requirements of the television studio or large theatres. The Stage Color 1200 is a powerful washlight which offers generous colour capabilities based on a 4 wheel colour mixing system, complete with a frost filter system that provides wide colour backdrops even over short projection distances. Lamp used is a high output HMI 1200. The Stage Zoom 1200 is a moving body graphic effects projector designed for theatre, television sets and concerts. The projector, which is equipped with a linear zoom function, can generate an infinite range of different effects thanks to its gobos and prism equipment.

All the Stage Colors have a pan range of 450° and tilt of 252° and 1-7 flash/strobe.

An adaptor kit for the SC1200 and the SZ1200 will be available so that you can change the lamp head on your basic unit as illustrated. The Stage Color range is planned



to be on sale in March 1998. It won the **Lighting Product of the Year - Entertainment: Most Promising Prototype** at LDI.

Australian dist: Show Lighting Australia (02) 9898 1666

Vari-Lite unveiled its newest addition - the **VL7 spot luminaire** which uses

a Philips MSR700SA, 700W lamp with a 5600°K integrated colour temperature. The VL7 offers full colour spectrum crossfades via the CVF System, from the palest shades to the most saturated hues. The 8:1 zoom lens projects high quality imaging and the field fall off is 2:1, centre to edge at any magnification.

Other features include rotating and fixed gobos, strobe and image morphing. Every feature is optimised for speed and also for slow, smooth repeatable transitions.

Vari-Lite are currently working on **Virtuoso**, a control which will be more user friendly than the Artisan, will have outdoor features, as well as Vari-lite protocol and DMX. Expect to see it in 1999.

Altman Stage Lighting launched their **UV 705 Focus Flood Blacklight** (AUS\$3600) which has a unique focussing mechanism that allows for adjustments from wide to very wide flood. Also new were the **Sundowner Dimming Shutters** designed for use on a wide variety of HMI and UV fresnel spotlights (from AUS\$4100). The **360Q Super Reflector** (AUS\$84) is a low cost upgrade for Lekos to increase the light output by double. It consists of two reflector segments which provide over 700 reflector facets for greater light output and sharper focus.

Altman's new **modular cyc** (not yet named) for ground/sky applications with patent-pending adjustable reflector won a **Lighting Product of the Year Entertainment (Honourable Mention) Award**. The compact ground cyc unit has adjustable field quality (focus)

and tool free joining latches which allow units to be connected and curved. Each unit has a fold down carry handle and is supplied complete with colorframe. Cost is AUS\$495.



Australian dist: Chameleon (02) 9310 5222.

Unipar have combined their unique clear fixtures and semi-transparent holographic embossed diffraction films (made of high temperature print treated metallised polyester) to produce the **Holographic-Par** which looks as good in bright daylight as it does on a dark stage. The Holographic-Par generates whatever gel-colour you select and, at the same time, the housing creates a multitude of dichroic sparkles reflecting from the holographic pat-

terns (4 different patterns available at this time). The effect changes depending on whether the light is coming from inside the 'par' or from outside such as adjacent lighting. A fascinating fixture!

Call Unipar +1 502 898 8962.

New from **Wildfire** are the **600W Spot Flood** and **Ellipsoidal** fixtures with instant on/off DMX512 better focus ability. Also new is the **Effects Master Series**, a new era in fluorescent fixture technology claim Wildfire. On offer is flash and strobe with adjustable rate control, custom coilzak reflectors for optimum throw, alternating mode, DMX512, dimming control, single or double versions available and it uses standard fluorescent bulbs.

Australian dist: TechScape (07) 3358 5118.

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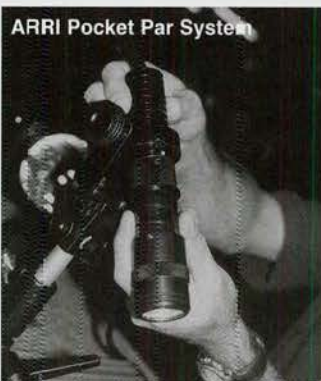
On home territory, **American DJ** were showing a multitude of new lighting products mostly aimed for the disco market. Effects lighting with names such as Progressor, Verti-Pro, Widow Baby, Mini UFO, Spin Out, Carnivale. There were new followspots, searchlights, laser gear and fog machines.

Some of the gear such as the Snap Shot, Dual-Color, the Max and, in particular the Virtual Beam, looked a little bit too much like other products already on the market out there, if the price is right.....

American DJ Supply Australia 1800 643 111. **ARRI** aimed to enhance their popular **Pocket PAR System** with a range of accessories for the 125W light. The **ARRI Pocket PAR System** can be AC or DC with the AC ballast accepting both 120V input and 240V and the DC ballast accepting 12V to 30V so you can plug it into a camera belt pack.

Accessories include spread lenses, barndoors, and optical accessories most of which will not be available until next year. There is a condenser lens for pattern projections and an optical tube which can turn the Pocket PAR into a soft light.

There was also the **Flex Light Liquid Optic System** which uses a special Collection Lens to gather and direct light through a liquid-filled Optic Cable into the Focusing Lens. When shooting Macro Photography, the Flex Light produces over 7000 fc at 2 feet from the subject with a remarkably low level of heat transmission. Light intensity can be varied by focusing the Pocket PAR or by the Electronic Ballast's built in dimmer.



ARRI Pocket Par System

ARRI also launched their **ARRI X 40/25** daylight wide angle floodlight which has a 1290 beam angle making it ideal for bounce light and for down lighting backgrounds. At 15 feet, the ARRI X covers an area of 60' x 60' and over 333 footcandles.

Also new is the **ARRI Fresnel 150W** extending ARRI's line of tungsten Fresnel spot lights.

Australian dist: John Barry Group (02) 9439 6955

OTHER LDI AWARD WINNERS

LDI97 Trade Show Booth - Best Small Booth City Theatrical

LDI97 Trade Show Booth - Best Big Booth (Honourable Mention) Group One

LDI97 Trade Show Booth - Best Big Booth Production Arts

LDI97 Trade Show Booth - Best Laser Show (Tie) Production Design International

LDI97 Trade Show Booth - Best Laser Show (Tie) Laser Fantasy International

LDI97 Trade Show Booth - Best Light Show: Small Booth American DJ Supply

LDI97 Trade Show Booth - Best Light Show: Big Booth Martin Professional

Scenic Effects Product of the Year (Honourable Mention) Protec Theatrical Services for their rigging control

Scenic Effects Product of the Year Total Fabrications for their 12 x12 XO Truss

Lighting Product of the Year - Entertainment (Honourable Mention) Compulite E-Mix, a DMX-to-Ethernet and Ethernet-to-DMX router.

available in 75 configurations. Other Light Pumps are offered with either halogen or metal halide sources from 2 to 1000 watts, in housing for interior, exterior or custom applications. Colour changer modules utilising DMX512 offer preprogrammed effects and custom designs. They are designed to accept all types of optical fibre and also are available with Color on Command an on-board intelligent control option for colour.

At LDI RSLI introduced the **Perpetual Light Pump** which takes the place of up to 68 individual light bulbs and features a maintenance cycle in excess of 5 years. The light source is a Solar 1000 sulphur lamp technology, the configuration is 12mm fibres and there are over 1500 lumens per port. Lamp life is 60,000 hours. For more info call: RSLI 1-714-248-0141.

Winner of the **Widget of the Year Award** was **MeshTel** for their small-scale fibre optic system consisting of a battery powered illuminator and micro-thin fibre that can be used in as many ways as you can imagine.

Contact: MeshTel +1 310 394 3694.



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control

MA Lighting previewed their **grand MA** lighting controller for touring applications and large scale venues. The most noticeable feature of which is the three full colour TFT touch screens mounted on a viewing angle adjustable panel. Optionally supported by two external monitors they offer control and multiple displays for group and preset operations, interactive output displays and different ways of cue listing.

Twenty Motorfaders offer direct access to any parameter of the actual setting like fade times, circle movement diameter or effect speed. They allow multiple page operation and therefore a virtually unlimited number of simultaneous playback operations.

The grand MA offers group macros and logical conditions for the selection of units. A designers command like, "Increase yellow light on backstage," can be real-

ised without looking for channel numbers or values, even if the units include colour scrollers or scans and have not been defined as a group so long.

Grand MA features 2048 control channels for simultaneous control

of conventional scrollers and moving lights. The DMX input for Remote, Snapshot and Merge operation together with SMPTE, MIDI, Remote GO and RS232 offer multiple synchronisation facilities. Australian dist: Show Technology (02) 9898 1111.

New at LDI was the **Obsession II**, ETC's new high performance console with its' funky design. The upgraded hardware and software include precise control of moving lights and a touch screen display. The desk can control up to 3072 channels and 3072 dimmers, with the capacity for up to 126 concurrently running fades. Single or dual processors and the option of three different control surfaces present the user with a variety of systems.

MA Lighting grand MA



ETC Obsession II



The Obsession II won the **ESTA Dealers Choice Award for Equipment**, tying with the Martin MAC 500.

Also new was **Expression 3** and **Insight 3**, combining new software and upgraded hardware to give direct control of moving light functions. Australian dist: Jands Electronics (02) 9582 0909.

Elekralite launched their **CP-5P** preprogrammed lighting controller with lighting shows ready to run for selected fixture types. A total of 16 fixtures can be controlled. The operator needs only to choose the type of show that best suits his music mood and the CP-5P will do the rest.

Australian dist: Show Technology (02) 9898 1111.

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 Birmingham B9 4EN, UK
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 Address: 1696 Walter Street, Ventura CA 93003, USA

TOTAL FABRICATIONS

Martin MAC 500 and MAC 600

By Cat Forcer

Last Year Martin launched their MAC 600 moving head washlight which fast became an industry standard luminaire for the performance lighting market. It was designed to compete with the Studio Color and Vari*Lite VL5.

This year Martin launched the MAC 500 moving head profile spot, a competitor for the VL6. The MAC 500 has so far been received warmly picking up an ESTA Dealers Choice Award (Equipment) at LDI.

THE MAC 500

Lighting designer Greg Yates has designed the last couple of musicals produced by The Hills Centre and the latest, *Jesus Christ Superstar*, coincided with the annual Sydney Martin Dealers Conference. This was very fortunate for Greg as he managed to secure himself a fruitful deal with Martin's Australian distributor (then Show Technology, now Martin Professional Lighting Australia - see page 64).

"I asked them for a sponsorship deal and they came to the party," said Greg. "They also ran their dealers conference here, everybody went home very impressed. They got to see the products in a real life theatre show. Not a boring theatre show but a real life, contemporary rock'n'roll theatre show. The show goes everywhere from snap fades, cues and bumps through to 'lets do a thirty second, nice slow theatre fade'. The gear does it all really, really well. They're really happy and I'm really happy, it's great gear."

Greg is using eight MAC 500 moving head Profile spots which literally came straight from customs to the show, in fact they turned up after the first two previews.

"There were about four days of 'they'll be here tomorrow' so it was a bit hairy," said Greg. "I didn't use anything in their place, I just wrote cues around them and hoped for the best. Unfortunately, because they turned up late, they're a bit under utilised."

Added to the MAC 500's are eight MAC 600 moving head washlights. Other Martin gear included eight PAL1200's plus about 200 assorted Strand theatre lanterns which live at the Hills Centre.

Greg's views on the MAC 500 are his initial findings, having only used them for a short time.

MAC 500



CONTROL

"Hhmm, this is a political one," Greg said thoughtfully. "Control for the moving lights is a Jands Hog 600. A nice desk **but** I wish it had a better processor in it and was quicker. For the conventionals I'm using an Avab Expert."

The MAC 500 can be controlled via DMX512 or via Martins own RS-485 protocol. Address and mode selection is done via the control panel on the lamp with an LED readout for address number. There are readouts of lamp hours and other data.

"They're excellent," raved Greg. "They're definitely for theatre but they could be used in any application - rock'n'roll, corporate. I use them mainly for gobo looks."

FEATURES

The MAC 500 has two motorised gobo wheels as well as five interchangeable 28 mm indexed gobos and nine fixed metal gobos. Greg was using the standard gobos issued with the MAC 500.

Beam effects include a motorised iris and a rotating 3 facet prism, while a combined microstep-driven dimmer and shutter can produce variable strobing.

"The lamp is very accessible," said Greg. "They use a Philips MSR discharge lamp which is 575W".

The lamp has a 5600K colour temperature and 750 hour lamp life. Greg was very impressed by how easy the MAC 500 opened - a small turn of a couple of screws and that was it.

"There are two colour wheels as opposed to a mixing system in the MAC 500 which is a minor downside from my point of view," Greg pointed out. "Consequently it won't do nice fades between colours like the MAC 600. The MAC 600 uses a CMY colour mixing system so you can do great crossfades, fast or slow."

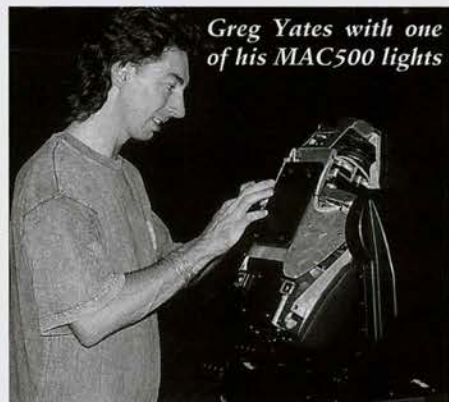
The MAC 500 has two motorised colour wheels with a total of 14 dichroic colours and four dichroic CTC filters. Combined the two wheels yield 100 mixable colours.

PAN & TILT

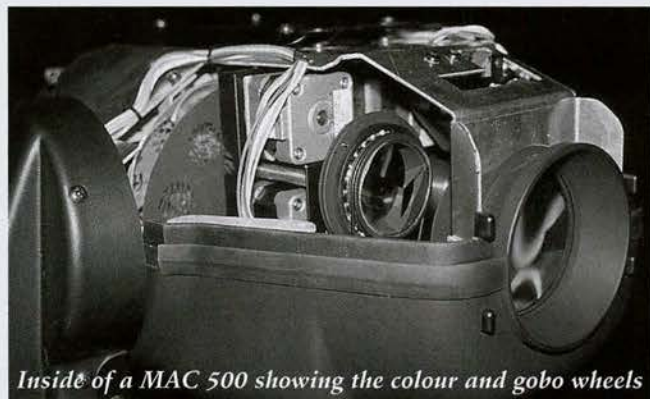
The MAC 500 has a microstep-driven head with a pan of 440° in 0.013° steps and tilt of 306° in 0.007° steps.

A microstep motor is a type of step motor which are different from regular electric motors in that they turn in precise increments called 'steps'. A typical step motor may have 200 steps per revolution. The distance, direction, and speed of step motor rotation may be programmed and controlled electronically.

In a microstep motor, each step is further divided into as many as 256 microsteps. This gives over 50,000 increments per revolu-



Greg Yates with one of his MAC500 lights



Inside of a MAC 500 showing the colour and gobo wheels

Back of a MAC 500 showing the fan and control area



tion, or a resolution as high as 0.007°. In practical terms, microstep technology means very smooth motion and high accuracy. In theory, at 10 metres, with the MAC 500's pan resolution of 0.013°, the light beam moves in imperceptible 2.3 mm increments.

OPTICS

"The MAC 500's are really punchy and have great optics - nice and sharp and clear," said Greg. "Focussing is easy, it's all remote from the desk."

The MAC 500 has a motorised focus which produces a fixed 15° beam angle.

NOISE

"They are very quiet," said Greg. "I couldn't believe it but at the conference, we had thirty Martin dealers in here and one of them asked 'how noisy are these things?'. I replied that we had had 24 Martin lights on all day and they were so surprised."

The MAC 500 is fan cooled.

IMPROVEMENTS

"It would be great if the MAC 500 did colour mixing like the MAC 600, it would be fantastic," Greg said. "But that's the path Martin have decided to go down with two colour wheels. I guess it's horses for courses, great for some applications but not others. In a theatre situation you just have to think a bit harder about your fades and changes which isn't too hard."

SERVICE

"The service from Show Technology has been excellent," said Greg. "Lots of Watts have been great, they're mixed up in the deal."

THE MAC 600

Gavan Swift was one of the first lighting designers to use the MAC 600 when it arrived on our shores last year. They were the main element to his design for the Bell Shakespeare production of *A Winters Tale* (see August 1997 Connections). Since then Gavan has also used them on corporate gigs such as the 40th Anniversary of Astra Pharmaceutical's and SAPHIRE 97 in Brisbane. Gavan is currently working on his lighting design for Dein Perry's latest Tap Dogs production entitled *Steel City* and, if budget allows, he hopes to use MAC 600's.

USE

Apart from theatre and corporate work, Gavan believes that the MAC 600 certainly has a place in rock'n'roll pointing out that 24 of them are currently on the road with silverchair (lighting design by Hugh Taranto).

MAC 600



WHY MAC 600?

What really sold the Martin MAC 600 to Gavan was the fact that they have full position recall just like a Vari*lite.

"So if you knock it out of position, it'll go back to where it was," said Gavan. "I think the brand new S version of the Studio Color now has it too, the old version doesn't so if you knock it you have to reset the unit before it'll go back to where it normally goes."

COLOUR

"It's just a standard CMY subtractive colour mix but it's quite a clever one in that it uses a disc," said Gavan. "Instead of saturated glass colours that fade their way into the light it's actually a disc with a 'fork' of colour. As the disc goes further on the fork gets thicker so you end up with fully saturated colour. So it's actually quite a smooth transition of colour fading plus it also goes through a standard theatrical fresnel lens so it mixes out quite well. You don't get bizarre colours where you've got a white centre with a blue outside, whatever the colour is it's a consistent colour through the entire beam."



Gavan Swift

The Martin system works by placing cyan, magenta, and yellow filters in the light path in varying degrees. Each filter can be applied between 0 to 100% from the controller. The resulting colour is determined by the amount of CMY. Both snappy instant colour changes and ultra-smooth colour cross fades are possible by varying the colour-mixing speed.

LAMP

The MAC 600 uses a 575W MSR lamp with 750 hours of life.

"In the early days with Bell Shakespeare there were problems with the lamp but now it's fine," Gavan said. "I just used 18 MAC 600's on a corporate show in Brisbane for a week, plus a day and a half semi-trailer movement, and we only lost one bulb."

PAN & TILT

Like the MAC 500, the MAC 600 has a pan of 440° and a tilt of 306°. The pan does a full 360° and then a little bit more.

"It's actually quite good that way because I generally start with the pan at 50° and work from there as you've only got 306° tilt," said Gavan. "You can therefore get everywhere, you can go all the way around starting stage left and over to stage right and, if you have to, continue around upstage. Then you can swing the unit head back around before you go back or whatever. You can't not get a shot."

"Getting that extra 80° out of the pan before the limit switches cut in is really helpful."

Martin use four faders to control pan and tilt, two for each. One fader is for fine movement and the other is for coarse movement. You don't get the fine resolution on the first fader for each function, on the second fader you get the 16 bit movement - the 0.013°.

FOCUS & OPTICS

"It's obviously just a straight wash lamp with a standard fresnel lens which gives it a

continued over

Martin MAC 500 and MAC 600

continued from page 73

set beam angle," explained Gavan. "However it has a frost wheel which widens the beam a bit more. You can't do a tight spot and then wash it straight out, you can only make the standard size a little wider."

The MAC 600 has a fixed focus and has a 25° beam angle. Optional wide (70°) and narrow lenses are available from Martin.

NOISE

"Although they have fans in them they make no noise," Gavan assured me. "I had 7 of them in the air with Bell Shakespeare with a 6 metre concrete roof and no proscenium to hide them behind but you still didn't hear them. I was very impressed with the quietness of them."

MAINTENANCE

"They are very easy to maintain," stressed Gavan. "I've only got to undo four screws and the whole front comes off. Then you've got access to all the colour, faders, beam shaping unit and dimming shutters. Two thumb screws at the back give you access to change the bulb."

CONTROL

Gavan runs the MAC 600 via DMX512 not Martins own RS-485 protocol.

"They are very easy to assign," he said. "You just punch them in and away they go. It's all on a digital display (on the back), there are no dip switches to set. Press enter, select the DMX address you want by pressing up or down arrows, press OK."

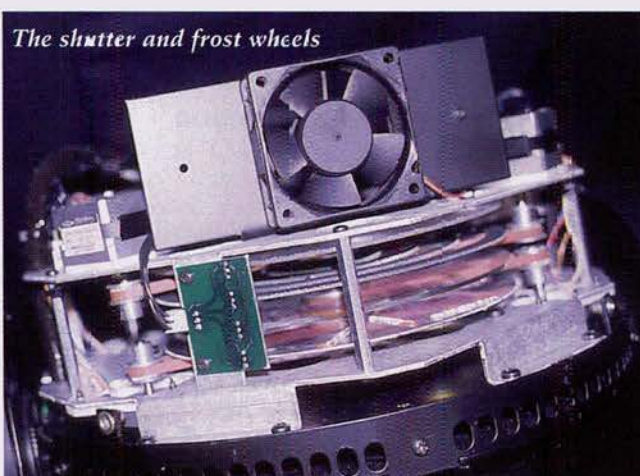
SERVICE

"The service from Show Technology has been excellent," Gavan said. "When I had them on Bell Shakespeare, I didn't know much about them as they were so new but any problem I had, Show Technology were straight out to fix it. I once had a colour wheel error but Vince from Show Technology sorted it out immediately."

IMPROVEMENTS?

"A little more beam control, in terms of being able to make it a spot right out to a flood would be good," said Gavan. "But that's always going to be difficult with a fresnel lens - you won't be able to get a huge degree of beam control without actually moving the lamp and the reflector in relation to the lens as that's how a fresnel works. But that's only a minor complaint. The actual lamp output is phenomenally bright."

"They used to have a problem with the shutter. It's got this great fader, so it



The shutter and frost wheels

fades right out but to stop the glow coming out of the front end of the lamp (which happens on a VL5 Arc) they've got a shutter just over the gate which used to snap in at the end of the fade. Now there's a new version software which fades that shutter in so it's a completely smooth fade to total black with the front of the unit not glowing at all. That's another big plus which sold the unit to me especially for Bell Shakespeare when there were times I wanted to cross fade from lamp to lamp without them all glowing. Now, as you get to the last 5% of a fade

the shutter slowly moves in to finish off the fade."

CONCLUSION

"I wish everyone would have them in hire stock so I can put them onto my shows!" Gavan laughed. "They're an impressive unit for what they are and they're light enough for one person to lift. They come in nice road cases so they're quite well supported when on tour. I think they are a really nice, well thought out unit."

The MAC 600 is also available in a studio version with electronic ballast to provide flicker free operation and an economical standby mode.

Accessories/Options: MAC 500 - Flight cases for 1, 2 or 3 fixtures (fits in MAC 600 flight cases). Outdoor protection dome. MAC 600 - Flight cases for 2 or 3 fixtures. Outdoor protection dome. 70° wide angle lens.

Measurements MAC 500

Size without bracket: 450L x 350W x 630H
Weight: 28 kg

Measurements MAC 600

Size without bracket: 450L x 350W x 610H
Weight: 28.5 kg

Electrical for both

AC supply: 200/230/245 V, 50 Hz; 208/227 V, 60 Hz.

Power, current consumption: 750W, 3.4 A @ 230 V.

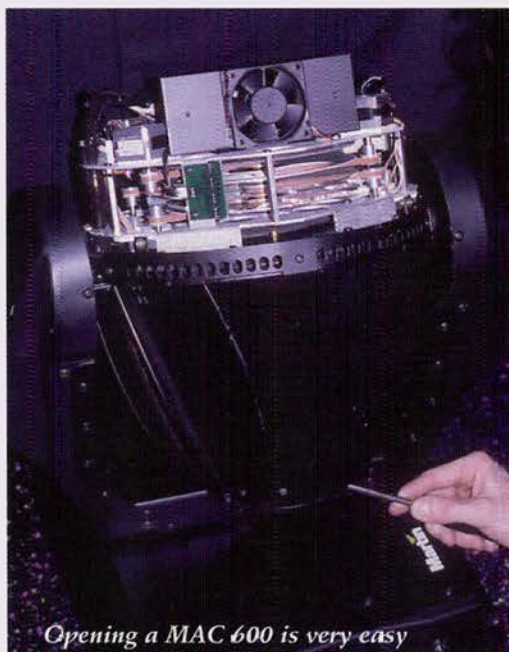
Price: MAC 500 \$11,699 retail inc. tax
MAC 600 \$9,999 retail inc. tax

Manufacturer: Martin Professional +45 87 42 88 88

Australian and New Zealand Distributor: Martin Professional Lighting Australia (02) 9898 1111.

Singapore Distributor: Martin Professional Pte. Ltd. +65 842 3031

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Recovery

Mandy Jones takes an early morning dip into youth culture

Studio 31 at the ABC's Ripponlea studios in Melbourne has been the home of some of the greatest live programs ever made in Australia - *Countdown*, *The Big Gig*, *The Late Show*, and now the acclaimed *Recovery*. Described as a music based youth culture program, *Recovery* goes live to air Saturday mornings between 9 am and 12 noon, 49 weeks of the year. Now in its second year, and in the grand tradition of *Countdown*, *Recovery* features some of the biggest international and best local bands playing live in the studio in front of a tightly packed screaming audience.

A close-knit crew is behind each edition of *Recovery*. Technical Producer, Rick Hunter, is the 'grand poobah' on crew. His role is to liaise between the camera, audio, and lighting crews from the design period right through to the after-show barbecue each Saturday.

"It's a real team effort. There is really not one cog you could pull out of it and get the same product."

Rick started as a trainee at the ABC in 1966. He has worked on just about every major show that has been through the ABC studios in various roles, and for the last twenty years has been Technical Producer.

The show is essentially run as a musical news program. Facility wise, five cameras are used in the studio - two pedestals, one crane, and two handheld. Outside Broadcasts are a big aspect of the show with a weekly live report from the Triple J studios, plus 1-3 camera OB's around the country, either as a straight cross or with live music.

"We treat the show like a news bulletin in as much as the run-down is news reader, news item, reader, item etcetera. *Recovery* is the same - host, link, tape, host, link, tape, host, link, live band. Basically we use the same machinery we use to put our news to air. For us it's a time proven method because

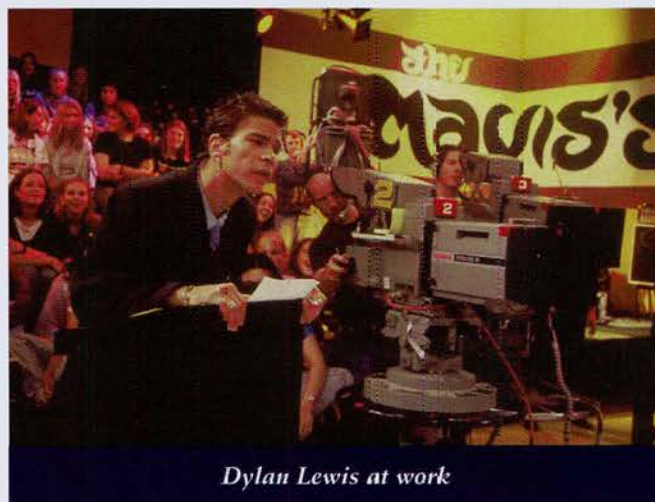
it's the same format we used on *The Big Gig* and *The Late Show*."

Hosted by 24 year old Dylan Lewis, lead singer of ultra-funky band *The Brown Hornet*, *Recovery* has gained a dedicated following.

"We're very lucky with Dylan because he has so much talent and credibility - don't tell him I said that! But he really is fantastic."

The studio is broken up into four stage areas, the largest being for the feature band, a second stage for another band, a hosting area, and a final small stage area next to the host for the house band which plays intracast segments throughout the show.

"The staging concept was to not make it a rock'n'roll show. Rock'n'roll shows use black cycs, lots of flashing lights, and lots of foreground audience showing animation. With this one we sat down and said, 'Hang on, this show is going to air at daytime - it's silly making the studio look like a night club'.



Dylan Lewis at work

"The sets are fairly basic and clean in their line, there's plenty of physical space for the artist to perform how they want. We have great feedback from international acts - they come in and they can't believe

that the show is live and they have to perform live, because if they're not going to perform live - then see you later. But we don't get any knock backs."

Rick explains that the live aspect of the show is everything. If it was recorded and time delayed it just wouldn't be the same.

"Once you do it live it's gone - it's out beyond alpha centauri before you can say oops, so people don't make mistakes, and we've found it doesn't inhibit the craft. We don't play safe because it's not open heart surgery. You can afford to make a mistake - you just don't do it again."

Production Week

The technical side of a *Recovery* week starts on Tuesday when the designer starts on the treatment for the band set up, usually taken from artwork on the bands' latest CD's. The crew meets on Wednesday to go over the run down, re-schedule segments of the show, and discuss any special ideas. Lighting is designed on Thursday, and the plot is rigged Thursday night with all lamps hung and coloured.

The set goes in to the studio overnight Thursday night and Friday morning. Then Rick and one of the cameramen set up all the cameras and all the vision side of things.

The lighting crew set their lights Friday morning in a three hour block. Audio gets three hours to set up and then the bands rehearsal period of one hour each in the afternoon.

Saturday morning, audio get access to the studio first because they have the most setting up to do. The camera crew come on at eight and the show goes to air at nine. There is no camera rehearsal of the show, or the band numbers so it is up to the Director and the Vision Mixer to have

continued over

Recovery

continued from page 76

a look at the set up of the room, and listen to the band rehearsals to look out for special parts of the bands performance that may need particular coverage. The show is live to air from 9 am until midday, followed by the weekly well-earned drinks and barbecue.

Lighting

Andrew Topp is the Lighting Director for *Recovery*.

Andrew started at the ABC 15 years, and is still one of the youngest. "Nothing moves fast at the ABC," he says.

Andrew trained under the ABC Technical Training course which was a three year traineeship in camera, sound, lighting, film and videotape. At the end of the course the trainees would specialise in one area. Since then, Andrew has worked on most of the shows made at the Ripponlea studios including *Countdown*, *The Big Gig*, and *The Late Show*.

"*Recovery* is run on a very small budget and tight timeline so with lighting we basically make do with what's there. We don't get much of a chance to do fancy or different things - it's pretty much just get it up and happening as quick as you can."

The timeline is so tight there is no time for a lighting rehearsal or a chance to go over camera shots. For the lighting crew, everything comes down to seven hours - four hours to set everything, three hours of live to air operation.

In terms of a typical lighting rig, Andrew downplays what they use.

"I guess there's not much to tell. It would be nice to have a rig of 50 or a hundred Vari*lites but unfortunately it's not a part of the show."

"The producers are pretty keen to keep the show away from the traditional rock n roll style of *Countdown* or *Hey Hey It's Saturday*. The show is more about promoting young bands and music, the lighting and the look of it is all



silverchair

secondary really. It's there for a practical purpose, not to show off or do anything outrageous."

A typical rig is based on colour washes against the white cyc, as well as feature lighting for the bands and set pieces.

The main stock consists of Janiro twin filament 5k's, 2.5k twin filament Casors, as well as the standard selection of about 300 par cans plus the normal assortment of smaller stuff.

The studio is fitted with 160 four foot motorised batters, most of which have 2 x 5k circuits on them, as well as one ring of cyc battens that goes all around the studio that has 5 x 5k circuits. There are an additional ten motorised staging battens with preset heights. All of the lighting battens are remote controlled in that any number of groups can be selected and raised up or down. There are also 10k floor outlets spread around the studio.

Control is through a Strand Galaxy 3 desk with two controllers, programmed for 360 channels because there are only 360 dimmers in the studio (350 are 5k dimmers, 10 are 10k dimmers). An Aerial Davis high level patch is used (200 in 400 cut so as to make up the outlet complement of 560 to the dimmers of 360). Basically, each batten has one hard wired dimmer and one patchable circuit.

Andrews says, "The Galaxy 3 is good for what we do - it's not a rock'n roll console

but we're not doing the hands-on things you would do for a concert situation so it doesn't matter. We bring up lighting state after lighting state, that's it. For what we do it's fine'.

Effects aren't a big feature of the show, again because of the decision of the producers, and also because of the costs. Big smoke or fog effects don't register against the white cyc, but a bit of smoke from the oil cracker is used occasionally to give ambience to the room.

Vision

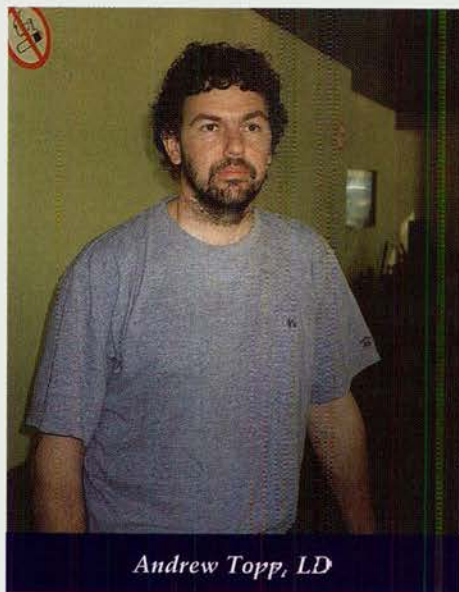
At only 60 x 80 feet, Studio 31 is the smallest major studio in Melbourne. The pedestal and crane cameras are Ikegami 323's which are probably the only tube cameras in the country still being used. Sony T70's were chosen for the handhelds because they can be broken down into a lightweight unit. A splittable camera, the lens, CCD block and view finder come away from the main body which makes the carry load for the camera man a lot lighter than the traditional portable camera.

"We do a lot of shooting around the building - we really don't care where we shoot. We're very short on budget as with any ABC production so if there's a space in the building we'll use it."

Rick explains that shots outside of the studio effectively become mini OB's with the number of cables run throughout the building.

In the control room four Betacam SP replay machines are used, with every item coming off tape on its own reel, rather than having one replay reel, which means items can be dropped from a run, pre-rolled or exited easily.

A Sony Laser disk with a few modifications is used for storage of still frames - up to 32,000 frames, per one side of one disk.



Andrew Topp, LD

BUYER'S GUIDE

SCROLLERS, COLOUR CHANGING LUMINAIRES & CONTROL

Prices EXCLUDE sales tax and were correct on 15th November 1997. All care taken, no responsibility for errors. Four models only are shown in each category although all these manufacturers have many more. Indicative only.

SCROLLERS

COMPULITE

Coemar De Sisti Australia (03) 9467 8666

Whisper Colour Changer High speed scroller, with super-quiet operation, twin DC motor drive for scrolls, 16 bit microprocessor, adapt to a wide variety of fixtures from 1K to 5K, DMX or Analogue control, remote and local fan control. End to end speed on 1K is 1.7 seconds. Variable gel string length. From \$2040.

Whisper E High speed scroller, with super-quiet operation, budget conscious features for 1K and PAR 64, 16 frame gelstring, autoloader function for quick gel string replacement, Daisy chain up to 18 units. From \$1672.

COLOURSET

Showcraft Australia (02) 9698 3009

Colourset Series 2 S4 high speed gel scroller with up to 33 colours. Suits Shakespeares and ETC Source4 + other 6" profiles. Unit is very small to minimise intrusion into sets etc. Versatile control options allow for both DMX512 fader tracking for split colour effects or locked frame operation for accurate colour control. \$1225.

Colourset Series 2 1K high speed gel scroller with up to 33 colours. Direct drive dual motor system provides electronic gel tension and easy set up of gel. Versatile control options allow for both DMX512 fader tracking and locked frame operation for accurate colour control. With adaptors fits Par 64/56, all profiles and PC spots. \$1275.

Colourset 5K for high powered lanterns. Suits 5K fresnels with 10"/12" lens and 6 watt DWE/ACL molefays. Up to 12 colours can be fitted. Control via DMX512 or dedicated Colourset controller. Max speed one third of a second per frame. Unit fits into the rotating barn door holder of most 5K lanterns or fitted with slide rails for 6 way units. \$2765, Barn doors \$295.

Colourset 8W suits 8 way DWE/ACL molefay fittings and can be fitted with up to 12 colours. Control via DMX512 or dedicated Colourset controller. Max speed one third of a second per frame. Gel cooling with low noise, high velocity tangential fan. \$3250.

ETC

Jands Electronics (02) 9582 0909

Colour Source 10 colour variable speed DMX512 controlled colour scroller. Autoloader feature. Adaptor plates available for most popular luminaires. \$1868.

PANCOMMAND

Concert Lighting Systems (03) 9646 8444

Colour Ranger features quiet operation, variable speed colour changes, functions in any position, is compatible with most digital controllers and features a rugged aluminium housing. \$1400.

Colour Fader features new high output dichromic scrolls for brighter colour, interchangeable for 7" 1/2" or 10" colour frames and eliminates the need for costly colour scrolls. \$2500.

XL Ranger features innovative dichromic colour system, quiet colour change/calibration operation mode, digital electronics for consistency and accuracy with a durable, black anodised finish. \$3600.

RAINBOW

Selecon Aust wide dealer network

Acclaim Stage 1 Scroller For Selecon Acclaim & most other 500/650w luminaires. Up to 16 colours. Breaks the price barrier bringing colour change technology to most. Sold as kit of four complete with scrolls, p/supply, ready to go. DMX control or stand alone. \$3700.00 for a kit of four.

Rainbow Pro 8 New generation digital scroller, up to 33 colours, real time DMX or frame by frame, front loading, auto scroll load, universal mount system for most 600, 1.0, 1.2kw and Pars. As used Phantom of the Opera etc, 2000 in use every night on the West End. \$1400. Also available in Pro 12 (\$1700) and Pro 6 (\$1300) versions.

Alfresco Weather proof 2/16 scroller for Par Cans etc. Up to 16 colours. DMX control. \$1800.

Pro 15 For Studio 5.0kw, 10kw luminaires. Up to 16 colours. Special model for Cyc lights. \$ 2850.

Rainbow range also includes scrollers for 8 Lites, Searchlights, Par battens.



Acclaim Stage 1 Scroller

R.V.ELECTRONIQUE

Ashton Admor Pty Ltd (08) 9478 3800

Colourart 1kW 185mm aperture, 2 to 16 colours, 1.5 seconds end to end, direct DMX control, fully incorporated power supply, 2 de motorised cylinders, very quiet, digital positioning, more colours feasible. \$1958.

Colourart 2kW 230mm aperture, 2 to 16 colours, 2 seconds end to end, direct DMX control, fully incorporated power supply, 2 de motorised cylinders, very quiet, digital positioning, more colours feasible. \$2924.

Colourart 5kW 380mm aperture, 12 colours with maximum reliability- more feasible, 4 seconds end to end, direct DMX control, fully incorporated power supply, 2 de motorised cylinders, very quiet, digital positioning. \$3453.

Colourart 5/10K Mini Brute 500 x 500 mm aperture, 10 colours with maximum reliability- more feasible, 5 seconds end to end, direct DMX control, fully incorporated power supply, 2 de motorised cylinders, very quiet, digital positioning. \$4100.

TEATRO

Lightmoves Technologies (02) 9560 0000

Colour Box 2 Quiet operation colours change in a semaphore fashion. Perfect architectural choice. Fast and Simple colour change. \$2600.

WYBRON

Bytecraft (03) 9587 2555, (02) 9550 3955

Coloram II top-of-the-line, precision engineered fully digital colour scroller with intelligent diagnostic system offers outstanding performance and reliability. Remote 24 head power supply ensure each unit is lightweight and easy to install. The Coloram II accommodates gelstrings of 2-32 frames (2 - 24 for the 10-inch model and larger sizes). From \$1983.

Aquaram first fully digital color changer designed to perform perfectly wherever rain or water spray is possible. Coated circuit boards, water resistant switch panels, shrouded vents, gold-plated internal connections and rubber sealed transparent panels covering the front and rear apertures ensure weather protected performance. Available in 7.5inch and large format. From \$2440.

Forerunner the new scroller on the block from Wybron replacing the The Scroller. \$TBA.

COLOUR CHANGING LUMINAIRES

ABSTRACT

Universal Lighting & Audio (07) 5532 9922

Duo Colour consists of two heads ready to be installed

with a pre-wired T-bar assembly, 7 colours, 6 gobos, 12v 100w lamp, full DMX512, only one single 240v connection required, 9.5 kg. \$834.

Colour Changer CED 12 pure dichroic colours combined with colour correction filter to produce 24 colours, 5 gobos, 4 beam widths, frost filter, multi colour gobo, GE 150w HQI 6000hr 4200K discharge lamp, full DMX512, shutter, 7 kg. \$1065.

AMERICAN DJ

American DJ Supply Australia Pty Ltd 1800 643 111

Colourchanger CH100 DMX An intelligent, inexpensive colour changer with 7 colours plus white, stepper motor, full focussing, pre-programs, can be linked in a master/slave without controller, can be used with one of 2 Colourchanger 250 controllers. Size: 435x165x150mm, weight: 16kg, lamp: ENH 120v 250w. \$409.85.

Colour 250 19/C Used in conjunction with the Colourchanger 250 DMX, features include built-in pre-programs, master dim, and individual colour change. \$327.87.

APOLLO SPECTRUM

Coemar De Sisti Australia (03) 9467 8666

Tourlight Utilises 8 dichroic colours plus white, wide angle dispersion, designed for club use, controllable via DMX and midi signal. Uses a powerful M33 250w lamp with in-built reflector. \$TBA.

Chameleon Utilises 9 dichroic colours plus white, wide angle dispersion, variable strobing, controllable via DMX and midi signal. Uses a powerful 200MSD/HSD or 250MSD lamp. From \$1,880.

Chameleon Pro Utilises 9 dichroic colours plus white, 4 rotating and 4 fixed gobos, wide angle dispersion, variable strobing, controllable via DMX and midi signal. Uses a powerful 200MSD/HSD or 250MSD lamp. From \$2,670.

CLAY PAKY

Show Lighting Australia (02) 9898 1666

Polycolor designed for theatre, television and on stage productions. Offers a wide range of effects such as a HMI 575 lamp, infinite colour range, fading, instant shutter from 1 to 7 flashes per second and 6 control channels. \$5205.87.

Combicolor 575 has a HMI 575 lamp, twin condenser optical system, colour generation systems, 49 difference colours plus white and black out, strobe effect, 2 frost filters, instantaneous black out, DMX control and 4 control channels. \$3709.63.

Combicolor 300 has 49 different colour shades plus white and black out, strobe effects, 2 frost filters, instantaneous black out, HTI 300 lamp, twin condenser optical system, colour generation system, 4 control channels and is also DMX controllable. \$2458.

COEMAR

Coemar De Sisti Australia (03) 9467 8666

Tourlight Spot 1200 Yoke mounted full 360 degree movement, convection cooled 1200w discharge colour wash luminaire with carbon fibre housing, CMY colour mixing, motorised zoom lens for variable spot size, 0-100% mech anical dimmer, super fast strobing, selectable voltage ballast (115v to 230v), flicker free operation. Control via DMX512. \$TBA

NAT Pro Colour motorised projector with built-in CMY colour mixing for unlimited colours, iris diaphragm, electronic on-board dimmer, zoom lens (14-28 degrees and 28-45 options), remote focus, frost facility, gobo holder, 1200HMI, and 2500HTI versions. Control via DMX512. From \$6,195.

Baby Colour available in Pro or Eco versions. Projector with built-in dichroic colours, rotocolour effect, strobe effect, 4 gobos, motorised iris, 3 - 12m working distance in 250W 120V lamp. Control via dedicated controller, analogue signal, or DMX512. From \$770.

continued on page 80

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PROFESSIONAL SHOW LIGHTING

BUYER'S GUIDE

SCROLLERS, COLOUR CHANGING LUMINAIRES & CONTROL

cont. from page 80

CONSTELLA

Show Structures (08) 9470 4707

Spectrum offers 18 colours plus white with full DMX control including on board dimming. High output M33 axial mounted lamp which is fan cooled. \$651.

FAL

ELSTA (02) 9568 2100

PF3003 Spectra economical colour changing system: 9 dichroic colours, bi-directional rainbow effect, split colour effects, 0-10v DC control, 20° beam spread, extruded aluminium housing, size: 260x260x190mm, 5kg weight, lamp: 240v 500w. \$654.92.

PF3006 DMX Colour-Changer: user friendly, exceptional beam power and colour temperature, 9 dichroic colour filters, frost, dimming and clear to frost, strobe and rainbow effect, size: 430x310x320mm, weight: 10kg, lamp: HTI 300. \$1638.52.

FUTURELIGHT

Coemar De Sisti Australia (03) 9467 8666

CC200 has a total of 72 single and bi-colour combinations. Focusable and zoom from 11 to 20 degrees, mechanical dimmer, frost filter, strobing shutter, DMX 512 signal or in-built controller allows for independent operation. Uses a powerful 200MSD/HSD or 250MSD lamp. \$TBA (new product).

JB LIGHTING

Universal Lighting & Audio (07) 5532 9922

Varycolour 2000 36 colours, 4 beam angle widths, flood effect, high speed shutter, very fast strobe effect, dimmer fade to black, 200 MSD lamp, full DMX 512, stepper motors, fan cooled, 10 kg.

LIGHTWAVE RESEARCH/HIGH END SYSTEMS

TechScape (07) 3358 5118

Studio Color M version Automated DMX color changing wash luminaire, convection cooled (no fan noise), 2-1/2 times the output of 1000 watt halogen fixture, 100 million colour permutations and beam shaping. Uses MSR or MSD 575/2 lamp. \$8,528.76 inc lamp.

Studio Color S version More features than M version and uses a fully electronic switching power supply for flicker free operation, 5 kg lighter, auto voltage sensing and much more. Uses MSR or MSD 575/2 lamp. \$9748.25 inc lamp.

Technopro Uses MSD250/2 lamp for extended lamp life, colour modifying wheels, 11 to 17 degree beam angle, full dimming/strobing, full DMX control, 8 scene programmable memory on board for stand alone applications. \$4039.54 inc lamp.

MAD LIGHTING

TechScape (07) 3358 5118

Mad Colour 211HP 10 colours plus open and 2 colour shifters (up to 33 colours), 6 gobos, 4 beam widths and frost filter. DMX 2 channel or stand alone. M33 250 watt lamp 300 hour avg lamp life. \$827.11 inc lamp.

Mad Colour 211AP Same features as 211 series except in discharge version employing an Arcstream 150 watt lamp with 6000 hour avg lamp life. \$1,126.93 inc lamp.

Mad Colour 211MP Same features as 211 series except in discharge version employing an MSD200 lamp with 200 hour avg lamp life. \$1,462.33 inc lamp.

MARTIN

Martin Professional Lighting Australia (02) 9898 1111



Robicolor III features an HTI 150W lamp, 11 dichroic colours, DMX control, fan cooling and weighs only 6kg. \$598.36.

Robicolor PRO400 features 32 colours, a 2000 hour MSD lamp, strobe facility, dimmer/shutter, 3 motorised gobos, optional objective beam angle, DMX512 controllable and fan cooling. Weighs 12kg. \$1392.62.

MAC600 features full CMY colour mixing, frost filter, combinable beam effects, full dimmer range, MSR 575 lamp and weighs 28kg. \$8250.

MAC1200 is a colour mixing spotlight featuring moving yoke, 9400 x 3060 pan/tilt, closed loop positional control, MSR 1200W lamp, full colour mixing, additional four colour wheels, 6 beam apertures, interchangeable gobo and frost filter. Weighs 47kg. \$11,228.69.

light featuring moving yoke, 9400 x 3060 pan/tilt, closed loop positional control, MSR 1200W lamp, full colour mixing, additional four colour wheels, 6 beam apertures, interchangeable gobo and frost filter. Weighs 47kg. \$11,228.69.

RYGER

Disco World (03) 9735 0588

Defender Color Changer 250W, 10 colours, 2 split colours, DMX controllable, roto gobo, roto colour, strobe, dimmable, 6kg, \$725.

S.G.M.

Ashton Admør Pty Ltd (08) 9478 3800

Colourlab 250 highly versatile with quality and performance of Victory. 16 colours, 2 tone beams, rainbow, music sync, frost lens, 0-100% dimmer, strobe, DMX512, EVC 250w 24v lamp. \$1640.

Colourlab 575 high power colour changer 8 replaceable dichroic filters, 2 tone beams, rainbow, very fast 0.06

continued on page 82

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MH-200 Minimoon



MH-200 Wildmoon



MH-1124 Dancing Waters

- MH-1124 Dancing Waters
- Available with 60cm or 120cm column
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- MH-130 Hyper II
- MH-200 Minimoon
- MH-150 Wildmoon
- MH-270 Goboflower



MH-180 Earthquake



MH-120 Hypermoon



MH-260 Ninja



MH-270 Goboflower



MH-1124 Dancing Waters

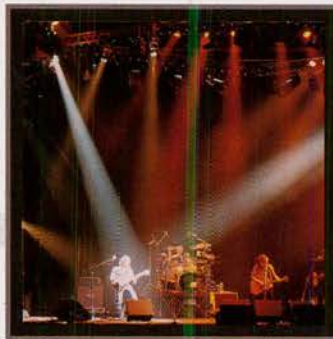
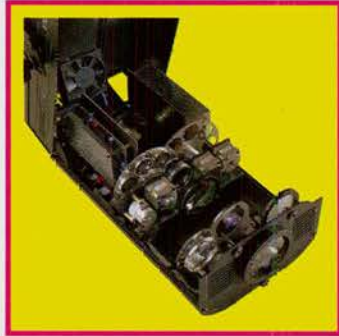
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- adjustable speed rainbow effect
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- wheel with 7 easily changed gobos
- 0÷100% dimmer
- 1÷9 fps strobe
- high resolution mirror movement (16 bit)
- 250W/24V halogen lamp, over 300 hr. lamp life

VICTORY II 250

- * 16 colours using carefully selected dichroic filters
- two-tone beam
- adjustable speed rainbow effect
- colour conversion filter
- frost filter for wash effect
- 4-sided rotating prism
- high-speed colour changer with or without black-out and music sync
- wheel with 7 easily changed gobos (4 are adjustable speed bi-directional rotary gobos). Gobo change with or without music sync
- 0÷100% dimmer
- 1÷9 fps strobe
- high resolution mirror movement (16 bit)
- 250W/24V halogen lamp, over 300 hr. lamp life



Pilot 1600 is a universal controller; it can be used with the Victory or any other unit requiring DMX512 standard

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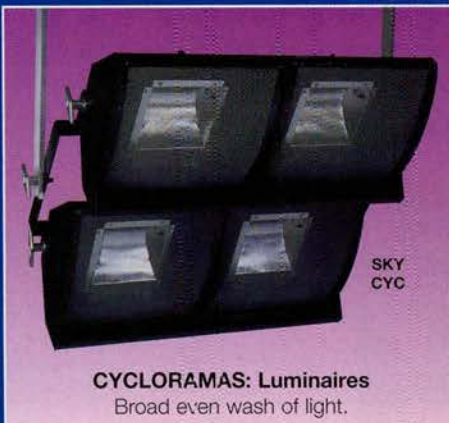
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IES Awards

Eastern Suburbs Leagues Club

The NSW branch of the IES held their Annual Dinner and Presentation Night last month but this year there was no Meritorious Lighting Award given, instead there were three Certificates of Commendation.

1 EASTERN SUBURBS LEAGUES CLUB - THE JUNCTION AND SCOZZ'S The brief required that an atmosphere and theatre of an external street scene with shops and building façades and almost full-size Bondi Tram be located in the centre of the Gaming Lounge.

To enhance the overall theatrical effect it was required that a late afternoon to evening setting be created with the colours of dusk dynamically cycling through to early evening with the stars twinkling in the heavens. A level of additional dramatic activity was requested by the computer linked animated display when a poker machine paid out a jackpot.

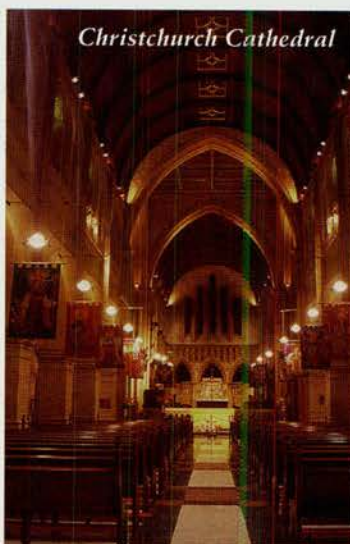
This is a well executed example of colour changing neon cove lighting with the blue being particularly striking. Other dynamic effects are the fibre optic star bursts and comets in the ceiling which were nicely integrated into the overall scene. The use of gobos on down lighting and back lighting with colour control by gela-

tine's produced a pleasing yet exciting street effect.

Lighting Designer: Jonathan Ciddor, Lightmoves Technologies **Architect:** Robert Gibb **Interior Design:** Sharryn Bowman **Electrical Engineer:** Wallis & Spratt Pty Ltd **Builder:** James Clifford Constructions (The Junction), Rotric Constructions (Scozzi's) **Luminaire Manufacturers:** Digilin, Selecon, Trend Lighting, Cooper Neon, Dyalite and Concord.

2 CHRISTCHURCH CATHEDRAL, NEWCASTLE - INTERIOR The lighting design brief required that an environment be provided appropriate to the wide range of uses of a Cathedral. Lighting should be as 'invisible' as possible apart from the original main pendants.

The design was a subtle and deceptively successful solution to the lighting of a significant heritage religious space. Restraint had been exercised in not overlighting every feature of the interior and in some instances illumination is achieved by the contrast of shadow proving noticeable and totally appropriate for a Cathedral. **Lighting Designer:** Dav.A Bird, Vision Design + Studio **Architect:** B.J.E. **Electrical Engineer:**



Lighting Designer: Nuri Chorvat, BHP Electrical Services **Electrical Engineer:** Nuri Chorvat, BHP Electrical **Electrical Contractor:** H.R. Glossop **Luminaire Manufacturers:** Sylvania, GEC, ATCO, Riveton Engineering.

3 BHP PORT KEMBLA SHIP LOADING WHARF & SHIPPING STORAGE WAREHOUSE required that a safe level of illumination be provided over the areas to be lit and that areas have as little shadow as possible. Luminaires should be installed with as few supporting structures as possible to minimise potential collision hazards when large vehicles are moving heavy loads.

The design solution was to use 1kW high pressure sodium lamps on 20-30m lighting poles insuring long life and maximum coverage. Wide fan type distribution luminaires combined with multiple source positions allows light to arrive at the target point from several positions thereby minimising shadows.

Areas of particular note are the wharf loading docks where ship loading cranes and support vehicles are in constant movement. Lighting is provided to the quay using stub poles mounted on the warehouse roof giving a combined height of 20m. Travelling wharf cranes have HPS luminaires mounted on their jibs such that adequate lighting is provided to view the ships hold.

Lighting Designer: Nuri Chorvat, BHP Electrical Services **Electrical Engineer:** Nuri Chorvat, BHP Electrical **Electrical Contractor:** H.R. Glossop **Luminaire Manufacturers:** Sylvania, GEC, ATCO, Riveton Engineering.

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BUYER'S GUIDE

SCROLLERS, COLOUR CHANGING LUMINAIRES & CONTROL cont. from page 83

sec colour change with or without blackout, frost lens, UV filter, music sync, DMX512, 575 HMI lamp. \$2018.

Spinner 575 as per Colourlab 575 with ability to fit adjustable speed rotating gobo. \$2190.

TAS

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Colore a.i.20 Projector with mechanical dimmer, black-out, strobe, gobo wheel, 9 dichroic colours, bi-colour ability, rotocolour effect, UV filter, colour correction available, 3 - 15m working distance in 200MSD/HSD or 250 MSD lamp. Control via DMX512. From \$TBA.

VersiColore 162 total colour combinations, 2 colour wheels with gobo or colour facility, motorised frost filter mechanical dimmer, black-out, strobe, bi-colour & proportional colour ability, rotocolour effect, UV filter, 5600/3200 colour correction filter, 3 - 15m working distance in 200MSD/HSD or 250 MSD lamp. Control via DMX512. From \$2,900.

Colore Fresnel 9 dichroic colour wheel, bi-colour & proportional colour ability, mechanical dimmer, black-out, strobe, rotocolour effect, UV filter, 12, 20, & 30 degree beam angles (motorised selection), 3 - 25m working distance in 200MSD/HSD or 250 MSD lamp. Control via DMX512. From \$2,280.

CONTROLLERS FOR EITHER

COLOURSET

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Colourset Controller 16 channel micro touch keypad

provides programmable control of colour and speed for any number of Colourset scrollers. 64 scene battery backed memory, programmable 99 step sequence can be cued from single button or via auto timing. Visual status indicators. Signal output via 5 pin XLR. \$1530.

Colourset Series 2

Power Supply 2U rack mount unit supplies up to 24 Colourset Scrollers over four separate feeds. Power and signal is provided on 5 pin cannon connectors. Signal splits are integral to the power supply. International capability with 110v/240v mains input. \$1390.

ETC

Jands Electronics (02) 9582 0909

Colour Source power supply. Rack or truss mount power supply and DMX splitter for up to 12 Colour Source scrollers. \$3327.

LIGHTWAVE RESEARCH/HIGH END SYSTEMS

TechScope Lighting and Audio Distributors (07) 3358 5118

Studio Color LCD Controller Controls up to 8 individual addresses via DMX output (equating to 128 channels of DMX), 891 scenes, 9 memories, up to 1024 front panel programmable presets. \$5068.48.

Status Cue Link Card and Software Status Cue P100 Link card with Status Cue for Windows software



TAS
Versicolore

controls up to 1024 DMX channels via 2 outputs, 6000 scenes, fixture library, powerful Cuelist features. Requires Pentium PC Console priced separately. \$4725.50.

MAD LIGHTING

TechScope (07) 3358 5118
Mad 1 Controller 60 channel DMX controller with 60 scenes and 12 chases pre-programmed and same number available for user programming. MIDID record/playback and in-built SMPTE decoder. \$1046.43.

Mad 4-1 Controller DJ friendly compact controller, non programmable but with audio activation and easy programme manipulation. \$262.95.

R.V.ELECTRONIQUE

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other products of note

The ESTA Dealers' Choice Award in the Expendable/Widget category went to **BlackTak™**, manufactured by **Le Mark** and distributed in the US by **City Theatrical**. BlackTak™ is a black light masking foil with a high temperature adhesive that leaves no residue on equipment like gaffer tape can. With many uses in film, video theatre and photography, BlackTak can be used for masking light spill, creating shadows, forming barn doors, face modelling, adapting gobos etc. A simple and effective product.

As well as new Roscolux colours, new glass and steel gobos, **Rosco** introduced **Permacolor**, a new range of dichroic glass colour filters. Customers can choose from among 24 standard colours or have colours designed to meet their specifications. Size can be specified up to 33 cm round and other shapes and sizes can be cut to order within a few days. You can preview the standard colours by purchasing the Permacolor Sample Kit available from Rosco dealers.

Rosco also launched the **Rosco TP-5000 Intelligent Fog System** a minimum maintenance system for long running shows, attractions and facilities. It allows a facility to have several independent fog generation sites connected to one distribution system and master show control. The system is designed to operate up to 24 hours a day, day after day.

Australian Distributor - Rosco Australia (02) 9906 6262.

Stage Technologies had their **Nomad!** stage automation control console on view at LDI, the product that won a PLASA Award for Product Excellence the previous month.

The Nomad! offers an alternative solution to the single operator systems available to date. Offering a fully functional, true multi-user system the Nomad! may be used as a traditional stand-alone unit or in a distributed system with up to 16 Nomad!s in a network and no master console. By having the potential to scale up in this way the system allows multiple operators to run cues simultaneously from different positions in any venue. Each Nomad! in a distribution system will have identical hardware with security codes providing each user with an appropriate access levels of functionality.

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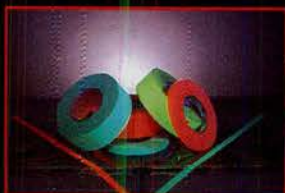
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Fluorescent adhesive tapes



Wildfire sample kits paints, dyes and plastics



Backcrop under white light



Backcrop under Wildfire UV-A

Technical Bulletins and Application Notes available upon request.



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Write in Reader Service Number: 106

CORRIDOR OF LIGHT

A Fibre Optic Face-lift for the Princes Bridge

Over the years, Alan Grossbard has been changing the look of Melbourne, bit by bit. He may be the Mayor of Glen Eira, but he always finds time to devote to his favourite past-time, livening up historic locations with a bit of light.

Alan came up with the idea to transform the lifeless Princes Bridge into an illuminated link between the old part of the city, and the new 'brighter' areas of Southgate and the new Casino.

Alan has been coming up with ideas to change familiar landmarks around Melbourne for some years now, including the installation of budlights on 100 trees along St Kilda Road, floodlighting Flinders Street Station, as well as the Treasury Building and The Polly Woodside.



this FREE CD-ROM from ROSCO will turn your Pentium™, Windows 95® equipped PC into a powerful lighting control console with incredible performance specs. The HORIZON CD-ROM software offers 3,072 channels of control and is designed to control any DMX512 compatible device. This includes dimmers and traditional fixed lighting but also includes automated lighting, colour scrollers, fog machines and show control systems.

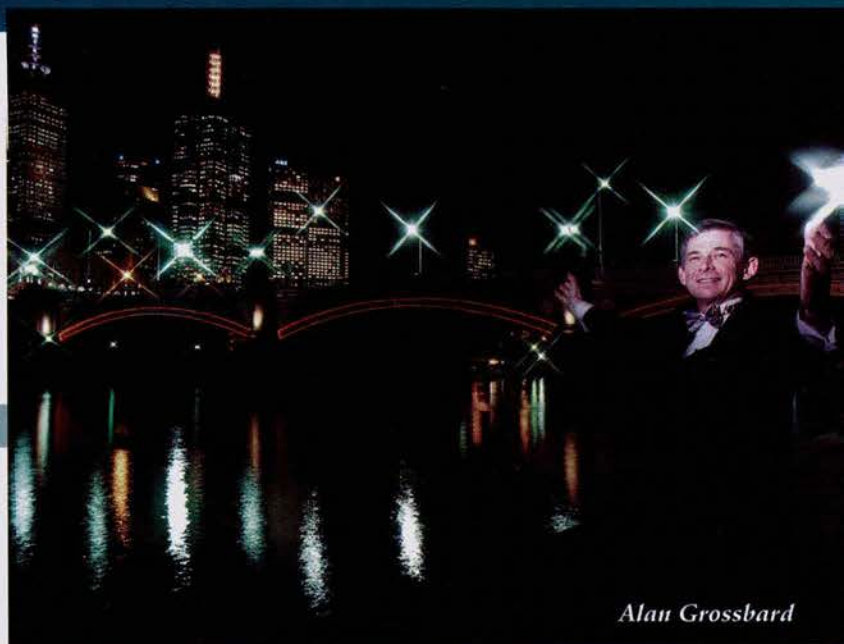
The free HORIZON CD-ROM is actual software, it is not a demo. It allows you to write cues, assign channels, prepare groups, submasters and even parked channels.

To run the show and dim lights, however, you must purchase the HORIZON DMX Interface Module (\$1800.00 plus s/t) from your Rosco dealer.

Lighting control with the power of your PC.

FOR MORE DETAILS CONTACT
ROSCO AUSTRALIA ON (02) 9906 6262

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Pic: HWT

Alan Grossbard

"It's a bit of a hobby of mine, lighting up different parts of Victoria."

In fact, Alan has created and developed architectural lighting for around twenty historic landmarks in Melbourne and regional Victoria. But Alan's hobby has a discipline - for each of his projects, he experiments with different types of illumination.

When Alan looked around Melbourne he noticed the darkness of the Princes Bridge against its surroundings and decided to highlight the arches of the bridge with optic fibre illumination.

Being a Heritage landmark, and protected by the National Trust, it took seven months to gain permission from all relevant bodies for the face-lift to go ahead. Installation only took one week but with complications such as having to wait for the only cherry picker crane suitable for work on a bridge, as well as 'no nail' restrictions set by the National Trust, Alan wondered if it was such a "bright idea" after all. The nail dilemma was solved when Alan came up with the idea of using perspex tubing with a flat side on the back to hold the optic fibres to the bridge. Each of these 800 clips were then adhered to the perimeter of the arches with silicon.

Alan trialed seven different colours, and considered a design where the fibres changed colour every few seconds, but finally decided on a soft orange glow.

"When I trialed the colours I noticed that some of them just made the bridge disappear, but the orange accentuated and brightened the bridge just enough."

Floodlights are also used to highlight the bridge's pylons where the arches join. The result is an elegant scene which has added a new lease on life to the 110 year old bridge.

The 360 metres of optic fibre cabling were supplied by Fibrestars and installed by Enetech. Each cylindrical element made up of 96 strands of fibres expels a mere 1.2 kilowatts of light. Six small transformers

are distributed along the ridges of the arches.

The optic fibre cables or "illuminators" as Alan calls them, had to be weather and water resistant, as well as protected from algae and fungus due to the exposure to the elements. Maintenance is minimal with the installation designed to last for ten years.

At a cost of \$30,000, the project was funded by Texas Utilities Australia, and was given to Melbourne as a gift during the Melbourne Festival, under the name *Corridor of Light*.

The installation requires no control system with the entire design running off 240 volts, and wired to turn on with the surrounding street lights. With such minimal energy usage, the estimated running costs for twelve months is \$800 or \$8.40 per night, which the City of Melbourne has agreed to pay.

To launch the new architectural lighting installation during the festival, David Murray came on board with a design to inaugurate Alan's design.

Four 'Moonscrapers' were placed on the bridge, two at either end to create a giant arc of light above the bridge. Supplied by **Bytecraft**, the spotlights were High Intensity Photographic Illuminators, each with an 7000 watt xenon lamp, and programmed to tilt from vertical to 45°. The moonscrapers were powered by 3-phase extensions run along the length of the bridge. While the moonscrapers were pre-programmed to operate between 7 and 11 pm, they required an operator to turn them on each night. Installation on the Princes Bridge required a crane truck to place the lamps on six foot high scaffolding towers weighted with concrete blocks.

David Murray's design for the light show was for the synchronised beams from the spotlights to form arcs up to 30,000 feet high over Princes Bridge that could be seen up to 100 kilometres away.

★ Mandy Jones

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Club

Sandwich

Edited by Caroline Grafton, Compiled by Nicky Morris, Catriona Forcer & CG

Product News

Pioneer Professional have launched the "vinyl turntable feel" CDJ-500S single CD player.



It features highly sensitive jog wheel, anti vibration, tempo control range of 10%+ or (new) 16%+, master tempo pitch lock, quick start, big display, advanced

loop functions, cue point sampler, headphone output with volume control. The compact size allows for flexible installation (up to 45 degrees inclination) on the optional bracket holding two units equalling 19" width. Priced at A\$1,399 from Pioneer on +61 3 9586 6300.

Vestax Pro Audio have released the PDX-a2 (above right), what they call a "vertical turntable". No, it's not what you think - it doesn't stand vertically, but the floating tone arm operates from the rear to prevent slipping and al-



low faster delivery. Looking at the pic, it really should be called a horizontal turntable. Other features include a high torque direct drive motor and double start/stop buttons located on either side of the unit. Available from Moore Music +61 3 9419 0344 Priced around A\$1,299inc.

From **KAM** we have the KCD650 single CD player (above right). Features include visual time and bar display elapsed/remaining time modes, large backlit cue/play/pause buttons, relay play facilities when linked to a second unit, virtually instant play, random play, vertical play, high quality metal joystick for fast accurate marking and pitch adjustments and (optical) digital output. Priced at A\$1200inc. Available from Universal Lighting & Audio (ULA), Sales Hotline 1800 648 111.



Disco World now have available from **Gemini** the PS-626PRO Mixer (below). In addition to all the features of the PS-626 you now have -26dB Cut on bass, mid and high of each channel. And in response to demand, PS-626PRO now carries recessed faders. Priced at A\$459inc. Call +61 3 9735 0538



• Model 626 shown (not PRO)

Club/Venue News

► Well the time has finally come when computers (which I really am not adverse to) are dictating our social agendas. Things to do in Sydney and Melbourne are now on the Web, but I must admit the other week when JG (you know! my husband, partner and editor) and I were looking for something to entertain us (very hard to do as we are both fairly cynical) the site we visited wasn't much help. I mean either Sydney had closed down that particular Saturday night or restaurants, cinemas, events, arts and music venues, clubs and pubs, hadn't yet cottoned on, to the idea of Web marketing. Probably the later, I'd say.

Anyway the same old print-media moguls have decided to thrash it out in the eternal competition for the mainstream advertising dollar. Kerry Packer has joined forces with Bill Gates producing the Website, *Sydney Sidewalk* (www.sidewalk.com.au) against the Fairfax Media Group's site for both Sydney and Melbourne, *City-Search* (www.citysearch.com.au). I really love the following quote of Mr

Harrington's - director of Sydney Sidewalk. "The moment we want to own in a consumer's mind is that moment when they say to themselves: 'I'm going out tonight, but I'm not sure what I want to do!'"

Well Mr Harrington, I wasn't sure what to do and you didn't help. But, my mind is still my own, thank goodness and for this I thank you. By the way, we ended up enjoying a great Thai meal on Oxford Street, revelled in the visual delights of the Darlinghurst social set, on a pleasant evening walk, and heard some not to good retro music at a big bar in the city with lots of marble. Two out of three ain't bad and I told you we were cynics.

► **The Palace Complex** situated in Melbourne, has seen the light of new interior decor. The club now breathes a fresh new Modern look and to celebrate this event *Monkey* is the fast tracking new club night. Every Sunday night *Monkey* spins the hyper beats from midnight 'til the wee hours of Monday morning for \$10. So if you like a scene of mixed sexual preferences, make your way to *Monkey*. Never fear, if the idea of trudging to work in a tire-

some splendour on Monday morning doesn't tickle your fancy and you're in need of recovery that night, The Palace is opened each night of the week, with three rooms of live bands and dance nights from \$7. Call +61 3 9531-0655 for details, or take a trip to The Palace Complex, Lower Esplanade, ST KILDA.

► A new live music venue has hit the streets of Adelaide. The **Colonist Tavern** plays live blues, funk, soul and jazz every Friday and Saturday night from 9pm - free Meals and drinks are available. For those bands who might like to play at the 'Old Col', contact Keven Kestler at KK Music Management, PO Box 218, Brooklyn Park. Or if you would like to just go and experience the music make your way to 44 The Parade, NORWOOD, SA. Phone +61 8 8362-3736 for details.

► **The Tube** in Fortitude Valley, is the place to be in Brisbane. Opened Wednesday through to Saturday nights, from 9pm. Wednesday night is *Addicted* where you can hear the sounds of house, slam and nrg for \$5 Thursday night wrecks the flavour of drum'n bass all night for free. Friday nights The Tube provides 2 rooms

The Astro Club

With its sweeping steel lines, coned shaped stools, vivid colours, angular/slatted columns and split levels, the Astro Club looks good. Bondi Junction needs some style, and this new club should do well.

David Felger, of Lightmoves, designed the lighting, which enhances the interior design. The ceiling is highlighted by large, multi-curved, night blue coloured perspex, suspended modules. The sections are fitted with rear mounted fibre optic lighting, which is then reflected off several mirror balls back onto the perspex, multiplying the starry effect. The result is a mid-summer's night sky.

The Astro has re-introduced the romantic booth into it's decor above which are projected various Gobo patterns.

The entrance is adorned by three looming internally luminated bubbling water cylinders while an oil wheel adds movement and colour to the Astro logo, projected on the footpath outside and dance-floor wall. Felger and Lightmoves also had input to the logo design and the colour scheme.

The audio, also designed by Lightmoves, has been designed in zones, so you can go off on the floor and then chill out in the quiet comfort zones of the booths and discreet tables, still

maintaining visual contact with the dance floor. A stage is available for live performance.

The Installation

Lightmoves Technologies (NSW) Pty Ltd
Ph: (02) 9560 0000



The Audio Spec

8 x JBL Control 25-150w/8ohm room fill speakers, 2 x MR925-350w/8ohm FCH speakers, Ecr. self powered Sub Bass speaker/250w, 1 x Crest CA-6 amp powering the room fill speakers, 1 x V900 FOH amp; 1 x Rane 15B Equalizer; 1 x Cloud CX335 compressor/limiter, 1 x M1200 mixer; 1 x Denon 2500F twin CD player; 2 x Technics turntables.

The Lighting Spec

General Interior: - 2 x Optikonetics K2 projec-

tors (MSD 200 lamp) with custom 3" cassette and rotator; 6 x Selecon Accent profile spots; 6 x Rosco E-size gobos; 8 x Kupo Par30 polished cans fitted with halogen 100w lamps; 2 x Genie Sparklers; 3 x Digilin mixed fibre optic point harness supporting 200 points each, 3 x DLS75 Lightsources; 5 x 8"-12" mirror balls; 1 x ADJ Starball 24v, 150w.

Main Dance Floor and Stage: - 4 x Martin Pro 218 MK II, MSD 200 lamps; 2 x Genie Sparklers, 8 x Kupo Par56 cans; 1 x Clay Paky Astro Raggi Twin; 6 x 40w UV Black lights; 1x Dynalite DTK 905CE Dimmer 12x5 amp; 1 x Light Point systems 12 way outlet, 1 x 12 way patch panel; 1 x Jands Stage 12/2 preset console; 1 x Circuit Tube powered lighting bar FOH; Cyc, side of stage positions; 6 x Kupo Par56 cans; 1 x LeMaitre G300 Hazer

Dance Floor Control: - 1 x Martin 2308 controller; 2 x Zero 88 Sigma Switch Paks, 1 x Delta Dim Pak, 1 x Mercury Lighting controller.

The Venue

195 Oxford St, Bondi Junction, Sydney
Phone: +61 2 9387 7887
Charge: \$10 after 10pm
Open: Wed - Sat



Club/Venue News cont'd

with house DJs spinning the sounds of Funky Sounds and Chemical Beats all for free if you can get there before 10pm and \$5 after that. S.L.A.M. is the Saturday night club with two rooms once again, House, Trance and nrg are the sounds and cover charge is \$7 (or \$6 for members). The Tube is situated at 20 Wickham St, Fortitude Valley. Phone +61 7 3852-1605.

► The Pavillion is enjoying complete refurbishment, with the install totalling A\$3million, all that was kept was the concrete floor. The club boasts two rooms with pool tables, holding capacity of 1000 happy clubbers and a 24 hour licence. Friday nights is *Pure Bliss* from 10pm until very late Saturday morning, spinning the sounds of House all night for \$7. Sat-


urday nights make your way for *Vibe*, where you can let the sounds of R & B fill your soul from 11pm 'till 5am. At 6am on Sunday starts recovery 'til 2pm for \$7/\$5 for members. New on Wednesday nights is *Fusion*, pounding out the sounds of funk all night, from 9pm 'til late. Need more info? Phone +61 2 9261-3622, or make your way to 580 George Street, Sydney.

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THE PA PAGE

What's that Noise, Hmmmmm?

Interesting the way some words lose their intensity with use/overuse. Once was a time when the title "genius" was reserved for truly great innovators and originators. One needed the talents of a Mozart, DaVinci or Einstein to warrant such an epithet. Not so in the 90's it would appear. Only the other night, one of our regular employees was declared a "genius" by the rest of the crew for his ability to fart the intro of "Eye of the Tiger". So whilst I appreciate any response from writing this page, against such a background, the occasional reader calling me a genius means little to me.

My primary objective in writing these articles is the spread of useful information. And as far as I'm concerned, my ability to repeat what I've been told makes me as much of a genius as your average parrot.

Repeating information is again what I'm doing this month. Last month, after many requests, I promised a page dealing with the eliminating humms. Most of what I have learned on the subject has come from things called instruction manuals. These are booklets supplied with the components when new, advising how the gear can be used to its best advantage, thereby generating repeat sales. Arrogant people never read them, and they are almost always lost by the time the item is resold. Well, I know heaps and I always try to read them. Even if I learn nothing new, they still make a damn fine toilet read. (Puzzled Female readers may need this peculiar male habit explained).

Hums in sound systems are usually the result of poor earthing techniques. Either too many earthing points or none at all. Unless the shield on an interconnecting cable is earthed, the internal cores carrying the signal are prone to all manner of induced nasties, such as those generated by lighting dimmers. Likewise, with too many earthing points, an earth "loop" can be created, resulting in much the same effect.

With a balanced signal, a reverse phase or kind of "mirror image" signal is generated for the negative core of your shielded pair. The idea that any noise that is induced on the way is done equally to both the positive and negative, effectively cancelling itself out. As effective and recommended as the practice of running balanced lines is, it is important to realise that hums can still happen. The number of times I've heard "But everything's balanced...!"

The trick is realising that there are two types of earth. There is the earth that originates from the overall mains power supply and, whether town or generator supplied, is hopefully securely anchored somewhere to good old mother earth herself. This earth is transferred via your mains wiring to each and every metal box in your system, thus shielding each boxes innards.

Then there is signal earth. Produced internally and separately within each and every component of your system. Every time signal earths are linked in more than one way, another "loop" is created

resulting in hum potential. If the components has its mains or "chassis" earth internally linked with its signal earth, then all it can take to create a loop is simply screwing it into a metal rack. Many years ago, people would scoff at my wooden sides with self tapping screws. When I finally bowed to pressure to get "professional" with rack strip and cage nuts, then the problems started.

OK., let's eliminate them. Firstly, before connecting any two items, determining whether each is balanced or unbalanced (we'll discuss quasi-balanced later). For beginners, XLR connectors do NOT necessarily imply balanced, any more than jack connectors mean unbalanced. XLR's sometimes have links between two pins, which does imply unbalanced. Jack inputs and outputs are often the Tip Ring Sleeve (TRS) type which can be wired true balanced. When not marked on the unit itself, consult the manual. (see above).

Never ever use single core "guitar" type shielded cable, even when connecting one unbalanced thing to another. In such a case, when using mono (TS only) jacks, it is good practice to connect the two tips with one core, the two sleeves with the other core and connect the shield, with the 2nd core, at the receiving end only. When wiring a balanced jack out (TRS) to an unbalanced jack (TS) in, again one core connects the two tips. The second core connects the TRS ring to the TS sleeve. And again the shield is connected, with the second core at the receiving end only. The sleeve on the TRS connector remains UNCONNECTED.

When connecting one balanced unit to another, NEVER connect signal earth. Get out of the habit of connecting all XLRs with little mic leads, there should never be a need, in these circumstances, to wire pin 1 on an output XLR. Try and use XLR connectors which allow an easy connection to the outer jacket. These types include classic Switchcraft, Nuetric and earlier Cannons (the type that came with rubber caps). Current Alcatels have no such provision. When XLR connectors DO have a chassis option, and you're wiring a balanced to balanced, do not connect pin 1 at EITHER end. Connect the shield to the jacket connection at the receiving end only, and let Mother Earth look after your signal.

Lastly, when wiring unbalanced to balanced, say via XLRs, wire positive to positive (whichever pins they happen to be), negative to negative, add a link between the negative pin on the receiving end and pin 1, and connect the shield to chassis earth via the sleeve connection at the receiving end only.

Radical stuff, but ah, the joy of a truly humm-free system! Any problems, just fax me on the number below.

Just don't call me a genius. (Dead set Ledge will do fine).

Michael Orland
Phone: (02) 9799 7219
Fax: (02) 9799 7219

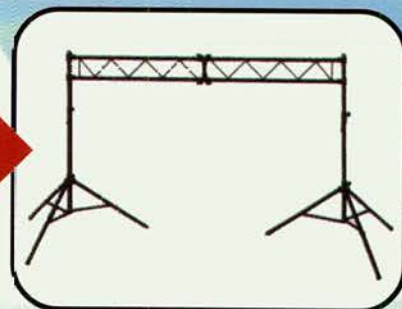
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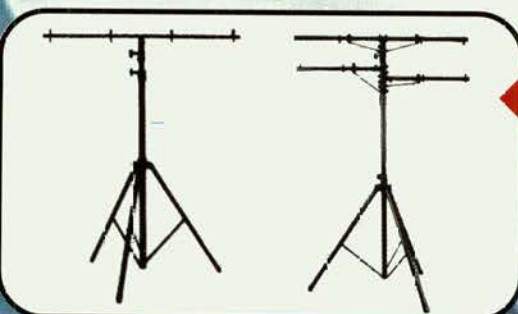
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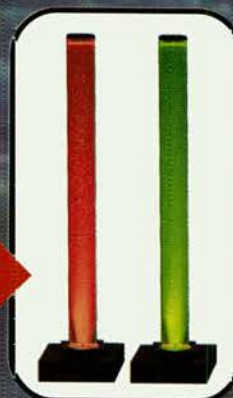
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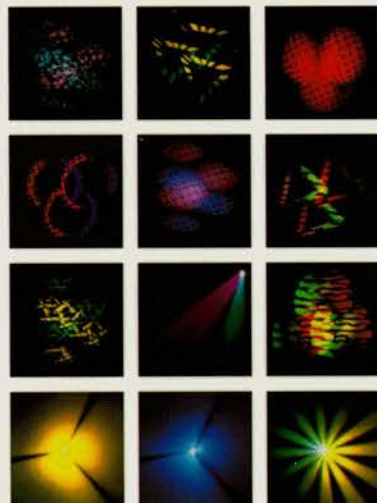


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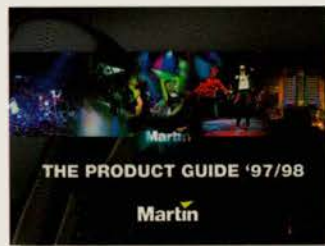
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