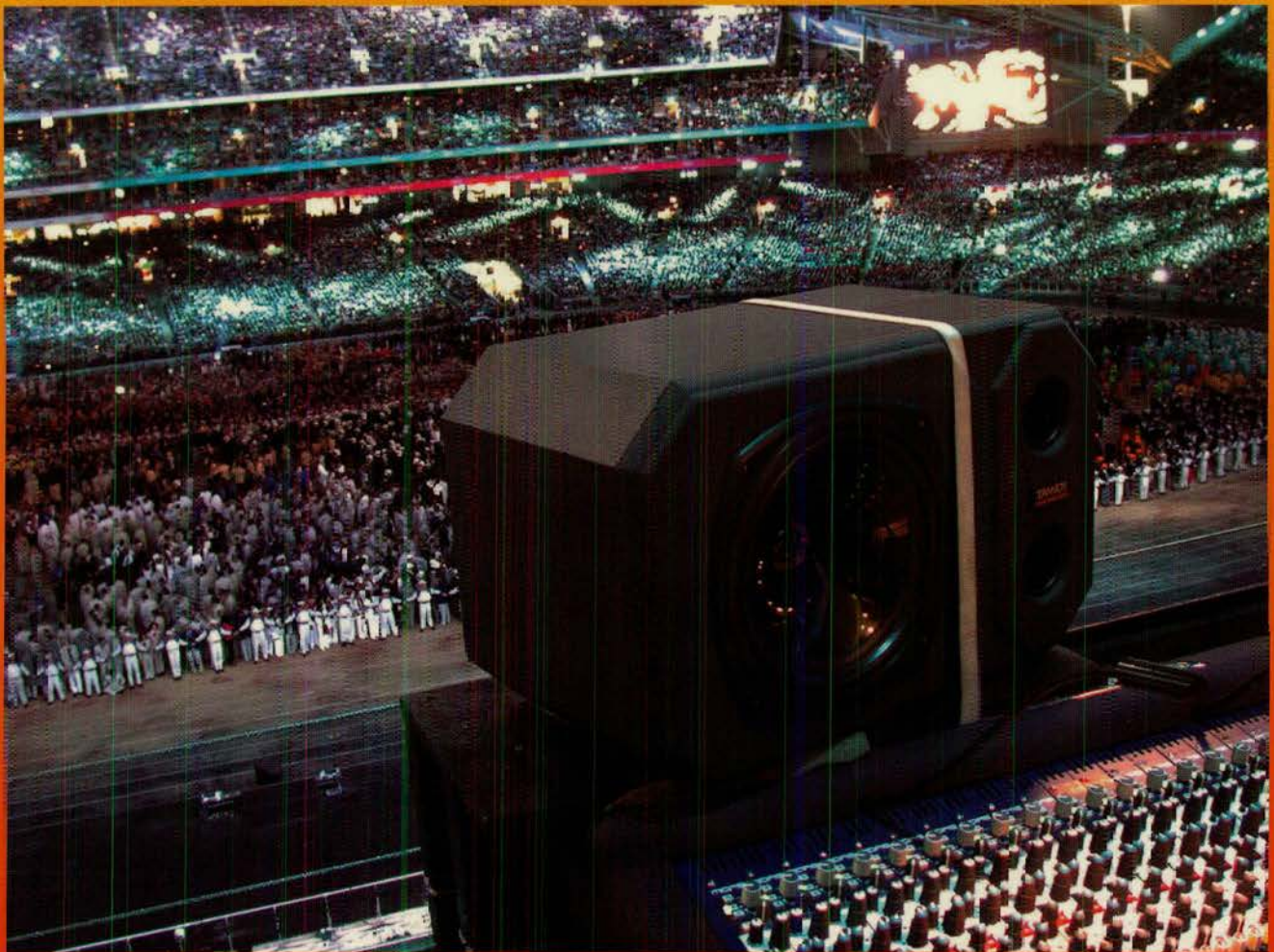


Connections

The **Entertainment Technology** Magazine

OCTOBER 2000 A\$5.50 (inc GST)

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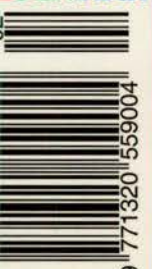
••••• HOW THE CAULDRON NEARLY EXTINGUISHED THE GAMES

••••• STAGE ZOOM 1200 REVIEWED

••••• YAMAHA DME 32 REVIEWED

••••• STACKS OF NEW PRODUCTS

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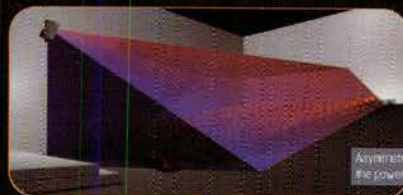
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Inside your news magazine:



Tall Poppy

"Cutting the Tall Poppy Syndrome" is one trait that I seek to avoid. I like to think that I will not cut any tall poppies that do not deserve to be chopped.

That is why it was a hard decision whether or not to run the piece I have written in this issue on the Olympic Broadcast. As you read, I have had a reasonable blast at one of the most well respected television directors this country has to offer.

I think it is important to recognise the role of constructive criticism in the ongoing professional development of anyone in any industry, however esteemed. The problem faced by a magazine such as this is that negative criticism of any product, production or person in an industry as small as ours can cause serious detriment.

I could be nice and not print anything critical - but that would make this rag worthless. I could take the view that as long as I am not "libelling", then it does not matter who I offend, but it will never be as simple as that. Ultimately, a few people, products or shows will continue to end up on the wrong side of my pen in times to come. Of the utmost importance to me is building Connection's integrity without compromising quality. And, having a laugh on the way.

-John Grimshaw, Editor.
email john@conpub.com.au



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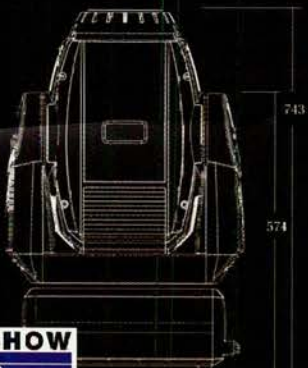
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Optics

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Connections

The Asia/Pacific Entertainment Technology Monthly **OCTOBER 2000**

Olympics shine may be unbeatable

Let's score the Production. Gold for Sound, Lighting, Rigging, Flying, Wardrobe and Stage Management. Silver for the Cauldron. Bronze for the telecast vision, Gold for TV lighting and Audio. Australian inenuity just got recognised worldwide!

If the Olympics is remembered for anything other than the sporting events, then the Opening and Closing Ceremonies are it. And how bold, how large, and how dangerous are these enormous shows?

First, lets say hooray for the music.

As Connections rightly reported last month, leading Producer Richard Lush spent a vast amount of time recording everything you heard on the night. Fairlight came good with a new Merlin, allowing hard disk editing and non linear access to everything.

At the Opening, as our coverage reveals, the best of either live or recorded were blended. The orchestra, playing live, were mic'ed - but what were you hearing? Our story inside reveals.

Spare a thought for the composers, unsung heroes that they are. Chong Lim excelled with his Nature segment. David Stanhope managed to make the Australian National Anthem sound like a new and exciting creation - while keeping it aligned with its traditional sound.

The audio, both live and telecast was virtually flawless. No mean undertaking, as the broadcast mix was done more than a kilometre away, out the back of the IBC.

Lighting was vibrant, set the mood, and punctuated the scene. It all appeared to work, it wasn't overdone, and it is a tribute to the resources marshalled by Bytecraft and designed by John Rayment and Rohan Thornton.

The flying was breathtak-

ing, both on TV and in the flesh. It pushed the boundaries, and as our story this month reveals, was almost done on a wing and a prayer as precious rehearsal time evaporated with high winds.

Genius was thick on the ground at Stadium Australia. Even the thing that momentarily stalled, the cauldron, astounded. Our story this issue shows you the construction and throws some light on what was almost a disaster.

We needed heroes, and now we have them.

This should be a time when the Australian trait of cutting down the tall poppy is buried.

Tributes please, to Ric Birch, David Atkins and Morris Lyda. More tributes to Bytecraft and Norwest Productions - the live audio production firm, who were sadly omitted from the printed program. When talk turned to the Olympics at ENTECH back in March, we heard a few dark pathetic and miserable souls commenting snidely that these companies couldn't possibly do a show like this. These people live in a different Australia.

The most interesting thing of all is that it's very unlikely anyone will ever stage a show so large again.

- Julius Grafton

LDI - the LDs Mecca

If it's October, it must be LDI. This is the worlds biggest trade show that is just for lighting, and this month it will be staged in Las Vegas, which is the worlds largest alien reservation.

Joining a growing number of lighting professionals from the region making the trip is your Connections team, who will seek out the newest trends - and the weirdest rumours.

New kinds of cocktails will be discovered, and many an MSR lamp will burn in vain as vendors desperately try to impress.

If making the trip, look us up in the bar at The Venetian, any night after 6.30.

• **LDI: October 20 - 22.**
www.ldishow.com

Court Case Dismissed

Martin Professional A/S has reached a settlement with Vari*Lite Inc., thereby lifting the injunction against the Martin MAC 500, MAC 600 and MAC 300 luminaires in the American market.

For Martin Professional the settlement means a return to full trading freedom in the United States, which is expected to contribute positively towards the company's future development in terms of both turnover and profitability.

With the recent release of a half-year financial report showing significant growth and profitability over 1999, the return of the full MAC range to the American market is expected to have a further positive impact. The settlement also means that Martin can unrestrictedly focus on its core business of providing top-of-the-line intelligent lighting products particularly to the US lighting market.

www.martin.dk

A few of several hundred heroes. Steve Logan (Fairlight), David Stanhope and Chong Lim (composers), with Bruce Jackson (live audio legend)



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Who is doing what?

ANTENNA NETWORK INCORPORATED

New network for NSW/ACT Technical Managers of performing arts centres is born

A new network for Technical Managers of performing arts centres throughout NSW and ACT is calling for interested Technical Managers to join.

The Antenna Network Inc. was officially launched on Friday 25th August 2000.

This new network has been created to assist Technical Managers of Perform-

ing Arts Venues to communicate with each other. A number of forums have been designed to share technical experience and expertise between venues as well as information regarding touring productions. They also hope to provide a platform for advocacy and lobbying on behalf of members when dealing with industry issues such as the new Entertainment Training Package, safety issues and WorkCover.

Membership of the Antenna Network is offered to venues for a small fee.

The Antenna Network was developed through discussions with interested repre-

sentatives from performing arts venues and touring organisations throughout NSW and the ACT. Representatives were present from Arts on Tour, Ensemble Theatre, Glen Street Theatre, Griffith Regional Theatre, Illawarra

Performing Arts Centre,
Civic Theatre Newcastle,
The Street Theatre, Sydney
Opera House and the
Sydney Theatre Company.

The Sydney Opera House

will be offering a Certificate IV Workplace Assessment and Training course for financial members of the Antenna Network. This course provides successful participants with a Certificate 4 in the new Entertainment Industry Training Package, and the qualifications to train and assess future participants in this training package. This course to be held at the Sydney Opera House in November is currently only being offered externally to members of the Antenna Network.

• Info: www.antennanet.bizland.com, or contact Patrick Buckle, 0409 371 914 or fax +61 2 9452-2209. Email antennanet@hotmail.com

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NETWORK Incorporated

FREE SIGNAL PROCESSING SEMINAR

Jands' next "industry night" on Tuesday October 24 looks at signal processors such as equalisers, delays, compressors, limiters and crossovers, including new generation DSP based devices.

"We'll be looking at what happens after the mixer," explains Jands' presenter Nick Orsatti. "We'll examine the operation of these devices, with demonstrations which will show how to enhance system performance with a focus on live sound production."

The seminar is recommended for people with beginner to intermediate levels of experience and follows Jands' presentation on mixing in July. The company hosts its industry nights every second month at the Empire Hotel for the audio, lighting and staging industry, with an emphasis on using new technology rather than on sales. Guest speakers, demonstrations and course notes are all provided free of charge.

To register or for more information, please contact Jands on +61 7 5562-0586.

AES Brisbane Section Meeting

AES have arranged a tour of the AURAN Facilities, on Wed. 11th October at 6:00 PM.

AURAN is one of the world's leading innovative software development companies specialising in computer game and graphic

engine development.

They are a home grown Australian software development success story sporting an impressive list of achievements. Early success came with 'DARK REIGN' but they have also developed some unique and technically advanced graphics software engines for calculating, transforming and rendering 3D images.

Part of the expansion of AURAN has included the design and installation of an impressive sound studio, one of the most fully featured and state of the art installs in Australia.

AURAN are at Level D, 24 Macquarie St, Teneriffe 4005, but call +61 7 3358-8888 to RSVP- don't just roll up.

ASSG AWARDS 2000

The 3rd Australian Screen Sound Guild awards will be held in Sydney on **Friday October 13th**. It's always a great night out, we love the unpredictability of it!

The ASSG Awards recognises best work in audio on screen, covering film and TV. Anyone interested in either medium will not regret attending.

The venue has moved to the Waters Edge Restaurant, at Pier One.

• Call +61 2 9906-2960 for tickets.



Fairlight On Air has delivered a customised SAS 32000 intercom system to Austereo Pty Ltd. It handles at least 32 stations and can interface with on air studio consoles, which output a clean mic feed to the selected location. The SAS 32000 system produces a high performance micro processor-based audio switching system specifically designed for use in broadcast installations.

Euphonix System 5 does audio for Olympics

Two new consoles used by 7 for all audio last month

A pair of 154-channel Euphonix System 5 High Performance Digital Production Consoles were used at the 2000 Olympics International Broadcast Center (IBC), located near Sydney, for broadcasts of the upcoming Summer Games. The two all-digital consoles provided Australia's Seven Network with all of its live, around-the-clock broadcast audio coverage, as well as handling the majority of production and post-production mixing chores.

"The System 5 in Control Room #1," explains Alistair Dewar of Technical Audio Group, Euphonix' Australian representative, "was used to put the Games live to air from 9 AM until 11 PM each day. The Control Room then switched over to a nightly two-hour live broadcast by popular Australian comedians, Roy & HG.

In fact, Control #1's audio operator had just two minutes to change the System 5 from Olympic broadcast mode to the live studio set up, with band and live audience.

"Then, from 1 AM to 6 AM, Control #1 replayed highlights of the previous day's Olympic events." The System 5's comprehensive automation and snapshot libraries allow the entire console layout to be modified in just a couple of seconds, enabling fast turnarounds.

"The Olympic Sunrise Show', at 6 AM, emanated from the System 5 in Control Room #2," Dewar continues, "giving Control #1 a short break. After that, Control #2 was used primarily to replay the Games' highlight shows for Australian regions outside of the country's eastern seaboard time zone."

"We have been using Euphonix CS [digital-control analog] consoles since the Barcelona Olympics [1992], and have been very happy with them," says John Hancock, Audio Director for Seven Network's Olympic broadcast. "Having started to work with System 5, I realised that it is everything we wanted the CS consoles to develop into."

• www.euphonix.com

Distribution Appointment

Moore Music have recently been appointed the Australian distributor for Gemini and Lytequest products. Call +61 3 9419 0344

Web Updates

There is now a website dedicated to **Vestax** products in Australia - www.vestax.com.au

Technical Audio Group say, "Check out our new web site. Is this a bench-mark in the industry or what??" I would suggest you see for your self at www.tag.au.com

Cuthbertson @ Fairlight OA

Tim Cuthbertson has been appointed CEO of Fairlight On Air, the specialist broadcast solutions arm of Fairlight.

Births

Emmanuel and **Gina Ziino** of Show Technology, are proud to announce a new baby girl: **Sofia Francesca!**

John Grimshaw (the sometime editor of this libel pulp) is pleased to announce the birth of his son, **Lachlan David** on the 5th of September. His wife, **Janelle**, is doing well after the birth of their first child, but he comments "we could all do with some more sleep."

~ Vale ~

Peter Brown, of Brown's Precision Welding (Melbourne), who passed away in the prime of life last month. Survived by his wife and two daughters, Peter built truss for many in the industry.

He made his ground on his own, and should still be here with us.

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Who is doing what?

Lee joins CDA

Coemar De Sisti Australia announces David Lee has joined as a TV & Film Lighting specialist. David has had 30 years experience in the Lighting Industry including Theatre, Concert, Corporate and TV Lighting spending 20 years working for BTQ7 in Brisbane.

New Studio Manager

Steve Defina has taken time off cloud nine to let us know that he been appointed Studio Manager at 301. Formerly of Syncrotech where he was product manager for Beyer and KOK, we wish Steve well with his new job.



Steve Defina

Show Tech Quality endorsed

After years of effort, Melbourne entertainment rigging and services company Show Tech Australia have been awarded ISO 9002 Quality accreditation. It's a major achievement for a small firm, congratulations Tiny and Robbie!



Lightsounds Phone No:

Lightsounds Pty Ltd's phone number was incorrect in our Easy Finder last month.

The correct number is +61 2 9560-0120.

NOISE LEVELS TOO HIGH FOR NIGHTCLUB STAFF

Excessive noise levels recorded in a Brisbane cabaret and restaurant led to a total of \$25,500 in fines and costs being imposed, in the Brisbane Industrial Magistrate's Court last month.

Magistrate Ken Taylor fined Wildlodge Pty Ltd, trading as The Beat Cabaret and Restaurant in Ann St Fortitude Valley and its Chief Executive Officer John Hannay.

Bar staff and disc jockeys health had been placed at risk after exposure to noise levels above the maximum acceptable standards.

Mr Taylor said the Division of Workplace Health and Safety had acted commendably in assisting the risk management process for the business by identifying the hazard long before the offence was committed.

Inspectors had carried out noise surveys of the establishment in 1996, 1997 and May 1999. Although safety notices had been issued instructing the business on ways to combat the noise levels the employer had only implemented hearing protection devices but did not enforce the wearing of the earpieces or instruct staff in their use.

The magistrate found inspectors had provided clear and practical options of other control measures to the employer including engineering controls, sound limiting devices and acoustic ceilings.

The business had opportunities to carry out noise reduction work as it underwent two refurbishments of the premises during the period.

Mr Taylor said excess noise was a serious risk to health. "It is an insidious danger, not often recognised, making it more dangerous than it is thought to be," he said.

He said although patrons may demand noise to some extent the employer had an onerous obligation under the Act.

Cauldron almost

By Julius Grafton

Here it is, the biggest idea of the Opening Ceremony, and with its final execution, possibly the *best theatrical effect ever invented*. But it nearly failed, and the failure would have been much more dramatic than first thought.

When the Olympic Flame left Greece, two custom made brass miners lamps were used to carry it. As the Torch Relay wound its way around Australia, the mother flame and backup were always nearby.

At the opening ceremony, the Cauldron made a spectacular and surprising debut, raising out of the pond around and above Cathy Freeman. The picture at top left shows the device lifted about a foot above the edge of the pool.

Fully lit and fast burning a lot of bottled gas and hydrogen on board, the Cauldron stalled at the cart (*top right*) when a limit switch malfunctioned. The talkback system was deadly quiet as the engineering crew manually confirmed all was correct before overriding the errant switch.

Some nervous minutes passed, the vision cut to startled torch bearers, and Cathy Freeman was instructed via in-ear monitors on how to look and what to do at this unplanned pause. The soundtrack marched on, timecode unravelling towards the automatic cue for the fireworks which then went off early.

The Cauldron was slowly running out of gas. Ric Birch says it had plenty left, but some crew claim it was actually failing as it finally came to rest and was hooked up to the mains.

Unknown at the time, the mother flame and backup were missing, presumed stolen.

It all could have gone dark.....

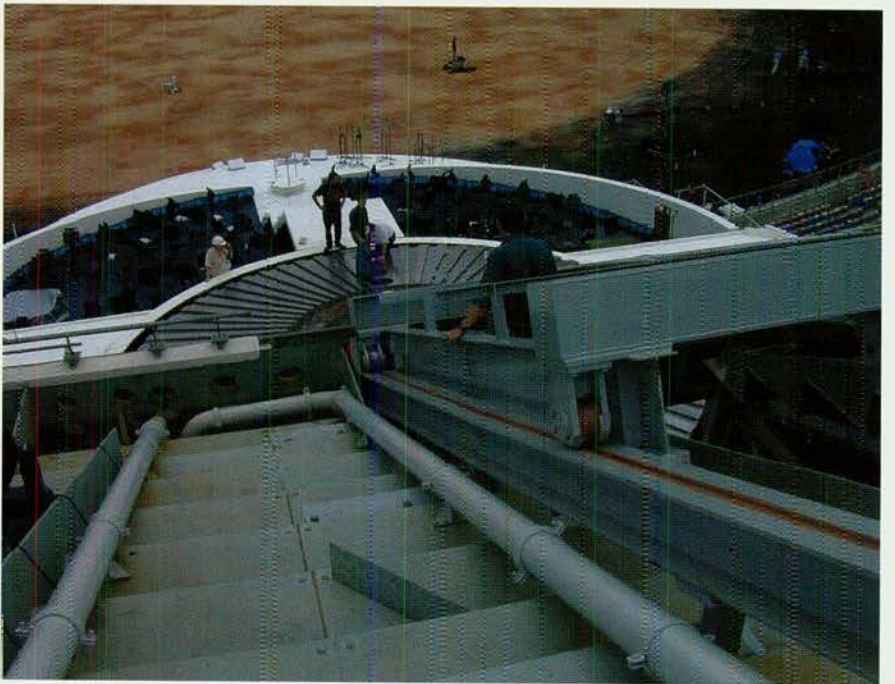


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LIGHTING FOR THE BIGGEST SHOW ON EARTH

As one of the most complex shows ever staged started, a small army of lighting crew quietly did their job, and the results stunned the world.

John Grimshaw reports.....

After an extremely hectic two weeks leading up to the event, the night went surprisingly well - only three lights were lost in that mammoth rig. However, the time leading up to the deadline was, according to Paul Rigby (Technical Manager), very stressful indeed. One of the major problems they faced was that there was 258V coming out of the sockets.

Meeting with OCA and Energy Australia initially looked like there was nothing they could do about the problem. With the over-voltage, all of the followspots and space cannons were blowing circuits and seriously damaging themselves.

In addition, much of the other European equipment simply was not coping with the voltage. It reached a point where the German

technicians here to supervise the equipment said that they would not let the cannons be used until the power was fixed.

Some arm-twisting was applied to Energy Australia - who had previously said they weren't going to fix the problem. The result was that they sent a great deal of resources to re-tap a number of transformers off the 10,000V lines to the stadium. Luckily, the work was completed (just) in time for plotting and rehearsing before the 15th.

Another problem that was conquered by the opening was that the scrolls on the 4k wash lights were not behaving properly. These teething problems could have been anything - the sporadic voltage, the wind or heat in the stadium or even simple DMX issues. Hours were spent in the air on the

Stephen Fcund. Lighting Producer, Bytecraft Director



John Rayment, Lighting Designer



Rohan Thornton, Lighting Director



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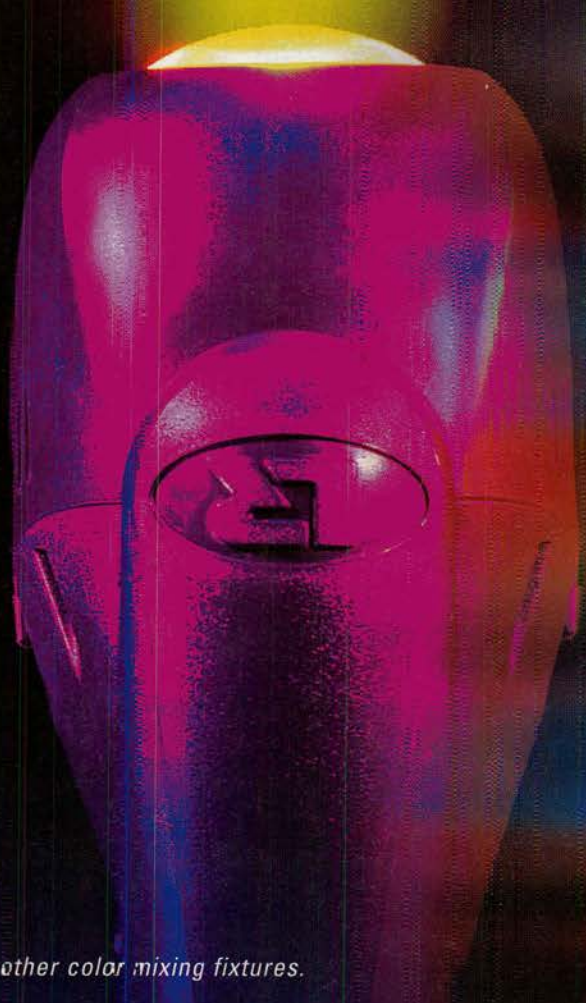
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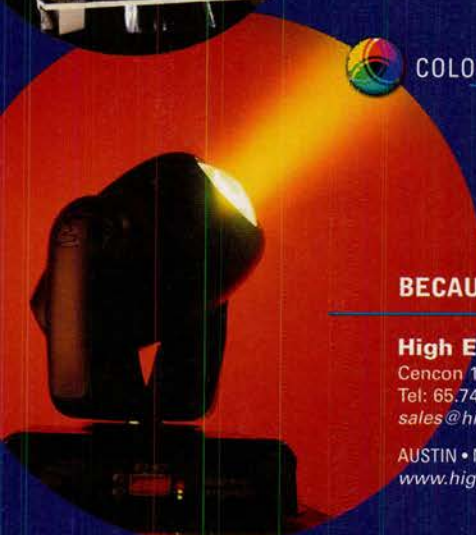
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Opening Ceremony



Hog Heaven



Paul Rigby, Technical Manager

truss looking at the problem and fault finding. Experts were flown in, and slowly the scrollers were made to work.

To deal with the followspots, Lycian sent a technician to try and help – on the day of the opening. In the end, there was probably a representative from every lighting manufacturer that supplied equipment just to make sure it all went smoothly.

It is very easy to understand Paul Rigby's statement; "The two weeks leading up to the night were very stressful."

Compliments must be paid to every technician on the ground and Bytecraft for the outstanding quality and the horrendous hours involved pulling this show off. Despite the fact that there was some concern that the international make up of the team may lead to tensions, the professionalism of the entire group was continuous and impressive.

This is the first time Bytecraft have taken on a "Producers" role, looking after the entire requirements of the performance lighting as a "turnkey" operation. They could not have chosen a bigger show to debut this new aspect to the company, but Steven Found (Bytecraft Director) has been extremely happy with the results. In fact, it will probably take the next month to reply to all of the emails he has received.

By all reports, everyone involved slept for three days once the show was done (were they dreaming of the accrued overtime?) Athens sure has one hell of a show to follow.

When we asked John Rayment how he thought the show went, John replied in his typical (almost trademark) laconic style, "Oh I think it went well." Although there is considerable understatement in this reply, Rayment went on to say that there were certainly things that he would have liked to have more time to work on.

"The task is to produce as much as you can." In the two weeks they had to prepare, plot and rehearse, Rayment was able to create a living design that well complimented all of the other elements of the show. However, he is always looking for room to improve.

"If I achieved everything I wanted to do, the bar was not set high enough," says Rayment. Would he do it again? The question was barely asked when he firmly replied, "Yes."

Rayment likes to think he has come out of this show older and wiser. Next time, he would be able to head off a few

more problems, and would choose to do a few things differently. In fact, his next opportunity to do it all again comes very quickly as he is lighting the ceremonies for the Paralympics.

In summing up the experience, Rayment only had one minor difficulty that could not be easily resolved.

"I thought at times that the creating the lighting for the show was given a bit of a back seat. It (lighting) is not just the hardware or installation - it is the creation of pictures - painting with light."

Rohan Thornton, lighting designer for the television audiences, was also quite happy with the final result. As has been reported in the general press, the various reactions worldwide were very complimentary. In particular, they had some good feedback from NBC, German television and a few other broadcasters. Thornton comments that certainly a couple more days of preparation would have helped, but in the end they achieved what they set out to do. The biggest problem faced by the broadcast was the extreme contrast between bright and dark scenes. Today's broadcast quality cameras can cope with very little light, however it takes time for a camera operator to get picture corrected after a big lux change.

Thornton was very happy that very early on money and resources were allocated to audience lighting - the scenic backdrop for the television audience. Ultimately, the opening was always going to be judged by TV pictures, and this is also how the world will remember the ceremony.

Because of the size of the event, so much of the show had to be created from scratch using the skills of the team involved.

"There was certainly no folder from last year to look up," says Thornton.

"The final success of the opening ceremony is a tribute to all involved."

And what a team that was.

Three lighting designers (John Rayment, Rowan Thornton and Trudy Dalglish) and the very capable management team from Bytecraft (including Stephen Found, Paul Rigby, Rowan Trundle, Durham Ritchie, Nikkitas Comos, Edward Fardell and David Storie), all involved moved heaven and earth to make sure the show worked.

Even manufacturers and suppliers came to the party, helping when required to make the show happen. These different international partners included, Strand Lighting, High End Systems and Procon – all supplying equipment and/or labour at greatly reduced cost.

To the various technicians, riggers, desk and spot operators, volunteers and others (including the poor buggers running cables for eight weeks) you should be proud to have been involved in such a successful show.

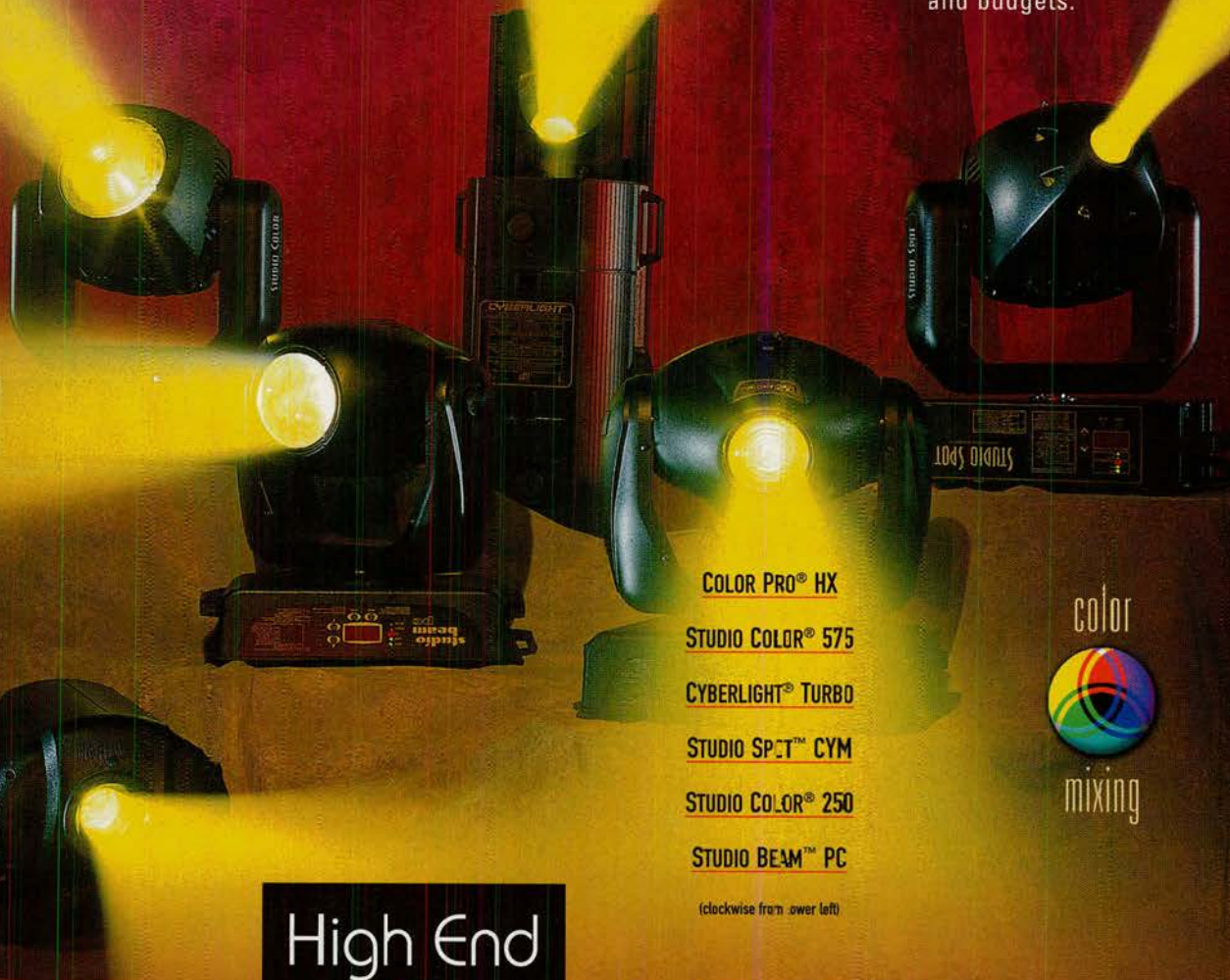
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AUDIO FOR THE BIGGEST SHOW ON EARTH

Conceived, designed and executed by Australians, the Sydney Olympics Opening Ceremony was the largest show yet held on earth. It's going to be hard to match, as Julius Grafton discovers....

Audio for the world's biggest show required some of the world's smartest people. It was a dual effort between broadcast and live, with the two teams co-operating from day one.

"It's not always like that, the PA company just come in and do what they want sometimes", said Audio Director Bruce Jackson. Audio Producer (International Broadcast Centre) Colin Stevenson agrees, and having designed and supervised the mix of the show for the 3.1 billion people on this world, he should know. "It's often tortured. People who know their stuff, like Bruce, are a delight to work with."

Live audio was supplied by Norwest Productions of Sydney, whose already excellent reputation has sky rocketed as a result. Broadcast audio was originated by SOBO.

SCBO supplied all other broadcasters with output, including ambient mixes. This produced some interesting situations, host broadcasters added commentary.

"The hard part of our job was SOBO were only set up to do effects and ambience

originally, then we were to produce all audio for the biggest show on earth! All the international broadcasters took our output.

The broadcast mixing position was more than a kilometre from the source. It was over the road from the Olympic Stadium, down a hill, across a car park, and inside the massive International Broadcast Centre. (Connections August, page 72).

Five Ramsa consoles in four control rooms were fed 192 lines via fibre optic cable, the first time a show of this scale has been cabled in digital. Several emergency analogue lines were also run, at super low impedance, as a backup.

Fibre made the show possible. Klotz Digital provided 13 main frames which were located around the Stadium, each being an input point for conventional analogue audio which was then converted to Klotz's digital protocol for transmission on fibre. A second fibre optic multicore system was supplied by Otari, this was the IBC's originally specified and installed system.

The four broadcast audio control rooms handled different programmes. Two were for

Opening Ceremony



Australian born, US based audio designer Bruce Jackson, with John Simpson

camera effects alone. Each camera had a stereo microphone on front, 24 cameras went to room one, 14 to room two. Double that number for stereo inputs. The engineers in these two rooms needed to chase the vision and fade audio up for each shot, with wildly different levels present at each camera mic.

Point of interest: when the camera zooms in the sound doesn't, of course. Would you believe that a way to do this automatically is being developed, via digital signal processing (dsp), at a high tech audio R & D lab in Sydney?

The third control room mixed the marching bands. Control room four had two consoles in it, and mixed the whole show.

SECRETS

The production community (and we at Connections) held the show secrets, hundreds of people knew about the Cauldron which so amazed the world. Dozers of people saw Cathy Freeman light it at the rehearsal early in the morning of the Opening. The segment artistic details were all kept under wrap for more than a year.



TV Director, Peter Faiman, with broadcast audio supremo Colin Stevenson at the IBC

ASSIGNING FREQUENCIES
A MONSTEROUS TASK

Bob Sloss (CEO of Syntec, the Sennheiser importer for Australia and New Zealand) was responsible for allocation of radio microphone and in-ear monitor frequencies at the Olympic Games. It's a gargantuan task, he started with a spread sheet. Broadcasters were across the top - and there are 67 of them. Channels ran down the side.

"Sennhieser gave me a plan showing you could place eight or nine reasonably intermod free channels in each TV channel" he told Connections. "Then it was a matter of getting every request for every venue and working through them".

Armed with an allocation from Bob, the user or broadcaster then went to the ACA (Australian Communications Authority) who are on site at the games in Sydney. ACA tested the equipment and confirmed it was transmitting on the correct frequency.

ACA had staff with scanners policing the airwaves, and found a few abnormalities here and there. "There was one spurious transmission created by three separate in-ear systems, luckily it fell into a vacant frequency" says Bob.

"People have been really cooperative. Even bands at live stages outside the venues are supplying frequencies in advance!"

Once the games started, the fun kept going, in just a few days Bob found an additional 150 frequencies for people at various locations.

Opening Ceremony



Steve Law (FOH engineer) and Chris Kennedy (CEO, Norwest Productions, supplier of live audio

Some things are still secret, or were until now.

Connections' readers were clogging our email and phone system as the Ceremony wound down, asking the same thing. Why was it reported in the September issue (page 11) that Richard Lush had painstakingly recorded the Sydney Symphony Orchestra, when they were there, playing live, and apparently mic'ed up?

Answer: the pre-recorded music was used.

Were the singers lip syncing?

Answer: some were, some of the time!

This produced some cat and mouse in a subsequent interview with Bruce and Colin, appropriately held at MacLarell restaurant in Sydney. Did Tina Arena sing live? "No!" they chorus, because the vocal track arrived as a final version processed for the CD release, not as the source stem. So by using it, it was obvious to anyone with decent hearing what it was.

But the audio team were coy about the rest. We know for a fact that the duet featuring John Farnham and Olivia Newton John was half live, half canned. It flipped from pre-recorded to live, at a point about half way through. Did anyone notice? This was so the singers could ab-lib and do the 'Good luck everybody' part at the end.

Vanessa Amorosi sang the house down, held the last note for what seemed like a lifetime, fell to her knees, and then bounced up and said 'thank you' - seemingly without taking breath. Was that live or pre-recorded?

"It doesn't matter when you have the

stems" said Colin. "That's the beauty of having the source mix, because you can do it all so naturally".

The answer is, the best source was used, every time. Some live, some not. All the music, aside from the Marching band, was prerecorded and played back live in multitrack format from Fairlight's amazing new Merlin multitrack system. The new 24/48 track hard disk recorder was backed up with a Fairlight MFX3 running in tandem but not required. The Fairlight's AES-EBU outputs were patched direct into the Klotz Digital fibre optic distribution system, where it could be collected in full glorious digital format anywhere required. Like a mile away, in the IBC!

REDUNDANCY

This was the show of disaster recovery plans. If the power went down, the system kept going, at least for a while. "We had two 7.5kva uninterruptible power supplies - big ones - on the front of house" says Bruce, "and UPS on key Klotz mainframes".

The second front of house (FOH) console, a Midas Heritage, backed up the first. Bruce says it is a nice console. The main console was mixed by Steve Law, with Norwest Productions CEO Chris Kennedy calling the cues. The backup console was mixed by John Simpson, supplying a backup feed to the IBC as well as live.

Tannoy monitors were used at the mixing position, which was on level 3 of the West stand, just under the dignitaries position.

In case of absolute disaster, the house system at the Stadium was ready for use. Audio feeds back from broadcast could be used live, live audio feeds could be used for broadcast. Both house (live) and broadcast had back up consoles and engineers in place, as previously noted.

And finally, there were those enormously lengthy analogue audio lines run in tandem with the fibre optic feed to the IBC, a distance of over a kilometre. "I don't (normally) like to run analogue lines more than a couple of hundred feet" says Bruce.

SNAGS AND SOLUTIONS

RF (radio interference) was a problem in more ways than one. "We couldn't have done it without fibre" says Colin. "Anywhere you had a dodgy line you had 2UE (RF from this radio stations transmitter was induced into lines really strongly) come in loud and clear."

Connections has heard of many interference issues on audio and data lines around the Stadium, mainly due to the complexity of

Master of Ceremonies, events genius, Australian based in LA, Ric Birch with unidentified person



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Opening Ceremony



EAW KF750's way above, to cover the North and South (end) stands



Face in the crowd, entertainment promoter Kevin Jacobsen



Announcer, John Stanton



Alex Jackson, assistant

integrating so many layers of technology for this most major event. All problems were resolved in one way or another, a tribute to the expertise of all concerned. It pays to have time to trouble shoot.

The Governor-General of Australia Sir William Dean, declared the games open, in a halting and slightly confused manner. The press leapt on this and all manner of inferences flowed. The reality was that he was actually confused by the huge delays of 150 milliseconds or more that he was hearing!

"I asked for him to be at rehearsals" said Bruce, "but he wasn't!"

The lectern had a hidden attribute too. Due to somewhat of a height difference between Michael Knight (Minister in charge) and His Excellency Juan Antonio Samaranch, the microphone cluster (2 Countryman Isomax and one Omni mic) needed to be raised and lowered a whole foot (300mm).

A meeting was held, a motorised device to raise and lower the mic was conceptualised. Colin found a linear motor for the mechanism.

One of Bruce's crew was positioned under the stage with a switch to activate the device and a script, but before the show Bruce realised any deviation from the script might produce the amazing sight of the microphone prematurely raising or lowering before a startled dignitary and 3.5 billion TV viewers. So the crew member was relocated alongside the stage.

Glenn Helmott from the Broadcast audio

team drew the short straw to become Mr. Hock. He got the horses gig. Originally it was thought the sound of five hundred hooves could be placed on the audio track - but then realised the animals would canter, trot and gallop - making it too hard to keep in sync.

Glenn used the little 10mw Sony transmitter, and old ECM 50 mics which no one minded having mangled. They were mounted low on the front girth strap - but the transmitter couldn't go down there, it was found that they tickled the horses tummy, making it: Bosh! So the transmitters were moved up the straps, level with the saddle. Glenn had to place these earlier in day, and rely on the extended battery life of the unit.

There were lots of little tricks, like effects mics at the Caldron, and large diaphragm Audio Technica mics for the fireworks which were cued by timecode from the Fairlight.

MARCHING BANDS

Bruce always knew he needed to amplify some of the marching band, because although staggeringly loud, the natural horn sounds tend to go the direction that the band (and their horn instruments) are facing.

Colin figured that about 28 of the players would be miced, so Colin went to the master of frequency allocation, Bob Sloss (CEO of Syntec, importer of Sennheiser, foremost authority on UHF spectrum pertaining to wireless microphone transmission) and obtained 44 frequencies. 16 of these were for

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Opening Ceremony

LIVE AUDIO CREW

The live audio crew comprised just under 40 staff plus 16 volunteers. Principal personnel were:

- Bruce Jackson** - Audio director
- Chris Kennedy** - CEO of Norwest,
- John Simpson** - Assistant audio director
- Steve Law** - Project manager and FOH audio engineer
- Ian Baldwin** - Assistant project manager and senior system engineer
- Ian Shapcott** - Monitor engineer
- Tony Szabo** - Control room system engineer
- Randy Fransz** - Speaker system engineer
- Peter Wood** - Audio stage manager
- Peter Twartz** - Radio microphone & IEM system engineer
- Steve Logan** - Fairlight engineer
- Keith Prestidge** - Klotz System Engineer



perimeter mic's. Bob is responsible for allocation of radio microphone and in-ear monitor frequencies at the Olympic Games. (See side box, page 19).

Looking at the costume design for the band, Colin figured that the transmitter would sit happily on the hat, provided it was a VERY small transmitter. Sony had a little 10 milliwatt model (most wireless systems transmit 50 milliwatts, some up to 250), which was curved and had 6 hours battery life.

A little Sony Freedom omni directional mic pointed down at the back rim of the hat.

Sony were set to work in Japan customising 44 of these to the specific frequencies that Colin had obtained.

Meanwhile a communications failure resulted in the wireless mic concept for the Marching Bands being scrapped. Colin found out some time later, and when the problem was clarified he found only five of the original

44 frequencies were still available.

Then 16 frequencies were scrounged back again, for the perimeter mic's. These were used with Sennheiser SK50 and SK250 transmitters. SK 250's were used at the Cauldron end for ninety minutes, and were running on Lithium batteries.

"Just as well too" he says. "The main microphone source was eight Shure VP88's, one on each of the eight conductors podium's around the ground perimeter. I was only getting the top end of the brass through them"

Eventually, one of each of Tuba, Percussion, Reeds, Flutes and Mellophones (a straight French horn) were wired up.

In addition there was one 'Kookaburra' mic, a pair of Audio Technica short shotguns on a catenary wire high above. NBC took a feed of these for their surround 5.1 program, likely assigned to rear as surround ambience.

> Continued on page 72



Adam Lowe (one of three calling stage managers) and Artistic Director/Producer David Atkins



Dawn Martin (one of three calling stage managers)

Recording producer Richard Lush with Fairlight engineer Steve Logan



Peter Twartz. IEM and Wireless Mic maestro



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What the home viewers DIDN'T get to see...

Editorial Comment by John Grimshaw

Peter Faiman Responds...

You are of course entitled to your opinion but as the Opening Ceremonies presentation has been so highly acclaimed both across Australia as well as internationally it is fair to conclude that that telecast must have captured something that excited the worldwide television audience.

The show could not have been so positively received if the telecast did not at the very least do it justice. And, as it is live television it will of course be imperfect.

As far as comparing what you saw in the stadium to what you saw on the screen I would like to remind you that television is a very specific electronic medium that can only relate in the best way possible what it sees.

The process requires the selection of images to portray the event in quick grabs that together build a picture of the whole. It cannot see everything. When you are watching a live event you can choose whatever you wish to see at anytime with focused or peripheral vision. I feel you acknowledge this difference between the two experiences yet are rather contradictory in that you nevertheless choose to be critical of television for being what it is. You also say you wanted close up shots yet didn't like them when they were there, preferring instead to see more wide shots.

You say you were "looking forward to the following Friday's telecast to see all of the secrets Ric Birch had hidden from the rehearsals". So was I. Much of the show was not fully revealed at rehearsals and much of it was seen by me and the crew for the very first time during the performance on the 15th of November.

I believe that everyone on the extraordinary television team drawn together for this event was professionally brilliant in their efforts to capture an event that cannot be properly rehearsed and only fully manifests itself once only. That once only time was on September 15th,

> continues over page

Two days before the opening ceremony, I had the chance to see the final dress rehearsal. I was duly impressed with what I saw, and was looking forward to the following Friday's telecast to see all of the secrets Ric Birch had hidden from the rehearsals. On Friday night, it was obvious that the performance quality that night was an order of magnitude better than the Wednesday night – it is a pity that the vision telecast by was in some ways flawed.

For those of you who did not have to opportunity to compare the live event to the broadcast one, you may not have missed what you did not see. Peter Faiman is a well known and well respected television director of many years experience. For the telecast, he had a supremely difficult show to direct. The sheer number of camera operators and other technicians used to cover this event live would have been incredibly complex to control. It also should be remembered that any theatrical event is the hardest type of performance to be captured on television. However, the overall result was disappointing. It appeared as if the telecast was being directed as if it were a stadium sports event, rather than a huge scale theatrical event.

The most important aspect of televising a performance like this would be to know how the creative team intended to show to be seen. The stadium was to become a theatre for the night, and the show's creators designed the performance to be viewed on a large scale. Because of the theatrical approach, almost any seat in the stadium could:

1. See "the big picture" of what was happening across the whole ground and/or large sections of the audience;
2. See the smaller performance vignettes as they passed;
3. See a big screen at the Stadium if there were "close up" moments important to the show.

From the point of view of the live audience, the above list also describes what was watched in order of importance. The television broadcast should have been able to build on that experience by being able to explore some moments more closely, as well as being able to give the best view of whatever the focus of the show

was at the time.

When I watched the telecast, I noted numerous large-scale moments that were missed while the audience was being shown less important aspects of the whole show. What really raised my ire was when a "Classic Crappy Shot" was on the screen while one of these moments was happening.

Other "moments" were lost when the

audience was being shown far less important parts of the show. The classic example of this came in the Tap Dog sequence. Not only did we miss the start of the first dancer rising out of the centre stage, we also missed the start of the next twenty of so joining him. When they eventually hit the screen, there were numerous shots that missed the most important part of any tap dancer – their legs. Then, the next hundred dancers joining them and you guessed it, they missed the start of this as well. By the time the remainder of the dancing cast joined them, the

director had gotten the idea and picked them up streaming out into the arena.

Another difficulty came when the focus of attention shifted from one part of the show to another. The best example of this (and I had a few to choose from) was prior to the tap sequence when the coloured floats were coming out, each with a different culture dancing on and around it. For every culture, a different type of music set to a continuous dance beat was played as each started out. As a result, the live audience's focus of attention quickly shifted to each one as they entered the arena. This was not the case for the television audience who lagged behind on at least two of floats, and as a result completely missed the Cossack dancers out the front of the blue float.

This particular segment of the opening ceremony also missed the exceptional large-scale choreography that highlighted this and many other moments in the show. In this case, the moment was lost to "Classic Crappy Shots" and a frustrating number of close ups on the performers. The impact of seeing one performer dance their routine is considerably less than the impact of seeing two hundred of them do it. Close ups are an important element to use, especially in televised sports, drama, news, documentaries etc. The staggering lack of medium and wide shots had me ranting at the television on numerous occasions that night.

Television will never be as good as live - but in my opinion, the broadcast was sadly deficient.

Classic 'crappy shots' of the night:

- Close up moments of people in the audience (nice for the person being shot, but the show is on the stage!)
- Medium shots of the audience (the most useless shot of the night because neither did you get to see the vast scale of the audience that a wide shot would give, it had no personal interest of any particular individual that a close up had)



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WOW! Flying antics set new heights

By Madeleine Murray

Peter Faiman

(continued from previous page)

2000 when the whole world watched, both from seats in the stadium and on television. At that time we all shared this unique experience together, live, uncensored and unedited; both brilliant and blemished.

Australia should be proud of a great live show and a great live telecast both executed by some of the most professional and experienced people in the world.

Thank you for your comments. I can point to a lot more faults than you could possibly come up with but I am proud of our efforts and am sorry your experience was flawed.

- Peter Faiman

Some of the greatest of many dazzling moments in the Opening Ceremony were the flying antics of the fish, little girl, swimmers, and spinning cogs. The aerial work lifted the show right out of the grid of the stadium floor, and into another dimension. The choreography and costumes were so brilliant that no one noticed the complex rigging system behind it all, except of course, Richard Hartman, Aerial Effects Project Coordinator, and his team of 40.

The rigging was a triumph of ingenuity and innovation.

The stadium is all curves - not a straight line in the place, and it had never been properly surveyed. "We had to hand rig this thing from scratch," Hartman says, in his quiet American accent. "Because nothing was straight, we couldn't get up there with a tape measure. No one had ever done it before, not like this, not for theatre." The cross wires were ultimately slightly curved as well, as the span was so great.

The crew rigged nine motorised lines and two manual lines, taking the flying fox

of it. The Opening Ceremony show pushed the boundaries of the possible, and many departments, like rigging, brought in engineers and industrial techniques to solve problems. The flying fox rig has been used in areas such as mining, rescue, and elevators. One of the engineers who designed the stadium system was Bill Kellerman, who had worked on the Katoomba Railway.

"It's a very elaborate system we have here," Hartman says. "Nobody really recognises that - the fact that you've got all this motorisation up on the roof, and you're controlling things that are 45 metres below you, and trying to do it with absolute precision, and absolute safety."

The team used industrial techniques, combined with theatrical controllers. The winches, leased from APC in Adelaide, came from various big shows, such as Phantom.

They were incorporated into the drive mechanism; then the winch drums and transmissions were built.

The cross wires were smooth, anti-rotational wire, 16mm in diameter. A little car travelled across the wire, and from that, a block dropped down on a cable 4mm diameter. One winch controlled the east-west travel of the car, and the other winch controlled the elevation of the block. The two motors made it possible to put a person anywhere in the stadium air, but they could only travel along the path of their overhead wire. The choreography was so fluid, that it never looked like a series of parallel lines. The illusion was enhanced by the stadium itself, which has no straight lines.

The hardest part was flying the truss, which was supported by all nine lines. This picked up the G'Day drop, and the Eternity drop, and moved them from east to west. The crew had to fine tune all nine cross wires or catenaries to equal tautness, because they had to lift up a piece of truss, and float it over to the centre of the field. The G'Day drop was launched from a kabuki device made in Adelaide. The trick was to pick up the truss, and move it along the wires, without breaking its back. "As soon as you start to travel along the catenaries, you can snap the truss if it is not perfectly balanced. We spent several nights fine tuning that, with sandbags first, then the truss, adjusting cables and tensions. It's like tuning a violin. And then it was quite involved to coordinate it all through the electronics," Hartman explains.



Richard Hartman, Aerial Effects Project Coordinator with some of his apparatus

system between the roofs of the stadium. The lines, 42 metres above the ground, running east-west, were about 110m long.

Hartman had installed a similar system in the Dome in London, where the geometry was 45 metres high, and 45 metres wide, which made the job a lot simpler.

Because the stadium is more than twice as wide as high, they needed a flying fox rig - an overhead cradle with a block that drops out

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WAVEFRONT

NEW WAVEFRONT LONGTHROW™

Martin Audio launch long-throw derivatives of their award winning Wavefront 8 concert cabinets.

Martin Audio's research into sound projection over distance has culminated in two additions to the extremely successful Wavefront 8 range. The R&D departments stated aim was to create a truly long-throw array that eliminates the need for delays in configurations for large outdoor festivals and stadia as well as large arena events.

Now a hot topic in the industry, 'long-throw' means different things to different people. However, it is the line array format, pioneered by Martin with the modular system in the seventies and the F2 in the eighties, which is widely recognised as the basis of true long-throw. Martin Audio's designers got it right first time!



The Gig: Hard in Hand Presents SWEAT
The Venue: Horzern Pavilion, Fox studios, Sydney
The Company: 3200 Lighting
The Rig: 20 x W8C's and 32 x WSX's
The Man: Ian Reed

WAVEFRONT LONGTHROW™ W8CT

Throwing high frequencies over distance outdoors has always been a problem because of air absorption. The air attenuates high frequencies as they pass through it, so high frequency losses increase as the distance from the source increases. At 200 metres air losses require a boost of 30dB to restore the frequency response. For large-format concert pressure drivers, which require 6dB of HF boost just to achieve a flat response at source, this is clearly impractical. The new Martin Audio W8CT achieves the necessary boost



The Gig: Australian Fashion Week
The Venue: RHI, Fox Studios, Sydney
The Company: 3200 Lighting
The Rig: 8 x W8C's & 8 x WSX's
The Man: Ian Reed

Wavefront Longthrow™ enclosures remain true to the original Martin philosophy by combining the high efficiency of horn-loading with the principle of vertical-in-line array. Columns of identical frequency elements are stacked vertically within each enclosure to increase efficiency on the main axis by narrowing vertical coverage. By stacking identical enclosures, the line length is increased, further narrowing the vertical directivity and increasing the efficiency on-axis.



The Gig: NSL Grand Finals
The Venue: Subiaco Oval, Perth WA
The Company: Phase One
The Rig: 12 x W8C's
The Man: John Caisley



The Gig: Permanent Installation
The Venue: Discovery Night Club, Darwin
The Company: Top End Sounds
The Rig: 12 x W8C's, 8 x WSX, 4 x W8T, 4 x W8S
The Man: Colin West

with no fewer than six 1" exit HF drivers optimised for maximum efficiency in the band from 3.5kHz upwards. With the vertical line array configuration and close spacing of these 1" exit drivers the W8CT can deliver a remarkable 147dB @ 1mtr! Further down the audio band, from 730Hz-3.5kHz, three high-mid devices are again arranged vertically-in-line for maximum throw. Each high-mid device is a sophisticated design featuring a 6.5in driver loaded by a toroidal phase plug and constant coverage horn radiating.

WAVEFRONT LONGTHROW™ W8CM

The compact low-mid enclosure features two vertically-aligned low-mid horns. Each is powered by a 12" drive unit covering the band 120Hz-750Hz. The low crossover point of the W8CM enables it to be separated from bass enclosures if required. It may also be used without bass enclosures for many applications such as speech-only reproduction. For stadium applications requiring throws of over 200 metres, a column of W8CM can be constructed within the main arrays.



The Gig: PROYECTO UNO.
The Venue: Hordern Pavilion, Fox Studios,
The Company: Jazzright
The Rig: 12 x W8C's, 12 x WSX
The Man: John Perez

WAVEFRONT LONGTHROW™ AND W8C COMBINED ARRAYS

By using the same acoustic elements and maintaining the same appearance as the W8C, the new Longthrows can be simply slotted into the upper rows of a W8C array. Same audio quality and tonality, same horizontal coverage angle, 55°, and the same rigging and loading considerations.

With their massive outputs the W8CT and W8CM can literally project for miles delivering the clarity for high quality, intelligible sound to audiences positioned way back from the stage. The Wavefront Longthrow™ technology now places an important new tool at the sound engineers disposal and gives Wavefront 8 users the capability to handle virtually any application using their inventory of W8C plus the new cabinets.



The Gig: St Patrick's Day
The Venue: The Domain, Sydney
The Company: Davidson Audio
The Rig: 4 x W8CT's, 4 x W8CM, 8 x W8C's, 4 x WSX's, 4 x W8CS's
The Man: Kevin Davidson

Opening Ceremony

Richard Hartman, flying
(continued from previous page)

The first test system was installed in April, when they did many tests, including acceleration and brake.

Hartman is pleased with the results, but pauses for several seconds when I ask him what the whole experience has been like for him. "I'm just trying to choose my words carefully," he says. "It's been a real introduction to Australian bureaucracy, but I think we managed to get through it, and put on a real good show. Everything worked magnificently. Our biggest enemy was going to be the wind. We had things that just couldn't fly previously because the winds were so high off the west. About two days before the Ceremony, the winds changed off the ocean, the temperature warmed up. About seven o'clock at night, the wind started to die. Perfect!

"The stage manager had all the wind tables on the scenery, and was in contact with the local weather department on site. On the night, he told us we had the go ahead, clear to fly! That was fantastic! The crew was ready to go for it, and did it as they had in all the practice sessions in all the months before."

One of the key figures in the success was Justin Harper, the board programmer and operator, who was controlling the APC equipment. Harper worked for more than six months with the equipment and the choreographers to get the cues to work with the machinery.

John Fairhall and Grant Fletcher, the lead flymen, developed the protocols with ground crew to make it all work smoothly on the floor. The problem was trying to coordinate the show over such a large area. "One had east side, and one had west side," Hartman says of the flymen. "There had to be a lot of coordination because things were launching and coming down on both sides. It was such a loud

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Inside the Glowing Barracuda

All those cables and batteries

By Madeleine Murray

Genetically programmed to be optimistic, Eve Bortz grew up in Pennsylvania, where her father had a business making chocolate Easter bunnies. So, it was a natural transition to lighting the astonishing fish in the Deep Sea Dreaming segment of the Opening Ceremony.

As Chief Lighting Technician on the fish segment, Bortz was responsible for supervising and building all the lighting that went into the ten fish and the deep sea diver. And the glowing flying fish were one of the most stunning effects in the show, according to me, who sat in Ric Birch's suite at the dress rehearsal.

The flying fish - such as the silver barracuda, the 12m sea dragon, and the lion fish - all had weight restrictions. The fly lines were rated at 150kg per fish, and 300 kg with a person. The 40m banana eel, and the manta ray were on the ground.

Each fish was built on a welded steel frame, and this affected where the lights could be mounted. The weight restrictions dictated the number of batteries possible - the crew used sealed lead tin batteries from America, which could be recharged, but didn't spill. The lion fish tipped the scales at 149kg, so they could only use one battery. They used the maximum possible wattage (up to 400W), and timed the battery drain for 10 minutes, the length of the segment. David Brown designed the internal lighting configurations, Adrian Green was the electronics technician, and John Harding from Battery Specialties was the power guru.

The eyes were lit in a light box effect. When there were two sockets, the lights were placed behind, with aluminium foil to scatter the light from the 12V lamps. If the eyes were close together, the crew made conduit pieces between the two eyes, and covered them with a Rosco soft reflector.

The lights were run to an electronics module, made up of dimmers and timers. The switch would start the timer, which then triggered the dimmer, and the lights would fade up as the fish left the ground. All the lights were 10, 20, 50 or 75W Osram 12V lamps. In some fish, such as the barracudas, they used MR16s. The barracuda eyes each had 200W of lights, and there were four dimmer modules in the whole fish. The mouth had 600W, that's 12 MR16s at 50W each, so that was 800W total, running off



two 13amp/hour rechargeable batteries.

The big purple angelfish had 1200W of light, because there was the weight space to put in three batteries. The sea dragon had a 26kg battery, with a 70amp/hour rating. It has 200W in the eyes, and many little 10 and 20W plastic coloured globes strung all the way down the body, all soldered by Adrian Green.

Despite the pressure and grim workshop conditions, everyone was fantastically helpful and friendly during the whole production period, according to Bortz. She spent hours fiddling with lights in the barracuda's mouth, wrapping electrical tape along 12m of aircraft cable to a battery, or running a lot of rigid 40amp cable a long way down the body from the dimmers just to put a little light bulb at the end.

'If you look inside, it looked fairly dodgy - wires, cables, batteries, little welded bits - but when it lit up it was magic, and I love that contrast,' she enthuses.

Bortz laughs about the whole thing now. 'The workshop was cold, dirty, loud - people would be welding on either side of you, in a crescendo like Dante's Inferno. The electricity department was this little teeny room in the back corner. To do anything, you had to walk through props, people fibreglassing things all over the floor, through the welding department, then carpentry. It was overwhelming!'

• Madeleine Murray wrote the programs for the Opening and Closing Ceremonies

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Olympics special

Richard Hartman, flying
(continued from previous page)

environment, that you couldn't rely totally on radio."

There were also spotters up on the roof, on each of the lines, and they had emergency stops for the lines. A lot of communication went on between the ground spotters, the roof spotters, and the desk operator. In the dress rehearsal on the 13th, the ribbon worm got tangled with the barracuda. The spotters saw it, stopped it, and separated them.

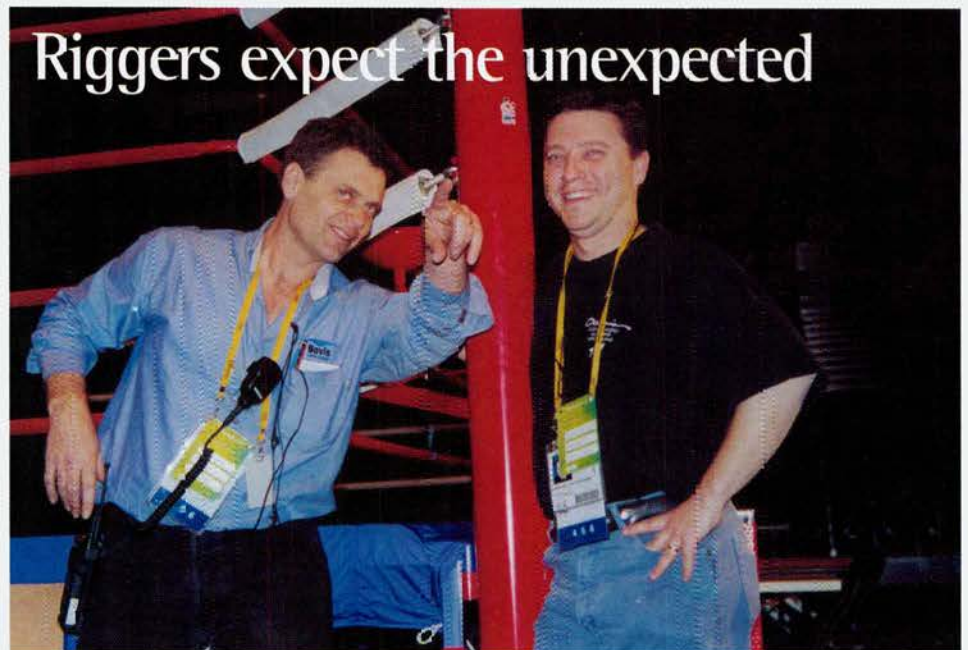
Among the crew were 15 rescue specialists, brought in from Rescue Equipment. They had practised with 200kg loads at the stadium tests. If any of the lines fouled, and the performer or prop couldn't be gotten out of the air, rescue experts, stationed on the roof, were ready to come out onto the line, detach the load, transfer it, and lower it (ie the performer and/or prop), onto the ground.

Another challenge was the choreography of getting the pieces on and off the lines quickly, and keeping the performers on the ground from getting hit by things coming in. The crew had to be totally aware of the aerial space, the ground domains, and the landing zones. "It was quite a risky business, especially in some of those costumes, where the visibility was low, or the performers were so hyped up from the energy of the event, that they strayed off into the wrong area.

"We had to keep track of all of that, and make sure that we could launch and retrieve performers, not hurt or hit anybody, and make sure there were no mechanical hangups due to something happening up in the air.

"It was quite a daunting task. It wasn't the most serene of conditions.

"Thank God we didn't have a wind, which increases the probability of screwups!" •



More to Olympics than an Opening Ceremony!

By Julius Grafton

It's

punishment - the jigsaw puzzle from Hell!" Lead rigger Michael 'Shackles' Kent (above, right) is gesticulating up to the window dressing in Hall 3 at Darling Harbour. What a bunch of entertainment riggers are doing here is what this the story is about. It's a big job.

The Olympics is a deceptively expensive event to stage.

For example, the sports of fencing, wrestling and boxing occupy almost the entire Sydney Exhibition Centre. Aside from seating system (30,000 seats) shipped from the UK there are stages, rises, and a lot of flown stuff. Like flags.

It was the morning after the flag master had done a snap inspection. "There are flags with the emblem the wrong way, there are whole countries missing - it's a big job" says Michael. They had methodically hung the supplied flags and banners according to the flag manual, which of course was wrong in parts. So, do it again!

The rigging team are from Scafform Australia, which is an arm of the international company. Headed by Michael Condon, Scafform won a contract to supply rigging in a host of venues, aside from a vast amount of scaffolding and staging work elsewhere around the harbour city. There are camera platforms just everywhere, for example.

Indoor events need lights too, and I was not surprised to see upwards of a hundred lights for the preliminary fencing arena alone. "There is about 1.5 kilometres of truss here alone" says Michael. The largest item is a

scoreboard, weighing 1.8 tonnes - considerably more than most entertainment industry single loads.

Starting work back in May, Michael Kent and rigging site manager Roger Cameron (pictured, left) oversaw a lot of contracted work, and plenty that wasn't. The window dressing alone took over 700 man hours, way more than contracted.

There's 'look' stuff everywhere. Like the 'Tribune's' - which are kind of fancy tables for press, set up amongst the seating. There's the victory dais, which in the case of boxing, is flown in. And camera tracks. And more!

Scafform got a lot of equipment from Charneleon, and Clifton productions. They also purchased extra chain motors and miscellaneous equipment.

Out at the Baseball Arena a novel solution was discovered to the problem of flying some customised beams off the main lighting towers 60 metres up. They used a helicopter.

• The Rigging team!

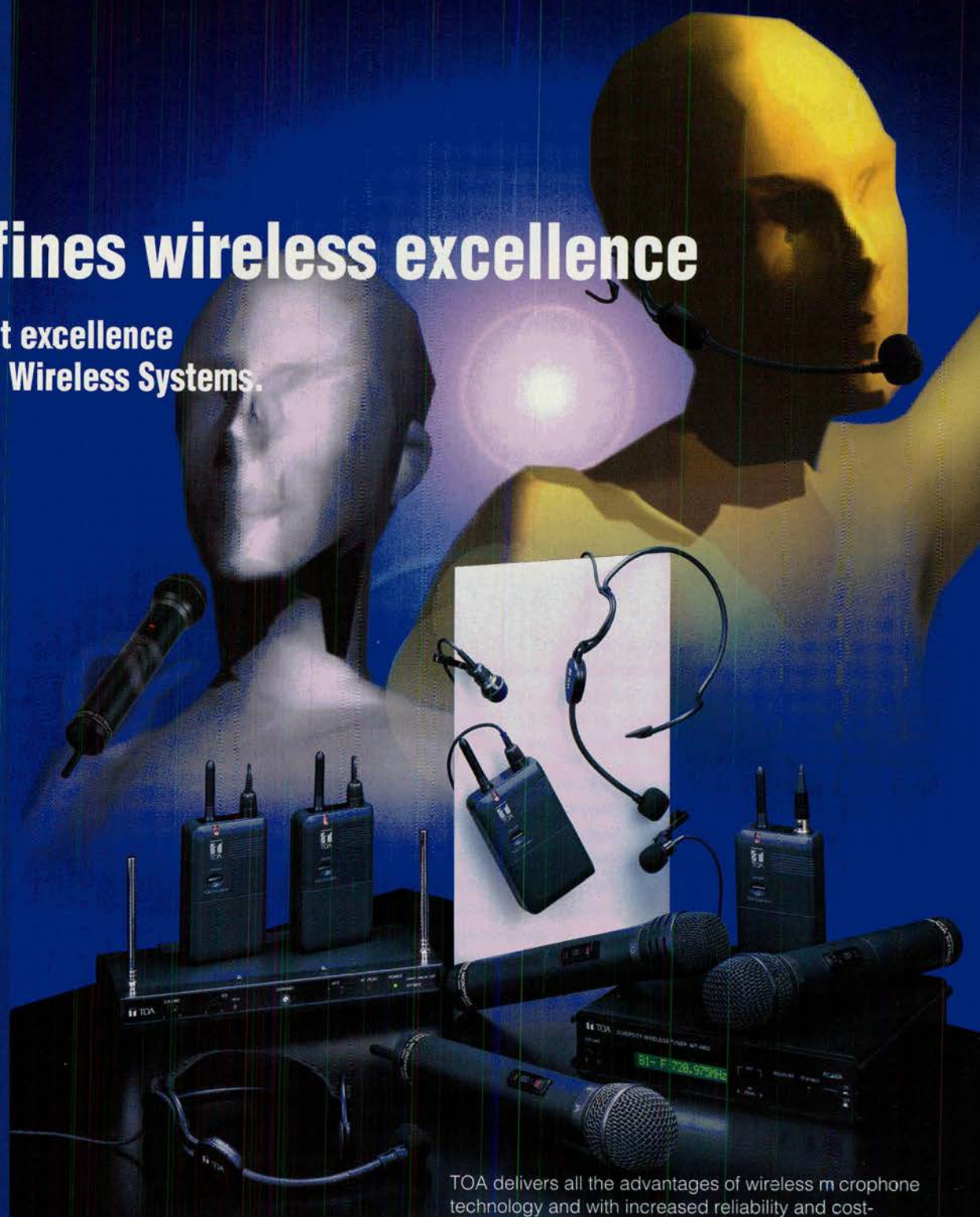
Nils Bendix • Huckle Cleary • Carly Thomas • Rob Llewellyn • Dave Hartley • Indra Cook • Greg Anderson • Kane Goré • Trevor Gilbert • Andrew Warrington • Haydn Griffith • Dave Froggatt*

* Dave is a veteran of the Al Faisaliah Tower launch in Saudi Arabia earlier this year. Protec won a massive contract to light the opening of biggest new skyscraper in the middle east. The UK crew discovered their thermometers were maxing out at OVER 50°C! Far broiled crew?



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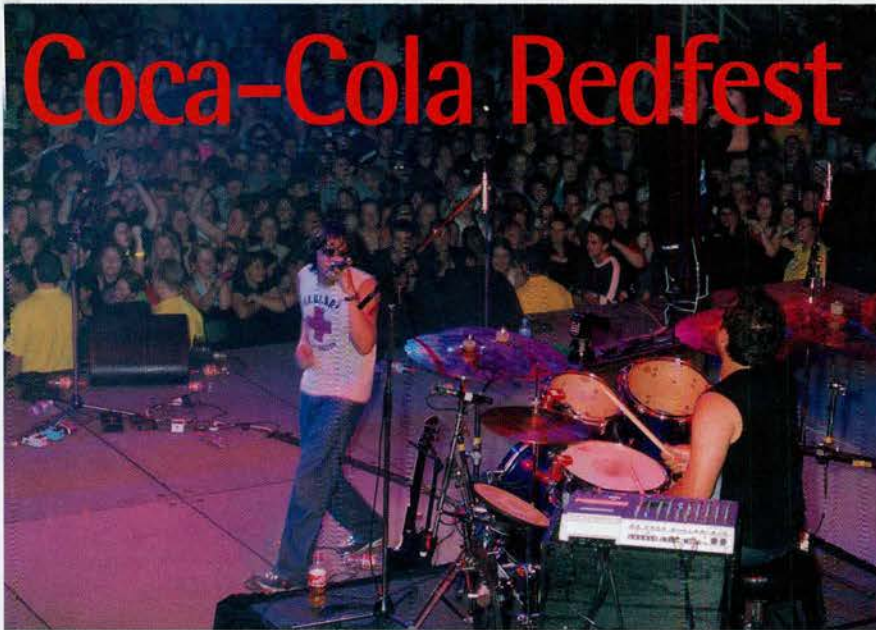
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by Mandy Jones

Coca-Cola Redfests were held in five capital cities around Australia on the day of the Olympics opening ceremony. Promoted as 'Olympic Kick-off Parties', Redfests featured live bands, DJs, carnival rides and street performers, and the live broadcast of the entire opening ceremony on huge screens.

The Redfest concept is the ultimate consumer promotion: encourage 90,000 kids to each buy 15 bottles of Coca-Cola (that's 1,350,000 bottles) and then reward them with a free ticket to a massive indoor/outdoor music and entertainment event.

DUET Special Events were appointed to implement Redfest across five cities - Brisbane, Sydney, Melbourne, Adelaide and Perth. With an expected 90,000 Coke drinkers in attendance and coinciding with the Olympics, planning the event was a major logistical exercise.

National Event Director and the Executive Producer Robert Joske explained Redfest was 18 months in the planning.

"We started a long time ago putting away things that we knew would be in high demand, in particular the outdoor screens were a critical asset to get booked and locked away early in the concept, similarly getting the stages squared away was pretty tough. In most of the other cities apart from Sydney we had no problems finding the necessary manpower, staging, lighting and sound equipment required to conduct the event."

An army of 600 people worked on the five Redfest sites: Randwick Racecourse in Sydney, The Riverstage in Brisbane, the WACA in Perth, The Adelaide Oval and Melbourne Park.

The combined Redfest sites feature 1200 sqm of staging, over 1500 lights, approximately 400 speakers, five large outdoor screens with a combined screen area of 200 sqm, and around 520 TV monitors.

State by state

In Melbourne, the extended coverage of the opening ceremony past the planned finish time meant a rushed end to the concert. *Area 7* only played four songs before it was time to start clearing the venues to work-in with public transport. Around 20,000 of the expected 28,000 ticket holders actually turned up to the Melbourne Park site, but to the organisers that was still a great success.

Melbourne Production Manager Patrick McLoughlin had to deal with a change of venues when the outdoor concert area became bogged days before the show. The new Vodafone Arena was used as an indoor dance party venue, and the main concert was held on centre-court at the Rod Laver Arena.

Production Site Manager Denis Bourke chose Concert Lighting Systems to supply lighting for both venues; the spec predominantly made up of par 64s, Martin Macs, Technobeams, Dataflash and UV units, and stacks of molefays gelled red.

Power Audio supplied a 64 box EV X-Array system and two DJ consoles for the Dance arena, while Simon Venning from Oceania Audio had a last minute challenge putting together a flown in-the-round Turbosound Flashlight system at centre-court for the main stage. OB was done through WIN TV out of Ballarat. Staging was supplied by Capricorn.

Sydney Production Site Manager John Thompson described Redfest at Randwick Racecourse as a "huge success".

"We had between 20,000 and 22,000 people which was a fantastic turn-out given 30,000 tickets were issued. I think a few people were scared off by the weather because it was looking pretty overcast during the day."

The opening ceremony running overtime was also an issue in Sydney.

"We were working under council noise restrictions and we had a pretty tight curfew so when the ceremony ran overtime it meant that The Screaming Jets only got to play four songs. And because we didn't have a running sheet of the ceremony we really just had to wait and see what happened without knowing what time we could start our final acts."

John was very impressed by the new pavilion at Randwick which was utilised as the dance party venue. The suppliers were Chameleon (Lighting), Australian Concert Productions (audio), World Stages and used The Shooting Star Picture Company's crews and OB unit for the Redfest TV broadcast facilities.

In Perth, Production Site Manager Camille Bradsmith was happy with how the day went.

"I was a bit dubious about using the WACA in

continued over



Patrick McLoughlin and Denis Bourke



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Redfest - State by State

the beginning but it turned out to be a fantastic venue, and even though we had some cold weather we still managed to come close to the 15,000 capacity.

"The opening ceremony running late didn't really affect us because of the time difference, so when the broadcast finished about 8pm there was still plenty of time for the bands to play. We had Primary and Skunkhour and a local unsigned band."

Camille chose local suppliers Concert and Corporate Productions for all lighting equipment, AAA Productions for audio, Statewide Staging, and for OB facilities Media Relief.

"The suppliers were great. They pulled their fingers out and all worked together which made my job really easy."

Camille's highlight was a pyrotechnic display at the site that was timed to coincide with the moment Kathy Freeman lit the gas ring at the base of the cauldron.

In **Brisbane** the venue was the Riverstage and Production Site Manager r-r-Ray McGuire reported no problems.

"It was about 29° throughout the day and it got down to about 18° at night so we didn't have any of the weather issues the other cities had. We knew rain wouldn't be a problem."

Lighting was supplied by Lighting Dimensions, and audio and staging were supplied through Brisbane Council's Major Venues company. The PA was a Meyer rig (28 MSL4's plus subs) run off Midas consoles.

"It's the biggest PA owned by a city council. And as part of it we use all the kids from the local TAFE audio school."

Ray said his load-in went so smoothly that they managed a full rehearsal the day before and on the day of Redfest, they were ready to open the gates at 9am - five hours ahead of schedule.

"Three of my crew went to the movies to fill in time because we were so organised. They caught a 10am session and were back with time to spare!"

Ray didn't have final attendance figures but said it was very close to the anticipated 9,500.

And being up north the ceremony's late finish had no affect on the concert.

"Our final band got to play their full 45 minute set and we were out of there at the scheduled time."

In **Adelaide** Event Manager Trevor Hunt reported the Adelaide Oval festivities attracted close to the 15,000 capacity and went off without a hitch.

"There were a few worrying

days leading up to the day with South Australia's record rainfall for September but fortunately the rain held off until the last pieces of staging were being dismantled.

Production Manager Jo Vechiotti supplied crews through his company Power Crewing and went through Osmonds Electronics for audio and lighting using an X-array system, and lots of par 64s and Golden Scans. Staging was supplied by Advance Concert Staging.

"It really was a faultless gig. We were blessed with good weather. The only issue was the Adelaide Oval's groundsman Les Burdett not being able to make up his mind exactly where the stage would go. But after many rounds of 'pick the spot' he decided and we were underway. The Adelaide Oval is a great venue and we've done lots of big shows there so we know it well.

"We weren't affected by the Opening Ceremony running overtime. We were all finished by 10.30pm....actually it was 10.38pm - we ran eight minutes overtime, but that wasn't a problem."

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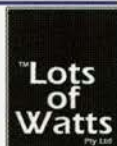
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<p>DM 1090X MIXER</p>  <p>Order Code: NUMMIX095 \$369.00</p> <p>SUPER PRICES</p>	<p>CM 100 MIXER</p>  <p>Order Code: NUMMIX096 \$411.00</p>
	<p>TT-1520 TURNTABLE</p>  <p>Order Code: NUMTRN520 \$385.00</p> <ul style="list-style-type: none"> • Direct drive turntable • 10% Pitch adjustment • 33, 45 rpm • Aluminum platter • Anti-skate control • Slipmat included • Cartridge included

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What will you be using soon?

MACH DUAL 15

Mach's TX215 features a modular, switchable crossover for active or passive use, as well as two M10 flying points in the top of the cabinet and one rear panel flying point. Applications for the TX215 are mobile DJ's, small club and hotel installations as well as bands. It can be used as a stand-alone cabinet or it can be used with the TXS18 18" Sub Woofer.

It boasts 90 x 40 degrees dispersion.

The h/f compression driver has service free thermal compression driver protection. Power rating is 600 watt RMS.

• RRP A\$1899

Audiology, +61 2 9584-0033



Postation II launched in USA



Australian manufacturer DSP Media have just unveiled their new Postation II to the American pro audio market at this year's Audio Engineering Society Convention (AES).

Building on the strength of the original Postation, first launched five years ago, Postation II represents a new generation of product that provides a complete and fully integrated audio post solution for radio, television and film post-production.

Postation II includes the latest 24-bit version of the Digital Editing Processor (DEP) audio editor; the Non Linear Video (NLV) hard disk video playback module and a revolutionary new Virtual Control Surface (VCS) mixer interface design. Along with a significantly improved ergonomic layout, the most important change is a new, modular 32 x 32 digital mix processor scaleable to 96 inputs, as well as Postation's multi-format surround sound monitoring system.

All system modules are controlled from dedicated faders and switches in conjunction with high definition active matrix touch

screen displays.

Andrew Wild, DSP Media CEO, explains the philosophy behind the new system, "Postation has always been about speed of operation and an ergonomic control. With the system's comprehensive integration and intuitive touch screen interface, audio post professionals can produce quality projects and less time than ever before."

The Postation II is ideal for posting short and long form television, trailers, commercials, documentaries, ADR/Foley, corporate training films, film editing and foreign language dubbing applications. Adding the TEAM networking system with Raid disc array, the Postation II is fully networkable throughout a multi-user environment and - they say - is the first, and only, audio post-production center to offer simultaneous and instantaneous project sharing.

"Advances in technology have allowed us to enhance the way Postation looks and operates. The use of high definition active matrix touch screens, the introduction of a modular 32x32 digital mix processor and new software, that includes 24-bit operation, bring the system into the 21st century," explained Joseph Narai, DSP Media's Technical Director and Head of the Postation II development team.

"Engineers now have sophisticated, flexible and totally integrated control capabilities along with the fastest and most ergonomic surface layout of any audio post-production system." www.dspmedia.com

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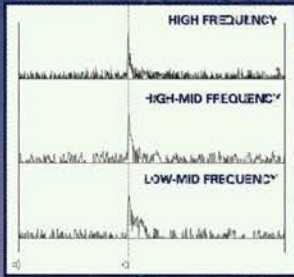


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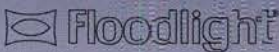
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1 Superior projection, superb intelligibility
result: from perfect physical time-alignment of the individual Floodlight drive units: offering excellent transient response.

2 Safer and more convenient, the polycarbonate 'biscuit' aligns the rear of the cabinets to ensure physical time alignment when flown or stacked.

3 Seamless, controlled horizontal coverage pattern of 50° nominal is optimised for the widest possible variety of applications.



Pictured: TFL-760H touring Floodlight enclosure

4 Safe, easy flying with UK government tested and certified flying and lifting hardware. Fly points are positioned precisely on the centre of gravity.

6 Smallest, lightest birch plywood enclosure weighs only 132 lbs. Flush handles ergonomically placed for easy handling.

8 Increased efficiency, ultra low distortion is achieved from Axehead™ waveguides coupled to specialised paper cone transducers.

10 Built-in EP6 multi-way cabling system parallels to adjacent enclosure; stows inside access door for trucking.

11 Congratulations Nova Hire Pty Ltd - Melbourne (03 9555 4766) - new Floodlight owner

12 Congratulations Action Audio Logic Pty Ltd - Adelaide (08 8232 7999) - new Floodlight owner

13 Congratulations James Gallagher Productions - Melbourne (03 9386 2008) - new Floodlight owner

Welcome to our ever-broadening Floodlight rental user group.



5 Smooth response and superior intelligibility in the ultra-critical midrange frequencies by extending the use of paper cone transducers up to 8kHz.

7 Easy access to loudspeaker components, multi-way speaker cable and captive biscuit is provided by the hinged rear access door.

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Turbosound

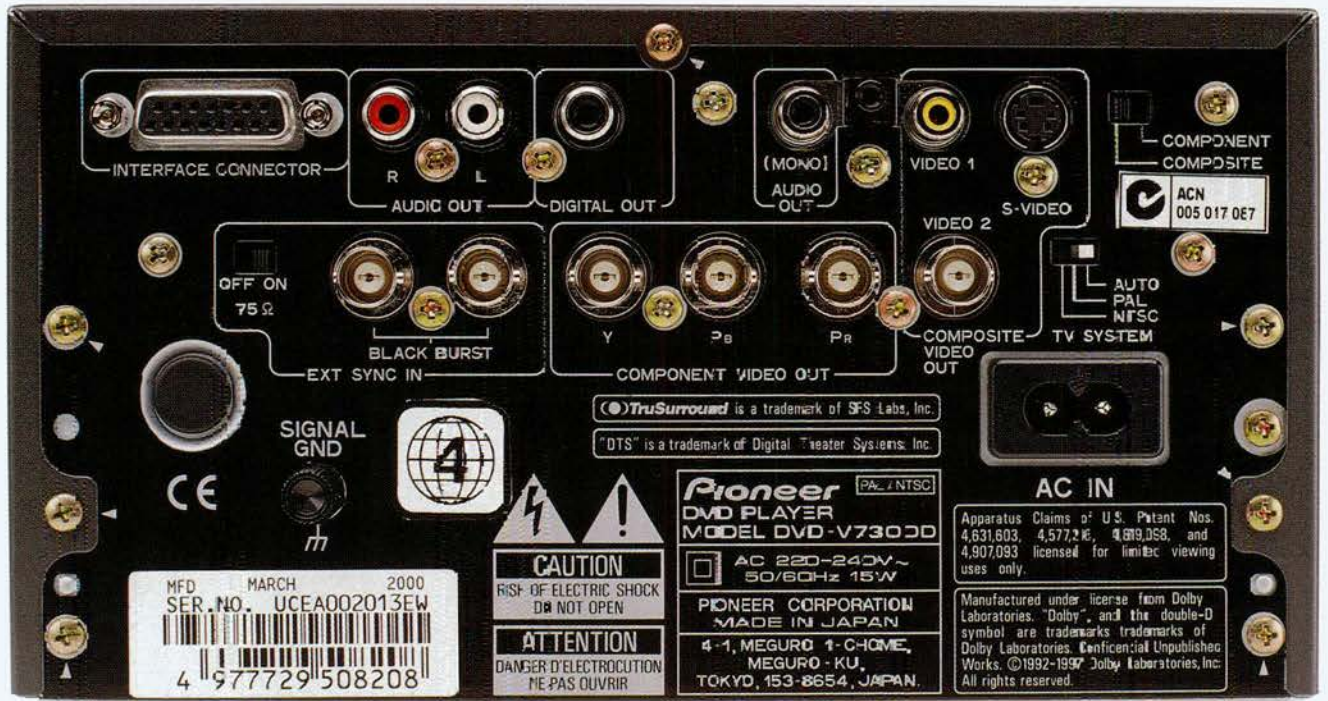
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What will you be using soon?

Seagate unveil quiet drives

Claimed to be "the industry's fastest and quietest", Seagate Technology's U Series 5 disc drive may be an ideal solution in many video audio and PC applications.

The family of drives in the U Series 5 offers up to 40 Gbytes on just two platters. Featuring its "sound barrier technology" (SBT), it is very quiet. SBT is a set of features that optimises disc drives for quiet operation. SBT lets PC makers, system integrators and even end users select acoustics and performance profiles that tell a disc drive to perform as required in various situations.

For example, in quiet mode for home entertainment applications, or to deliver faster seeks for business applications where data must be gathered quickly from various sectors on the disc drive. Sound emissions can be customised to meet the specific needs of home and office environments. SBT also provides resonance reduction and other mechanical design optimisations, reducing drive idle and seek noise emissions.

Want speed? The U Series 5 features a 1-Mbyte cache, industry-standard 5,400-rpm spindle speed for an internal transfer rate exceeding 41 Mbytes per second and the Ultra ATA/100 interface.

With available capacities of up to 40 Gbytes, U Series 5 features Seagate's high-performance ATA chip architecture for instantaneous cache response.



'Turbo' projectors

Canon Australia have announced a push for market share with three new XGA projectors. The LV range boast a kind of 'turbo' feature for extra light output where the colour spectrum isn't so crucial, like with presentations. Light output steps up 25 percent from already good levels. It's done optically, the lamp life is unaffected.

The LV 7320 costs \$9200 and its 1000 lumens increase to 1250 when Turbo is happening. It uses a 150w UHP lamp. A larger model, the LV 7325 incorporates a PCMCIA card so presentations can be run without a laptop!

Top of the range (LV 7525) delivers 2200/2750 lumens, from a 200w UHP lamp.

The projectors are nicely engineered, we can confirm.

• Call 1-800-888-899 in Au.



HHB Portadisc now in Production

At the AES show in Los Angeles, have HHB displayed production models of the new Portadisc. Ruggedly built, this unique little device has a number of innovative features including the inclusion of a USB interface for the high-speed transfer of files to and from PC and laptops. Other important features of the device include XLR Mic/line inputs, Coax and optical digital I/Os.

• Audio Products Australia:
+61 7 5529 8788.

Data Storage Breakthrough by IBM

IBM have announced it is the first company to ship products based on a breakthrough industry-standard technology for tape storage. Using IBM's Linear Tape-Open Ultrium (LTO Ultrium) products, customers can back up information with up to twice the capacity and speed at about the same cost of existing technology. The tape can transfer information at 30 megabytes per second. At that speed, LTO Ultrium could read a 300-page novel in about three seconds.

The new tape storage products range from 100 gigabytes in one tape drive, which is equivalent to a floor full of academic journals, and scale to 248 terabytes.

LTO Ultrium is intended for customers such as media companies and those doing business on the Web who need to back up large volumes of digital data.

Prices start at: A\$16,250 plus GST for the desktop Tape Drive.
Info: www.ibm.com/storage/lto.

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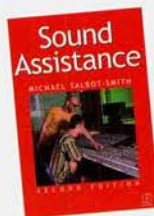
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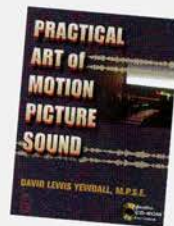


SOUND ASSISTANCE,
2nd edition \$56

By Michael Talbot Smith. Offers an easy-to-understand account of sound operations in radio and television studios. New edition covers microphone sensitivities, loudspeaker listening tests, stereo transmission in radio, stereo PPM interpretations, MiniDisc, and more. 250 pgs, 1999.

PRACTICAL ART OF MOTION PICTURE SOUND (with CD),
2nd edition \$84

By David Lewis Yewdall, MPSE. This book features such topics as: Pre-production planning, production tips, temp dubs and test screenings, custom recording sound effects, dialog editing, non-linear editing, music in film and television. The audio CD contains sound-effects and demonstration material. 265 pgs, 1999.



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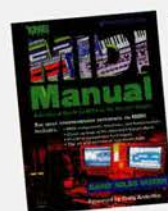


PROJECT STUDIOS, a more professional approach \$84

By Philip Newell. With a boom in so called 'bedroom studio' operations, lack of experience can lead to bad recording practices and an inability in getting the best performances from musicians. This book provide tips and advice on getting first class, professional results from project studio equipment. 274 pgs, 2000.

ON-LOCATION RECORDING TECHNIQUES
\$64

By Bruce Bartlett, with Jenny Bartlett. Focuses exclusively on the special techniques used for recording outside the confines of a studio. Offers a clear explanation of stereo miking theory, along with specific techniques, procedures and hardware. Also covers mixing and editing a live gig tape, building a recording truck, surround-sound miking, binaural and transaural stereo. 278 pgs, 1999.



THE MIDI MANUAL 2nd Edition \$64

By David Miles Huber. The book provides a close-up look at the industry's top products and teaches you how to integrate them with your computer. Illustrations and step-by-step lessons teach you how to set up an efficient MIDI system as well as how to use your PC to expand your musical recording and performance techniques. 255 pgs, 1999.

All prices in Australian dollars. Add freight for each order. Prices may change at any time of course! Current as of August 22, 2000. An activity of Connections Publishing P/L (ACN 058443182), PO Box 439 Epping NSW 2121

What will you be using soon?



dB Technologies expand Opera range

The Opera 415 (left) is a new bi-amped active speaker (450W LF + 100W HF) for small to medium PA requirements. It joins passive models from dB. Incorporating a volume/gain control, a mic/line balanced input and a balanced out/link connector into the powered unit, this device has all of the features required for fast set-up of simple PA systems.

• It costs A\$1,995

See www.cmi.com.au

or phone CMI on +61 3 9315 2244



HNB "Fatman" Tube Compressor has landed

Audio Products Australia now have stock of the new HNB Radius 3 'Fat Man' stereo tube processor (left). This new processor adds fat, tube warmth to a track or mix, delivering 16 selectable compression programs ranging from vocals, acoustic and electric instruments, to drums and overall mix settings, each created in conjunction with leading audio engineers.

Manual controls allow the user to set their own compression.

Priced at \$1249, contact Audio Products for your nearest supplier +61 7 5529 8788.



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MicroFM from N-COM

N-Com have released a new 50mW stereo FM transmitter that some sound professionals may find very useful for wireless linking, one way coms, IFB and all manner of uses. The device is broadcast quality and operates on the 88-108 MHz FM band. Its use is very simple - just connect your audio source, power and dial up the frequency.

The MicroFM transmitter uses a heavy duty steel case designed for broadcasting on the move, in a small package. It is small enough to fit in a backpack, gear pack or even in your pocket.

There is no need for a proprietary receiver as any standard FM receiver can be used. The MicroFM is frequency agile across the FM band which means that you will always get to air, no matter what your location. Frequency change is by way of DIP switches on the front panel. Both left and right audio inputs are balanced 47K, XLR female connectors on the rear panel. The MicroFM will also accept unbalanced low level signals and still provide full deviation. Separate adjustments for left and right input level are on the front panel.

12Vdc operation means the MicroFM can be fed from the plug pack supplied or from a battery. The device's documentation indicates it has a range of up to 1.5km.

Price: A\$1040 (plus GST). N-COM Pty Ltd Ph. +61 7 3855 5911

Frequency	87.5 MHz to 107.9 MHz in 100 kHz steps
Output Power	50mW
Input Level	(Balanced) -16 to +4 dBm. (Unbalanced) 250mV - 1V RMS
Input Impedance	47 Kohm
Frequency Response	40 Hz to 15 kHz ±1dB
Distortion	<0.5% THD
Noise	Typically -64dB (ref 75 kHz deviation)
Separation	Typically >40dB
Size	150 x 75 x 47mm

Mackie's SRS1530 Active 3-Way Speaker System ...\$2995

Each
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..with audiophile accuracy
and intelligibility unheard
of at this price point..



The First Affordable Active System with 3-Way Accuracy

If you shop music stores or browse the web, you'll discover that there aren't a lot of portable three-way sound reinforcement systems. Moreover, there aren't any active three-way systems designed for smaller venues.

We thought that was a shame... since a three-way system can deliver enhanced fidelity and detail to vocals and instruments that fall in the critical midrange frequency spectrum. A three-way system's perfect for churches, groups with vocal ensembles, lots of string or woodwind instruments - or anywhere that accuracy and fidelity are important.

So we set out to realize the potential of a three-way PA system by applying our active electronic and amplifier technology, a completely new type of integrated horn system, and some of the world's finest precision transducers.

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- Linear response from 40Hz to 20kHz at high SPLs
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What will you be using soon?

Nicer Halide

The HPI(T) PLUS by Philips is a new 'softer' alternative to metal halide lamps which can be operated on both HPL and SON gear. With a considerably "nicer" colour temperature, this lamp is likely to be quickly adopted by many as a better alternative to existing sodium and mercury vapour lamps.

Compared with traditional metal halide technologies this lamp offers a longer service life. Another advantage is the interchangeability of this lamp. Traditional metal halide lamps are only compatible with either SON gear or HPL gear and a mismatch leads to a reduced lamp life.



Developing DMX tools



The first device to come from Enntec (no relation to Entech) is DMXPlayBack - a DMX512 show recorder. The user can program the unit using the FC, PalmPilot or snapshot scenes from an existing lighting console using the DMX input.

Each scene has its own Fade time (cross fade) and Delay. The light show (collection of scenes) is then downloaded into the box where they are stored in non volatile memory.

The unit can store up to 26 different light shows and a total of 1000 scenes (with data compression).

This show can then be replayed using a couple of starting triggers - on power up, on external trigger, or through RS232 control. Software for RS232 is available at no charge on Enntec's website.

Windows and Palm Pilot software is also


available from the web site. Both versions offer numerous functions including Fixture Library, parameter editing etc. The device is 9.5 inch x1U, allowing two to be mounted side by side in a 19 inch rack.

The units cost \$499 ea (inc GST). A companion remote control for the DMXPlayBack is due to be released shortly.

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- Gobo scrolling with variable speed
- Gobo shake
- Minimum gobo rotation speed (0.1 rps)
- Colourchanger and gobochanger with blackout
- Colourchanger and gobochanger with music sync



- 2-tone beam, analog color selection and 16-speed rainbow effect
- 2 rotating 4-faceted prisms with variable speed in both directions
- Frost filter smoothly variable from soft-edge to full-wash
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- Electronic ballast 90-245 V
- Automatic repositioning with black-out
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What will you be using soon?



DRUM MIC KIT

AKG have two neat microphone packages available to take the brainpower out of mic'ing a drumkit. The package above features 1 x D112 kick drum mic, 2 x C1000s condensers (the big guys, used for overheads), and 4 x C418 baby clip on mic's for toms and snare.

It sells for A\$2,299 including the case. A cheaper version which deletes the two C1000s costs A\$1,499.

- **Audio Products Australia,**
call 1-800-642-922.

ADJ ANNOUNCE NEW TIME TUNNEL & LIQUID LIGHT EFFECTS

Two ADJ new effects are now available. The first is a new oil wheel effect - Liquid Light. The colourful effect is ever changing, fluid and colourful.

The new ADJ Liquid Light features a dichroic reflector 150W lamp that is easy and inexpensive to replace. The unit is easy to set up. Priced at \$299 inc GST.

ADJ has also introduced a new laser like effect - Time Tunnel. It uses the popular 12V 100W halogen M/28 lamp to create laser cones of light that change colour. Small and compact, the lamp used is a M/28 12V 100W. Priced at \$299 inc GST.

Info: call Show Technology
+61 2 9898 1111

Verity Systems CopyDisc 7P

Integrated Automatic CD Duplicator and Thermal Printer



The new CopyDisc 7P provides an excellent solution for those wanting to automatically duplicate and print to CD-Rs.

Combining the Rimage Perfect Image Thermal Printer and the Verity Systems range of CopyDisc automatic duplicators, users are assured of efficient quality CD-Rs printed with high-resolution colour text and graphics.

The automatic operation is simple and effective enabling unskilled personnel to easily operate the entire process. Up to 220 blank CD-Rs can be loaded onto the machine. All command operations are entered via a

user friendly control menu. The CopyDisc 7P incorporates as standard a 6 gigabyte hard drive providing ample storage for data and graphics, if required additional hard disk capacity can be provided with options of installing up to 27 Gigabytes of storage.

High performance 8X and 12X CD-R writers from Plextor and Teac ensure speedy transfer of data to the CD-R. The CopyDisc 7P supports all current CD formats for audio, video and data to Book standard.

Up to 7 CD-R writers can be installed, allowing up to 42 CD-Rs (650MB/74 minute) per hour to be duplicated with 8X writing speed. Once the CD-Rs have been burned they are then printed with the appropriate graphics, automatically by the integral printer. The CopyDisc 7P utilises a low cost thermal ribbon, which can produce 500 colour images. Alternatively if a single colour ribbon is used, 1500 mono images can be produced.

- **Verity Systems Email (and www)**
marketing@veritysystems.com

SONY DEBUT ULTRA HIGH END REVERB

More processing power makes better reverb, new DRE-S777 astounds at demo

Reverberation has long been the most popular effect used in music, film and television soundtrack production and now Sony is pleased to announce the release of NEW optional software packages available for the DRE-S777 Sampling Digital Reverb.

The DRE-S777 already offers audio professionals a totally new approach to sound processing with its technologically advanced digital effects processor that recreates the natural reverberation of concert halls, theatres and sound stages. Unlike conventional processors, the DRE-S777 achieves this breathtaking naturalism by using highly advanced processing that allows audio signals to be combined with sampled data taken from actual acoustic environments.

Sony engineers have painstakingly collected sample data from some of the world's

most highly regarded concert halls, studios and other acoustic environments, and also from classic analog plate reverb units. The DRE-S777 is supplied with a standard set of



sample data, while additional optional sampling reverb software is available.

The DRE-S777 is provided with a 'self-sampling' function when operated with the newly developed DASK-S704 Sampling Function Software. For years, the 'Holy Grail' of Digital Signal Processing has been the development of a real-time convolution processor. Until now the required processing power simply has not been available.

- **SONY: Peter Norman +61 2 9887-6674**

THE ULTIMATE

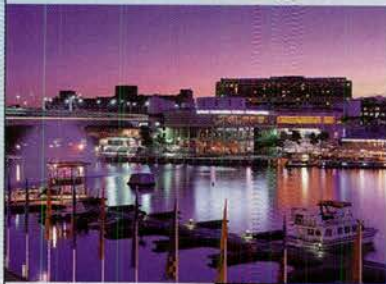
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What will you be using soon?



DENON 100 DISC PLAYERS

A virtually inexhaustible supply of continuous pre-programmed music is now available in Australia with the release of Denon's DCM-5000 100 CD automatic charger and its companion DCM-5001, a 100-disc "slave" for the master unit. From Denon's range of professional audio products, the DCM-5000 "master" can be daisy chained to five DCM-5001 units to create a changing system that holds 600 discs, or more than 740 hours — a month of continuous music.

The DCM-5000 uses the AL-24 processing that is employed in their reference class DVD-5000 DVD player. The AL-24 processing expands input signal bit length to 24 bits and over samples for exceptional detail and resolution.

Also equipped with an HDCD (High Definition CD) decoder, the DCM-5000 can play both standard and HDCD encoded discs for outstanding sound quality.

A major advantage is the twin CD drives in the unit. While one CD is being played in one drive, another can be loaded in the other and held in standby mode, offering a seamless transition from one musical selection to the next. There is also simultaneous playback available from both drives, plus two sets of audio outputs, which means different tracks can be relayed to two different locations or rooms.

For professional or semi-professional applications, discs can be selected and played using either the panel controls, infrared remote, a standard PC keyboard or using RS-232C/RS-422A.

• DCM-5000 and DCM-5001 RRP is A\$3899 and A\$2999 respectively.

Info: Audio Products Australia,
+61 2 9669 3477

Flying Pig Systems - Hog PC unveiled

Flying Pig Systems has introduced Hog PC, which transfers many of the Wholehog II lighting console's functions to a personal computer.

Born out of the company's existing Hog Edit software, Hog PC runs on any Win 95 or 98 computer and includes a USB device to output DMX.

Other DMX output devices include Printer Port dongles and Ethernet output boxes. Up to four DMX universes can be controlled from one Hog PC.

Hog PC is an excellent backup for a lighting console because it is more portable and can be run from a laptop computer — making it more affordable. Shows programmed on a console can be run from a computer through the Hog PC. Once Hog PC is running, by using any widely available third-party software (such as PC Anywhere or Timbuktu), the operator can program cues and run a show from any location, even halfway around the world.

The Hog PC also fills a niche in the market that the Wholehog II has not reached,



because of expense or space considerations. "We envision Hog PC as being very useful for architectural or retail settings where a cost-effective playback solution is desired," says Vice President of Marketing Nils Thorjussen.

Hog PC will feature an astronomical/real time clock on the PC, which previously has only been available on the Hog unit rack mount version. Hog PC will also interface directly with WYSIWYG on another computer via an Ethernet connection.

• www.highend.com

New Club devices from Numark



Numark expand their mixer line into the installation market with the RM6 one-space rack mixer and stereo preamplifier. The unit comes with 6 line inputs, balanced mic inputs and dual zone outputs. Price is A\$849.00.

EM360 MIXER

The EM360 is a DJ mixer with an interactive, real-time effect processor. Effects processing is operated by the in built KAOS Pad. This pad features sixty effects programmes, sampling functions and MIDI outputs.

Also featured is real-time effects processing, an X-Y pad, separate parameter controls, a hold switch to lock in settings and digital processing on all inputs.

The mixer features 6 line and 3 phono inputs, fader start and balanced outputs on the master. The front panel has a Neutrik mic input with bass, treble and auto ducking control.

• Priced at A\$1299.00.



CM-100 MIXER

The 4RU high CM-100 utilises auto-fader start, and features microphone auto-ducking, rear panel EQ defeat, split or blend cue monitoring as well as PFL. For ease of operation, the auto-start crossfader is designed to work with Numark's CDN-20S, CDN-22S, CDN-32S and CDN-34S as well as many other popular CD players. Price: A\$549.00.

• Information on Numark:
Call Show Technology +61 2 9898 1111



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TANIA KERNAGHAN GOES BUSH

Country music star Tania Kernaghan has recently embarked on a tour of Australia with Paul Collison as her lighting designer.

"The tour is steering away from the big cities which can be a bit of a pain when it comes to production," said Paul. "If you have a problem with something you can't just call the local production company to come and help you. You have to be really self-sufficient. You have to be quite smart at making things work and adapting to the variety of venues. Venues can vary from nice theatres to RSL's which have just hacked on a stage to their bingo room!"

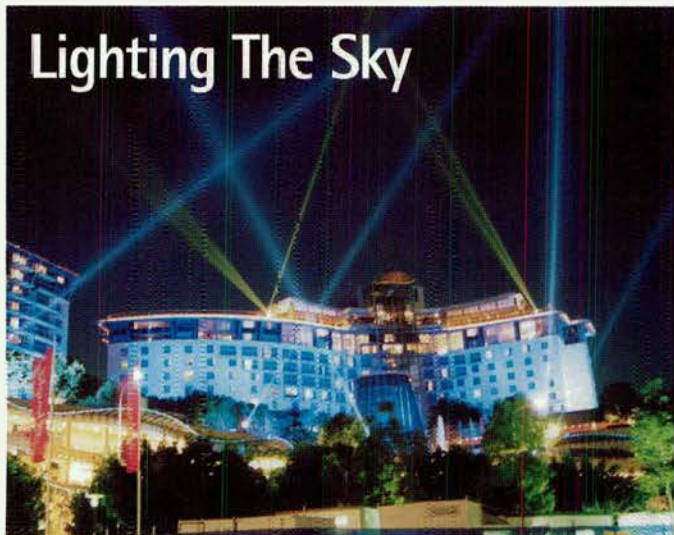
"We run twelve Martin Pro 400's, with 250 HSD lamps for extra kick, which run flawlessly," added Paul. "The four Martin Pro 918's we use are fairly reliable too, they just keep going."

The show has 32 Par cans which have been painted white to match the white stage which Paul describes as great for bouncing gobos off. Control is via a Jands Hog.

"Depending on the venue, we use a lot of white Lycra or white drapes around the stage, and the Pro 400's are used to uplight those," explained Paul. "It gives us a bit of dimension and depth to play with. The Pro 918's only have two preset scenes so they're not moving at all through the show. I use them purely as a projection onto the band and cyc. There's a lot of gobo work with them. I got some custom gobos from Lighting By Design on the Gold Coast, they've been great. Their glass custom technology is just fantastic and far superior to what else is available around the country."

"The rig is really quick to put up, we've loomed it all up. One of the good things about the Pro 400's and Pro 918's is that they don't suck a lot of power. The Pro 400's run at just over an amp each. We very rarely have power problems. When you get to some of the smaller RSL's out in the country, to use their three phase you've got to unplug half of their poker machines and refrigeration to get enough power to put on a show!"

Lighting The Sky



The Great Outdoor Lighting Company unloaded its arsenal on the Sydney Skyline in time for the Olympic Celebrations with an impressive range of new equipment.

The equipment includes the Space Cannon new colour changing 4k Xenon Irees Pro and the compact 2k Xenon Easy searchlights. "The 4k Irees are the same lights as used in the opening and closing ceremonies at Stadium Australia" commented Colin Baldwin. At a cost of \$70,000 each, they pack a wide range of functions including full colour mixing, zoom, high and low resolution pan, tilt and strobe effects.

From Griven, the equipment includes the powerful new 2.5k Kolorstream beamlights and 2.5k Kolorado washlights. Both units have full colour mix, with the Kolorstream being the first of its kind in Australia to provide a zoom function for long throw applications. The Kolorstream Beamlights are being used to light up a number of key buildings in the CBD over the Olympic period including Westfield Tower, IBM and Nestle Buildings.

At Star City Casino and Hotel complex, a wide range of fixtures have been installed which link via DMX to the GOLC Lightjockey show computer. A complex set of sequences set the mood each night with Howard & Sons providing a nightly pyrotechnics display.

For Westfield Tower, TGOLC installed the new Space Cannon 2k Xenon Easy searchlights and the new Griven 2.5k Kolorstream Beamlights which were programmed through a Martin Case Console to provide a choreographed set of sequences.

Colin Baldwin said, "The Olympic lighting experience has been so exciting and will long live in our memories. Roger and I would like to pass on our congratulations to Andrew & Rosie Walsh, Andrew White, Chris Walsh and to Michael Tanner and his Chameleon team for their contribution to lighting the Sydney Skyline. We would also like to thank Con Baviano and his team at

Universal Lighting & Audio for their unconditional support and backup service throughout the Olympic job set-ups."

• TGOLC can be contacted on +61 2 9966 9111 or www.greatoutdoorlighting.com.au



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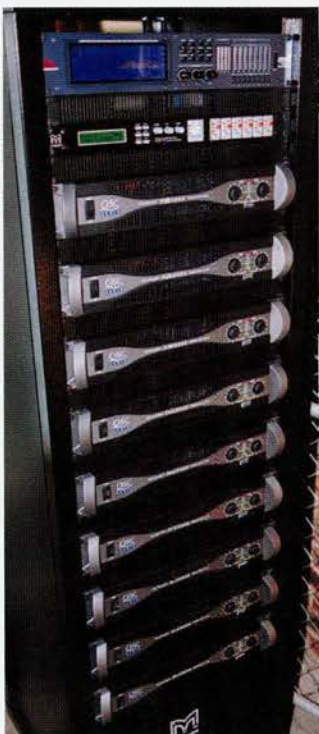
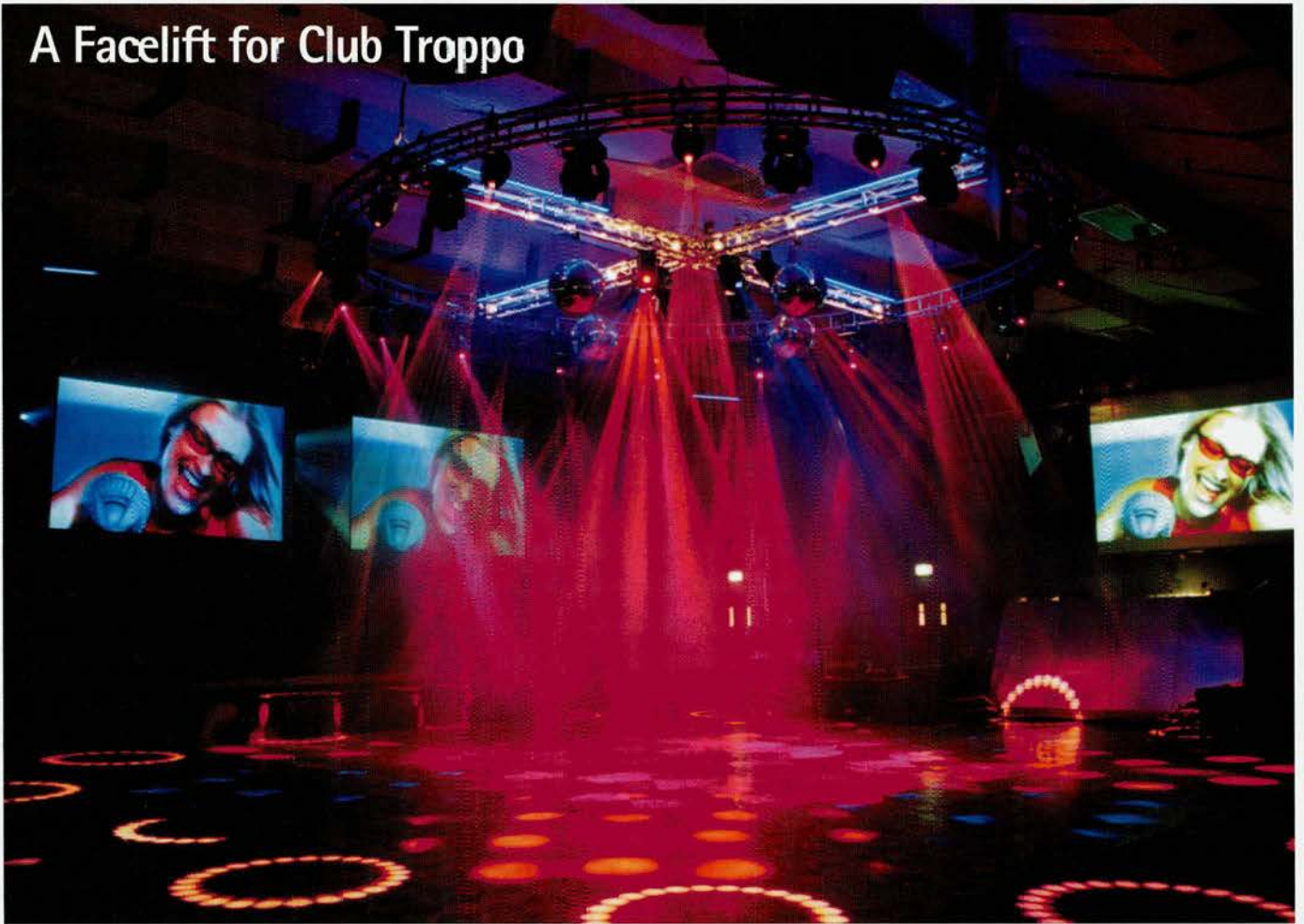
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A Facelift for Club Troppo



It was only twelve months ago that Club Troppo, the Saturday night event held at Central Coast Leagues Club, had a major lighting, audio and video revamp. The organisers of the event, Rock Circuit Promotions, contracted Total Concept Projects and they were so delighted with the results they asked TCP to give the club a fresh look for the year 2000.

TCP Director Richard Skarzynski was the designer of Club Troppo, Alan Claridge was the Project Manager and Andrew Brajbisz programmed the lighting. In all, the contract was worth \$60,000.

As Club Troppo is the most popular nightclub on the Central Coast it is vital that the technology is kept right up to date. The discerning youth of today take notice of all audio visual aspects. With that thought in mind, TCP looked for the latest and best in audio, lighting and video.

Having observed the patrons over the year, TCP decided they would be best served if most of the action was focussed on to the dance floor whilst keeping intimate areas to the side of the room. The room is probably one of the largest club areas in the country.

LIGHTING

For the lighting, the club was happy with the sixteen Futurelight intelligent lights installed last year and so it was decided to retain them. However a host of lighting effects was added to the circular truss to give the lighting rig more punch and variety. For such a large room, the lighting packs a lot of power.

Sixteen of the new Martin CX2's colour changers were added to the circular truss. The lamp reduction switch on the CX2 was an attractive feature to TCP because it mean the lamp life can be increased thus saving the club money. Effects lighting includes eight Martin Destroyers, four Acrobats, eight Geni Shimmers, and two Geni Spyros.

Control of the lighting is via a Martin LightJockey system.

VIDEO

The Sony VPH1000 video projectors were replaced by the new Sanyo LCD projectors which deliver extraordinary clarity. Two rear projection screens and one front projection screen provide continuous video action to the room. The rear projection screens are an immense improvement as smoke and haze

INSTALLATION

can no longer get in the way of the projected image and the screen.

Adding a humorous element to the night, digital cameras and video cameras are used to occasionally take pictures of the patrons to put up on the screens.

DJ EQUIPMENT

The original DJ equipment was retained and this consisted of a dual CD player, two video CD sources, two VCR sources and a spare source for any other devices likely to be required by guest artists.

"We always try to look to the future and surmise what may be required," said Andrew Brajbisz. "For example we've got a data lead for computer-generated, software-driven projections. We've got extra line level inputs and extra power for additional equipment. Rather than go with the bare minimum, we try to cover all future possible requirements."

AUDIO

The audio system was completely redesigned. Harry Della from RCP was blown away by the Martin Audio Wavefront 8 system at Darling Harbour's One World Sports, and he asked TCP to engage Technical Audio Group's Tony Russo to design the new system.

When Tony first inspected the enormous room he said, "it sounded like there was a gig there but it was 2kms down the road."

"When designing for such reverberant rooms I tell people that in this environment the best sound you can give patrons is a set of headphones! So I try to get the speakers as close as possible to them and make sure that every audience area is also covered directly by speakers, it's all about pattern control and keeping the direct to reverberant sound very high."

Six of Martin's Flagship W8C's are hung as low as possible over the dance floor thus avoiding audio spill into the room and allowing people on the dance floor to hear the speakers not the room.

The bass is concentrated in a block on the dance floor with six Martin WSX sub bass speakers, incorporating an 18" woofer in a 7ft long horn. The result is maximum bass impact and pattern control "Two things in life you can't get enough of," said Tony "Cash and Bass".

As you walk back off the dance floor four Martin Blackline H3, 15 inch, 3 way fully horn-loaded speakers concentrate the sound dispersion accurately to the club's seating area with small high powered EM15 speakers located at the entrance of the room giving the feel of a intimate club.

"There are no dead spot areas you can still talk away from the dance floor and the balance is just right, even on the dance floor at peaks of 122dB you can still carry on a conversation, said Tony. "This is because the W8 system is so low in distortion and even in response that speech is not masked".

Power is supplied by 9 QSC Audio PLX series amps, with Bridged PLX 2402's, delivering 2400 watts for each pair of subs. A dbx drive rack runs all of the signal processing for the main floor and a separate Martin Audio DX1 digital processor provides, EQ, delay and processing for of the room fill speakers. The system was computer tuned with SIA Smmart- and some critical ears.

Lastly, with such a high powered system, the DJ's are covered with 2 x Martin Audio H2's, 15 and horn wedges which provide a quality sound at high spl levels.

"It's one of the most difficult rooms in Australia, but we're really pleased with the results, but more importantly it gives the audience a system that is as good as anywhere in Australia"

Industry feedback

Back to a copy?

I got off NZ015 after six lousy months mixing in LA and grabbed the two publications I've missed from the newsstand before even leaving Sydney airport - Connections, and The Sydney Morning Herald. Both have a major new style. So why did Connections copy the Herald? Sure it looks good, but some originality please guys.....

Jackson Menendez, email

• *Our new look was introduced in May, the SMH may have copied us, because theirs came in July! -Ed*

Staging 'beat up'

I work for the greatest AV staging company in the world - Staging Connections. My colleagues and I are incensed that Connections chooses to ignore our company's achievements every month, then beats up a court case. Hang your heads in shame, Connections. I'm never buying your magazine again.

Furious, email

• *Wrong. Staging rarely, if ever, tell us what's happening. When they do, we usually report it. The news report in our last issue was just that - news. Why shouldn't we report news? No shame here. -Ed*

With Tiny Good

Site Safety

Rigging Note No.8

The information contained in this note is the opinion of Tiny Good based on industrial training as a rigger, and job experience. No liability is accepted for use or misuse of this information.

Women DO want to be Techs!

Under a headline worthy of tabloid journalism Ms Smithers (*Letters - August pg 46*) purports to speak for all females in their dislike of becoming a Tech.

Well, thank you Ms Smithers, but I hate to disprove your tidy little theory based on obviously limited experience. This is one female (and I've got a child to prove it) that does really WANT to be a tech and has been one for the past eighteen years.

The next promotion in my job is one that leads to an office desk and paper work with little or no direct creative involvement. I'll stick to teching thank you!

Kate O'Neill

Lighting Technician. Email

And in NZ especially.....

I was amazed to read your article in May 2000 Connections on Toni Glynn. The comments that caught my eye were with regards to the glass ceiling and misogyny in the theatre industry and the "look of fear" in the film industry.

This appears to be an Australian problem, as here in New Zealand we have a raft of women working through all levels of the theatre and film industry and not having any apparent problems with "the boys".

I have been fortunate over my 25 years in

the film and TV industries to work alongside many women in all roles of lighting and count them as valuable colleagues. They not only work as well as the men but in most cases better, and also have a moderating effect on some of the macho bullshit that is quite often indulged in on an all male crew.

We have had "best babes" (their own title, not mine) who are now gaffers, and DP's, camera loaders, grips, etc.....

The comment about physical strength is very appropriate, also to the men in the area, as everyone on the crew has to be fit and strong. There is no reason why a woman can't achieve this level of fitness along with the men.

I would suggest that Toni may want to look at jumping the pond and experiencing the business over here.

Without want to get into to many OZ-NZ stoushes, I could suggest that this attitude to women is very apparent to the outside observer and appears to be very common across all areas of work, social life, and life in general in Australia.

Chris McKenzie, Professional Lighting Services Ltd, New Zealand

• **Letters always welcome, send to mail@conpub.com.au or fax +61 2 9876-5715**

RIGGING

Site safety is every item you could possibly think of, from access of the general public, to the way in which the procedure is scheduled.

Site safety is more than just blinking lights and hard hats, but that may be part of it. Site safety starts with the 3 basic steps of HSO procedures for all work.

1. Job procedure

This involves thinking about the way in which a job is to be done and should include all items from the time you spec. the job till you return all the gear to the shelves in the warehouse. Items like load in and out access, numbers of crew, access to the rig, cable runs, and weather all need to be considered.

2. Hazard identification

This second section involves reading your procedure again, and at each step thinking of the possible hazards that may result. Some examples would be, enough crew to safely lift the equipment on and off the truck, persons in the room that may get hit by something you drop from the ceiling, the general public being hit by crew carrying items through doorways, or crew being hit by traffic in loading area. These are just a few of thou-

sands of possibilities.

3. Hazard minimization

For each hazard you identified in section 2 a solution needs to be found to minimize the risk. This does not mean that all risks can be removed completely, but they can be minimized and still allow the work to proceed.

The next step is to communicate the procedure to ALL the crew working on the job. You MUST advise ALL crew of their obligation to observe signs and barriers, and wear personal protection equipment at the times required.

Some examples of hazard minimization are visibility vest, drinking water, hard hats, sun cream, hats, shirts, site lighting, witches hats, traffic flagpersons, warning beacons, barrier tape, and signage to tell people what to expect.

This note could go on for a phone book if I was to try and cover every situation, and you are all smart enough to solve the problems yourselves. Just remember procedure, identify the hazards, and reduce the hazards. It is easier to think early than cure too late.

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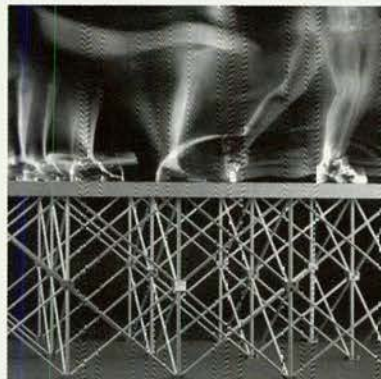
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GREATER UNION ENTERTAINMENT TECHNOLOGY



Studiomaster

Yamaha's DME 32

A different approach to matrixed dsp mass control of audio. Julius Grafton examined the system on the Gold Coast last month.

Yamaha's DME 32 is a serious competitor to Peavey's Media Matrix system. Media Matrix was introduced in 1995. Since, many audio contractors and designers have embraced the notion that anything audio can be done in digital, severely reducing interconnection cables and eliminating a vast amount of outboard.

The catchword in professional audio today is routing.



These devices take inputs and outputs, and allow you to process them, mix them, and patch them any way you like, all internally, all digitally.

Yamaha have drawn up a different approach to that used by Peavey. The new DME 32 doesn't incorporate a PC like Media Matrix does. It is a firmware device using flash RAM memory, meaning there is no hard disk



DME 32's DSP engine has four card slots for 01V sized cards. This allows flexibility in either digital connections or an inexpensive form of conversion, with 8 or 4 i/p cards and 4 o/p cards available for analogue audio interface with the unit. Green connector strips are for GPE hard wired controls, like switches, pots or little customised control panels you install around the site.

spinning away. Peavey have a low end Media Matrix product called X-Frame which doesn't use a hard drive either, otherwise their MiniFrame and MainFrame products are essentially based on industrial strength P.C.'s.

There's an upside and a downside. Media Matrix has a PC on hand at all times, so re-configuring is easy. Yamaha allows limited reconfiguration from the front panel.

DME 32 is a system based on a 32 x 32 DSP engine (pictured above) in one three rack unit tall box.. 32 x 32 means up to 32 inputs, and

up to 32 outputs. To go beyond that number, you cascade (add on) up to four DSP engines, for a possible maximum configuration of 128 x 128 in's and out's.

Yamaha argue the vast majority of audio contracting work falls inside this matrix. Yamaha also see the DME 32 working as a live PA system controller, and given the depth of features this is entirely probable.

Points of difference between Media Matrix and Yamaha are many, one is that the new Yamaha system has 24 bit AD and DA options, Peavey are about to address that but currently offer 18 bit breakout boxes.

In simplest form, one three rack unit tall DSP engine is required, along with input and output converters. In the analogue audio world, which is where everything west of a mixing console still operates, you've got microphones and lines that need to come into the system, and balanced line level signals that need to go out to amplifiers.

The input and output of audio is done via either external 2 rack unit tall AD (analogue to digital, as in inputs) or DA (digital to analogue, as in outputs) boxes, or just mini YGDAI cards, identical to those used on the 01V digital mixer. These cards come in 6 flavours, allowing AES/EBU, ADAT or TDIF interfaces, plus 20 (8 inputs) or 24 bit (4 inputs), or there is a 20 bit, 4 output card.

The three digital format cards handle 8 inputs and 8 outputs on each card.

The DSP engine has four card slots. One analogue input card, and one analogue output card would be the bare minimum requirement to pass audio.

The elegant input solution is an optional two rack unit tall stand alone box named AD 824, which as the name implies is an 8 input device (featuring XLRs and jacks) loaded with 24 bit converters. It also has 8 send and return inserts available on balanced TRS jacks. It could be a stand alone 24 bit input expander for people owning Yamaha digital mixers too. It has a card slot, so it needs a digital card to talk to the DSP engine.

Talking about cards and digital, you've got three ways to connect the DSP engine to the AD 824. You can wire it using TDIF or ADAT light pipe, or use AES/EBU which is the preferred pro option. In doing so, you go from one of the cards on the DSP engine, via a D-

sub connector, to both an input and an output box if desired. A 'Y' lead is required to access both boxes from the one card.

The Output optional box is called the DA 824, it is similarly equipped with 8 balanced XLR outputs, plus 8 jack connectors.

If your DSP is loaded with four card slots, then it is hardware configured to handle 32 inputs and 32 outputs. The four 8 channel input boxes, and four 8 channel output boxes each need a card, so you need a total of 12 cards.

Naturally, you can route directly into other digital gear using any of the three formats, depending on which digital card type you have.

Yamaha also equip their DME 32 hardware with word clock (BNC) connectors. Word Clock isn't time code, rather it's a way to sync the processing so every device starts each packet of info at the beginning, rather than part way through. This avoids jitter, clicks and other digital nastiness.

At the heart of the system, the DSP engine has front panel controls which allow access to anything, or nothing if software disabled. The mains power switch has a screw on coverplate too, so if an exposed installation is done the thing can be locked down.

You generally need a computer (laptop is best) to actually do the initial system configuration, which is where you select devices, and 'virtually' wire them together.

Example (skip ahead 2 pars if you understand already):

Select an 8 x 2 mixer. Wire 8 inputs (one complete AD 824) and take the two mixer outputs to another virtual device: say a stereo equalisers. Then, wire it through a stereo limiter. Then, wire the two channels into a stereo 4 way crossover. The 8 outputs from this can go to an entire DA 824.

In this simple way, you have 8 balanced lines running in, and 8 running out. On your laptop, configure all the component parameters - eg: select crossover curves, dB slopes, points, compressor settings, thresholds and limits, and an EQ curve.

Now download the setup to the DSP engine, either via an RS 422 cable, or on a PCMCIA card. Once downloaded, remove the cable or card. The engine is set. You can now affect (operate) any parameter from the front panel, if you wish.

This style of configuration is likely when the DME 32 is used as a system controller for a touring PA system. Different system 'voicing' and crossover setups can be configured and recalled. The engine allows two completely different settings to be enabled as 'A' or 'B', so you could configure two and offer more on PCMCIA cards. Just plug and play, no exclusive system processing, just one generic solution! Big audio production firms will buy DME 32 for this alone. Because they can also run delay zones and multiple speaker clusters from one control source.

There's another aspect of DME32 that is unique. It has up to eight virtual digital reverb devices akin to the SPX 990 inbuilt. Using these all at once would fully load the 10 onboard 32 bit DSP chips, but it can be done, according to Yamaha.

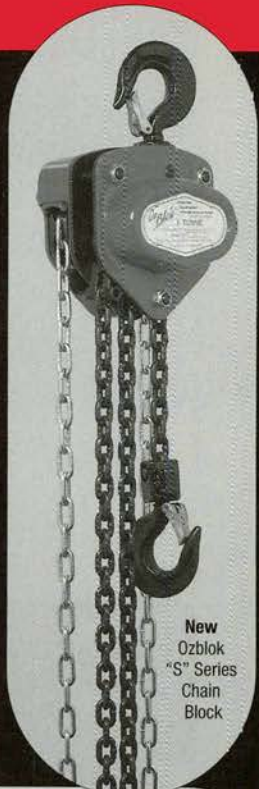
Allied with the completely abstract way that you can configure dynamics processing on any signal path, the addition of the effects processors makes the DME 32 a powerful device.

It's in major install world where a product like this (or Media Matrix) really pays off. That's because it is increasingly common to have gazillions of in's, out's and operator options. You may need to zone things and have increasingly confusing

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Reviewed



mixes of this and that going hither and dither.

The old way needed copious hardware, and resets and patches. The new way is this way, the DSP way.

Compiling a system is a software task, you'll need a PC to do this each time, or you can have it done for you by the vendor. The software is free online (www.yamaha.co.jp) or call Yamaha on +61 3 9693-5111) and once you have a configuration you like, it may be sent to the DSP engine via RS 422 or a PCMCIA card.

The unit will store two different system



AD 824 is a fine stand alone 24 bit 8 channel analog to digital converter, use with DME 32 or your 02R. One digital card is required for interface, choose AES/EBU, TDIF or ADAT flavours! Note BNC connectors for Word Clock, to tighten up your data stream and avoid clicks and pops.

configurations. Re-configuring is a task that takes a minute or so.

It holds 99 scenes in memory. A scene is a preset change of format, where in simple form, maybe a room may be set up for a lectern, so the speakers at that end are activated, the mic input opened, a certain EQ used. While that scene is set, you may wish to alter the mic level - do it on the front

panel, or remotely. Another scene may change that room into one of many rooms on a distributed system. Yet another scene may disconnect the room altogether, and activate a main PA in a theatre.

If you need outboard controls, like knobs and switches, DME 32 facilitates this via 16 GPI ports. These are essentially wired analogue connections where a twisted cable pair can run off to a switch or pot or control panel somewhere. You can have on/off, up/down, change scene, volume or whatever kind of control you like, wherever you like it.

Finally, bear in mind you can option up inputs and outputs to suit, you may have more inputs than outputs, each DSP engine handles up to 32 of each.

The wrap up. Peavey's Media Matrix is a growing family of devices which until now hasn't really had a direct contender. Yamaha's DME-32 isn't a 'me too' box, it has some points of difference - some good, some are features that are missing in duty and may be added later.

System designers and specifiers will look closely at both systems.

Prices: DSP Engine: \$6,995. AD 824:\$3,995. DA 824: \$2,995. Cards: \$485 to \$632 each.

Configured system examples: 4 x 4: \$7,965 (using 20 bit cards for input and output). 8 x 8 (incl. one AD and one DA box) \$15,881. 16 x 16 \$25,762. 32 x 32: \$42,539. All include GST and are A\$.

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Selecon Axial Acclaim

There is no doubting that the work-horse light of the theatre industry is the 500/650W range of fresnels and profiles.

For any venue thinking of buying lamps in this range, the recent move towards axial lamps by companies like Strand - with their SL range, and Selecon - with their Pacific range, has increased the options (and price range) dramatically.

There are a huge variety of new and used "half k" fixtures on the market. As a result, no one company has been able to "sew up" the market with their product. Enter Selecon with their latest attempt to increase their market share, The Axial Acclaim.

Connections arranged for four of these fixtures to be provided to lighting designer, Martin Kinnane, to see how they fared in a real working environment:



by John Grimshaw

Selecon have had the Acclaim range on their books for some time, and it is a very good design at an affordable price. From the technician's point of view, even after several years use a casually maintained Acclaim will remain easy to set up and focus. The new axial Acclaim has a lot to live up to.

From the outside looks very similar to the original design, with a few minor changes. The gel frame retaining bolt has been replaced

with a far more practical "clip" that swings in to lock in the frame. The shutter blades have large handles (very similar to the Pacific ones) and the tilt lock nut has been re-designed to allow a more solid lock. The gel frame and gobo holder sizes remain the same.

It is when you take the back end of the fixture that you can start to see the major changes. The lamp base is enclosed in the removable back end. This base can be

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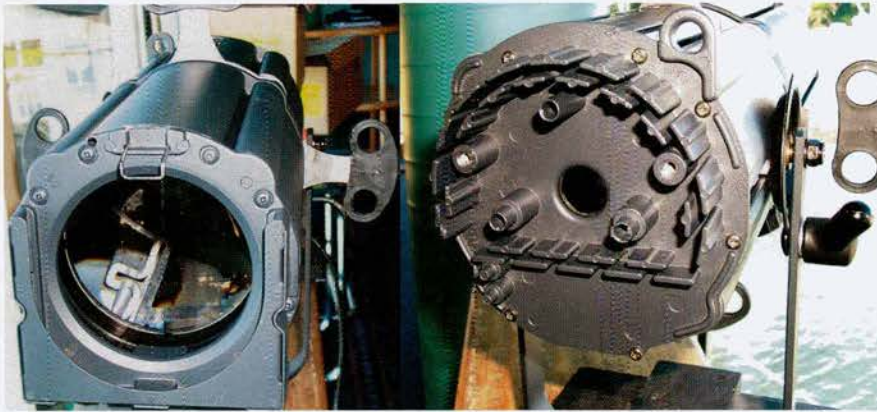
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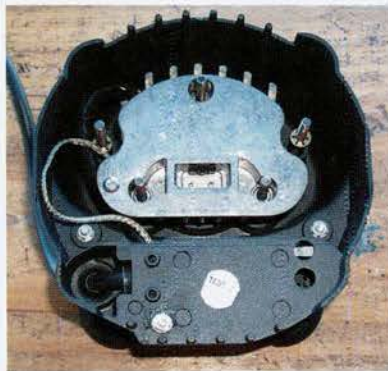
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Selecon Acclaim



Left: Front view of the fixture. Note the modified gel retaining clip.

Right: Back view with the base removed. The lamp is fitted on the removeable back end, and passes into the hole in the centre when assembled.



Removeable back end - G9.5 lamp base for GKV or GLB lamps

Special thanks to Jaycar, who supplied the Temperature meter, and Rodger Hind who supplied a standard Acclaim for the comparison.

“peaked” with three separate knobs to centre the lamp in the reflector. All three knobs can be turned at the same time using the central dial - allowing the filament to be moved to different places in front of the reflector. The two other knobs on the back end are the lock bolts that hold the end in place.

Inside the lamp housing consists mainly of the reflector through which the lamp sits, and a reflective panel that diverts a significant proportion of the heat up to the hidden heat sink at the top of the lamp chamber. This part of the fixture is not easily accessible - presumably to keep stray fingers out of this delicate area. Certainly the cleaning will be slightly complicated and will require tools and time.

The lens chamber has the ability to easily detach the lens tray - making a quick change from 18-34 to 22-40 possible. This feature could be a little better designed, because it was quickly discovered that if the lens tray was not seated properly, it could very easily drop out completely. At the very least, a safety wire should be attached to the tray to avoid that rather embarrassing effect of knocking people on the head with stray bits of metal.

With the lamp properly “peaked” the resulting beam was very flat and even. It was also quite a bit punchier than the conventional 650W Acclaim that was set up beside it.

Focusing the light was quick and easy - before long identifying this fitting as very user friendly.

To test the fixture’s heat dissipation ability we performed a “Congo Blue Destruction Test”. This involves taking a piece of Lee filter that has the lowest light transmission (Congo Blue L181 at 0.7%), focusing the light so that the image of the filament/reflector can be clearly seen on the gel, and leaving the lamp powered until the gel burns out. For this test, we added a variation - a conventional Acclaim was similarly set up as well, and both were set going at the same time.

With thanks to Jaycar, we were able to measure and compare the temperature behind the gel of the two lights. Using the QM-1600

Temperature Comparison

Time (min)	Conventional Acclaim	Axial Acclaim	Temp Difference
0	19	19	0
1	118	69	49
2	128	73	55
3	130	73	57
4	131	73	58
5	134	74	60
6	134	75	59
7	135	75	60
8	137	75	62
9	136	75	61
10	136	75	61
20	141	80	61
30	145	86	59
60	149	90	59
300	160	107	53

and a probe into each light, the difference between the two fixtures was immediately apparent. Over the course of an hour, we made several measurements (see table), and difference between the lamps remained a reasonably constant average of 58 degrees.

The obvious conclusion to draw from this test is that both gels and gobos will survive considerably longer in these lights.

5 hours later, when the lamps were turned off, there was noticeable discoloration in the centre of the conventional Acclaim’s gel, while the Axial’s gel remained unchanged.

All in all, we came to the conclusion that it is a well priced fixture with some excellent features. The Acclaim Axial will be available in two different beam configurations; 18-34 and 24-44.

Price Comparison (including GST)

Acclaim 18-34 (conventional) - A\$501.60
 Acclaim 18-34 (axial lamp) - A\$525.80

Pros

- Longer gel and gobo life
- Flat and even beam
- Improved Shutters
- Improved Tilt lock
- Improved Gel clip
- Lamp interchangeability
- Extended Lamp Life (if using GLB or "GKV Long Life" @ 1500hrs)

Cons

- Lens tray needs safety wire
- Too easy to confuse lamp peak knobs with back end locking bolts
- Changing a blown lamp on a rigged fixture requires two hands

Clay Paky's Newest...



...the Stage Zoom 1200

By John Grimshaw

Looking like a Mac600 on steroids, the 16 to 24 degree Stage Zoom 1200 from Clay Paky is on first glance a very impressive looking unit. Lifting the 55kg unit out of Lots Of Watts' custom built roadcase, it was a comfortable lift for two of us.

For anyone that has had to set moving lights up, you immediately appreciate the pan and tilt locking mechanisms that hold the unit in place for shipping, resting, moving etc. The head section can be locked in three tilted positions – pointing away from the base for shipping, as well as parallel to the ground on either side for service. We locked the unit in this parallel position to take the head apart and have a peek inside.

The designers at Clay Paky obviously thought a great deal about the real world requirements for "tool-less" accessibility to the motors, gobos, prisms etc, with the front cowl being held on by two clips on either side of the unit. There is an additional safety wire that needs to be unclipped before the cowl can be completely removed. Inside the head, the all of the beam control mechanisms can

be removed as a single unit by the simple method of turning four wingnut type locking pins, and lifting out the internal skeleton.

This section weighs an estimated 6 to 8kg, and is very solidly built. All of the "M" sized gobos, prisms and dichroic glass filters are very easy to get to for changing or service.

Expecting to see CMY colour wheels in the vein of the Mac600, it was surprising to find out that the Stage Zoom 1200 uses an entirely different system. Each of the CMY colours is produced by using two "paddles" for each colour. These move together from either side of the central beam channel in a similar way to how a dowser works. Jeff suggested that this method makes for considerable more control over the whole colour mixing process as it seems to give more incremental steps at the saturated end for each colour. It certainly looked to be a complicated arrangement of glass, which presumably would be a little hard to clean.

Inside the exposed rear end of the unit, the small HM 1200W bubble sits exposed in the centre of an array of cooling fans, reflectors and heat sinks. The whole back end is really

With the recent release of Clay Paky's Stage Zoom 1200 moving light, we asked Lots Of Watts if we could get one out of a roadcase and have a look at a few of its features first hand. With thanks to Jeff Morgan who took us through the unit, it quickly became obvious that this luminaire was very well designed.

View of the back of the removeable internal "skeleton". Rotating robes are visible to the left.



Fixtures Review



View of the lamp with the front cowl removed.



View of the internal setup of the lamp housing with the internal "skeleton" removed.

DMX display and I/O



one big heat sink, with two rear access doors on either side of the fitting to allow bubble and (rear) gobo access without having to remove the internal skeleton. Again, these doors were opened without tools as each door is held shut by two large head screws.

Another important innovation for this lamp is that the internal skeleton section and its associated cowl is completely interchangeable with the Stage Wash 1200 skeleton and cowl – thus significantly increasing the usefulness of this product for the rental market. Not only could you swap out a faulty mechanism quickly to get a hire out the door, but the type of fitting can be changed without tools within the space of a minute.

Having thoroughly inspected the internals, the unit was put back together and fired up. On turn on, the lamp immediately stuck and the head went through the customary startup dance. Setting the address on the main control panel was a refreshingly simple process – no navigating through cryptic menus, just the customary Clay Paky dip switch setup. Clay Paky have continued the approach of keeping the setup at the actual lamp as simple as possible by minimising the number of different option settings, all of which are visible “at a glance” by the dip switch settings. Using this kind of control means that the unit does not need to be fired up to set its address, operating mode or any of the other user definable settings. This would have to speed up equipment preparation for both the rental companies and the technicians on the ground about to rig the unit. That being said, I would hate to the technician hanging by a harness next to the lamp to fault find dip switch settings in a dark venue – a distinct advantage for the LED menu driven setups.

Controlling the unit from an old Jands Hog, the unit has the two modes of operation, as seen in most other moving lights –

The number of channels required to run the unit are 16+3, the +3 being for 16 bit mode. The 8 and 16 bit modes define the “resolution” of the movement of the fitting. 8 bit mode provides two separate channels for coarse pan and tilt. 16 bit mode adds a second pair of pan and tilt channels for fine adjustment. For this unit, 16 bit mode also adds a lamp control channel.

During running, the various gobos and prisms behaved as expected. The iris control was impressive with a very small diameter pin spot achievable – at the 4m or so to the roof, the circle was not much bigger than the front opening of the fixture. By contrast, opening the iris right up and zooming back to the full 24 degrees width created a very wide beam for this moving light. The addition of prisms, frosting and soft focus appeared to more or less double the beam diameter at the expense of output intensity.

Bring the beam back to normal, we had a bit of a play with the CMY colour mixing. While the system certainly seemed to be very controllable as suggested earlier by Jeff, with the beam on sharp focus, it was possible to just distinguish the two paddles moving into the beam path, with a very subtle shadow effect present at the saturated end of each colour. This was very easily removed by subtly adjustment of the focus, but it is not what you would call completely ideal. The fully saturated colours were very intense – perhaps thanks to the brightness of the lamp – but still a very important point for any CMY lamp.

At this point we decided to test a few of the fixtures speed attributes. With the help of a stopwatch, some (very rough) timings were taken on how fast the fitting could make a 180 degree pan and a 180 degree tilt. The pan took 2.6 seconds and the tilt 2.1 seconds. Moving head type fixtures will never reach the speeds achievable by moving mirror type

Channel Layout

1	Iris	11	Fixed Gobo Select
2	Colour Effects	12	Rotating Gobo Select
3	Frost	13	Rotating Gobo Rotate
4	Manual Dimmer/Strobe	14	Colour Mixing - Cyan
5	Pan	15	Colour Mixing - Magenta
6	Tilt	16	Colour Mixing - Yellow
7	Zoom	17	Lamp Control (on/off)
8	Focus	18	Pan (fine)
9	Prism Select	19	Tilt (fine)
10	Prism Rotate		

Channels 17-19 available in 16bit mode only

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Views of the internal "skeleton" - all of the gobs, prisms, CMY, focus, zoom, the iris and the associated motors for these items are located in this one unit.

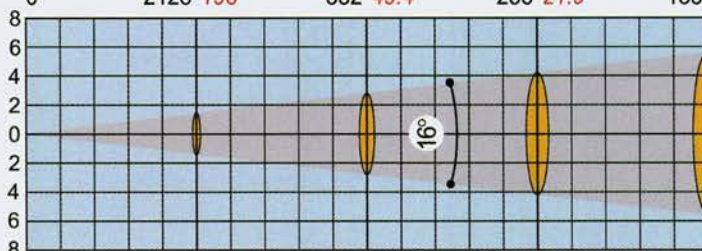


View of the lamp housing with one of the rear access doors open.

Stage Zoom 1200 - Minimum Zoom - Focal 243 (16°)

HMI 1200 W/S

electr. lux (fc)	0	2433 226	608 56.5	270 25.1	152 14.1
magn. lux (fc)	0	2128 198	532 49.4	236 21.9	133 12.4



Distance m (ft in)	0	10 32'10"	20 65'7"	30 98'5"	40 131'3"
Diameter m (ft in)	0	2,80 9'2"	5,60 18'4"	8,40 27'7"	11,20 36'9"

fixtures, but this is still a good speed for a lamp of this weight.

The next test was the rest time. We set up a position and focus for the fitting, and then turned the power off. When the power was restored a second later, the lamp re-struck within moments, and the lamp fully reset itself and then found its way back to the position still being sent by DMX within 38 seconds. While this is considerably faster than many other fittings available on the market, it is still not the sort of figure an operator would like to deal with if a show failure occurred. During the reset, the fitting needs to reset all of its limits so it knows where it is. Unfortunately, this process can have a very strange progression of colours, gobs and prisms slowly moving around the room while it works itself out.

The beam output was a very flat and evenly dispersed light – an important consideration for television lighting. The unit has very quiet operation, with all of the motors driving the unit being only marginally

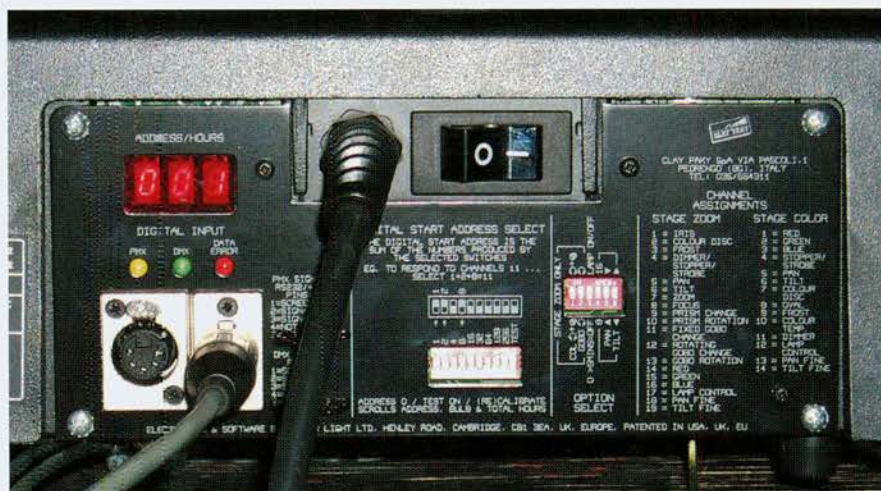
above the level of the fan noise.

Jeff was certainly very pleased with the unit. His anecdotal evidence for this was that when the units were imported into the country, they went straight from the wharf to be rigged for the Rock Eisteddfod. For some fittings, this would be an unpleasant prospect – having to work out how to use a new moving light on the job with a pressing deadline. However, these units took less time for the technicians to understand than it took to teach the desk about the new light. Nearly all of the units worked straight out of the box, with one apparently not having its outer plastic covering not seated properly (a problem that was quick and easily fixed).

Interesting Specifications

Gobo Size	M
Weight	Electromagnetic ballast version: 55.4kg Electronic ballast version: 41.5kg
Colour Type	CMY
Lamp Type	HMI 1200W/S (Colour temp 6000K - average 750hrs life)
Power Consumption	Electromagnetic ballast version: 1700W Electronic ballast version: 2200W
Speed to reset	38secs*
Speed to tilt 180	2.1sec*
Speed to pan 360	4.0sec*
Zoom Angles	16 to 24 degrees
Movement Range	Pan 450° - Tilt 252°
Control Data	DMX512 or RS232/423 (PMX)
Control Channels	16+3
Price (inc GST)	\$17,000

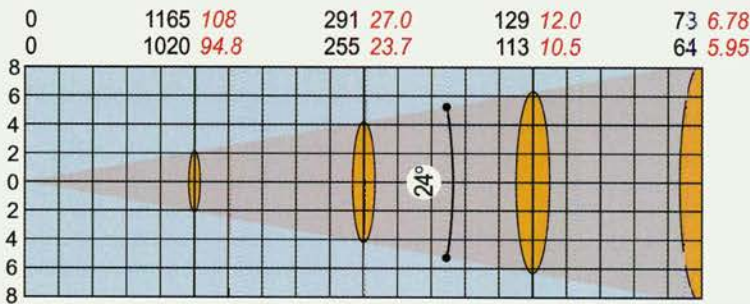
* All speeds are approximations only



View of the Control Panel - note that everything you need to know is written on the panel

Stage Zoom 1200 - Maximum Zoom- Focal 114 (24°)

HMI 1200 W/S
electr. lux (fc)
magn. lux (fc)



Distance m (ft in)	0	10 32'10"	20 65'7"	30 98'5"	40 131'3"
Diameter m (ft in)	0	4,20 13'9"	8,40 27'7"	12,60 41'4"	16,80 55'1"

Because this event was light for television, he was surprised to find that he had to run them at 40% intensity of most of the time, because of the intense flaring caused in the television at the highest light levels. It is not often you get to hear about television people complaining about too much light in a

theatrical situation! Jeff also discovered that he could cover the 60' cyclorama completely with two units.

The Clay Paky Stage Zoom 1200 has been priced at \$17,000 (inc GST). Call Show Technology +61 2 9898 1111 for your nearest distributor.



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Hod Bregfst?

The PLASA show and more

I've just come back from a lightning visit to the UK for the PLASA exhibition, in London. Four days of peace and love and dishing up the hard sell. It's a show that has been growing in importance over the last few years, and this year's was the biggest and most well attended. Normally Colin Park from ARX gets to go, but a severe ear infection left him with the distinct risk of an ear exploding at 30,000 feet, probably all over the passenger next to him! "Excuse me, miss, this salad dressing tastes funny!"

I was booked into the Hotel Lily, a brown brick post-war block, as cosy as an egg carton and a similar packing density. My head scraped along the ceiling of the corridor as I walked down to my room! The rooms were designed in an era when people were a whole lot smaller than they are now; the 50's, maybe? My room measured ten by twelve feet, and a large chunk of this was taken up by the bathroom. In the space that was left there was almost enough room to fit a bed, as long as you didn't mind climbing over it to get out of the door!

But it was clean, cheap (by London standards anyway), the people were friendly, and best of all, it was only about fifty metres from the Earls Court Exhibition Centre.

London is a lot more European than when I was last there in '89. Lots of foreign cars with garish number plates whizzing around, and lots of European students working holiday jobs in restaurants and cafes. Even the hotel had young girls of various nationalities waitressing in the restaurant, as I discovered on my first morning. I went downstairs and sat at a table. The waitress came over with a glass of orange-like juice and in a heavily accented voice said "Hod bregfst?"

I took this to mean two things: One, English of any kind, either native or Australian, wasn't her first language, and two, she was asking if I wanted a hot breakfast.

"No thanks, I'll just have some cereal," I replied. She looked at me quizzically and tried again.

"Hod bregfst?"

"No, cereal, thanks," I repeated. No luck. "Hod bregfst?"

I tried a shot in the dark "Some cornflakes?" Bingo - enlightenment spread over her face.

"Ah, confections," she repeated, nodding and smiling. Then she brought me a deep fried wellington boot. No, just kidding!

I finished the cereal, had some toast and tea, and then I beckoned her over.

"Can I get this charged to my room?" I asked. She looked horrified.

"No room, no room," she said vehemently.

I got the impression that she thought I was asking her if she'd like to come up to my room! "No, I want to know if I could get breakfast put on

my room bill", I explained.

She flashed me a filthy look, repeated "no room" again and walked off in a huff.

Hmm. What we have here is a failure to communicate. She returned with the lady in charge. "What seems to be the problem here?" she enquired icily.

"I was just asking if I could get breakfast put on my room bill," I explained. She burst out laughing and said something in Russian to the waitress, who also started laughing and ran off, and then she turned back to me and said, "No, it's already included in the room charge!"

It was a warm four days while the show was on, and in a show where half the space is taken up by lighting, you'd think that there might have been a bit of consideration for the amount of compensatory cooling required. I mean, as anyone who's stood on stage for a while knows, lights are hot. Especially bloody big sky waving searchlights, which were displayed and lit up on many of the lighting stands. One giant aluminium one was so hot that as I brushed past it the hairs on my arm shrivelled up. Multiply that a few times and you've got some idea of the heat in the place.

But the fact that lights are hot seemed to be the one thing the organizers had not taken into consideration. On the first

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day, people were roaming around literally dripping wet, great dark sweat patches all over their shirts. A really attractive look if you're trying to convince people to buy your product!

The truth is, though, that air-conditioning is a totally alien concept to Brits in general, and to the owners of Earls Court exhibition centre in particular. There is no air-conditioning as such in the place. It's so old (late WW2 aircraft hangar architectural style) that to air-condition it now I was told would cost at least six million pounds (fifteen million Aussie dollars!). It does have a rudimentary form of ventilation, but of course it was a hot four days, and pumping more hot air in from outside only aggravated the problem.

Still, dinner that night in a cool basement restaurant in Covent Garden recharged my batteries somewhat, and I was able to get through the night without falling asleep in the soup. This was a grave disappointment to my hosts, as the sight of Colin fast asleep on the table is usually one of the highlights of the show!

The exhibition itself was large, well organised, a glorious windfall for the electricians, who must be able to buy a new house in Spain every year with their profits, and absolute

chaos during the load-in and out. The loading lanes each side of the venue are just about wide enough for one truck to drive down slowly and carefully. With thirty or forty trucks all trying to do the same thing it's a nightmare, especially for the left hand drive vehicles over from the Continent. The word 'gridlock' doesn't come close to describing the situation.

However, the traffic situation at the load-in was mirrored by the traffic situation in London. I'm sure London traffic has been a problem ever since the Romans tried to pass each other in their chariots, and the intervening millennia haven't seen much change.

Narrow roads, jammed with parked cars as far as the eye can see, and clogged 24 hours a day with a steady stream of cars, buses, trucks, bicycles, pedestrians, and still more cars. In fact, often the only visible difference between the parked cars and the driven ones was the presence of someone in the driver's seat!

You know, it reminded me of Sydney!



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Signs Of the Times *by Graham Walne*

Recently I queued in a supermarket behind a lady who had placed her selection of nuts and raisins all in one bag, only to be asked to separate them for weighing at the check-out. We all waited patiently as she emptied the contents onto the counter and made small piles of different items. I began to wonder what sort of sign would have avoided this in her case- 'place each item in a separate bag' might have resulted in 96 bags each with one nut inside.

Life has become more complex and has resulted in an increase in the number of warnings we need, some of which can be taken two ways. 'Heavy plant crossing' has me looking for Triffids (now apparently not a figment of John Wyndham's imagination) and 'this door is alarmed' suggests some reassurance is needed.

The entertainment world seems rather free of these admonitions. On spotlights 'point lit end towards stage' might never be needed but 'I am upside down - please turn me over', an appellation sometimes found on the bottom of Sara Lee deserts, was needed some years ago when colour runners lacked retaining clips and an incorrectly rigged light could rain frames on the audience.

'Ensure all dimmers are powered before operating desk' might seem another extraneous notice but service engineers have legions of stories about call-outs for just this problem. It happened to me. Years ago in one theatre the new dimmer installation powered the lighting desk from the first of 24 racks. This theatre employed 20 electricians so the person powering up wasn't always the board operator. One show started with the tab dressing and opening frontcloth lit perfectly but then little else happened. Complex reasons were considered as memories and relay banks were examined. Eventually, someone simply threw the remaining breakers and all was well. It turned out

that some afternoon maintenance had been done on the first rack, thus powering the desk (and some front-of-house), but none of the other racks had been needed.

Many signs are the result of litigation 'objects in this mirror are closer than they appear' being typical, we're perhaps lucky that one court case in the USA didn't give us 'objects in this mirror are behind you'. In the UK the growth of safety regulations in the 1980's led the Royal Shakespeare Company to be the first to appoint a full time safety officer for their (then) six theatres. This stirred interest nationally and the officer, one Kevin Sivyver, kindly arranged a series of distinctive nationwide seminars on his role. As the regulations became more prominent these sessions sadly changed from 'how to do it safer' to 'how to avoid being sued'.

This is happening here. I've just been part of a team designing a new \$8M concert theatre for a private school at Hale in Perth, the theatre boasts \$600,000's worth of lighting, sound and communications, and significantly, a Kospro powered flying system. The last job the team did was to design a mass of signs effectively limiting the

school's liability in the face of the kind of accident which had happened in another school and which is now the subject of a court case. The lack of common sense doesn't seem to be provide much defence.

Of course, notices are essential where untrained people come into contact with equipment. Some years ago I reviewed a book which contained a series of exercises for schools designed to familiarise children with the basics of lighting, sound and staging equipment. One suggestion for cutting out gobos would undoubtedly have resulted in an exciting afternoon and a sign which said 'do not insert patterns made from paper'.

Even with unfamiliar equipment people have expectations of how it should be operated. Some years ago a demonstration in the UK of a powered flying system uncovered the fact that opinions were evenly divided as to whether it was natural to assume that pushing the joystick forward meant the bar flew out, or in. Concern was expressed that language difficulties in Europe could create risks if instructions were not properly understood. A national conference debated the harmonising of control instructions and the possibility of using icons rather than words. To date nothing has been done.

But this matter doesn't just affect Europe, most equipment today has an international market and so some harmonisation would be very helpful. The complexity of control desks for lighting, sound and rigging demands that they are provided with manuals written not by the people who designed the system, but, by those who have to operate them. Some manuals are so complex that they increase, rather than reduce, stress levels - prompting a sign reading 'do not attempt to read the manual during the plotting session'.

Other signs are now needed on drawings which can easily be enlarged or reduced photographically in the copying process, I tend to put both a sign which relates the scale to the size of the paper and a scale check after one memorable focussing session where everything had been rigged further away than it should have been by the maximum enlargement proportion of the nearby copying machine.

Lack of understanding of other disciplines could result in a plethora of signs. A stage crew once very carefully manoeuvred a masking flat to avoid hitting my sidelight, but positioned it right in front of the beam - perhaps they thought they saw a sign which said 'light path may be impeded by masking, these lamps are merely props'. Designers could benefit from 'of course I don't mind the set blocking this lighting position'. On numerous occasions I've had to bounce lights off mirrors to get around obscured positions.

Theatre communications are interesting in the way that techniques are handed down against a very mobile workforce, often without any formal training. Much of what we do isn't written down. So how come we have avoided the Stupid Sign Syndrome, or are there real examples out there I haven't mentioned?

Signs we (hope) we never will need- On spotlights: 'point lit end towards stage'!



New South Wales

ARTIST	PRODUCER	ENGINEER	SESSION
A#Sharp Jeff Cripps +61 2 9153 9988 24 Track Analogue/32 Track Digital			
Kami Kids	Jeff Cripps	Jeff Cripps	CD
Jay Justin	Jeff Cripps	Jeff Cripps	CD
Onslaught	Jeff Cripps	Jeff Cripps	CD
The Bell Hops	Jeff Cripps	Jeff Cripps	CD
Aphek Studio Greg Dixon +61 2 9876 8170 24 Track 20 Bit Adat/16 Trac< 1" Analogue			
Fish Bait	Fish Bait	Greg Dixon (E)	Album
Victory Christian Church	Victory Christian Church	Greg Dixon (E)/Rohan Mansley	Live Album
Backy Skank	Simon Smith	Greg Dixon (E)	Album
Cheltenham Girls	Cheltenham Girls	Greg Dixon (E)	HSC Compositions
Boulder Bay Studio Rob Godwin +61 2 4982 7711 16 Track Yamaha hard disk; dbx valve preamp; TLA Valve Preamp; AKG Solid Tube Mic, ATM 8033 etc			
Rob Simpson	Rob Godwin	Rib Godwin	Jingle for TV Fishing Show
Inhale	Rob Godwin	Rob Godwin	4 x Demo CD
Damien Gerard Marshall Cullen +61 2 9555 1710 2" 24/pro tools Music Facility			
Pete Wells	Lucy De Suto	Russell Pilling	New Album
Nick Dalton	Nick Dalton	Russell Pilling	Album
New Christs	Rob Younger	Russell Pilling	Album
Calibre	Kalib	Russell Pilling	EP
Gangstar Studios Dave Dwyer +61 2 9557 7116 24 track Digital studio			
Grover	Dave Dwyer/Grover	Dave Dwyer	Album
The Desperates	Mick Roberts/Bruce Venables	Dave Dwyer	Album
Bernie Segedin	Dave Dwyer/Bernie Segedin	Dave Dwyer	Album
Festival Mastering Suzanne Hill +61 2 9395 8070 Mastering Facility			
King Kapisi (NZ) Album	King Kapisi	Sub-Mariner/King Kapisi/Dave McDougall	
Stanley Flaskey	Stanley Flaskey	Stanley Flaskey	Album
DJ Soup	DJ Soup	DJ Soup	Album
Josh Abrahams	Josh Abrahams	Josh Abrahams	Single
Festival Studio Suzanne Hill +61 2 9395 8070 Analogue Recrding Studio			
The Hard On's	Mark Thomas	Mark Thomas	Album
Skunkhour	Skunkhour	Tony Wall + Steve James	
Luxury	Luxury	Rob Taylor	Track
Rumanastone	Rumanastone	Evan McHugh	Live Tracks
Hindsong Studio David & Lyn Hinds +61 2 6582 7070 Digital Project studio			
Balance	David & Lyn Hinds	David & Lyn Hinds	Album Tracks
Dazza & Shazza	David & Lyn Hinds	David & Lyn Hinds	Album Tracks
Town Plumbing Supplies	David & Lyn Hinds	David & Lyn Hinds	TVC Soundtrack
Leslie Avril	David & Lyn Hinds	David & Lyn Hinds	Live Recording for Video
JMF Recording Studio Fran Esther +61 2 9790 4097 2" Analogue, 32 Track Digital, 24 Track Adat			
Green Valley Choir	Warren Barnett	Guy Saminaden (E)	Tracking
Cryogenic	Cryogenic	Tony Jarret (E)	Demo
Gervais Koffi	Gervais Koffi	Guy Saminaden (E)	Album
Mary Schneider	Mary Schneider	Glenn Phimister (E)	Tracking
Megaphon Studios Shane Fahey +61 2 9550 6576 24 track Analogue; 3 Great Recording rooms + Digital recording			
Ashtray Heart	Ashtray Heart	Shane Fahey	Album
Steve Clark	Steve Clark	Shane Fahey	Album-Mixing + Overdubs
Fourth house	Fourth house	Shane Fahey	Album
Nu-Town Studios Greg Hopping +61 2 9516 3306 Digital/Analogue Recording + Production			
Kelly o'	Greg Hopping	Greg Hopping	Album
Andy Cicone	Greg Hopping	Greg Hopping	Album
David Upman	Greg Hopping	Sofie Loizou	Single Demo
Q Recording Paul Conroy +61 2 9212 4851			
3 Point Tilt	Paul McKercher	Paul McKercher	Tracking
Tap Dogs/SOCOG	Lawrence Maddy	Michelle Barry	
David Jones Choir	Virginia Reed	Michelle Barry	Album Recording
Fugue	Fugue/Sorrelle	Sorrelle	Album

CHARTS



ARTIST: The Superjesus
SONG TITLE: Gravity
PRODUCER: Ed Buller
STUDIO: Festival Studios, Sydney
ENGINEER: Ed Buller Assisted by Evan McHugh
MIXING: Paul Lani @ Royaltone Studios, LA. Assisted by Chris Wenzler



ARTIST: Motor Ace
SONG TITLE: Death Defy
PRODUCER: Craig Harnath & Motor Ace
STUDIO: Sing Sing & Hothouse in Melbourne
ENGINEER: Craig Harnath & Chris Dickie. Assisted by David Coulthard-Clark
MIXING: Chris Sheldon @ The Church, London
MASTERING: Chris Blair @ Abbey Road studio, London



ARTIST: 28 Days
SONG TITLE: Goodbye
PRODUCER: Kalju Tonama
STUDIO: Sing Sing, Melbourne
ENGINEER: Kalju Tonama
HARD DISK CONTROL: Andy Baldwin
MASTERING: Steve Smart @ Studios 301
ADDITIONAL PRODUCTION: Andy Baldwin & 28 Days

Opening Ceremony

(Continued from page 32)

Broadcast Audio Crew

Colin Stevenson - Broadcast Audio Producer

Mike Smith - Senior Audio Director

Tim Davies - Audio Director (BBC on loan)

Milan Milenkovic - Audio Director FX

Steve Korres - Audio Director FX

Steve Delmenico - Audio Director Systems

Glenn Helmott - Audio Director Systems

Neil Laycock - Audio Tech Support

Matt Louie - Audio Tech Support

Mary Graham - Senior Audio Assistant

Al Craig - Head of Audio, SOBO.

• Plus another 17 assistants and volunteers.

Audio Technica's interesting new AT 895 Adaptive Array Microphone System was used here too. 8 were used on either side of the Stadium, hung on the catwalk truss, and evenly spaced in between KF 750 clusters. These were programmed so the pattern was a vertical lobe, and aimed back at the audience. The idea was to get maximum audience reaction. It meant that audio earthed power points needed to be put in at every mic position on the catwalk. A further 3 per side were pointed back in arena to get the marching bands, in a horizontal lobe pattern.

NORWEST PRODUCTIONS

It's been reported in these pages before now that Norwest Productions, a Sydney audio company which is owned by Chris Kennedy, won the Olympics live audio contract. The contract was awarded after an open audition in the winter of 1999, where a slew of systems were trialled.

Norwest demo'ed their EAW KF860/861 Virtual Line Array boxes in a cluster of two boxes. These were deemed most suitable from the ground position. A manoeuvre on the day saw EAW importer Production Audio Services supply an additional four KF 750 boxes, which were flown and pointed at the North stand, by way of demonstration of the possible option of using them.

Norwest won the job, against a fair bit of industry backlash, where accusations were levelled that EAW were buying the job, and things were said about Norwest not having the support or infrastructure to pull it all off.

Clearly both were untrue. Chris Kennedy says he was loaned some KF 750's by Production Audio Services, the importer, and he purchased or hired whatever else he didn't already own. And, Bruce Jackson, Mr. Fussy himself, is completely happy with the job.

The system comprised 46 x EAW KF860/861 Virtual Line Arrays in 23 clusters of two around the floor edge of the track, facing up into the stands. They were powered by Crest 8001 and CA9 amplifiers, and processed by XTA DP226 using XTA's Audiocore control software running faultlessly via RS485 over 1.3 kilometres of distance.

The North & South Upper Grandstand Speaker System comprised 24 x EAW KF750 in 4 clusters, each two wide and three deep - flown above the roof as stereo L/R pairs. They were powered by Crown VZ5002 and VZ2402 amplifiers with Pip II cards using Crown IQ. An ethernet network over fibre using three computers connected it all together.

In the East & West Upper Grandstands, the system was made up of 32 x EAW KF750 flown as sixteen clusters of two on their sides using custom Norwest designed rigging. There were eight symmetrical clusters on each side. Once again they were powered by Crown VZ5002 and VZ2402 amplifiers, with Pip II cards using Crown IQ. (On ethernet over fibre again.)

The House delay line was used, it consisted of five Bose 9702's per side plus there was a third (Norwest supplied) line of delay comprising seven Zeck T-3 cabinets per side.

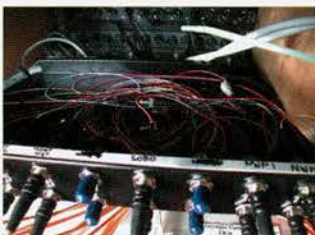
EAW KF 750's arrive in Australia



The hat mic system



Fibre Optic connections & cables





New South Wales (cont)

ARTIST	PRODUCER	ENGINEER	SESSION
R & R Recordings Rob Zimola +61 2 9672 4494 Analogue/Digital			
Dom O'Leary	Rob Zimola	Rob Zimola (E)	Album
Anton & Paulo	Anton & Paulo	Rob Zimola (E)	Demos
Raine & Horne Bathurst	R & R Recordings		Corporate Message
Rockinghorse Vern +61 2 6688 4005 Neve V Series 48 channel Console, Studer 24 Track, Pro Tools MIX 24			
Hydroponics	Skritch	Skritch (E)	EP
Overdub	Dave Bravyman/A Lycenko	Jim Arnold/Anthony Lycenko (E)	Single
Ten Tenors	Brendan Morley	B. Morley/Anthony Lycenko (E)	Sgl Remix
Rollerball	Rollerball/Anthony Lycenko	(E)	Single
Sound Level John Soane +61 2 9552 3200 24 Track DA.88 and hard disk			
USSA	Jorden Brebach	Jorden Brebach	Paris Tracking EP
M.I.B' Jorden Brebach	Jorden Brebach		Live to Hard Disk demos
John Bee	John Bee	John Bee	Drum Tracking
Damon Quinn	Damon Quinn	Jorden Brebach	Live to Hard Disk
Soundwarp Meredith Brooks +61 2 9905 7144 Mastering Studio			
Fallen	Scott Hartnet	Meredith Brooks	Album
Feldeen	Dave	Meredith Brooks	Album
Krash Kennedy	Nathan	Meredith Brooks	EP
"An Unquiet dream"- Film	Andrew Rotaro	Meredith Brooks	Remaster Soundtrack
Studios 301 Marie Toparis +61 2 9698 5888 Recording Studio			
SOCOG Opening/Closing Ceremonies	Max Lambert	Richard Lush	Various Artists
Mental As Anything	Mental As Anything	John Haeny	Mixing
Moulin Rouge	Marius De Vries	Richard Lush	Soundtrack
The Olympic Album	Maurice Levine	James Cadsky	Various Artists
Top Cat Recording Studio Brad Wann +61 2 6628 0233 24 Track Analogue 1", Pro Tools MIX 24 Plus			
Crush	Brad Wann	Brad Wann (E)	EP Mixing
Dead Man Groove	Brad Wann	Brad Wann (E)	Album Tracking
Forte	Brad Wann/George Christie	Brad Wann (E)	Album Mixing
Chilblain	Brad Wann/Lee Dowling	Brad Wann (E)	Album Mastering
Trackdown Digital Mike Duffy +61 2 9550 6890 64 Track Digital (Pro Tools)			
The Magic Pudding	Chris Harriott	Cathy Naunton (E)	Film Album Sndtrck-Mixing
Velvet Sound Recording Studios Dave McCunn +61 2 9267 2915			
Ides of Space	Wayne Connelly	Wayne Connelly	EP Track & Mix
Skunkhour	Steve James	Tony wall	Album Tracking
Revelation	Revelation	Adrian Grigorieff	EP Track & Mix
The Rhythm Slaves	Serind	Tony wall	EP Track + Mix

Queensland

Domenic Sound Shane Hughes +61 7 3216 5187 24 Track Adat + Pro Tools			
Franko	Andrew Pashley	Shane Hughes	Album
Jaquie Major	Jacque Major	Shane Hughes	Demos
Shane Domenic	Shane Domenic		Demos
Janie Shrapnel	Janie Shrapnel	Shane Hughes	Demos
OPM Studios Daniel Seymour +61 7 3374 0066 Digital Multitrack with Logic Audio			
Mainstay	Mainstay	Daniel Seymour	Remixing for EP
7 Zark 7	Daniel Seymour	Daniel Seymour	Remix
New Settlement Rogue	New Settlement Rogue	Daniel Seymour	Single
Stargate Music Production Dash Mclvor +61 7 3260 6294			
Brett Goodwin	Dash Mclvor	Dash Mclvor	Album
Kelly Mellers	Dash Mclvor	Dash Mclvor	EP
Rob Black	Dash Mclvor	Dash Mclvor	
Tanya Self	Tanya Self	Dash Mclvor	Voiceovers
Taramalin Sound Allan Lahey +61 7 3208 9736 Pre + Post production Studio			
Kepu Kids	Lester Vaele	Allan Lahey	EP
Fiona Honeyman	Fiona Honeyman	Allan Lahey	Demo
Gary Higgins	Gary Higgins	Allan Lahey	One Song
Gerianne Rudd	Gerianne Rudd	Allan Lahey	Jazz Album



ARTIST: Body Jar
SONG TITLE: Fall to the Ground
PRODUCER: Kalju Tonama
STUDIO: Sing Sing, Melbourne
ENGINEER: Kalju Tonuma
PROGRAMMING: Andy Baldwin
 Assisted by Richard Stolz
MIXING: Tom Lord-Alge @ South Beach Studios, Miami
MASTERING: Steve Smart @ Studios 301



ARTIST: The Avalanches
SONG TITLE: Frontier Psychiatrist
PRODUCER: Viking Bobby C & Darren Seltmann
STUDIO: Sing Sing, Melbourne
ENGINEER: Viking Bobby C & Darren Seltmann
MIXING: Bobby Dazzler & Tony Espie
MASTERING: Mike March @ The Exchange, London
ADDITIONAL NOTES: Recorded by The Avalanches @ Softlight Bistro. Remixed by Mario Caldato, LA



ARTIST: Taxiride
SONG TITLE: Nothing in this World
PRODUCER: Jack Joseph Puig. Co produced by Peter Dacy
STUDIO: Oceanway Recording, Hollywood
ANALOG ENGINEERS: Jack Joseph Puig, Peter dacy, Jim Champagne & Darren Mora
DIGITAL ENGINEERS: Dan Chase & Adrian Hannan
MASTERING: Don Bartley @ Studios 301
ADDITIONAL NOTES: Additional recording and remixing by Adrian Hannan @ Secret Sound Studios, Melbourne

Tracking Guide



ARTIST: Magic Dirt
SONG TITLE: Dirty Jeans
PRODUCER: Phil Vinall
STUDIO: Festival, Sing Sing & Birdland Studios
ENGINEER: Phil Vinall Assisted by Mark Thomas and Matt Maddock
MASTERING: Steve Smart @ Studios 301



ARTIST: Rai
SONG TITLE: Give A Smile to the Planet
PRODUCER: Full Force & Rai
STUDIO: Quad studio, NY
ENGINEER: Mark "Nice Guy" Rubenstein and Angelo "Flash in the Pan" Quaglia
ASSISTANTS: Edith "Bunker" Luis & David Swope
MASTERING: George Marino @ Sterling Sound
REMIXING: Additional programming & Production by Ben Garden. Mixing by David Hemming @ Tiger Studio, Sydney. Assisted by Danielle McWilliam.



ARTIST: The Tenants
SONG TITLE: Boredom
PRODUCER: Dave Trump & The Tenants
STUDIO: Festival Studios
ENGINEER: Dave Trump. Assisted by Evan Dando
MIXING: Dave Trump @ Paradise Studios
MASTERING: Dave Macquarie @ Studios 301

South Australia

ARTIST	PRODUCER	ENGINEER	SESSION
Disk-Edits Catherine Linke +61 8 8340 1377 Audio mast & Post Production. CD & Cassette Manufacturing			
Blind dog Taylor & The Heat	T Taylor	Neville Clark	Mastering/CD manufacture
Virgin Black	Virgin Black	Neville Clark	Mastering/CD manufacture
Mallee Blue	Mallee Blue	Neville Clark	Mastering/CD manufacture
E Type Jazz	E Type Jazz	Neville Clark	Mastering/CD manufacture

ARTIST	PRODUCER	ENGINEER	SESSION
Mixmasters Mick Wordley +61 8 8278 8806 24 Track 2"			
Tea Rose Duo	Bernard	Mick Wordley	Album
Bergerac	Jed Palmer	Jed palmer	Album
Lazaros Dog	Evan James	Evan James	Album
Linus	Anthony Steel Scott	Mick Wordley/Jed Palmer	Album

Victoria

ARTIST	PRODUCER	ENGINEER	SESSION
Audrey Studios Craig Pilkington +61 3 9415 8599 Analogue/Digital/Hard Disk			
The Pod	Jesse Atkinson	Craig Pilkington	Demos
The T Bones	Mick Thomas	Craig Pilkington	Mixing Album
Red lantern	Anna Burley/Craig Pilkington	Craig Pilkington	Album

ARTIST	PRODUCER	ENGINEER	SESSION
Baker Street Recordings Allan Neuendorf +61 3 9888 8084 Music/V/O Studio			
Mark Westby	Allan Neuendorf	Allan Neuendorf	Album
Derek Bailey	Phil Gaudion	Phil Gaudion	Album
Kathy Chan	Jared Haschek	Allan Neuendorf	Album

ARTIST	PRODUCER	ENGINEER	SESSION
Crystal Mastering Joe Carra +61 3 9326 2318 Mastering Suite			
Madison Avenue	Van/Rachelle	John Ruberto (E)	Mastering Remixes
Even	Even	John Ruberto (E)	Mastering Single
The Drugs	The Drugs	Joe Carra (E)	Mastering EP
The Meanies	The Meanies	John Ruberto (E)	Mastering EP

ARTIST	PRODUCER	ENGINEER	SESSION
Dex Mastering Adam Dempsey +61 3 9372 2266 Pro CD Mastering & Restoration			
Joe Chindamo Trio	Joe Chindamo	Adam Dempsey/Chris Corr (E)	Album
Warren H Williams	CAAMA Music	Adam Dempsey (E)	Album
Playground	Bruce Gatther	Adam Dempsey (E)	EP
37° Star	Brad Pomphrey	Adam Dempsey (E)	Demo

ARTIST	PRODUCER	ENGINEER	SESSION
Honeyface Mark Hilton +61 3 9507 2067 Budget Digital and Analogue Mastering with Analogue warmth			
Trampoline	Mark Hilton	Mark Hilton	Album Mastering
Dom Jurec	Mark Hilton	Mark Hilton	Album Tracking
Tom Griss	Mark Hilton	Mark Hilton	Album Tracking & mixing

ARTIST	PRODUCER	ENGINEER	SESSION
Metropolis Audio Sally Rodrigues +61 3 9696 2111 48Track Dig Multitrack with SSL4000 V Series Automation			
J Farnham/O Newton-John C Lim/J Farnham/R Fraser(P)		D Brady(E)/C Lim(P)	Record+Mix
Vanessa Amorrossi	Chong Lim (P)	Doug Brady (E)/Chong Lim (P)	Record/Mix
Nature - Chong Lim	Chong Lim (P)	Doug Bard (E)/Chong Lim (P)	Record + Edit
Nikki Webster	Chong Lim (P)	Doug Bard (E)/Chong Lim (P)	Record + Mix

ARTIST	PRODUCER	ENGINEER	SESSION
Studio 52 Paul Higgins +61 3 9417 7707 2 x 48 Track Studios			
Nova (From SA)	Trevor Carter	Trevor Carter	Pop Vocal Group - Pre Prod
Kool Skools Projects	Andrew Meakes/Mitch Kenny		50 Albums for various schools
Greenwich Meantime	Mitch Kenny	Mitch Kenny	Tracks for Indy CD
Blind dog & the Reverend	Barry Hills	Trevor Carter Trk for 'Real Australian Blues	

ARTIST	PRODUCER	ENGINEER	SESSION
True Form Recording Neil Gray +61 3 9391 0907 24 Track Digital/Analogue + Hard Disk			
The Boatshow	The Boatshow/ Neil Gray	Neil Gray (E)	Demos
Greedo	Glenn Lewis/Neil Gray	Glenn Lewis (E)	Demos
Gridlock	Gridlock/ Neil Gray	Neil Gray (E)	Album
Klinger	Klinger/ Neil Gray	Neil Gray (E)	Single

ARTIST	PRODUCER	ENGINEER	SESSION
Wombat Rd Recording Barrie Clissold +61 3 5145 4204 24 Track Digital, CD mastering			
Anna Melville	Anna Melville	Barrie Clissold (E)	Demo CD
Waffra P.S Orchestra	R Woodhouse	(E)	Show Score
Rachel Field	M Field	Barrie Clissold (E)	Demo CD
Various (Live)	Barrie Clissold	Barrie Clissold	Compilation CD

ARTIST	PRODUCER	ENGINEER	SESSION
Woodstock Studios Red +61 3 9631 9011 Recording Studio			
The Casuals	The Casuals	Robin Mai	Album
Area 7	Joe Camilleri		Single
Disasterware	Peter Camilleri		
Feelin Grooves			Album

Opening Ceremony



Ian Baldwin with Klotz fibre optic cable



Colin Stevenson with Senior Audio Director Mike Smith

The latter were powered by Crown VZ2402's with Pip II cards using Crown IQ.

Monitors were made up of 20 x EAW SM200ih wedges and 8: Zeck T-3's.

There were around 20 IEM's - (In Ear Monitors); mainly Shure PSM600 & PSM700 plus a few Sennheiser's (slim packs for girls in slinky dresses). There is also some sound engineer gossip about who wore what underwear, but we are a family magazine.....

There was an FM system (on two especially licensed FM frequencies) for bulk in ear monitoring for horse riders, tap dancers and various cast members and stage managers. There were a total of just under 1,000 of these units!

The FOH control comprised 2 Midas Heritage 3000 /48 channel consoles, with a Midas XL-3 for monitors, and 2 Mackie CFX20 sidecars. EQ went through about 20 Klark Teknik DN360's.

Compressors included 2 x DBX160SL (main system compressors), 6 x DBX566 Tube

Compressors (inserted on FOH), 6 x DBX1046 quad compressors (Inserts FC-H & Mons). 6 x Drawmer DS201 did gating, and there were Lexicon 480L, TC M5000, Eventide H3000, and Yamaha SPX990 effects.

The Active splits between consoles and broadcast were done with 9 x XTA DSE00's.

Microphone world included a comprehensive array of Audio Technica microphones (including 4050's, 4051's, 4047's, 4041's and 3525's) for the orchestra mic up. All radio microphones were

Shure U1 series with Beta 87 capsules. The headsets were DPA's, into Shure U1 belt packs

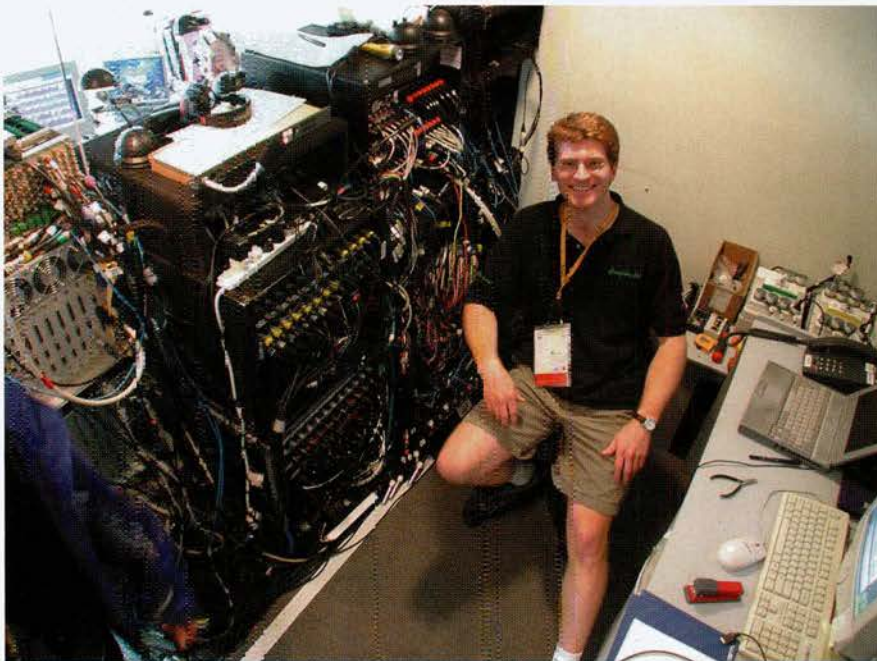
ZERO HOUR

Connections sat in on a live rehearsal of the Opening, two days prior. It ran very smoothly, and despite being in the worst seats in the house all vocals and announcements were both intelligible and loud enough. Helicopters circling created ambient noise, and a slight to moderate wind blew the

Audio Technica's AT895 Adaptive-array microphone system has a dsp control pack, and is said to offer the best off axis rejection of any mic. Colin Stevenson says they were used with different polar patterns, from the catwalk, to produce extremely long sound pickup of marching bands and audience reaction.



Opening Ceremony



Tony Szabo, Australia abroad, here to assist. Tony is a senior systems engineer with Jason Sound, Canada's leading audio co. More recently he lives in London. Note the sidecutters, obviously Tony is ready to strip, solder and terminate without notice.

frequencies about.

Bruce squawked big time about the helicopters. John Simpson generated a list of sensitive moments and sent it to the assistant director, who kept the helicopters out during these parts.

The live sound component of the show was the greatest challenge, I say that with respect to broadcast, lighting, staging and the actual talent on hand. Getting so many sources, spread around four acres, delivered to each of 110,000 seats at appropriate gain and with intelligibility is a task few could achieve.

Bruce Jackson pays tribute to Norwest

Productions.

"I'm very fussy", he says. "I don't often work with audio companies other than Clair Brothers. Chris Kennedy has a really good team. I wouldn't have any trouble hiring many of them internationally".

Bruce's background should be known by most readers, he is probably the greatest live sound designer in the world today, although he would shrink from the description. Australian born, he was long serving designer and engineer for Elvis, Springsteen and currently Streisand and is based in LA. He is the 'J' in Jands, which stands for Jackson and Storey.

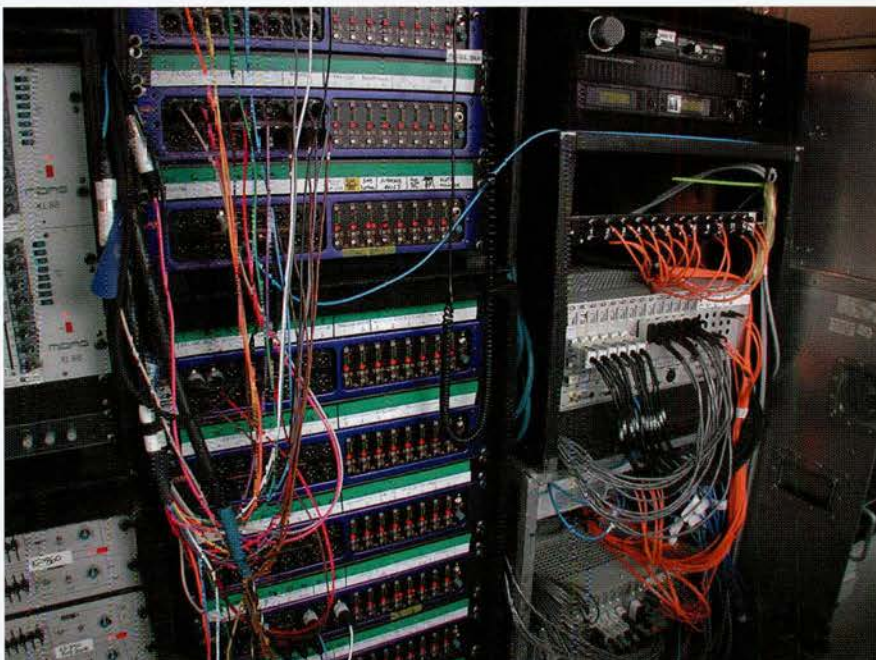
The live telecast of the opening appeared seamless in audio terms. We were impressed at the smooth levels, response and reach of the system.

Colin Stevenson has worked in Television Audio since 1958, and with Event TV Producer Peter Faiman since 1964. He now runs Production Audio Services with son Graeme and wife Margaret in Melbourne. Amongst other lines they distribute EAW in Australia.

Colin and Bruce are unified on the need for the right people, to communicate effectively and work together to produce a result. While the layers of bureaucracy attached to the Olympics could be bewildering, "you just had to find a worm hole and get through" says Colin.

They both stressed, at different times, that we emphasise the co-operation between their departments, which obviously contributed to the enormous success of this show. •

Klooz fibre optic audio mainframe



Honourable mention dept:

There's no way Connections can credit all the crew or all the departments who worked on the Opening Ceremony. The program credits extend six pages!

We do note the following, and apologise to anyone miffed at missing out:-

- Communications Contractor: PA People
- Fireworks: Foti International
- Staging: Edwin Shirley Staging Australia
- Technical Director: Morris Lyda
- Assistant to TD: Joanna Lloyd
- Operations Director: Malcolm White
- Technical Manager: Michael Auckland
- Art Dept Supervisor: Brian Edmonds
- Senior stage manager: Anneke Harrison

Thanks to those who helped with our coverage!



Western Australia

ARTIST	PRODUCER	ENGINEER	SESSION
Poons Head Rob & Sam +61 8 9339 4791	Audio/Production/Mastering		
Penelope	Rob Grant	Rob Grant (E)	Album Mixing
Leanne Chinnery	Rob Grant/Leanne Chinnery	Rob Grant (E)	Album Mastering
Salem	Alan Dawson	Rob Grant (E)	Mastering
Trick	Rob Grant	Rob Grant (E)	Single
Revolver Vic Manfrin +61 8 9272 7505	32 Track Automated Analogue and Digital		
The Sleepy Jackson	The Sleepy Jackson/Ben Glatzer	Ben Glatzer	Mixing
Nathan Gaunt	Nathan Gaunt/ Ben Glatzer	Ben Glatzer	Mixing
Greenroom	Greenroom/ Ben Glatzer	Ben Glatzer	Tracking
Klipspringer	Klipspringer/Laurie Sinagra	Laurie Sinagra	Tracking
Satellite Recording Studio Darren Halifax +61 8 9470 4003	Pro tools 24 bit x 64 Tracks		
Silver Hair	Tom Baddley	Darren Halifax	Demo
Tom Haran	Tom Haran	James Hewgill	Album
Prawns in the sun	Prawns in the Sun	Darren Halifax	Demo
Hockey Roos	Bob Hurst	Darren Halifax	Song for Olym pic Album
Sonic Lab Mark Whitehouse +61 8 9375 3902	Sonic Solutions Mastering Facility		
"De Sorell"	Craig Pinkney	Mark Whitehouse	CD Single Mastering
Mercedes College	M Whitehouse/C Blackburn	M Whitehouse	CD Recording + Mastering
Woodvale S.H.S	L Collins/ M Whitehouse	L Collins/ M Whitehouse	CD Rec + Mast
Keep Australia Beautiful Council	Steve Ramm	Steve Ramm	Awards Presentation Night
Witzend Alan Dawson +61 8 9336 1888	16 Track Analogue + 8 Track Hard Disk		
Salem	Alan Dawson	Alan Dawson (E)	Album
Jessica Kenny	Jessica Kenny/ Alan Dawson	Alan Dawson (E)	Album
John Young	John Young	Alan Dawson (E)	Demo
Bayou Brothers	Richard Woollett	Alan Dawson (E)	Pre Production

Post for Film/TV

Hullabaloo +61 2 9906 2933	2 Pro Tools Suites		
Roy & HG's Olympic Update	Jamie Rigg	Glenn Heaton	Television Themes
The Great chase	TCN 9	Glenn Heaton	TV Series/Audio Post
E! News	Imagination Entertainment	Dan Bowers	Audio Post
Various	Dan Bowers/Glenn Heaton/Geoff McGarley		Video/TVC's/TV Series
Trackdown Digital Mike Duffy +61 2 9550 6890	64 Track Digital (Pro Tools)		
Flipper 2	Y Gross/EM TV	D Candusso/T Lista/S Ryan	Dialog Rec/music edit/Foley/Mix
Tabaluga 2	Y Gross/EM TV	/T Lista (E)/S Ryan (E)	Dialog Rec/music edit/Foley/Mix
Old Tom	Y Gross/EM TV	/T Lista (E)/S Ryan (E)	Dialog Recording
Dot	Y Gross/EM TV	D Candusso (E)/T Lista (E)/S Ryan (E)	Dialog Rec/music edit/Foley/Mix
Metropolis Audio Sally Rodrigues +61 3 9696 2111	MFX 3+ Fairlight Digital Workstations		
La Spagnola	Anna Maria Monticelli	Acam Rhodes (E)/Cezary (P)	Film Score
Aust. Open Launch campaign	Nancarrow Marketing Communications	Simon Pavone	TVC
AFL G. Final Pre game Entertainment	K Hayes/G Mills	S Pavone TV Mix	E Rose FOH Mix



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Musiclab (07) 3252-2188
 Tek (07) 3239-4000

ARTIST: Pretty Violent Stain
SONG TITLE: Talk
PRODUCER: Bird & Bush
STUDIO: Monnow Valley studios, Wales, UK
ENGINEER: Bird & Bush
MIXING: Mark Freegard @ Materock Studios, London
MASTERING: Don Bartley @ Studios 301
ADDITIONAL NOTES: "Raising Atlantis" produced and recorded by Jeff Lovejoy @ Airlock Studios, Brisbane. Mixing also by Jeff Lovejoy @ Red Zed Studios, Brisbane. "Tastes like Lemon" recorded by Phil McKellar for JJJ.

ARTIST: The Mavis's
SONG TITLE: Coming home
PRODUCER: Kalju Tonama
STUDIO: Sing Sing, Melbourne
ENGINEER: Kalju Tonama Assisted by Chris Corby & Richard Stolz
MIXING AND ADDITIONAL PRODUCTION: Mark Saunders @ Loveshack, NY. Assisted by Michael Floyd & Matt Haick
MASTERING: Howie Weinberg @ Masterdisk

ARTIST: Kaylan
SONG TITLE: Shake It
PRODUCER: Steve Kipner, Jack Kugell & the Rockmelons
STUDIO: Rockmelon Music Studio
PROGRAMMING: Jack Kugell
MIXING: Earl Cohen @ Sound Track studio, NY
MASTERING: Kath Naunton @ DB Mastering, Sydney
REMixING: Studio 347, The Leigh Brothers and Chilli Hify.

ARTIST: Regurgitator
SONG TITLE: Crush The Losers
PRODUCER: Regurgitator
STUDIO: Home Studio
ENGINEER: Quan Yeomans
 Additional engineering by Jeff Lovejoy
MIXING: Chris Lord-Alge



USING NOISE GATES

(Part 2, Extract 30)

First, a technical description... A Noise Gate is an audio signal processing device that shuts off a signal when the level drops below a user adjustable threshold. When the signal is below this threshold the gate will close and the signal won't be heard; when it is above it the gate will open and let the signal pass through unaffected by the gate.

Not too technical, is it? You can see that a gate can be set up to discriminate between the audio signals you want, and unwanted sounds such as hiss, buzz, background noise and leakage from other instruments. All that is necessary is a level difference of a few dB for the gate to distinguish between wanted (louder) and unwanted (softer) sounds. By careful adjustment of the threshold control, you can let through what you want to hear and shut out what you don't.

Noise gates are very useful for controlling drums in live sound. For example, inserting a gate on each drum microphone means that when each drum is not actually being played, no sound will come out of that drum microphone.

On Kick drum, you can set the gate to open (turn on) the instant the beater hits the skin, and to close (turn off) a few milliseconds later. No ringing or 'boing', just a solid thud. The same goes for the Snare, and gates are just great for those toms that hardly ever seem to get hit, but just sit there feeding back. You can't pull down their level in case the drummer hits them, and drastic EQ can suck out all their punch.

With a set of gates, you have the freedom to use the desk EQ to give the drums the sound you want, rather than the sound you have to put up with to stop them feeding back.

Gate Features



Most gates have some or all of the following features:
Attack

This controls how fast the gate opens

when the signal reaches the threshold. On many gates it is an automatic function, varying between fast and very fast depending on the program material.

Release

This controls how fast the gate swings back closed after the signal has passed through. It is usually user variable from fast (a few milliseconds) to slow (a few seconds).

Depth (or Range or Attenuation)

This determines how much signal and/or noise is let through by the gate when it is in the closed position. There are times when you don't want the gate to be totally shut, but left slightly ajar. Vocals, for example, can sound very choppy if they suddenly go from completely off to on to completely off to on ... and so on.

Setting this control so there is less of a jump when the vocals rum on gives a smoother, more natural sound.

Threshold

This control varies the level that the signal has to reach before the gate opens and lets the signal through. When the signal drops back below the threshold the gate then closes. How fast it closes depends on your Release setting.

Key Input

You'll find this on a lot of gates, so here's what it is. When you plug a signal into the Key Input of a gate, the gate is no longer controlled by the signal plugged into the normal IN socket, but by the signal you have plugged into the Key Input. In other words, you can control one signal with another. Controlling the Bass guitar with the Kick drum signal, for a funky sound, is a popular application, but there are plenty of others.

For example, if the brass section of a band is a bit ragged, you could assign them all to a subgroup, gate it, and key that gate with a line from the lead brass player's channel. Now when he or she plays, they all play!

If you have access to a signal generator you could run a 40 Hz signal into a gate and key it with the Kick drum signal for a really fat sound that no amount of EQ boost could give you. You could also try the same thing with a white noise generator keyed by the Snare drum (or pink noise for a deeper sound).

Using Key inputs can be fun. Just be careful you don't get so involved that the mix falls apart while you work on them!

Tunable filters

Some gates have tunable Low Pass and High Pass filters, to make the gate not just level sensitive but 'frequency sensitive'. The Drawmer company pioneered this concept with their DS 201 Dual Gate, and now a lot of



gates feature it. By using this method you can tune the gate to be 'deaf to certain frequencies.

For example, on a drum kit, the gate on the Snare drum microphone can often be falsely triggered by the sound of the Hi Hats, which are right next door and can be very loud. On the DS 201 you can adjust the two filters so that the gate rejects the high frequency sound of the Hi Hats and only opens with the lower frequencies present in the Snare drum. If you have a gate on the Hi Hat cymbals you can tune it to do the opposite.



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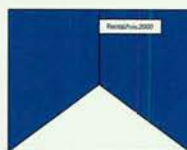
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