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- Epson EB-450Wi Interactive*
- Short Throw Projector*
- Avolites Tiger Touch Console*
- Jands SLX-100 'Hoist in a Box'*

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NEWS: GEARHOUSE RESPOND TO APARTHEID ALLEGATIONS, BIG COLLABORATIONS IN THE AUDIO BIZ, LATEST ON THE TCP DEBACLE AND PLENTY MORE PEOPLE, PLACES AND THINGS.

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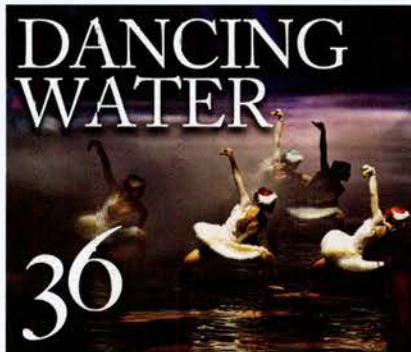
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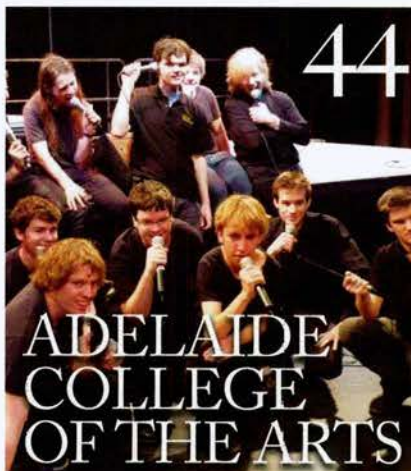
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Mail: Locked Bag 30, Epping NSW 1710 Australia.
Call: 1-800-635 514
EMAIL: juliusmedia@me.com
Web www.juliusmedia.com

Publisher, Managing Editor: Julius Grafton
Editor: Andy Mackenzie
Staff Writer: James Den-Ouden
EMAIL: juliusmedia@me.com
call +61 2 9638-5955

Sales: Steve James
EMAIL: cxmag@me.com
direct +61 2 9638 5955

Newsagent distributor: NDD
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CUE03

Entertainment Training Resource

This magazine contains much information which is a direct resource for anyone studying from the new Entertainment Training Package, named CUE03. From 2006 we will start to map certain articles direct against the relevant Unit of Competency within the package. This makes CX magazine a very cost effective resource for schools, colleges, and universities. Note that we offer a copyright release where articles in CX Magazine may be photocopied and distributed to students within an accredited course.

EDITORIAL

SMARTS

Check out the Expo story inside. Not mentioned but worth considering is the considerable risk where if the audio visual or the mechanicals stopped, the suppliers would have been fined a lot of dollars. So it adds to the wow factor. And now see the thing on Julius TV. Go to juliusmedia.com and find TV in CX land.

ENTECH

Warmed my heart to see the guys and girls at ETF launch ENTECH TV recently. They got 1200 views by lunchtime on day one, which makes it a must-see. It runs 15 minutes, and is renewed each month. Nice to see they have their mojo firmly in place ahead of the July tradeshow which runs alongside SMPTE in Sydney.

TCP

The more I think about how TCP sold their PLASMA digital signage system into clubs, the more I think it was a Ponzi scheme. Sell one, get paid four times what it costs, sell another one and then backpay a little lost revenue to the first club. Repeat until you run out of clubs. Then go broke. Looks dodgy to me.

STG

On ENTECH TV I was blown away by the 3D projections on the Melbourne buildings from Staging Connections. Nice to see some of their work in a segment of the industry I didn't associate them with. That's the power of media - CX, ENTECH TV - to learn things you didn't know. I love this business!

NEWSAGENTS

Welcome Fairfax as our new distributors. They have some enthusiasm, and we've added to our print run! Let us know if your local newsagent doesn't stock us. Call 1800 635 514.

TIME TO ACT

Latest news on wireless from the US is that all the 'white space' is gone, and a paltry amount of spectrum left for small users (ie all of us). It will happen here, and the best thing we, as an industry, can do is to be ready when it does.

Australia's only a small market, but the US is a big one. Hopefully their troubles will push the manufacturers into gearing up for the future, and we'll see the benefits here.

SPRING IS SPRUNG

The spring has well and truly taken hold - no more cursing and freezing in the early mornings, just lazing about on balmy spring afternoons.

And of course we're seeing the annual crop of outdoor events - the garden festivals, the school and church fetes, the fun runs and all the other great stuff people get up to the minute they get a whiff of summertime.

And any minute now we'll get into the leadup to Christmas and more festive outdoor business, followed by a very quick breather and onwards into festival season.

It's a great time of year to work in event production - sure you'll get rained on a bit, pick up a hint of sunburn and do plenty of sweating, but you'll be surrounded by people enjoying themselves, and you'll know how much you contribute to that.

Feels good, doesn't it?

AND FINALLY...

After all my recent rantings on the subject of noise levels at gigs, it's interesting to see that I'm not the only one - more than 75% of the 1200+ respondents to a Sydney Morning Herald survey answered yes to the question 'Are gigs too loud?' Perhaps a message to all those soundies who reckon it's what the punters want? That's all I'm saying.

Julius

Andy

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CX NEWS

DEVICES, PEOPLE AND CONCEPTS



CX partied hard to celebrate 20 years of deadlines with Back On The Block breaking our 'most musicians on the stage' record here at campus. Coverage inside. Pic by Bob King.

ENTECH ON TRACK AND ON TARGET FOR JULY

ENTECH returns to Sydney next July alongside SMPTE for the first time. Organisers have expanded the trade attractions to reconfirm the event as the leading convention for the industry.

"ENTECH TV launched this month, it's a powerful promotional device never used before," ENTECH manager John Garfi told CX. ETV is produced by Shoe String Theory in Mount Eliza, and is a high quality 15 minute show produced each month and streamed on the web.

After cancelling the previous ENTECH in the midst of the GFC, the organisers ETF have worked hard on the build up to the next show, held every two years. "We did the right thing by the industry", says ETF Director of Exhibitions, Robby Clark. "We were not prepared to run a smaller show, and we took a big hit. But we are here for the long haul. ENTECH has been running since 1994 and it has been the leading event by any measure ever since it started".

Newly-appointed ETF Managing Director Jodie Richmond will also bring years of hands-on industry experience. Richmond joined the industry as an event producer over 17 years ago and has had the opportunity to work alongside teams of all sizes on events, and as part of businesses that have produced Olympic



Newly-appointed Exhibitions and Trade Fairs Managing Director Jodie Richmond.

and Commonwealth Games ceremonies.

A strengthened educational program is planned, with significant business, safety and award wage seminars. "ENTECH and SMPTE together makes an unbeatable convention, the largest ever staged", says Garfi.

Social events are a crucial part of the mix at ENTECH, so this show will include a proper ENTECH After Dark Party held at a venue with live music. "We do things properly at ENTECH", adds Garfi.

continued on page 10 ➔

SUMMIT OF AUDIO VISUAL FIRMS

On Tuesday 20 July a summit will be held at ENTECH to discuss issues specific to installation, such as contracts, staffing, training and the industry in general. Attendance will be free. For more info, see www.entechintech.com from January.

JANDS PRODUCTION SERVICES AND JOHNSTON AUDIO COMPLETE MERGE

Melbourne based Johnston Audio has merged with Jands Production Services, to form a new entity known as JJP Audio. The combined firm will continue to operate from its Sydney and Melbourne bases, but offer a harmonised audio production service.

The merger creates the largest specialised live audio production firm in Australia, offering L-Acoustics, Clair Brothers, JBL and d&b audiotechnik line arrays along with all mainline digital audio consoles including the Midas XL8.

Johnston Audio boss Bruce Johnston said at presstime that there were no major plans other than to harmonise cultural differences and administration. He reported the firm is very busy this summer.

Jands Production Services was founded in 1970 and operates in the theatre, corporate and touring audio markets.

Johnston Audio Services commenced operations in 1985 and provides audio for tours, festivals and fixed installations. **CX**

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ENTECH...Continued from page 8

Entry to the halls at ENTECH and SMPTE is free, and ETF do not plan to introduce a charge for visiting the trade exhibits as some shows do. "We even put on free drinks", says Garfi, "with happy hour between 5 and 6 on day one and day two".

The show runs Tuesday 19, Wednesday 20 and Thursday 21 July 10am to 6pm daily at Sydney Exhibition and Convention Centre.

* See ENTECH TV at www.entechintech.com



CODAN BECOMES ROSS VIDEO

Codan Broadcast has become Ross Video Australia Pty, a wholly owned subsidiary of Ross Video Ltd, Iroquois Canada. Ross Video is a privately held Canadian company with operations around the world. Ross has a strong presence in the broadcast and production industries globally with key product lines such as Vision and Cross Over Series Production Switchers, openGear Terminal Equipment, OverDrive Automated Production Control, SoftMetal Video Servers and XPression Realtime 3D Character Generator and Motion Graphics System.

Ross Video now offers the key NK Series routing switcher product line for sale world-wide through a network of sales representatives and business partners. They plan to continue to operate the factory and design lab in Melbourne, Australia with all Codan Broadcast Melbourne staff making the transition to Ross. This team will continue to design, and manufacture the NK Series.

www.rossvideo.com



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QSC AND GREG MACKIE TO REDEFINE LIVE MIXING CONSOLES

QSC Audio Products have been on a long term mission to own the top spot in live and installed audio. They steadily and methodically introduced loudspeaker products over the last decade, then set about integrating their amplifiers and speakers with a powerful DSP control network.

Now they have partnered with M&W Pro Audio to create a series of digital audio mixing consoles. Greg Mackie and Peter Watts are, respectively the M and the W in the organisations' name.

After retiring from Mackie Designs (now Loud Technologies) in 2003 Greg still had a desire to create the kind of innovative and high-value products he is known for. So it only took a little charm and cajoling by his long-time friend and collaborator Peter Watts to convince him to come out of retirement in 2008 and develop the concepts for a line of digital mixing consoles. Peter is also an experienced pro-audio veteran who has spent 35 years designing analog and digital recording consoles including the first digitally controlled console, the Trident DiAn.

With concepts and preliminary designs developed, Greg and Peter began looking for a partner to bring these mixers to life.

"We needed a pro-audio partner with established sales, marketing and distribution. A partner with a solid reputation for quality and reliability – one that had the technical capabilities to develop advanced digital mixing consoles and the manufacturing know-how to produce the products." Greg Mackie goes on to explain, "I had a long time personal friendship with John and Barry Andrews and knew I could trust QSC to be exactly the right partner."

"We are delighted to be working with Greg and Peter. Their passion for creating fine audio products mirrors our own." Says Gerry Tschetter, QSC VP of Marketing "Our efforts to create value and performance on the 'B-Chain' (processing, power and loudspeaker) side have yielded a number of highly successful product lines. It's great fun to be working on the 'A-Chain' (mixing) side as well."

Design work on the products will be done by both M&W and QSC while manufacturing, distribution, sales, marketing and technical support will be handled entirely by QSC. The first products are expected to be announced during the first half of 2011.



BARCO ADDS 8,000 LUMENS PROJECTOR FOR RENTAL AND STAGING

Barco expands its RLM product line with the RLM-W8 projector. It is an 8,000 lumens, three-chip DLPTM projector with a WUXGA (1920x1200) resolution. In addition to offering low power consumption and decreased noise levels, it features geometry correction and edge blending capabilities. Barco's RLM-W8 is perfectly suited for the rental and staging markets, and uses an optional Barco

stacking frame.

Early 2010, Barco launched the RLM-W6 as its first Barco Elements three-chip DLPTM projector in a single-chip DLPTM price range. It offers a top-end image quality along with an environmentally conscious profile, by being ten times more silent and 33% less energy-consuming than competing products. As an extension of the RLM family, the RLM-W8 continues these themes, while adding more features that suit rental and staging environments.



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Pictured - SMPTE Governor John Maizels (Asia/Pacific Region) tests the new TV studio at Julius College. Photo: Bob King

TV STUDIO ALLOWS EXPANDED LIVE DIPLOMA

When Julius College (Sydney) started a full time live technical production course in 2005, video training was strapped on to meet employer needs. Since then the TV industry has undergone a revolution as the live imag business expanded exponentially. With DVD, BluRay and CD all in decline, the new era of streaming and download content has pushed demand. Now TV training is a full Diploma elective at Julius College, leading to entry into Charles Sturt University's Degree in TV Production.

A lot has changed. The one year Diploma of Live Production now carries a TV elective stream alongside audio and lighting. Students study all three in Semester One, and then move into an elective in Semester Two, enabling those in the TV stream to apply for entry to Year 2 of the Bachelor Degree at CSU. Julius College enrol 50 students each year, split between Live Technical Production and a Stage Business Diploma, with most graduates quickly finding employment in the live production industry.

STUDIO DAZE

In January this year the recording studio at college was retired. It always sat a little askance, according to Julius. "Originally we had a number of studio audio aligned units which we meshed with the live audio units. But each year the relevance of the studio recording units faded - and students professing desires to work in a studio gently discovered there were no jobs." Last year the final studio specific unit was retired, so the studio itself became redundant.

The studio helped to sell the college though, with many students comparing Julius college with other colleges that run

studio recording specific courses. It looked great - terrific ambience, classic valve gear alongside a new DM2000 and Pro Tools. Studio Engineer Rob Zimola even had a classic multitrack machine. It was a great 'shop window'. But it was time for a new approach. Zimola relocated, and the space invited a total rethink.

THE NEW WORLD

Enter James Den-Ouden and Les Bishop. James works for JuliusMedia four days a week and does a lot of freelance in audio and TV. Sometimes he works alongside Les, a TV and Vision Director, on Moshcam shoots. Together they built a small OB van last year. The first step was to see what equipment could be sourced by way of sponsorship, as the college does not buy equipment. "The college business was never designed to hold assets", says Julius, "to buy and keep replacing in the entertainment tech industry would need more than 500 students, and then there would never be the time for one on one training. The curve line between a viable tech college and what we do runs in two directions."

Four months later, the studio emerged and was commissioned on the night of the CX 20th Party at the college. Bands on the sound stage were shot with six cameras, switched live to tape. Audio was active split out of the FOH and stage monitor chains, and mixed in the studio. The results exceeded expectations, according to Julius.

THE BUILD

Den-Ouden cut through a wall into a utility corridor that had been used as a store. He recessed two floor to ceiling

equipment racks, and there was space in the corridor to easily wire and access all equipment, as well as allowing the equipment to cool. Then he built a bench which sweeps across the corner of the room. At one end of the bench are the CCU and TD/autocue ops positions. RCP units are set into the bench to allow for ergonomic CCU operation of 4 triax camera chains, complete with iris lever activated picture switching. Other gear in the rack includes D/A frames, Sony vision switcher frame, 16x16 video router and 4x DPS framestores to allow connection of non-synchronous sources. Playback and records are done on a combination of BetaSP, HDV, and Final Cut Pro via a Canopus A2D converter. Adjacent to the TD bench is the director position, with monitor wall including multiviews for replays, dedicated camera monitors, audio bridge and commas panel. VCG and VTR areas sit adjacent to this, again with multiview for monitoring. The audio desk is in the middle of the room, facing the studio glass into what was the studio recording space. 32 audio lines run into the room, plus 8 channels of VTRs with any sixteen sources accessible on the PreSonus digital console. Full multi-track recording is also supported.

The control room looks into the space where musicians once recorded through double sheets of glass. It is still a terrific recording space, but now most action in the studio will be shot to video while recorded. A small set has been built for forthcoming JuliusTV projects. But the real action is on the sound stage, now also accessible from the studio via dual doors.

continues over➤



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TV STUDIO...Continued from page 12 SOUND STAGE

Having been known as The Barn (due to ply timber raked roof lining) and also 'Theatre', the sound stage is now patched for vision into the studio. Extra drapes and acoustic work have improved the sound stage, which has a portable 8m x 4m stage capable of hosting a 14 piece band. This was tested at the CX Party, with 'Back on the Block' comprising four brass, four vocal, 2 guitar, bass drums, percussion and keys. Live audio systems are loaned, the best combination to date is point source speakers flown off the venue trusses, with floor mounted subwoofers along the front of the stage. Stage right has an offstage area large enough for monitors and ancillary equipment, leading to the studio door. Eighty seats along with FOH and Lighting positions are comfortable, or without seats the venue holds 150 people. Double doors at the entry allow an overflow into the green room beyond.

LIGHTS, CAMERA, ACTION

The sound and the camera shots are no good if the lighting doesn't suit the camera - and the live audience need the right atmosphere as well. The sound stage has three stage trusses, side bars and three trusses running down the length of the venue, meeting the dual needs of the Vision Director and the audience. Two 3.5HP air conditioners battle to keep things under control.

The Future! "It's more and more about live meets TV", says Julius. "We've always run our own events, simulating every possible kind of live show - and these are now caught on video as we go. Getting everything first time, switched and mixed live, is the most demanding production requirement there is."

*Preview JuliusTV at juliusmedia.com 

STAGE SURVIVES ONCE IN 48 YEAR SNOW DUMP

The very end of winter and the start of spring is the best time for snow in Australia. So Butlers Events and Staging discovered, at an MTV outdoor event.

"Shovelling 50cm of snow off the dome roof at 3am in minus 8 the night before the gig was a challenge, we even had to ring Captain Cairellie (Stephen Knight) at 3.30am to come down and turn his blinders on just to try and get some heat on the skins to help melt the ice threatening to cave the cantilever", said Tim Chapman.

"Anyway it was media heaven when

TCP DIRECTORS FACE LEGAL CLAIM OVER FAILED PLASMA SCHEME

It was supposed to be the idea to save Total Concept Group. The Sydney headquartered audiovisual systems integration firm had laboured most of its 25 years under a growing mountain of debt. So the directors came up with an idea that had immediate cash flow. Club venues would be offered a deal that had no downside.

Clubs would purchase a digital signage system made up of multiple plasma screens fed advertising and club promotions from a TCP designed server. TCP would facilitate advertising, and the scheme would pay for itself. Even make a profit.

But the insanely great idea quickly became greatly insane.

TCP was paid by a finance company each time they installed the system in a club. It appears they then didn't deliver all of what was promised. And the rivers of money didn't help, since the whole TCP group went down earlier this year owing a reported ten million dollars.

Now nineteen registered clubs in Queensland, NSW and the Australian Capital Territory have launched two related class actions claiming to have lost more than \$11 million as part of the scheme.

The clubs are claiming they were induced into signing rental/finance agreements with Rentworks Limited (now Allleasing Finance Australia Limited) and Capital Finance Australia Limited on the basis that the leasing cost for the equipment would be covered by advertising revenue.

The scheme promoters, Richard Skarzynski and Tony Musico from Total Concept Projects (Australia) Pty Ltd and Total Concept Media Pty Ltd, allegedly told the clubs that if advertising revenues failed to cover the equipment rental/

finance costs their companies, specifically TCP, would make up the short fall.

Despite this commitment, over the five year average finance term the clubs paid out an average of \$600,000 in lease or finance repayments to the rental companies with the repayment from the Broncos Leagues Club, the lead applicant in one of the class actions, totalling \$1.2 million.


The clubs will claim that, on average, the rental companies achieved an unconscionable return on the cost of their equipment from the rental agreements in the order of 400% - 500% over the five-year contracts as a result of the misrepresentations made by Mr Skarzynski and others as agents for the rental companies.

Van Moulis, litigation lawyer at Slater & Gordon who is acting for the clubs, said the clubs were now pursuing the promoters and the rental companies for:

- misleading and deceptive conduct under s.51A and 52 of the Trade Practices Act and the State Fair Trading Act equivalents; and
- unconscionable conduct in business transactions; specifically breach of s.51AC of the Trade Practices Act.

"These clubs, which work hard to contribute to their local communities, have been taken advantage of by slick salesman and rental contracts that demanded exorbitant repayments and penalties," Mr Moulis said.


"We are now working hard to recover the money the clubs paid to these businesses, release from future rental contractual obligations and penalty payments.

"Despite both TCP and TCM now being in liquidation we will be attempting to access their insurance policies which we understand provide up to \$10 million in insurance cover." 



Tim Chapman looking happy as Operator Please freeze.

they all woke up to see 80cm had fallen in 36 hrs and our 12m baby was still tight as a drum. Olin and the guys at TDC

made it look awesome on camera and MTV have already booked it in for next year". 

PRODUCT SPOTLIGHT

CLOCKAUDIO

UHF MULTI-CHANNEL RADIO MICROPHONE SYSTEM

Who is Clockaudio?

Clockaudio is a specialist manufacturer of professional microphone and DSP audio system solutions, and since its formation in 1994, has achieved a position of high regard within the professional audio, corporate and leisure AV installation sectors. Its reputation has been built on sound principles, whilst its dedication to quality and service has gained the respect of all. Clockaudio professional microphones and equipment can be found in daily use, for example in broadcasting, parliaments, courts, council chambers, places of worship, airports, banks, leisure centres, etc. and is the preferred choice for many key applications. Clockaudio products are exclusively distributed in Australia by Madison Technologies.



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The Low-Down!

Clockaudio's CW9000 features 192 PLL selectable channels per UHF band. The true diversity system includes tuned antennae and two independent receivers for optimal reception in poor conditions. Receivers are made of rugged metal and come in a compact 1/4RU size with easy controls, LCD display including battery status, and balanced XLR and unbalanced 1/2" jack outputs. Internal squelch and mute are provided to minimise noise.

The CW9000 is available in handheld, beltpack, wireless desktop or combination versions to accommodate a diverse range of applications.

For more info

For more information on the Clockaudio range contact Madison directly on **1800 00 77 80** or email clockaudio@madisontech.com.au

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Product
Beltpack & Handheld Transmitters

The Low-Down!

Two mobile options available to suit the CW9000 receiver include the CW9001T belt-pack transmitter and the CW9000T handheld transmitter. The beltpack transmitter with lavalier microphone (CL 6) tunes to 192 phase-locked loop (PLL) selectable frequencies displayed on an LCD along with battery status. The transmitter also includes audio-level control and a power switch. The unit can run for up to eight hours on two AA batteries.

The CW9000T handheld transmitter has the same features, and it can fit either a dynamic or a condenser head. It is rated to run for 10 hours on two AA batteries, and it uses an integrated dipole antenna.

UHF DESK BASED WIRELESS TRANSMITTERS

Stylish, Cable-Free Solution

Product
Desk Based Wireless Transmitters

The Low-Down!

A new series of desk/table top and floor-stand wireless systems has been added to Clockaudio's successful CW9000 UHF Multi-Channel Radio Microphone System. Using the CW9000 receivers, the latest additions plug into new stands to create a portable wireless gooseneck or boundary mic and they can be used in multiples, e.g. where the situation calls for six portable goosenecks on a boardroom table without hard wiring. The CW9004T base has a built in Tini Q XLR connector allowing you to mount five different microphone options. The CW9005T comes with a built in microphone, and the CW9006T with a XLR connector. A new rechargeable docking station (CU-2) is also now available.



Doug Parkinson and the band. Pic by Bob King.



Chrissy Moy and Sarina Jennings, Back on the Block. Pic by Bob King.

GREAT EXCUSE FOR A PARTY!

250 of you ate all our food and didn't drink anywhere near enough. The hardest 2% of our readership battled the tail end of winter and the wilderness that is Rydalmere to help make CX's 20th birthday into a civilized rage. No one fell over, not counting the young musician in the after band, Tzar Bombers. So named as the guitarist suddenly flings himself off the top of the kick drum, and breaks both guitar and Nexo PS10 monitor wedge grille. What the?

But on the sensible side of midnight we had Kere Buchanan's excellent concept band in honor of Quincy Jones and Michael Jackson – Back On The Block. Loaded with familiar session players like Bill Risby (keys) and Victor Rounds (bass), a four piece brass section make a great visual counterpoint to the four singers.

In the auditorium Grant Sassall did a smooth mix for Back On The Block, into a Tannoy system that Jimmy designed for the night. It had six powered coaxial boxes, flown in left, centre and right and repeated on a short time delay half way

down the room. Three Tannoy subs sat along the front of the stage. Given the peculiarities of our venue, it worked like a dream.

Up on top of the studio roof lead student Amy Noble was perched with the Jands Hog, driving a truckload of Chameleon lights and making sure we had constant light for the cameras.

Kere backed up again on drums for Doug Parkinson later on. DP is one of the gentlemen of showbiz, and you could feel the love. He hung with some punters and told us the Let It Be tour he interrupted to play for us had sold out. Literally, he played Canberra on Friday night and Newcastle on Sunday, with us in the middle. Most other musos would have blown us out, but he wanted to be there.

Around then the food ran out, so we tallied the new reality where CX readers prefer to eat rather than drink. By night's end we had spent 4 grand on food and 2 on drink, with a uteload of grog headed to the editorial dept. We are drinking our way through it now, so don't worry.

Out back we crash tested the new TV studio – Les Bishop came down to call the cameras and John Maizels ended up doing the broadcast mix of the two main bands. We should have some clips on YouTube by now – check out juliusmedia.com and go to TV. Our college students labored hard on cameras, CCU, lights and monitors – we were blown away, the footage is proof positive that the next generation have the right stuff.

Old mates and new, a blur of faces and some of you even sent gifts – which was unexpected and thankfully mostly wine or Champagne, which all ended up in the director's suite.

We've learned from previous parties at our campus, so we didn't load out that night or even the next day. That was a civilized Monday learning experience for our students and by Tuesday everything had gone back to where it came from. Thanks to Lots of Watts, Chameleon, Audio Products Group, Hills SVL, LSV Productions, Butlers, Rode and other lovely CX readers for everything.

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—Doug Parkinson turned down a big dollar gig to be here. Pic by Bob King.

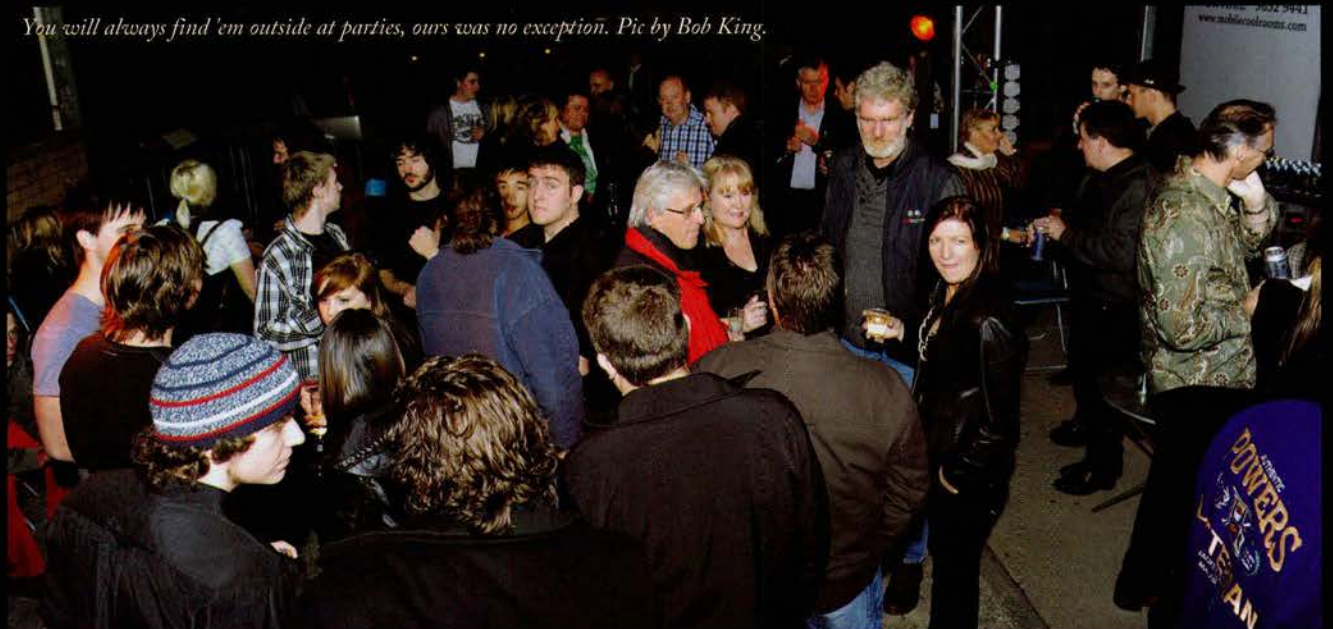
•Party people groovin' the night away. Pic by Bob King.



Presonus desks linked by Firewire deliver 32 tracks of Audio Pic by Bob King.



You will always find 'em outside at parties, ours was no exception. Pic by Bob King.

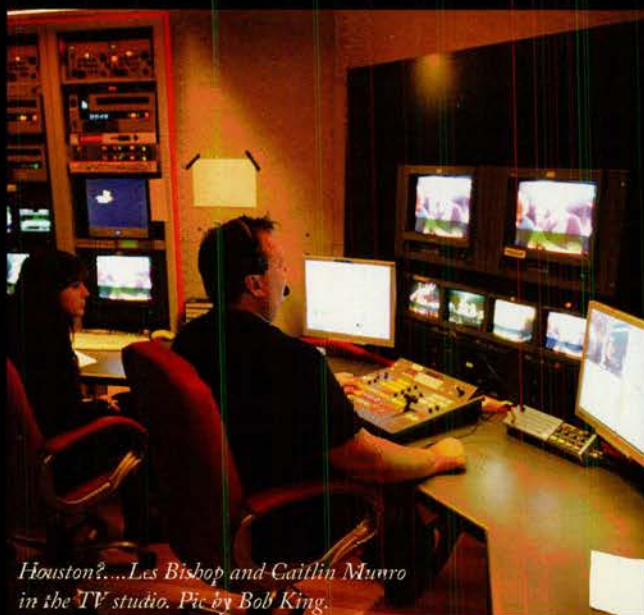




Grant Sassall at FOH. Pic by Bob King.



Something happening!



Houston?...Les Bishop and Caitlin Muuro in the TV studio. Pic by Bob King.



Camera operators hard at work. Pic by Bob King.



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NO CREW APARTHEID HERE, SAY GEARHOUSE SA

Gearhouse South Africa has hit out at suggestions it practices selective hiring that discriminates against blacks. CX reported accusations made by South African Roadies Association President Freddie Nyathela that un-named event firms associated with producing the ceremonies at the FIFA World Cup this year discriminated against his black crew.

"The accusation is ludicrous and it seems ridiculous in this day and age that we are still called on to refute such incendiary statements", said Robyn D'Alessandro from Gearhouse SA.

"Regarding the Closing Ceremony claim, SARA is not one of our regular suppliers and although our team comprised of 120 skilled technicians of all disciplines (of whom 71 were black), together with 77 black stagehands, SARA crew were not involved. We believe we compiled the most suitable technical team for this showcase event, with no racial bias whatsoever".

Gearhouse supplied this list of skilled crew on the Closing Ceremony:

Lighting Total – 41 (28 black),
Audio Total – 11 (4 black),
Power Total – 14 (4 black),
Rigging Total – 20 (10 black),
Structures Total – 8 (4 black)
Followspotters – 24 (20 black)
Stage hands = 77 (all black)

"Gearhouse is well known for having an extremely proactive approach to skills development and wherever possible our technicians are sent to work on international exchange programs to upskill themselves. We have a significant proportion of skilled personnel and managers of colour permanently employed within the operation and a further pool of freelancers from which we draw as necessary.

"Gearhouse was also instrumental in establishing the first fully accredited Learnership within the Technical Production Services Industry in 2006. This Learnership has since become the industry standard and is run annually by Gearhouse Training Centres. The 10 month course is free of charge to industry entrants of all ethnic groups and can accommodate 12 candidates in each centre. Learners rotate through teams in each discipline, receiving practical skills transfer and mentoring on site as well as formal training and assessment sessions.

"We employ some of these graduates ourselves and the rest are fed back into the industry. Of our 25 graduates last year, 16 were people of colour". CX

PHILIPS ENTERTAINMENT ROAD SHOW



Philips Entertainment is currently running a Road Show to demonstrate new Strand and Selecon lighting products. CX went along to see the new toys.

On show was a range of new products including the following:

- The SPX ellipsoidal zoomspot range, a fixture which uses compact filament 800W lamps to achieve higher output
- PL1 and PL3 LED PC spots – based on the Vari-Light LED engines with beam spread adjustable between 14 and 50 degrees
- Strand 200 Plus – two new models of console with up to 96 channels of control, including basic LED & moving head functionality
- A range of IGET dimming solutions



including rack mount units, a standalone 1200W model, and a batten with integrated dimmers

The Zenith Theatre, Chatswood was chosen for the NSW event, with similar venues chosen in other states. This is not surprising given the theatrical heritage of both the Strand and Selecon brands. The event was fairly casual, and ran from 10am through till 4pm. This meant that rather than a short event being overcrowded, people had the opportunity to spend some time with product specialists and have their questions answered.

We look forward to bringing some of the new gear through the CX test bunker soon, stay tuned! For more information, head to www.seleconlight.com CX

CHUGG LAUNCHES SEMINAL BOOK

Excerpt: Michael Chugg's Hey, You in the Black T-shirt

I am the king. I must be the king because I am sitting in the king's chair. Down at the other end of the banquet table is the queen's chair, but it's empty. The twenty or so remaining seats on either side are also vacant. Whole pigs, sides of beef, shoulders of lamb, chickens, ducks, turkeys, vegetables, fruit and bread lie waiting, begging to be eaten, but no one enters. Champagne, brandy, wine and more crowd the parts of the table not occupied by food.

Every night it's the same. I appear to be in a medieval tent, like something set up for a royal jousting carnival. It feels strange to be here alone, sad even, yet there's this amazing rush of wellbeing that comes and goes in my head. At its peak it feels like all I have to do is snap my fingers and anything I want – and I do mean anything – will be mine. When it subsides, futility and loneliness creep in.

This you might think, is perfect fodder for the psychiatrist's couch; the recurring nightmare of a man who wants for

nothing but who can't find happiness, a man too busy in the pursuit of money and power to appreciate the good things in life such as family or a few days lounging by the pool

You'd be wrong. This is no dream. This is backstage at a Fleetwood Mac concert in Australia in 1977, nine months after their album Rumours went ballistic worldwide and just a few days after they arrived in the country for a tour that took in Sydney, Melbourne, Brisbane, Perth and Auckland. The man sitting alone is me, Michael Chugg, thirty-year-old tour director for Australian rock promoter Paul Dainty and the person in charge of supplying the members of Fleetwood Mac with their hearts' desires for the duration of their stay.

Top of their list is a medieval marquee, complete with flags, bunting and carpets, to be erected backstage at every performance so that they – Stevie Nicks, Linsey Buckingham, John and Christine McVie and Mick Fleetwood – can indulge their newfound superstardom in a private and suitably excessive manner.

* CX has just received our copy. Michael Chugg is one of our favorite industry identities. CX

EAW SYDNEY LAUNCH

CX was lucky enough to score an invitation to Production Audio's Sydney launch of new EAW product, held at Trackdown Studios on Friday 27th August.

By Jimmy Den-Ouden

We arrived to be ushered into the courtyard around the back of the studio, where a trailer mounted wood fire pizza oven had been brought in for the occasion. The pizza was really good, but doing good food at a launch is easy. Doing a credible launch in a town you don't live in is another thing entirely. Food and beverage in hand, we were gently herded into the studio along with several audio industry heavyweights. I was the only one holding a beer, but it was 1pm and a light beer so that was okay.

Within the studio space, several systems had been painstakingly rigged and configured. On show was a stereo NTL720 system with NTS250 subs, as well as a QX cabinet. The main attraction of the day however was the dual hang of all new KF740 cabinets with SB2001 dual 21" subs parked leisurely beneath. Everything was nicely lit, so you could see what you were hearing. A central projection screen was used for some PowerPoint presentation, but this was kept mercifully quick.

The presentation done by Jeffrey Cox of EAW was casual, open and informative. He introduced the NTL720 series followed by the matching NTS250 subs configured in cardioid mode. Some CD



From Left to right: Dave Rameses (EAW Commercial), Thomas Mittelmann (Powersoft), Graeme Stevenson (Production Audio), Tim Milikan (Production Audio), Bernie Broderick (EAW), Jeffrey Cox (EAW), David Bunn (Production Audio). In front: Ben Clarke Production Audio.

track was played on the NTL system, followed by pink noise through only the subs. The pink noise demonstration included an invitation for audience members to walk around the studio and behind the subs so as to evaluate the effectiveness of their cardioid pattern. Next up was the demonstration of the QX cabinet, which was rigged with the wide dispersion angle in the vertical plane to demonstrate the pattern control of the cabinet. Again, more walk-around tests were invited. Finally it was time to hear the KF740 system. Some CD tracks were played, including a loud one to demonstrate output. Following this, an acoustic duo (Guitar & 2 vocals) was brought out to

illustrate the performance of the system under real world performance conditions.

Plenty of product info as well as educational video resources were on hand. Specialists from EAW were available to answer questions, and it was nice to see some of the science behind EAW speaker design explained during the course of the presentation. The demonstration was open, effective and came across as honest. We walked away impressed with what we'd heard, and look forward to taking a closer look at some of the product in upcoming issues. Hats off to the Production Audio & EAW folk for putting on a good show, especially straight off the back of 3 days at a tradeshow. **CX**

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NORWEST FIRST WITH LAKE LM26

Norwest Productions have been a long time user of Lake products and were in fact early adopters of the original Lake Contour, taking the first four units that arrived into Australia almost a decade ago. Fast forward to August 2010 and it's another first for Norwest, snapping up the first shipment of the all new Lake LM26.

The LM26 is a full-featured 2-in/6-out Digital Audio Loudspeaker processor in a compact 1RU frame. It offers seamless compatibility with the Lab.gruppen PLM Series as well as with all Dolby Lake Processors and earlier versions of the technology, including Lake Mesa Quad EQ and Lake Contour Pro 26.

Norwest have extensive large event experience with Lake processors, Dante audio networking and of course Lab.gruppen power amplifiers. Chris Kennedy of Norwest commented: "We are a long term, loyal user of Lab.gruppen which never let us down. It's great to see a new Lake processor on the market and even more pleasing that it's being built in Sweden by Lab.gruppen."

www.hillssvl.com.au



SADiE 6 ADDS PLUG-INS BUNDLE

Prism Sound, manufacturer of the SADiE product range of high-end DAWs, has announced a major addition to its new SADiE 6 release. All SADiE 6 systems will include a customised and expanded audio effects feature set powered by iZotope technology.

The iZotope bundle, customised for SADiE 6, will include Reverb, Chorus & Flanger, Analogue Delay, Phaser, Pitch-Shift, Parametric EQ, Single and Multi Band Compressor, and Simple Mastering (including EQ, reverb, exciter, widener, loudness maximize).

These nine VST plug-ins are in addition to the existing on-board EQs, dynamics, aux sends, M/S decoder width control, Graphic EQ and Mastering Limiter. All SADiE 6 systems also come with SADiE's own Hidither tools.

The SADiE 6 Sound Suite and Mastering Suite packages include Prism Sound's Super Noise Shaping dither tools.

For further information contact CDA Professional Audio by email:

sales@cda-proaudio.com



ARX RELEASES NEW PC-PRE



ARX announces the release of the new "PC-pre2" two channel microphone preamplifier. It can be mounted into a standard P.C tower disk drive slot or alternatively used as a stand alone unit.

The new "PC-pre2" has been designed for applications including hard disk

recording, data acquisition, loudspeaker testing measurement, sound system testing & EQing and law enforcement interview recording.

It's completed with +48V DC phantom power capability.

www.arx.com.au



SWITCHCRAFT DEBUT STUDIO PATCH

These new audio patchbays are built by hand in the USA. They utilize Switchcraft's EZ Norm technology, allowing signal flow to be changed from the front of the patchbay using a standard screwdriver.

Now, every StudioPatch Series patchbay comes with easy access programmable grounds, making it possible to custom configure the ground

setting of each channel to either vertically strapped or isolated.

Two versions terminated to DB25 connectors, wired to the TASCAM DTRS pinout allow for direct connection to today's most popular audio interfaces, creating greater flexibility in your studio.

www.clarke.com.au



TERRITORY INNOVATION WINS ENGINEERING AWARD

A Missy Higgins concert sowed the seed for one of the Territory's most successful innovations, a Framelock crowd control barrier, honoured in recent Engineering Awards in Darwin.

Tour organisers of the 2006 Missy Higgins concert in Darwin stipulated industry standard barriers must be used at the concert. However, none were available in Darwin and the cost of shipping them from interstate was prohibitive.

Never one to shy from a challenge, Colin West of Framelock Structures/

Eventquip developed and manufactured the prototype of the Framelock Crowd Control Barrier.

This saved concert organisers thousands of dollars, meant industry standard barriers were available in the Northern Territory for the first time and led to Framelock Structures Pty Ltd becoming Australia's leading crowd control barrier manufacturer.

The barriers have since been used all over Australia, and are now available in all states to keep adoring fans at bay.

"I get calls from people who have heard about the barriers who can't believe Australia's only manufacturer of crowd control barriers is based in Darwin," says Colin, who is now getting calls from as far afield as America and the UK.

www.tes.com.au



MASSIVE AUDIO VISUAL PUSHES BOUNDARIES

2 million watts of Australian invention rocks Shanghai 10,000 times

World Expo comes around every four years and gives nations the chance to show off to the world. The first one was in 1851 - the Great Exhibition of Industries of All Nations was held in London. The expo entices tourism and trade.

This year in Shanghai, Australia built a pavilion which was ranked around fifth most popular from more than 100 others. At presstime over six million people had gone through, well ahead of estimates.

Governments treat the World Expo very seriously, and Australia was successful at previous expos. This one appears to have set a new benchmark.

"It came about as a sketch on the back of a napkin by Pete Ford from Think!OTS", says Paul van der Ent, the Wizard behind Wizard Projects. His firm of 20 people turns over ten million dollars a year doing audio visual projects that push technology. This one has re-written the book.

Wizard

Projects MD was the Executive Technical Director for everything revolving around displays as well as some building services. "It was the seventh expo for me", Paul van der Ent told CX.

For a list of the participants in the project, see the side box.

COME INSIDE

Visitors enter the pavilion building and become immersed in the culture and diversity of the country. How the various national pavilions do this is a mash of methods, including live shows, but these days audio visual is a massive tool.

Australia's pavilion covers 4,500 square metres and the internal pavilion contains 7,800 square metres of exhibition. It was designed to accommodate 5,000 people at one time.

In the middle of the pavilion is the main event, a theatre that has accommodated 10,000 shows over seven months including



AUSTRALIA
澳大利亚



3 segments with centrepiece.

commissioning. Each day 48 shows run over 13 operational hours for around 45,000 visitors per day. That's serious traffic.

Looking a little like Ayers Rock, the pavilion structure is clad in Corten material, a form of steel sheeting that is allowed to rust slightly, so it looks earthy.

The entire building was designed and built for Expo, at peak construction 700 Chinese and 70 Australians were on site. It will be pulled down by the end of this year with almost everything inside shipped back to Australia.

You walk in and up what is called Act 1 – Journey, the introductory ramp. You pass through zones – the first of these is called Bedrock. It consists of

indigenous art by Maningrida including Aboriginal mimi poles of different sizes. Some have speakers inside, some with illumination. Twelve audio tracks play out a soundscape in this area.

Next is the 'Nation Scene' covering off 222 years of history. It contains characterised models, with information in Chinese and English. On the ceiling is the Harbour bridge and Ayers Rock - all hung upside down because we are from down under.

"This was a most intricate exhibit, and hard to light for Phil, because he had to hide all lights in the exhibit. It has 24 tracks of audio", Paul said.

Third up is 'Sisters', mini documentaries all about women in

Australia -through the Department of Foreign Affairs and Trade-commissioned the Pavilion.

A tender for design was awarded to Think!OTS from Melbourne.

In this first phase, working with Wizard, they came up with the winning proposal and a concept of what the building would look like was delivered with a lot of help from Wood Marsh architects.

Preliminary engineering was done by Connell Wagner engineers, and the stage engineering was done by HME.

This whole concept was then put to a building tender.

Bovis Lend Lease Projects Shanghai pitched and won the tender to build, and then in turn contracted and partnered with Think who contracted Wizard and HME.

Think!OTS then appointed Phil Lethlean for lighting design, and Brian Laurence as audio producer along with composers and engineers. Tony Russo from Technical Audio Group implemented the design of the audio system that Wizard created.

Think director Andrew Dibble directed the video content which was all shot on Red 4k cameras (4000 x 2000 pixels).

both Australia and China. It is the first of the video projections – a 4 projector edge blend on a vertically curved surface. Again all this had to fit into a tight space.

"The whole building is made up of curves, there is not a straight wall. You have to work in all these planes!"

Moving along the tunnel, the 'Land' exhibit with its Wave Rock structure

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- ✓ Design sophisticated integral rigging system with 10:1 safety factor that allows enclosures to be joined together by one person using only one hand.
- ✓ Design accessory fly bar that also doubles as a ground stack base and include M10 rigging points on enclosure top and bottom.
- ✓ Incorporate dual-angle, integral pole mounts allowing the bottom enclosure to be aimed 0° or -15°
- ✓ Create Guinness Focusing settings for use with the UX8800 digital processor to further enhance performance.
- ✓ Bring the whole package in at under 55 lbs.



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resembling land, ocean and cities with densities. These are backlit acrylic, with curved stainless steel punched to take a 25mm pixel LED screen that has been pulled apart.

The last tunnel area is called 'People' – with graphic portraits and explanations for 12 famous Australians, with a story to read.

Now you are headed to the holding areas for the main show. This pre show area has video chandeliers with 135 synchronized 22" LCD screens. Content to these is fed by tourism commission material, and explanation of what they've seen and what will happen next.

THE MAIN EVENT – ACT 2 - DISCOVER

Automatic doors open and up to 1000 people file into a raked theatre, in the round.

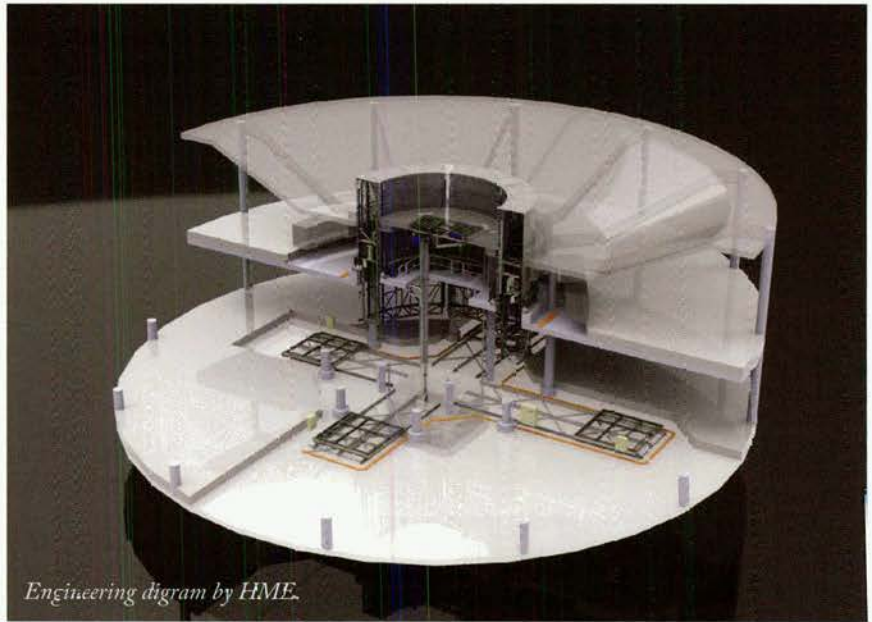
A static display is lit in the middle, surrounded by a glossy rotating circular floor. Up high are hundreds of 'Happy Tubes' - a LED tube each with 24 pixels.

The doors close, and the show begins. The audience don't know what to expect. Suddenly three curved segments rise and circle around the fixed element in the middle. Each segment rises five metres, and becomes a curved projection screen approximately five metres wide.

Incredibly the video is tracking the segments as they revolve at a fast pace!

With equal distance between each segment, you can see through to the centre element, and also the reverse side of opposite elements. The back of each has a reverse curved LED screen on board.

A story is being projected onto the



Engineering diagram by HME.

screens, moving along with them. The audio is also moving along! 1,000 people are slack jawed. It is a fully immersive event, driven by audio visual technology and smart engineering.

This happens four times each hour, all day and half the night. Attendants make sure the guests enter and leave, and push a touchscreen. AMX takes over and a massive pile of technology performs exactly as advertised.

Another three elements rise, so the whole revolve is a circular screen. When they descend again, a different centre element is in place. These are lit with everything in a lighting director's contemporary arsenal.

The video content is brilliant, and as Paul says, 'content is king'. A story is told, the audience is engaged, and when

it is all over they spill out the lower exits as another thousand wait to come in the top doors.

Four different centre elements are revealed, each of these motors into position along an eleven metre railway underneath the rotating video screen elements. They come in from four sides, and retreat to their side when done.

The whole machine weighs over thirty tonnes, and was built in Sydney and shipped to Shanghai, then assembled into the building structure.

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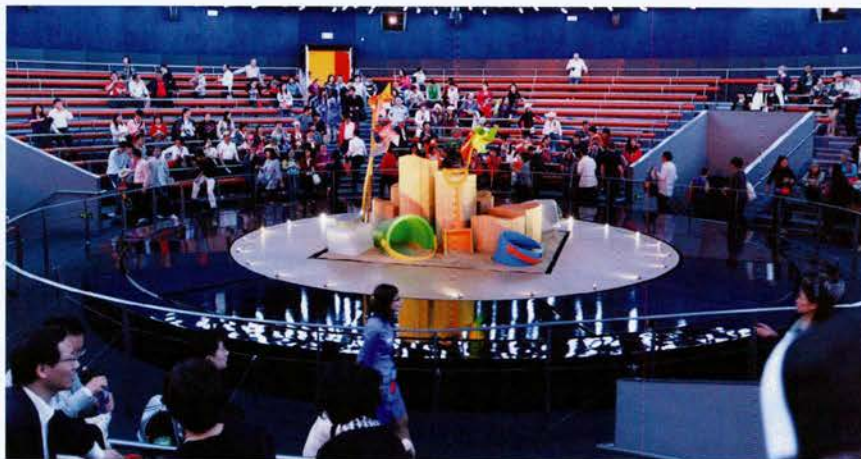
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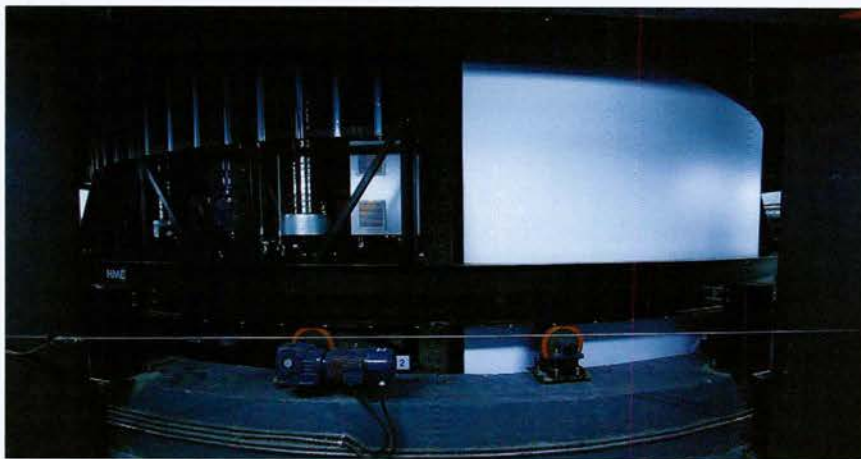
Digital Partyline Intercom



Professional Mobile Radios



Walk in and what will happen?



Motors drive the machine.



3 segments and another centrepiece.

mission statement for a new passenger jet that will sell several thousand copies, not usually a one-off audio visual display. The jet takes a decade to deliver. This one happened a lot quicker.

"It's showbiz at the end of the day", says Paul. Entertainment people can innovate something like this.

Glen Harris from HME in Sydney came up with the mechanicals and the control. The vertical aspects are based on Gala Systems Spiralift devices. Two of each were built into each of the six elements. Mitsubishi Programmed

Logic Controls (PLC's) were built into each one. Tracks and rails for power and signals were built around the inside middle level.

Motors around the outside perimeter drive the circular display which clips along at one revolution per minute.

The video imagery on the outside face of the segments is projected from seven high res (1400 x 1050) Christie S+ 20k projectors located about 13 metres back in the venue. The images track the rotating machine, with telemetry from a wheel encoder and a height encoder supplying

data from the machine operating PLC's to the video system.

The 'now technology' of the Coolux Media Systems Pandoras Box is what makes the video tracking possible. As the three initial screen segments rotate, the imagery is sequenced across the seven projectors, which show in effect a seamless blend and mask the image wherever there is a gap between the segments.

When the second group of segments rise to fill in the whole circular screen, the image is adjusted as the segments raise and lower. It is mind bending stuff, generated and rendered from around half a million US dollars worth of Pandoras.

But wait ... on the reverse of three segments are 25 pixel pitch SMD (LED) screens, covering about 4.8 x 3.6 metres in surface area. These were custom built by Aoto in China. These are visible when the three segments are raised, because there is a gap between each segment that is filled in when all six segments are raised.

The imagery playing on the LED screens on back of the segments is generated from a custom made media server designed by Wizard that is on board the rotating lift segment. These take a wireless cue from Coolux.

The hundreds of LED Happy Tubes are all running video program as well, but in this case the Pandora plays the video, which is output in Artnet, and then Pathport decodes into DMX for the tubes. Phew!

Try this: there are 2,048 conventional lighting channels from the Vista – movers, LED's and Selecon conventionals.

Last and definitely not least: six QSC line arrays of four elements each carry the audio – at one revolution per minute. So as an image passes from left to right, so does the audio.

4 subwoofers and 15 surround speakers are fed with 30,000 watts of audio from QSC amplifiers. An additional six QSC speakers are installed in the front of the stage as front fill.

"We can spin effects from top to bottom, and front to back. It is very complex audio", said Paul.

Each of the 24 tracks on the Fostex is fed out to its own QSC Basis DSP. "I like Basis because it links the amps to the processor and I get full reporting – heat, load, everything".

CONTROLLING THE BEAST

This is the pointy end of audio visual, where a limited number of specialists like Wizard find exciting work in museums

ENGINEERING TRIVIA

According to HME, if you turn the machine on it's end and roll it, the distance covered would be over 9000km - further than it travelled from Sydney to Shanghai.

The Centre lift can manage 4.5 tonnes and the screen segments weigh 2.5 tonnes each.

Because of the extreme workload, the Spiralifts reached Gala Corporation's recommended service life of 32,000 cycles in just 3 months. Normal life would satisfy a theatre across 10 years. HME scheduled replacement of the steel bands.

There is 300 amps of power on the slip rings, and the machine draws 280 amps at peak.

and top end applications, no two jobs alike.

Wizard utilised AMX control as the overlay system for this job, so that user interfaces such as the 'close doors' touch panels then start a sequence of show commands served out from AMX.

To start the show, the revolving machine must pass a zero point, and as

it rotates at one RPM there could be a delay up almost a minute between doors closing and show starting.

A massive number of lighting DMX channels are driven from a Jands Vista control system, the audio is contained on a Fostex 24 track hard disk playback device, and the Coolux Pandora servers and Mitsubishi PLC's driving the machine all need commands.

Paul van der Ent says there is a redundancy plan for every occasion, and if required, the Coolux and Mitsubishi systems can be directly addressed in the unlikely event something bad happens in network or user land.

One slightly unexpected aspect of the installation is the use of metal cable conduit, not plastic as we have in Australia. In this regard, the Chinese building standards are tougher than ours.

LIKE A THEME PARK

Once the audience leave the show, they filter through a cavernous area full of sponsor displays and information. This area has audio visual and interactive elements, and a creative element incorporating a flying display devised by the George P. Johnston company.

Overlooking this area are VIP



Paul Van der Ent

rooms, dining rooms and offices. A full commercial kitchen generates hundreds of VIP meals each day. This is where government and sponsors do business, winning support from stakeholders who have been rightly impressed by the brilliant creative execution showing the virtues of the country known as Australia!

The project is a credit to the creative, technical, construction, scenic, and indigenous teams who all worked to get this project completed. And of course the over 400 who are operating the pavilion on a daily basis. **CX**

Launching at the end of September 2010, ENTECH TV is an exciting new online TV series covering stories from the Live Entertainment and Audio Visual Industries. The organisers of the ENTECH INTECH trade show are pleased to bring you ENTECH TV!

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Put the ENTECH INTECH 2011 show dates in your diary – 19th – 21st July 2011



JERSEY BOYS

Looking clean and sounding tight is not simple

By JULIUS GRAFTON

Jersey Boys has moved to its second Australian city, the critical Sydney market where the producers hope it will do even better than its launch year in Melbourne. There the show was an outstanding success, because it is a tightly scripted musical with high production values and a top 40 score of classic tracks.

To see just how tightly produced the show is, CX visited the Sydney production at opening time.

The show had come out of Melbourne and taken a while to install.

"Shows like this are an installation these days", said the quietly spoken production manager or 'carpenter', David Worthy. He doesn't have a tool belt – he is in charge of commissioning the physical elements of the show.

At Sydney's Theatre Royal this meant having a concrete saw chop half a metre off the front of the stage. This was done with engineering direction and an obligation to recreate the front of the stage at the end of the season. Why? To get an extra row of seats into the 1133 seat venue. "That is worth \$600,000 across a year", he explains.

Theatre Royal is almost too small against the Lyric and Capitol Theatres in Sydney which both seat around 2,000. But Jersey Boys' producers have taken the risk as both those theatres were unavailable.

SIMPLE BUT NOT

"It is a simple looking show but it's quite complicated", Dave said by way of understatement. The new row of seating at the front sits over the back half of the orchestra pit. Jersey Boy's stage deck sits over the front half. They need the orchestra pit space for the front lift and trapdoors.

"It's like a pop up toaster", jokes Hugh Hamilton, the associate lighting designer. Trap doors hinge down, and the lift brings the four singers up to the stage floor. It is hydraulically operated.

Automation plays a big part here. "We would need eight or nine flymen if not for automation," says Dave. There are elements coming and going, and a massive stadium backdrop loaded with countless ETC Source 4 Pars. "They need 48 channels of dimmer and another power feed – all for a short segment", says Hugh.

To avoid hiring eight or nine flymen, the show tours 13 electric winches (supplied by Adelaide Festival Centre Engineering) that are bracketed above the grid. New temporary pulleys are bolted above, and the wire lines run down the theatre's fly tower to meet the scenery battens or trusses. It is assisting the rope counterweight system, and the winches pull in both directions with dual wires.

Lou Mannarin

CEO of L&M Sound & Light NY, Live Engineer for the New York Philharmonic Orchestra



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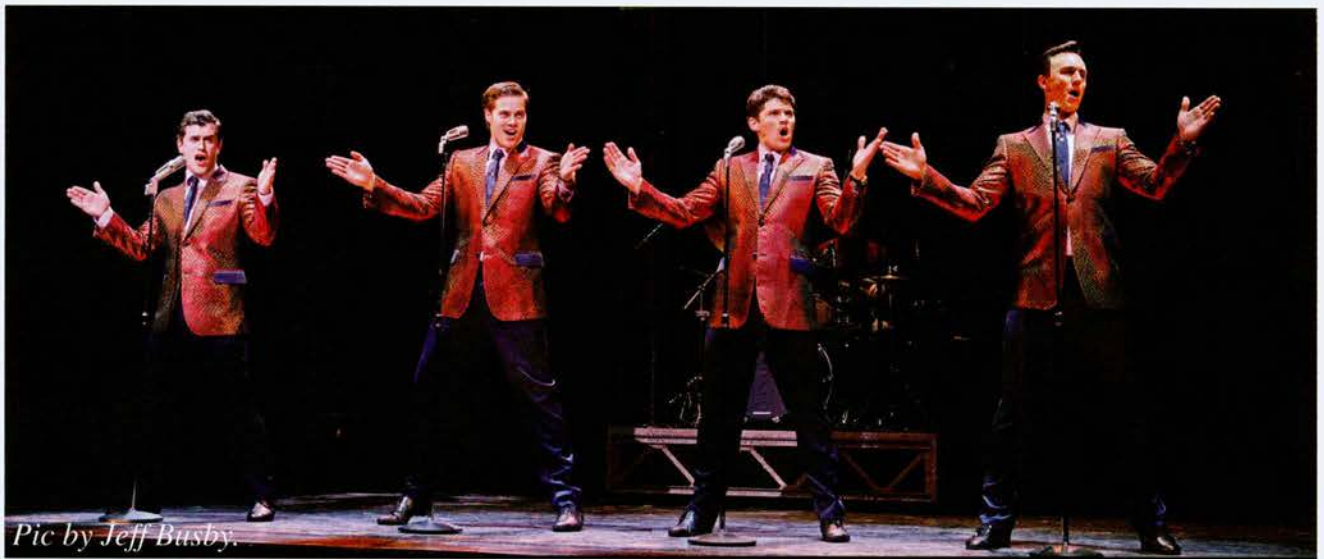
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Pic by Jeff Busby.

There is 13 tonnes of properties flown for the show, and since the flying system is double purchase, this makes 26 tonnes in the system.

Downstairs the floor hides more complexity with tracks for trucks, and two drum kit trolleys that can revolve almost 360 degrees.

SLOW PROGRESS

Getting into the theatre itself is laborious since the site can't accommodate semi trailers. "We had to unload at Botany, and bring things in on a smaller truck, in order of requirements", said David.

The concrete sawing of the curved forestage needed engineering plans, and must be restored when the season ends by recasting and pouring more concrete. "It was constrained by structural pillars as well", Dave says, showing CX the cut line from inside the stage lift.

A set bridge upstage was too high for the followspot positions in the theatre, so a truss was installed between the two lighting bridges. "This, like everything in the show here, was tight", Hugh says, "because we had to clear the audience sightlines from the back rows". Three followspots are installed up there, with colour scrollers on front. Noise from these was an issue.

They pulled out the proscenium. "When we walked in here for the pre inspections, I could see elements of what many productions had done here in the proscenium – all the way back to Phantom of the Opera", says Dave. Jersey has built a flatter, featureless facia that accommodates considerable audio – dual centre line arrays up high, and left / right fills with subwoofers.

"There's less wing space than we had in Melbourne. We had to modify floor modules. Four of the winches needed updated motors because of the extra



David Worthy.

weight in the double purchase system".

The production had cast on stage for three weeks before opening, with the creative team from the US flying down to adjust and tighten the production. Many of the scenes are very short, and the fastidious direction is part of the reason the show is such a world wide success.

When CX came calling, designer Howell Binkley had just left. He won a Tony Award for the lighting design.

LIVE!

"It's bright", says Hugh. "We have 500 amps a leg power feeds – at peak I think we are clocking up 330 amps per leg. Brighter than anything I've done before".

The Stadium effect with umpteen Source Pars is an example. "Each Par has a different donut, so there is a perception of depth. Then there are 40 Dataflash strobes with the reflectors blacked so you only see the light source – they look like flashbulbs."

There are two classic cameras that feed video to some of the three large LED screens. The largest screen weighs about a tonne. The other two are flown at an angle, necessitating diversion of some flylines.



Hugh Hamilton.

Inside the old fashioned camera cases are Sony broadcast cameras on triax with focus and zoom remote controlled. The imagery from these is converted down to black and white, which caused issues with processing time. "The Americans specified a particular converter which initially we couldn't get", says Hugh, "and the delay was noticeable".

Like many shows now, video is everything.

On this show the lighting is controlled from an ETC Obsession console, which sends MIDI to a second console – a Grand MA, used for the countless VariLite 2500 fixtures. The MIDI stream continues to a Watchout system that runs the video.

At the end of the show, the closing segment is triggered by SMPTE time code from the sound desk, so that the vision elements are in sync with the music.

Lights and video came from Bytcraft, while the show audio is supplied by System Sound in conjunction with PRG.

A nine piece band are hidden in a box backstage. It is actually a portable sound treated pair of rooms, in which several keyboard players, guitarists, brass players



Automation control.



Winches and diverted lines atop grid.



Someone cut the stage! Jersey floor sits on top.

and associated others produce all the material. The guys on stage are pretending, except for the drummer. The production owns an impressive array of guitars, and there is even an electric sitar, used for one little part of one number.

Probably most mind-bending for this writer was the grand piano. The strings are removed. Several speakers are strapped to the sound board. Piano played in the band room is transmitted to the pseudo grand piano, where the speakers reproduce it. Thus the onstage piano is emitting genuine piano sounds, which are also of course sent to the audio system. The actor is not actually playing the thing – she can bang away, but what we hear is coming from the box full of musicians backstage.

Some things in theatre are terrifically fastidious.
I recommend you see this show!



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TOO MUCH IS NEVER ENOUGH

Have the rivers of gold run out for big tours?

"I can count on the fingers of one hand the number of big shows where I have really enjoyed the sound."

By **DUNCAN FRY**

I read in ProSound News magazine from the US that gross ticket sales are down 17 percent for big tours in the Northern Hemisphere summer. It seems that now CD sales have fallen down the toilet, the touring 'river of gold' that was every artist's fallback money-making position has dried up.

Not surprising, really. As I mentioned last month, I rarely come away happy from going to a concert. I just don't like the sound that comes out of the over-driven line arrays that are the standard touring systems these days. Oppressive one note bass, no low mids, ear bleeding hi mids and aggravating highs. Have not heard one that makes me want to hear it again.

And the same old excuses trotted out; bad night, bad venue, bad mixing position, bad vibes man, unfamiliar band/system/mixing desk, or I'm being too fussy. Well for my \$150+ I feel I'm entitled to be as fussy as I want. And what I want is for it to sound as good as the CD I was playing in the car on the way to the concert, but louder and played live!

Why is it all the money and all the technology that has gone into today's system design and manufacture has not resulted in anything sounding any better?

I can count on the fingers of one hand the number of big shows where I have really enjoyed the sound, and sadly none of them are in this century! Led Zeppelin at Kooyong Tennis courts, with an early Jands system comprising two bathtub W bins a side, some Roys and some multicell horns, and pretty damn good sound for 1972. Queen at Festival Hall around Bohemian Rhapsody time. Don't remember what the system was but it was so clear and sounded so good it made me want to get into the live sound business. And the Police at Festival Hall in 1979/80 with a Jands discrete horn loaded rig flown in a wire cage each side of the stage. Really good sound that whipped the arse off the S4 system that



Fleetwood Mac had used in the same venue a few nights before.

What none of these concerts had, of course, was any form of digital processing.

I'm not convinced that digital signal processing, in the form of crossovers, processors and the like, sound any good WITH A BAND. They all sound crystal clear clean and sparkling with just a voice and an instrument running through them, but once you start to add in drums, bass, brass section, more guitars, backing vocals, then to my ears everything starts to get very gritty and harsh. I'm not a digital designer so I have no idea of the cause, but I do know what happens when I try to run too many programs on my computer at once!

If you like music, the reality is that there are lots more things to do as an alternative to going to a big concert. And in tough times, when dollars are scarce, people naturally become much more

selective in the shows they will pay to see.

For example. I see the Eagles are coming here again. Big deal. I like them but it's the same four or five guys (depending on who hasn't spat the dummy with the other members) playing the same songs in the same venues.

If you've seen an artist in the last couple of years you're much less likely to want to see them again. No matter how over the top the production is.

I also see in the media that the upcoming U2 tour will be 'in the round'. With a 40 metre high stage set that looks eerily like the Claw machine at the funfair that attempts to pick up a fluffy toy, then drops it just as you get towards the chute, swallowing your 2 bucks as it goes. Except that in this case it'll be more like 200 bucks.

The only reason bands do shows in the round is to sell the normally unsellable seats and make more money. There is no wasted area behind the stage, so

every seat in the arena can be sold. It's a profitable arrangement for promoter and band. As an audience experience it's shit.

They say ticket prices are up because production costs are up. Production costs are way up because artists, or possibly their production designers, have become so carried away with what they can do, regardless of cost, that now the tail is wagging the dog. The artist is now, in effect, the support act for a succession of dancers, videos, special effects, aerial artists and ginormous sets, in venues where distances from the actual stage are so great that you're lucky to see the artists, except in close-ups on the big video screens.

If that's how it's going to be I think I'd have a better experience watching a live DVD in front of a big screen TV with my trusty Beyer 770s squeezed on my head and a decent sub to add some grunt. In fact, for the price of the night at the show I could buy a rumble pack to wear for that thump in the guts feeling. I won't have to pay through the nose for a plastic cup of watered down beer, or approximately the same price for a bottle of water, because I'm not allowed to bring my own. Why not? For 'security reasons'. As weasel word phrases go, that ranks right up there with 'privacy laws', and

translates as...greed.

Any kind of refreshment is a major part of an already expensive night out. Add in the cost of parking or transport and a t-shirt and the cost easily doubles! Crikey we took Eskys full of beer and tape recorders into Led Zeppelin and The Rolling Stones in the 70s!

To digress for a moment, although I really enjoyed the AC/DC show recently, I drew the line at a souvenir t-shirt. I wanted one, but paying fifty bucks was way too much.

However I still ended up buying one, but not just then, because a couple of weeks later official AC/DC tour shirts were 15 bucks each at K-Mart. As well they should be. That gives the merchandisers well over 100% *** profit-surely that's a reasonable amount for anyone?

At the end of the day, when you get right down to it, all a good artist needs to do is perform. That's it. You don't need dancers, jugglers, high wire acts or dancing bears. Sing, play or do whatever you do that made you famous. Just don't do it too often, and don't assume that the audience will always be there, no matter how much you think you can charge them to get in. Because as they're now finding out in the US, they won't!



As luck would have it, a mate emailed me saying he had 2 spare seats for the U2 concert, and only \$200 each. Naturally I said yes, but now I'm not so sure...

****As a t-shirt screen printer myself, I'm well aware of what the raw materials cost, and in the quantities most tours get done, selling them at \$15 each they're still a nice little earner! At \$5C each they're a license to print money.*



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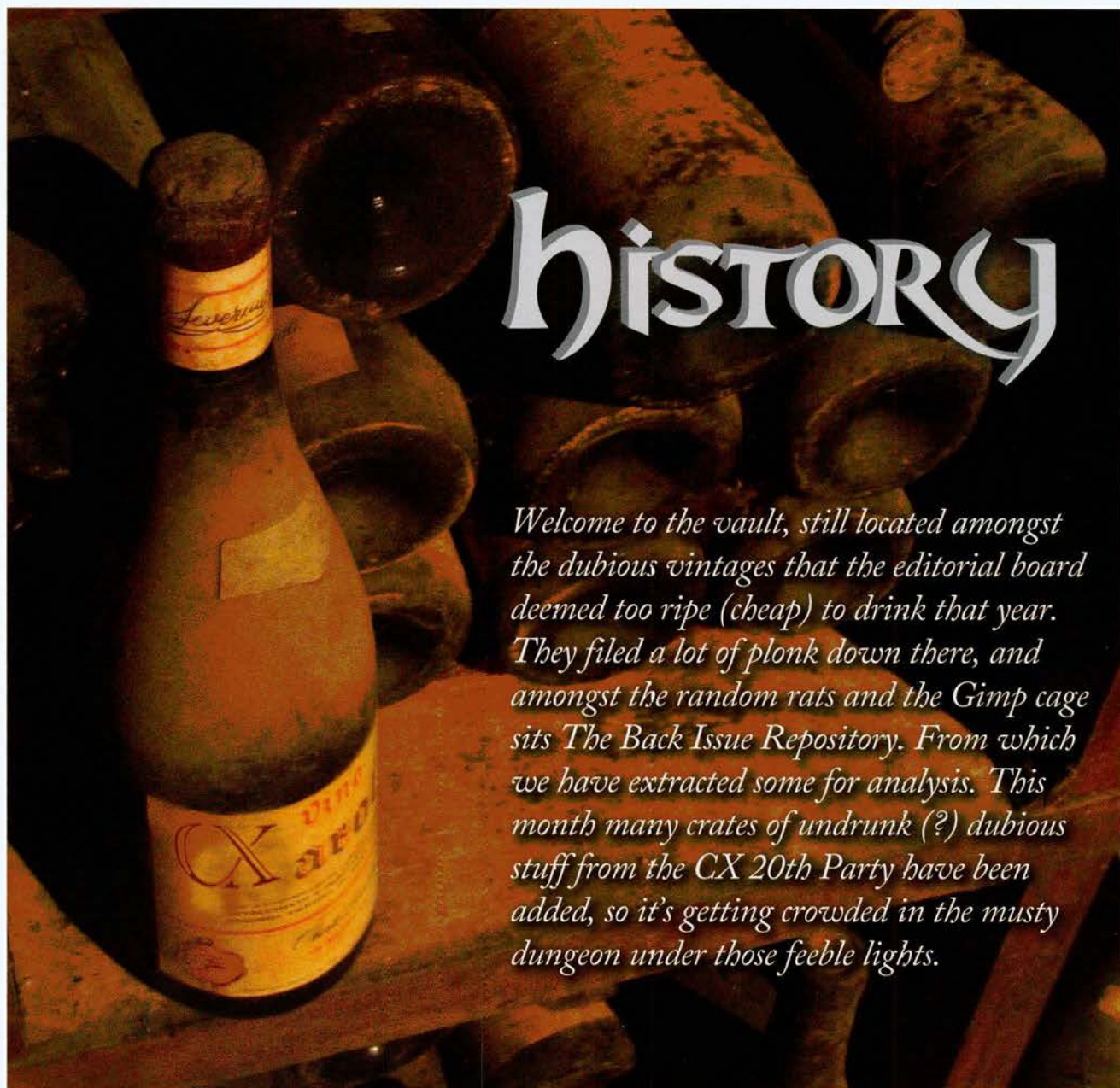


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NEUTRIK



history

Welcome to the vault, still located amongst the dubious vintages that the editorial board deemed too ripe (cheap) to drink that year. They filed a lot of plonk down there, and amongst the random rats and the Gimp cage sits The Back Issue Repository. From which we have extracted some for analysis. This month many crates of undrunk (?) dubious stuff from the CX 20th Party have been added, so it's getting crowded in the musty dungeon under those feeble lights.

15 YEARS AGO NOVEMBER 1995

A cover featuring one of Cat Strom's fav singers, some mincing ponce from Take That. Inside there is a note to subscribers apologising for a three week delay with the previous issue. We remember this well..... instead of our casual crew of eight school kids and working mums stuffing thousands of mags into bags, we contracted a mailing house. Bad move.

AVID ON AUSSIE FAST TRACK

That was a headline, and it was a ripe time for AVID for a while there. Not any more. 'Competition Hobbled' was another one, talking about how the then new Brisbane Convention Centre had 'locked out' AV firms in favour of its

own AV department. No news in that anymore, since any venue has the right to open an AV department, just like they can install a kitchen and hire a chef.

PALA

Has it been 15 years? We bitched about crap carpet and the organisers charging \$5 for a show guide. Seems like some trade show organisers are just there for the money, and we firmly put the Singapore PALA show into that camp. They wrote us a letter, of course. But it was the 40 minute wait for taxis that did it for us, and we haven't been back since.

AES

Wow 1995 was the zenith of our trade show travelling – a different era when we actually needed to go to so many trade shows. We racked up thousands of miles (business class of course) and AES

in New York was – and remains – a favourite of ours. 1995 flagged the end of ADAT and Lone Wolf's Media Link – touted as crucial as mother's milk just a year earlier.

WHAT WE PAID

- Soundtracs Maxi 24 console \$5000.
- EV SX 100 speaker box \$999.
- Rosco Hazemaker \$3,400.

10 YEARS AGO NOVEMBER 2000

'Here comes a line array summer', screamed our cover. Remember it was the birth of the era of the line array. But the Australian dollar was causing prices to rise as it fell to a paltry 0.60c. But wait – we've seen that happen before, haven't we?

ENDPLAY FOR LEGAL STOUSH

We had the best-est time reading hundreds of pages of Supreme Court transcripts leading up to the eagerly awaited slugfest between T. Davenport and G. Hackett, estranged partners in Staging Connections. We were so bitterly upset that they settled at the last minute, because all the juicy material in those transcripts could not be used. Robbed! It was going to be a corker.

SHURE COUNTERFEITS

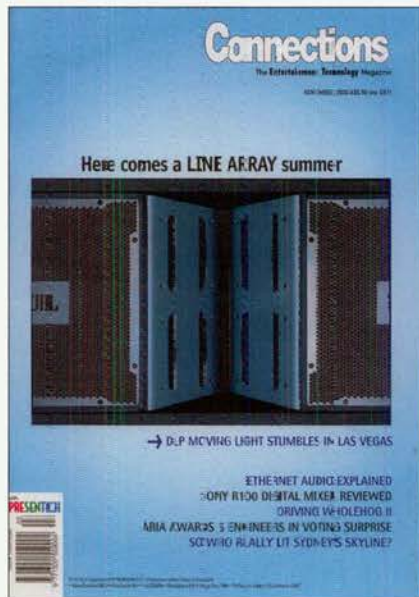
This was the start of a long war against some very bad Shure copies discovered coming from China. A battle that continues, for many quality brands.

SONY RMX R100

We reviewed this digital console and thought it was great. Sony seem to have a lower profile in pro audio these days.

LDI LAS VEGAS

We were on the trade show circuit again, this time in Vegas. ICON from LSD was the big push, with a very lot of



investment and a very lot of disinterest. Great gobc projection but not enough light out the end. Le's face it : speed/loud/brightness is everything!

BIG GAMES BLAST

New Connections editor John Grmshaw took on the role with gusto by declaring the TV coverage of the Olympic Opening Ceremony featured, quote, 'crappy

camera shots'. Several pages of furious letters to the contrary make this issue of Connections a satisfying read.

WHAT WE PAID:

- EBTECH cable tester \$299
- TC Electronic Triple C processor \$1,895
- Le Maitre Bubble Master 2000 \$4,330



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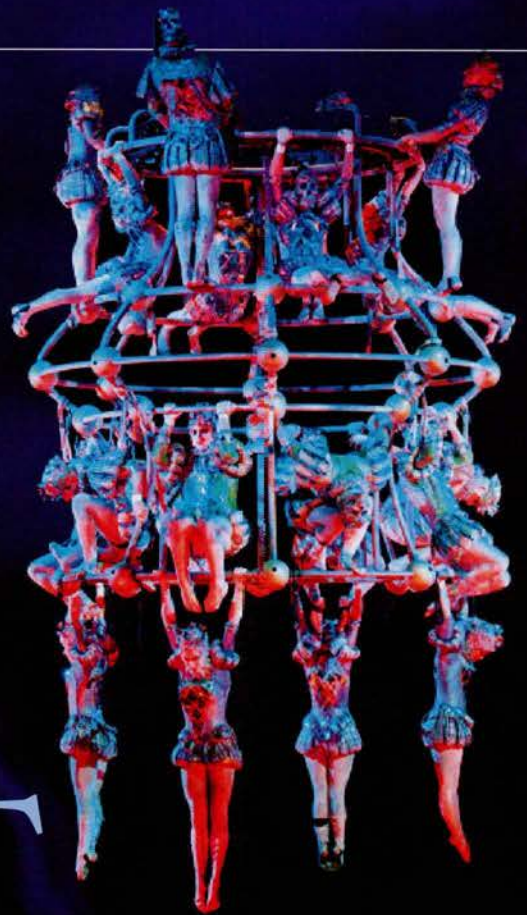
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WORLD'S BIGGEST AQUATIC SHOW

The most expensive show ever made is open now



Nick Etis has just helped build, commission and hand over the world's most extraordinary theatre. The stage is under 16 million litres of water, and the entire venue was purpose built from the ground up for this one show.

Welcome to Macau where House of Dancing Water is the most ambitious theatre project of all time. Macau is China's gambling enclave, a one hour ferry ride from Hong Kong.

This is a US\$250million seventy minute show by France Dragone Entertainment in a 270 degree theatre named "The Theatre of Dreams". The creative contains 'storms, shipwrecks, love lost and a journey of rediscovery.'

Located within the new City Of Dreams Casino complex, most of House of Dancing Water is a tightly held secret at presstime. It opened while this issue of CX was at the printer, and by now you would have seen segments on international TV news. Because it is very big news.

Nick is an Australian-at-large, a Technical Director who cut his teeth through the Sydney Olympics - working for PA People at the Olympic Stadium. He came up through the ranks of the Sydney production industry, starting at Lots Of Watts. These days he works around the world, on all manner of projects, and is rarely at home in Sydney.

WATER WORLD

The water is kept at 31.7 degrees which is a number determined from much experience with smaller water shows in Vegas.

The theatre has just under 2000 seats. The overall pool is 50 metres in diameter, with a performance area that is 22 metres in diameter. The seating system is cantilevered over the water, and the show is performed almost in the round.

The pool is over 9m deep and contains approximately 16 million litres of water. The whole performance area is fitted with stage lifts, which are obviously in the pool. These can raise up to 1m above the water level to become a dry surface for performance, and can be dropped to give a pool floor that is 7m below the water surface. The surface of lift is perforated Mondo material, similar to that used on a running track. This is finished in a very specific artistic design, water cut and fitted on a PVC backing, and rated to survive in chlorinated water.

Even with the perforations on the tops, the stage lifts displace a lot of water.

"One scene we were moving up to 8000 litres a second into the gutters around the edge of the pool. These feed into holding tanks, the water is filtered and sent back to the pool. The water in the pool can be drained in 6 hours, and almost all stored underneath then refilled ready for a show 24 hours later after allowing about 6 hours work in a dry pool. The holding tanks use the same filtration and heat exchanges."



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LIFE OF NICK

At 37, Nick Eltis has most recently been the Technical Director of the Opening and Closing Ceremonies at the inaugural Youth Olympics in Singapore.

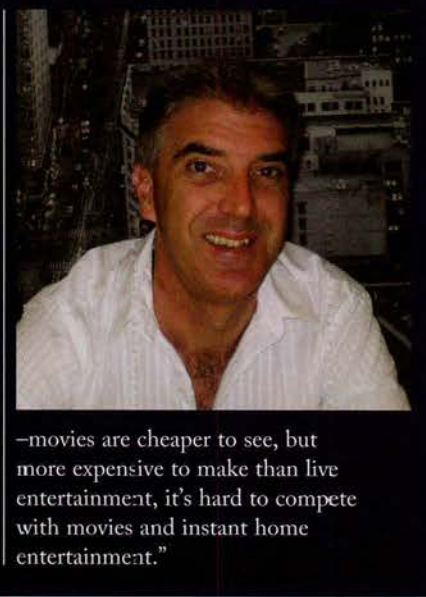
He has worked on the Australian Pavilion at World Expo in Shanghai for George P. Johnston, who were pivotal in the cultural program in the exit pavilion at Expo.

And there was Singapore National Day, on which he worked from 2007 through to 2009. Along with one-off corporate events around the world.

So what about the forward challenges?

“How do you stimulate an audience?”

They seek instant gratification from other forms of entertainment. It's expensive to produce quality results



—movies are cheaper to see, but more expensive to make than live entertainment, it's hard to compete with movies and instant home entertainment.”

JOURNEY

“I started in July 2008, when the theatre was a hole in the ground. I wasn't able to take up a full time position as Operations Technical Director, instead I worked in a consulting role since then and have been in and out of Macau for about 2 weeks a month ever since. I then spent 8 months there from late 2009 through May 2010.

“It was a role that morphed – I started getting the long term operations team in place, there are 140 staff. I did a lot

of phone interviews. There were a lot of procedural things, and a lot of work with the resort owner as the sole Dragone representative on site for a lot of the time.

“In late 2009 we started doing a lot of review work on the installation, to make sure the install and base building facility was as good as it could be, we made improvements and cleaned up the systems.

“By May the theatre was ready for the operational team, the show was all teched in, building commissioned, lighting

and audio programming underway, the automation was very advanced in programming.

“We put the animation directly into the automation consoles”, Nick says. “Before an actor would even do a scene, it was programmed. At rehearsals various acts were animated, then automated. As to the eventual show order – we had no idea. The creative team use that bag of tricks and they compile a show”.

THE THEATRE

The show itself has been at least four years in the making. When it was commissioned, Macau did not have anything like this. Across the road on the Cotai Strip is the Venetian, where a Cirque du Soleil show called Zaia runs in another custom built theatre. This show struggles to attract enough patrons, even though it was designed for a mainly Chinese audience.

Now House of Dancing Water will add much needed pull to the city, and hopefully create a larger theatre market alongside the casino attractions.

“Just walking into the room – the facility is phenomenal”, says Nick.

There was a lot of flexibility designed into the facility. “The grid is designed so that we can move the secondary steel structure to support points. Not much was welded, mostly it is all bracketed in place.



There are tracks in the stage.

“By the time we hung the grid and put scenery on the flying system we were on draft 38 of the rigging plot. There could be several changes a week. From the stage it’s 42 metres to the grid. There are 40-plus trolley winches, 11 stage lifts, and the heaviest scenic piece is 20 tonnes. That’s a hydraulic driven circus apparatus that sinks and goes away under water. Most scenery is self driven, self powered, with battery packs”.

One of the most complex areas is under the stage lifts, according to Nick. “There is LED lighting, water jets, fountains, cannons, air effects and all with corrosion protection so nothing rusts - and it all has to be safe for people working in dark confined spaces underwater”.

Safety is a very big deal. “We did a rescue scenario for a a motorbike rider in full riding kit. Literally threw a guy in the pool to see what happens!”

Yes there are motorbikes. In a water show. Figure that out!

“The air conditioning has to extract fumes from bikes along with a lot of humidity. There are no back seats in the house. There’s a good chance people could get wet. The contingencies because of water are quite significant!”

WHAT THEY SAY ABOUT THE SHOW

The awe-inspiring production unveiled publicly for the first time today, shows the beauty of human performances with spectacular scenes of the romantic water dance, the ‘human chandelier’ and ‘Russian swings’ sequence which involves high-performance diving and gymnastic artistry, the excitement of the show reaches to the climax when the a highly spectacular motorcycle acrobatics and strap dancers demonstrated their talents in the purpose built Dancing Water Theater, one of the largest water-based theaters in the world.

Performed by a superb cast of approximately 77 international performance artists, ‘The House of Dancing Water’ is set in an extraordinary Kingdom where nature’s magic reigns. It tells an epic spectacular love story transcends through time and space where a young and brave stranger makes a vow to brave any danger to set the beautiful princess free who is imprisoned by the serpent queen on the sea shore.



DETAILS, DETAILS

The show requires 20,000 litres of liquid nitrogen - which is fed into the venue to keep fog low across the pool. “Originally it was thought it would last for just 2 weeks of shows. Now we know it lasts considerably longer, as much as 4 weeks of shows.” The cost? Around 50c a litre, or US\$10,000 every time you buy a new lot.

There are 146 crew, including wardrobe. Nick hired many of them. “I did ask them if could swim. We ran swimming lessons for the crew if they wanted them. The edge of the pool is open and not protected - you could fall in!”

There are 32 full time divers on the aquatic team, and every department has divers within their crew. “We offer everyone scuba certification. Divers dive

on Nitrox, to stay down longer.

“Divers typically can’t come from a theatre background. There are a couple of ex navy divers - they are very good in the dark. We have a performer handling routine under the water - the performers dive in, and go down. They are caught, collected, given air, and then we move them underwater. They don’t reappear!”

To do this, there is a holding area for performers under the seating with handrails and breathing apparatus. Some divers have underwater comms, with cameras on their heads so the dive control can see what is happening.

As to the motorbikes in the show, “At one stage there was a desire expressed to have a bike come up from under the water. I don’t know if that happens!”

CX



WHAT IF?

*Flying multi-wire
battens with a
limited budget*

By **ANDREW MATHIESON**

Single wire-rope load-brake winches are sometimes used to fly multi-wire battens where budgets are tight and options are severely limited. This type of installation is far from best-practice, but if the budget will only stretch so far, then sometimes they can appear to be the only viable option.

If there really is no way at all that the budget can be stretched to use, at the very least, a multi-wire hand operated hoist, then we need to ensure that the installation is as safe as it can be.

Is it legal? Is there a specific piece of legislation or a standard that prohibits the use of a single wire load brake winch in this manner? No there isn't, but your local WorkCover inspector is going to be interested in reading the Risk Assessment you produce to demonstrate that the installation is safe.

What are the risks inherent specifically in the use of single wire rope load-brake winches, and how do we minimise these risks to ensure that the installation as safe as is reasonably possible?

Failure of the winch or winch brake (the last thing we want is for the winch to "let go").

- Purchase a winch from a reputable manufacturer and verify that it complies with AS1418.
- Make sure you consider the friction

losses within the system – this can add as much as 100kg to the rated capacity requirement of the winch.

- Follow the manufacturer's instructions regarding load brake servicing to the letter.
- **DO NOT** under any circumstances use a boat winch from your local auto parts shop.

Failure of the (single) winching wire rope attachment to the clew plate.

- Ask the supplier to supply the winch pre-fitted with the lifting rope, thimble and swage.
- Ask the supplier to make at least 2 sample swages, using the same rope, swaging machine and operator, before **AND** after swaging the lifting rope, and have the supplier produce destruction test certificates for these samples.

Structural failure of the (single) winching wire rope.

- Use the manufacturer's recommended lifting rope as an absolute minimum.
- Use a rope with a factor of safety of 10:1 if at all possible.
- Inspect this rope regularly and replace it if it shows signs of wear or damage.

Twisting of the clew plate.

- The clew **MUST** be guided over its entire length of travel – apart from a failure of the connection of the lifting rope to the clew plate, this is the most serious hazard to deal with.
- The clew guide must be designed either as a rigid guide (bushes and channels)

JANDS

Staging

or with the ability to tension the guides (wire rope guides).

Collision of the clew plate with the head pulley sheave and winch.

- Place markers on the lifting rope and on the wall adjacent to the hoist to give an indication of where to stop raising or lowering – driving the clew plate or rigging gear into either the head pulley or the hoist can cause serious damage to the ropes and fittings.
- Keep your eyes open and **WATCH** the clew plate through its travel.

Untrained and unobservant operators.

The continued safety of this type of winching arrangement depends on operators:

- paying close attention to the travel of the winch rope and clew plate
- regularly inspecting ropes, winch and fittings for any sign of wear or damage

This article forms general opinion only and must not be relied on without a detailed, professional risk assessment undertaken specific to your situation. Consult a professional staging company every time you consider anything that may involve risk with flown objects or people.

CX

OH&S AGONY AUNT

with Julius Grafton



Suddenly some festivals and even indoor venues are requiring production crew possess an OH&S General Induction Card. This is known by colour – Green Card, White Card, Red Card or Blue card depending on state.

OH&S CARDS

Roderick van Gelder from Stage Safe says all cards mean the same thing, and are nationally recognised. “Generally this is a half day course and it costs \$80 or \$100”, he says.

Is it a legal requirement? “It was driven by Worksafe in Victoria who argued that a gig setup was the same as a building site. Technically they say that it remains a build site until it is ready for punters”.

Production crew should arrange a card, and crewing agencies will need to require their crew hold a card. Training firms everywhere that have been accredited by Workcover or the state equivalent, offer the course.

“We should accept this as a fact of life”, says Roderick. CX agrees.

SCHOOL LIGHTING GRID

Last issue we ran a picture of a highly dangerous steel pipe lighting grid, slung and balanced on four wire lines without safety lines. You’d think CX was guilty

of a crime judging by some of the emails we got.

Paul Matthews wrote: “Steel pipes & Joiners”. Yes. Is there a problem? Are materials that have been suitable for this purpose for decades suddenly no longer suitable? Who are you to suggest they aren’t? Or isn’t the issue more one of what was suspended from the bars (and where) rather than the bars themselves? Did you bother to get up a ladder and check what the bars were actually made of? Your solution: “Proper Truss”. Why? and who is going to pay for these supposed truss lengths? Who are you to go around telling people what’s “proper”? And have you stopped to consider the implications of what would inevitably lead to a heavy rig becoming even heavier than the one in the air in your photo?”

David Haddock: “Just because it is not up to the latest over zealous safety standards or best practice doesn’t mean it is dangerous. It looks sturdy and is holding the rather light 400kg load easily. You could put another 400kgs on it.”

WORDS ARE CHEAP

At least Philip Brainwood from dB Sound (NSW) agrees with us.

“I don’t always agree with your opinions 100% and I do sometimes ponder the power you have over the industry by virtue of a printing press and website but on

the issue of safety I can only agree, there is no second best, there is no room for the budget option, there is no replacing little Johnny Brown. Had I seen what you showed in that photo I would have done fairly much the same thing. My policy, both professionally and personally is that if you don’t report a problem or even potential problem, you become part of that problem. By my measure, you had no option than to take some form of action”.

“I’m amazed at the opinions of some of the people writing in and their apparent blindness to the situation. A school hall has to be equipped to the same standards as any other venue, all buildings are regulated by the same BCA rule book”.

In closing, just to rebut some correspondents who say CX should be proactive in offering help to schools instead of reporting unsafe installations: we’ve always taken problems to the schools concerned. CX visits plenty of schools giving career talks, and see plenty of problems. We then offer plenty of solutions. CX

The nature of the advice given here is general. Do not rely on this column, and do refer any questions you have to legal counsel before imposing any changes to your venue, job practices or workplace. This column is not legal advice, and should not be taken as such.



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EARTH FIRST

By RICHARD CADENA

"Safety is something that happens between your ears, not something you hold in your hands." – Jeff Cooper, fire arms expert

I was about 10 years old when I first learned just how important the practice of earthing is and how it's related to safety. My older brother had a garage band, and you couldn't have one of those back then without having a Bogen dual column PA system with two 8" speakers in each column. Nor could you have a legit garage band without the requisite electric guitars. And it goes without saying that no self-respecting garage band would ever be without a garage.

Our garage had a concrete floor with no carpeting or fancy epoxy paint covering; just bare, unadulterated concrete. Growing up in a warm climate, we had little use for shoes from the beginning of summer until the last few days before the start of school, and then only during the week. Do you see where I'm going with this?

Watching my brother's band play was great, but playing with his gear was magical. In fact, you could say that it was electrifying. When I strapped on that cherry red hollow-body guitar and flipped

on the power switch I would see stars... and sparks. Literally. It's a wonder I lived to tell about it.

It wasn't until later that we figured out that if you put a piece of carpet down on the floor where you stood when you played that guitar that there would be more jam and less D@MN! But that didn't help when you put your lips to the microphone and touched the guitar strings. It was electrifying. I should have been a drummer. But then I wouldn't have been so curious about earthing.

Earthing and bonding is one of the most important things to know about operating a power distribution system because it's one of the main ways to keep ourselves and everybody around us safe while we're using electricity. Most of us know what we know about earthing through experience and perhaps from what we've learned from other people in the industry. But very often that's not enough. There is a lot to know about this subject and the more I read about it the more I find out there is to know.

For starters, there's the issue of language and terminology. When I first started reading about earthing systems there were a lot of terms that I took for granted, and that I thought I understood, but I'm finding out I often misunderstood or partially misunderstood. There are very specific terms in the codes and

regulations that are used in order to make clear distinctions. And though the intent is to be clear, what I've found is that it's often confusing until you parse each word out, and even then it takes several reads before the meaning comes clear. A good example is the distinction between the earthing conductor and the earthed conductor. The earthing conductor is the green and yellow wire and the grounded conductor is the blue wire or the neutral. It would be much simpler if they would just call them the green and yellow wire or the blue wire, but I'm sure codes and regulations prohibit that; otherwise it might be too clear.

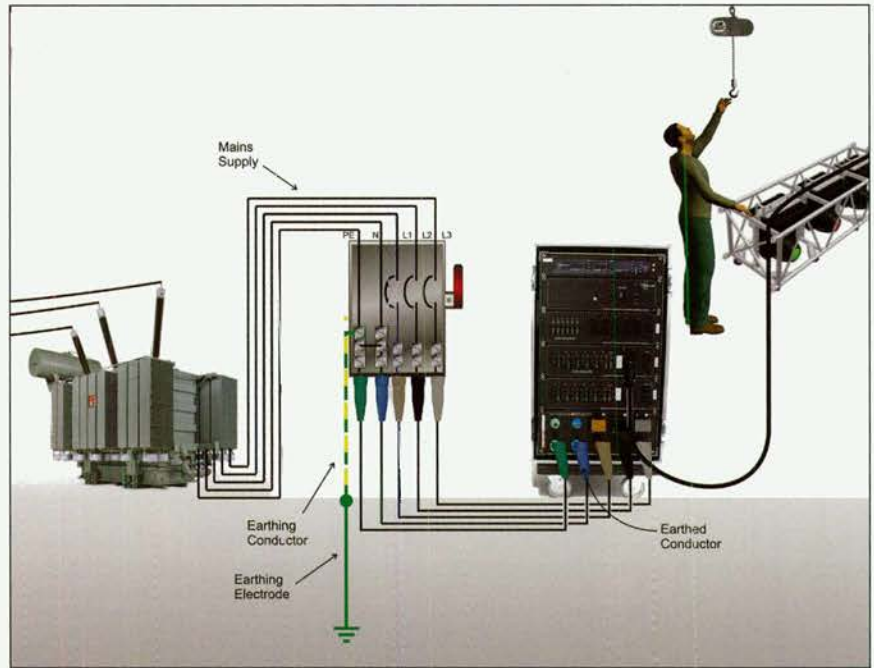
There are other terms that defy comprehension on the first read-through. And to make matters worse, the codes and regs are not illustrated – no photos, videos, cartoons or stick figures to speak of in the entire book. So if you just want to look at the pictures you're out of luck. Sometimes reading codes and regulations brings a whole new dimension to the phrase "We're from the government and we're here to help."

I'm all about illustrations. You can talk until your face is in full CTB and I might get it; but draw me a cartoon and we just might make happy hour. A picture is worth a thousand words so I'll be asking for double pay for this column. The illustration accompanying this article

is really the meat and the rest is the appetizer.

Once you've digested the art, see if these terms make more sense to you:

- Mains – the conductors and equipment supplying power from the utility. We typically tie our power distros into a disconnect or company switch supplied by the mains.
- Mains Switchgear – the switch or interrupt devices and the associated equipment.
- Equipment Earthing – the interconnection and earthing of the metallic parts of a power distribution system including racks, equipment chassis, motor frames, metallic equipment enclosures, and an earthing conductor. This is critical to maintain an equipotential plane and to eliminate shock hazards between different parts of the structure.
- Earthing Electrode – the earthing rod, earthing plate, or other acceptable connection to earth. Volumes have been written about what you can and cannot use for an earthing electrode. Read up.
- Earthing Conductor – the green and yellow conductor.
- Earthed Conductor – the blue conductor in Australia (or white in North America).



- Equipotential Bonding – the practice of connecting of all metal parts in a power distribution system to each other and to an effective earthing system in order to limit the voltage to earth. Of course, these are loose definitions and not strictly legal speak. They are designed to give you a basic understanding

of the parts of an earthing system. To get a thorough understanding you really should read the codes and regulations. And afterwards, if you're thoroughly confused, find a good book on the subject, preferably one with lots of pictures.

Earth to the author: rcadena@austin.rr.com CX



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THE ADELAIDE COLLEGE OF THE ARTS- ANOTHER SECRET REVEALED

By JEANNE HURRELL

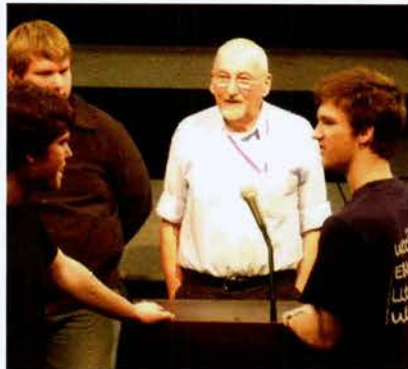
My mother used to say that Adelaide was Australia's best kept secret and should stay that way, in case too many people crowded her favourite haunts. However, when it comes to training live production techs, Adelaide is happy to spruik the Adelaide College of the Arts (AC Arts).

Part of TafeSA, the College has been training live entertainment technicians and stage managers since the early 1980s, originally as the Centre for Performing Arts(CPA) and, since 2001, as AC Arts after it joined forces with the North Adelaide School of Art to become the largest Performing and Visual Arts school in SA.

Technical graduates work in all the areas you'd expect – drama, dance, circus, musicals, festivals, cruise ships, convention centres and technical hire and production companies. In fact, two recent graduates were mentioned in CX53, in the credits for the Korean leg of the Cats tour - Vanessa Stephens (Dome Supervisor) and Hon Wai Li (Scenic Assistant).

ALL THE OPTIONS

Students can graduate with the Cert IV or Diploma in Live Production, Theatre and Events, or the Advanced Diploma in



Paul Curry explains a concept.

Stage Management, with skills in audio, lighting, stage management, staging, technical management and vision systems.

AC Arts also trains students in set construction, props manufacture, scenic art, costume manufacture, as well as set and costume design. The College has a dedicated screen studies course for those wanting to get into film and TV production. On the performing side, AC Arts has students undertaking qualifications in Dance, Acting and Music Performance, so the tech students get plenty of experience working with performers of all kinds.

The focus of the technical production training is very practical. The building houses three theatres and student technicians produce more than a dozen



Lisa coils caobies.

public seasons each year for the Dance and Acting departments.

SHOW DAYS

Currently, students are in production for three shows. Sweeney Todd – the Demon Barber of Fleet Street is being presented by the Acting Department in the Main Theatre, with Rachel Moorhead as Director and Carol Young as MD. Choreographer Leigh Warren is putting together Uber Bunk in the XSpace with the Dance Department, and Paulo Castro is directing and choreographing Underground, with the Acting Department, that starts in the building's basement carpark and ends in the Stables theatre on the top floor.

Each Friday, when the theatres aren't

in use for dance and acting shows, the tech students present local bands in the XSpace. They build a stage with full masking, and install and run a rock-style light show, including movers and followspot.

They install a large sound system with Meyer PA and Allen & Heath ML5000 mixer plus outboard effects, GEQs and compressors/gates. There is a separate foldback system with Soundcraft Monitor desk, GEQs and compressors/gates for a six-send feed to AM1K2/TX-2/Tannoy T-12 wedges.

GOING TO 'TAPE'

Down the corridor, in the dressing room, they set up a recording studio with a Yamaha LS9 which feeds a couple of CD burners and sends a live mix back to the theatre where it ends up on a DVD recorded by the vision crew.

Vision for the band gigs comprises a three-camera shoot, with the vision switch going live to a large screen hanging next to the stage, and also onto a couple of DVD recorders along with the audio recording mix.

At the end of the show, the bands get a CD and DVD of their show and the college keeps the second copies so that students have a record of their work.

AC Arts has a great working relationship with local venues, performing companies and hire companies. Major venues like the Adelaide Festival Centre and the Adelaide Convention Centre have significant numbers of graduates on their regular rosters and, like the local performing companies, provide students with fantastic work experience opportunities. This year, for example, numerous stage management and tech production students did placements with Womadelaide, Adelaide Festival, Fringe Festival and Cabaret Festival. The network expands beyond Adelaide with past grads recruiting recent ones in companies like Disney Cruises and Cirque Du Soleil, and on events around the world including the Edinburgh and Glastonbury Festivals.

EXPERIENCE IS EVERYTHING

The tech lecturers come from the Arts and Entertainment Industry with loads of experience. Senior among them is Paul Curry, who lectures in audio and vision systems. He says his experience goes back 'to when Methuesula was a boy'. His early career credits include mixing the Beatles concert at the Sydney Stadium in 1964, and being sound man for the first Ourimbah Pop Festival in 1969 (the first



View from the monitor mix.



Brad switches the vision.



Brad, Adam and Peter in the grid.

of its kind in Australia).

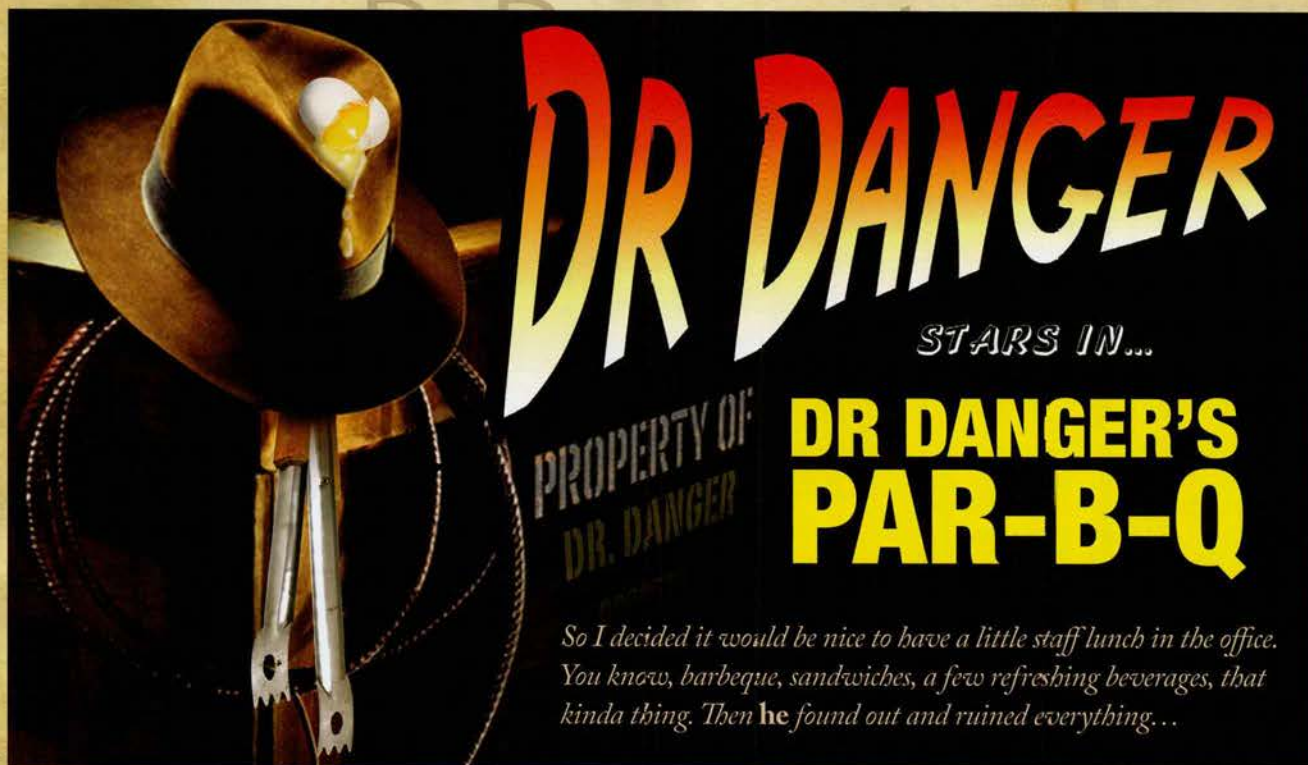
Paul came to Adelaide in the 1970s, as the first Sound Supervisor for the Festival Centre. That was followed by stints with some of the local hire companies, and running his own TV and electronics servicing company, before returning to the Festival Centre in the 1990s, then moving into full-time teaching at AC Arts six years ago.

Paul, now aged 68, wears his own

personal in-ear monitoring system, aka, hearing aids, and claims that mixing is still very possible. 'Mix by the lights. If the LEDs are flashing, you know you'll hear it,' he claims. He loves being dragged out to meet the Arts Minister because he can say, 'I'm deaf and I teach audio, so you can be sure that TAFE SA is an equal opportunity employer.'

Jeanne Hurrell lectures at AC Arts in sound and technical management.





So I decided it would be nice to have a little staff lunch in the office. You know, barbeque, sandwiches, a few refreshing beverages, that kinda thing. Then he found out and ruined everything...

By DR NIGEL SHORTCIRCUIT

Thus begins Science Boy's whiny, self-pitying diary entry. I'll concede that the idea was originally his, but he was lucky I came along to save it. The careless oaf had hardly organised anything! He hadn't even got the beers in. Acting swiftly to avert the impending crisis, I sent him off to find something to cook – and a pan to cook it on. Meanwhile I settled down to figure out what we could use as a heat source.

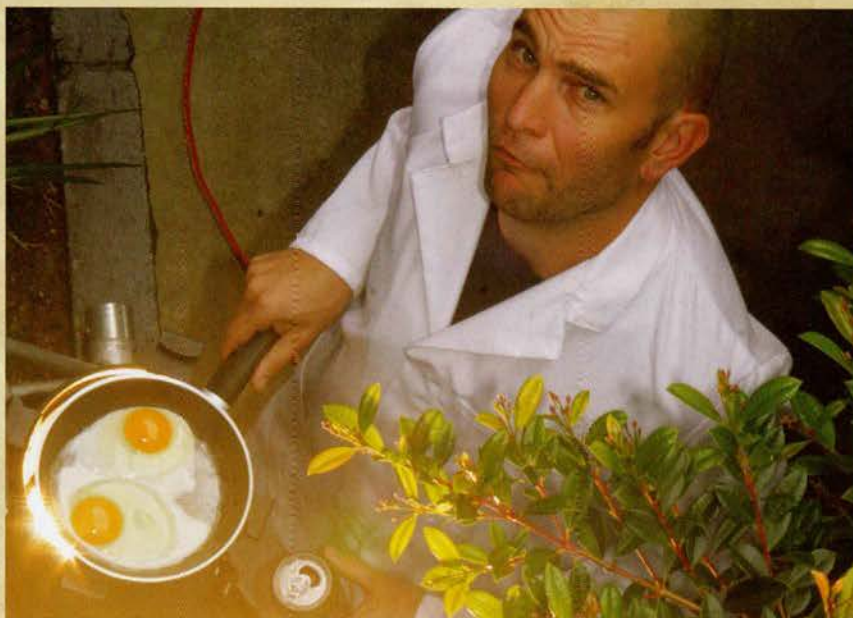
Having already dismissed the idea of cooking in the kitchen (hardly a barbecue, is it?) I was wandering the corridors, seeking inspiration, when my eyes lit on a PAR64.

THE PARBECUE IS BORN

As soon as Science Boy returned from the shops with his rather dismal offering (Eggs = 6, Steaks = 0) he was set to the construction of our miracle of modern cooking.

The reasoning behind it runs thus: Incandescent lights generate light as a secondary output. Their primary output is heat – the current through the filament heats it up so much that it glows brilliantly – and all that heat needs to go somewhere. Some lights have smarter heat management, but the vast majority of the heat produced by a PAR64 shoots straight out the front.

Using the 110V PARs gave us a two



burner model, so I could fry eggs on one while making the toast in the other.

DOES IT ACTUALLY WORK?

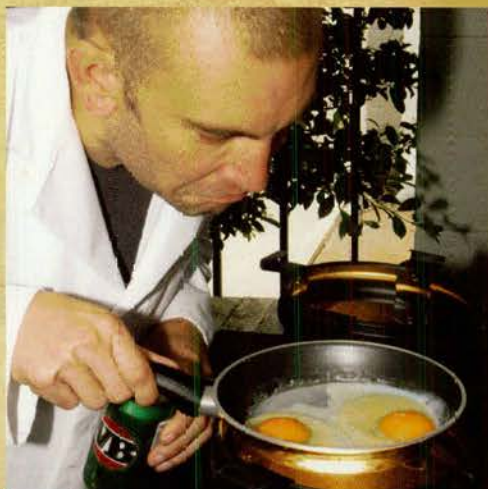
Well, yes and no. The toast was something of a disappointment – it went nicely stale and hot, but the temperature just wasn't high enough to brown it properly. The eggs, on the other hand, came out brilliantly. The pan definitely doesn't heat up as quickly as it would on a more conventional cooker, and the eggs don't sizzle and bubble, but they did cook nicely – and the lower than usual temperature gave them a lovely softness like a poached egg. Delicious.

Anything you want cooked in a big hurry might be better on a standard barbecue, although I would suggest that a pan with a black bottom would have yielded better results than the silver based one we used. Faster cooking could probably also be achieved by dropping the food straight on the front of the lamp, but cleaning up might be messy.

The good news is that I've finally come up with an experiment you can safely repeat at home.

SO WHERE'S THE SCIENCE?

Aha! Excellent question. There's always science grincing away in everything.



It may not be quick, but it's worth it in the end.




First up, we've established that most of the heat does indeed come out of the front of the lamp – even at the peak of the egg-frying finale, while the back of the can was hot to the touch it wasn't hot enough to burn, while the frypan was decidedly too hot to touch.

We've also been reminded of the eternal problem of efficiency – how much bang do we get for our buck? A PAR54 spits out a lot of light, but there are plenty of other things that emit the same amount or more – and very few of them would output this kind of heat. Try doing the same stunt with an LED fixture, or even a discharge lamp, and see how long it takes. Just don't rely on your experiment to feed you. So watt for watt, the PAR64 doesn't score well on light output because so many of the watts go into making it hot.

WHAT CAN WE LEARN?

For a start, spare a thought for the poor sods you're pointing lights at. All that lovely heat... It's probably fine in the winter, but rather depressing in the heat of summer. It also makes a substantial contribution to the pain the air conditioning suffers.

Then there's the matter of power consumption. With power prices expected to go seriously up in the next few years, it's seriously worthwhile keeping consumption down. 



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A WIRELESS FUTURE

As long as we're left with some spectrum, wireless isn't dead. The challenge is to use it smart enough to fit into the available spectrum. Andy Mackenzie looks at some possible solutions...

By **ANDY MACKENZIE**

Loss of spectrum is nothing new. I well remember the last time, when we got unceremoniously shovelled out of VHF TV world into UHF. It came as a rude shock to lots of people – not just the production companies writing off thousands in hire stock, but the multiple small users (churches, schools, clubs, community groups) who had no idea it was coming.

And now here comes the juggernaut again.

Like it or not, we're just not commercially big enough to stand in the way of the multi-billion dollar plans people are hatching for 'empty' spectrum. All we can do is look for ways to survive in the new reality.

LESS IS MORE

For a start, let's not use it if we don't need it. Drummers and piano players with wireless in-ears, backing vocalists and lecterns with wireless mics – there are plenty of situations where you can easily substitute a cabled alternative. This is a big step, but it will only work for some users.

DIRECTIONAL ANTENNAE

Sounds good in principle, but in reality probably won't be a reliable solution.

FM receivers will always lock onto the strongest signal they can get – so everything will be fine as long as your transmitter stays switched on...

Pilot tones offer a similar problem. They might stop the thing passing audio from an unwanted RF source, but they won't stop it from blocking out the signal you actually want.

Either of these could represent a partial solution in a low interference, non-critical application, but not much more.

A DIGITAL SOLUTION

Most users are nervous of any kind of digital solution, but there would be advantages. Digital transmissions are much more immune to noise and interference than analogue FM, and can also be mashed into narrower bandwidth – which equals more channels. There's also the possibility of multiplexing signals with a single physical source, the obvious example being in-ear monitors, and using addressed receivers to decode – thus getting multiple channels of audio on a single carrier.

Latency is always an issue in digital systems, but it is unlikely to remain so for long. Latency is a direct result of data processing speeds, so as the exponential increase in processing speed continues we should see a similarly dramatic reduction in latency.

ABANDON SPECTRUM

We could simply abandon the UHF spectrum, and head for the wild frequencies up past 2GHz. The 2.4GHz band is internationally approved for low power devices, and spread spectrum designs in this range would be largely immune to interference. At frequencies this high, range is relatively limited and signals don't penetrate walls very well, but this won't be a problem in most applications and may even help protect you from the wireless next door.

This band also offers a significant advantage because of being a recognised space with a recognised purpose, rather than the 'white space' we occupy now.

THE FINAL FRONTIER

Or maybe someone will come up with a pile of IP addressable devices that work over wi-fi. There may be some limitations at the moment, but it wasn't that long ago that people found the idea of transporting audio over Ethernet ridiculous. Digital audio is advancing by the day, and it may be simply a matter of time.

Whatever happens, the world of wireless is unlikely to ever be the same again – there are just too many dollars waiting to be poured into spectrum. Get ready...

WIRELESS - THE VERDICT IS IN

Stage use of wireless may continue into the future. BUT...

By JULIUS GRAFTON

At presstime the United States FCC mandated that two TV channels will be retained as they sell off the rest of the spectrum for billions of dollars. This means the theatre, broadcast and concert industry will not be brought to its knees overnight, which is what a complete closure threatened.

CX think it is likely the Australian regulator will follow suit, so we will also retain two channels.

What does this mean for users?

With the existing fleet of more than 100,000 wireless systems, you'll be competing for a lot less bandwidth. Two channels of TV means about 10 or 12 channels of wireless. Less for stereo in-car monitors.

Your biggest worry will be the theatre or venue next door and what frequencies they are already using. Currently there are enough channels available that careful

management allows around 40 devices. A theatre musical is a demanding beast, with actors often having wireless packs swapped as soon as they come off stage. Ask an audio designer how many wireless channels they 'need' and they will always say 'more than we have'.

Can we manage the existing analogue wireless designs more carefully? Can we make antennas more directional or try to focus coverage areas? Yes and yes, but it will mean higher risk of failure.

THE FUTURE

My colleague Ancy Danger has some technical wisdom on the opposite page. Meantime we both agree the march of digital technology has sped up to become a starve. One iPhone now carries ten times the computing power of a PC ten years ago.

Everyone has been saying that digital wireless will not fly, but we disagree. The argument was that a digital wireless microphone or transmitter, and a digital

receiver, will require time to process. This is generally termed 'latency'. But any digital mixing console or digital system processor already in wide use has latency.

People say adding another set of latency on top via a digital wireless system means too much latency. Too much latency, or processing time, is when the audio lags so far behind the action that you can see the singer's lips move ahead of the sound.

The good news is that a few milliseconds will not do that. So it is obvious to us that wireless manufacturers have been slaving away on a complete ground up rebuild of the technology, and that will roll out 'soon'.

You say 'Yes, but what about the frequencies?'

Digital code being transmitted from a mic to a receiver may need way less bandwidth than analogue. See Andy's thoughts for more.

Long story short, with a new generation digital wireless system, we'll get more devices on lots less bandwidth. CX

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THE PILBEAM THEATRE INSTALLATION

By **STEPHEN BRUEL**

HISTORY

Originally opened in 1979, Rockhampton's Pilbeam Theatre is one of the finest theatres in regional Australia and is the focal point for the performing arts in Central Queensland. Named after the city's long serving Mayor, Rex Pilbeam, who was the driving force behind the push to ensure Rockhampton had a performing arts centre of a high international standard, the theatre is owned and operated by Rockhampton Regional Council, and offers a diverse range of productions all year round.

These productions include the Queensland Ballet, Opera Queensland, the Bell Shakespeare group, rock bands and international artists. There is also a strong community base with the venue being used regularly by local high, primary and dance schools, the local choral society and in-house productions.

THE STAFF

When it came time to upgrade the PA system, the Pilbeam Theatre's Technical Co-ordinator Ross James and Senior Technician (Audio) Matthias Conway were both involved in the process, and with such a solid background in audio and theatre, and mixture of experience and youth, the decision was in safe hands.

"I started in the entertainment industry as a band manager/roadie in Melbourne 1969 and spent 25 years working audio, everything from cover bands to major acts, including a stint with my own PA hire business and two and a half years in television with ATV 0 (now channel 10)," said Ross. "My first theatre gig was with the Australian Opera season at the Princess Theatre in Melbourne. I then went touring Queensland with a cover band from Ballarat and settled in Rockhampton. I started doing casual audio work at the Pilbeam, and became a full time employee 17 years ago. These days I do more admin style work."

Matt Conway began his audio career as a trainee with the Pilbeam four years ago, and has held his current role for the past 18 months. As the main operator, Matt has the final say.

THE NEED TO UPGRADE AND THE SOLUTION

According to Ross, the theatre's old system didn't quite provide even coverage across the room, and in particular, failed to project the top end frequencies to the back of the room. Matt and Ross decided to trial EV, JBL and Nexo systems side-by-side to see which system best suited them and remained on budget, and EV won the battle.

"We have run EV for the last three upgrades and have always been happy with the product, particularly its suitability for our dance shows and musicals," said Ross. "Most rock acts that perform here are roll ins with their

own systems so the big rock rig wasn't so much of a consideration. Although these other systems were great, the EV suited our use and came in on the budget."

Matt describes the process of comparing the three systems within the space.

"We were deciding between an Electro Voice EVA Line Array, Nexo's GEO S12s, and a JBL VRX system," said Conway. "We hung the EVA system, comprising of two EVA-2082S-906 and two EVA-2082S-920 boxes, on the left side of the venue using one Dynacord H5000 to power all four. We then placed four NEXO GEO S12 speakers on the right side using their Camco quad amp. I also ran the JBL VRX system for comparison."

The final PA system consists of four EVA-2082S-906 cabinets (two per side on top of the array due to the smaller vertical dispersion), four EVA-2082S-920 cabinets (two per side on the bottom of the array), one EVF-112S/126 for centre fill and two XCS312 cardioid subs hung centre of the pro arch.

"We also purchased four XI 1082 boxes for front fill and used the EV Netmax N8000 to process the whole venue,"



Exterior of the theatre

added Matt. "That includes the onstage foldback which is also EV boxes plus we have Dynacord PowerH 5000 amplifiers to drive the system."

THE VENUE

The venue has raked seating for 986 patrons and consists of a proscenium arch (12 metres wide by 5 metres high), a stage area (15 metres wide by 11.5 metres deep by 13.7 metres high) which is non-raked with a painted masonite finish,

and the orchestra pit (11 metres wide x 4.25 metres deep and 1.9 metres below stage) which is an electrically operated screw jack lift. The pit may also be used as a forestage at stage level or provide additional seating (up to 4 extra rows with a total of 80 seats).

Ross said another problem that needed to be addressed with the upgrade was that when the orchestra pit is set up to provide extra seating, there are four rows of seats situated either directly under or behind

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Senior Technician (Audio) Matthias Conway (left) and Technical Co-ordinator Ross James.



the flown system. Also, when extended to provide the forestage area, this space needed to be placed behind this system.

"In the past we would use extra speakers from previous systems to provide infill across either side of the pro arch," said Ross. "With the new system, we added four 8" infills that can be placed across the front of stage and are time aligned to suit."

The stage is equipped with 40 single purchase counterweight line sets with a working load limit of 400 kg, distributed evenly along the length of the batten so all lighting bars and masking can be hung to the user's requirements. The line sets are operated at stage level on the opposite prompt (OP) side of stage. The Stage Manager's Desk is located in the Prompt Corner (PC) and contains facilities for headset talkback (TELEX) to 12 stations with the points hard wired through the venue, four channels of radio talkback, cast call to all dressing rooms and the Green Room and Closed Circuit Colour TV.

"We have flown the PA and installed fixed foldback over the stage from the fly floor and the dimmer gallery," said Ross. "I instigated this about twelve years ago. It keeps the side stage area clear, works well for dance acts and musicals, and also cuts down a lot of set-up time."

There are 24 balanced microphone inputs located in floor traps on the orchestra pit/forestage (12 inputs) and on the stage (12 inputs). There is also an in-house multicore that carries 37 channels of audio and 15 line returns

from the centre of house mixing position to the OP stage with foldback tail or dropbox capable of locating in the pit. Additionally, there is a 36 channel multicore from prompt corner for the radio microphone system to the centre auditorium, with antenna distro using antennas mounted in the top corners of the proscenium arch having line of sight both onto the stage and throughout the auditorium.

THE GEAR

The theatre has a fairly comprehensive gear list encompassing both digital and analogue technologies. The mixing consoles consist of Yamaha digital (M7CL/48, LS9/16), analogue (MG124c) and powered (EMX5012C) models, a MIDAS Venice 320/24 and Allen and Heath GL2400/16 analogue units. These are run through Dynacord (H5000 and H2500) and Crown power amplifiers.

"Amp racks are situated at the top of stair wells within close proximity to the speakers," said Ross. "This helps keep fan noise away from the stage."

Processing and effects units include dbx (266XL stereo compressors and 2231 stereo graphic equalisers with type 111 noise reduction), Yamaha (SPX-1000 effects unit) and TC Electronic (M-One XL effects unit). The newest member to the family is the EV NetMax 8000 processor, a digital audio system controller.

"We had the Netmax system set up for us originally with wireless control from a



EV arrays have the right sound for the room.

laptop when the system was tuned to the room," said Matt. "This system allows us to control processing, equalisation and delay settings quickly all from the one point."

The microphone selection consists of Audio Technica condenser models (ATM10a, ATM33a and ATM31a), Shure (SM58, SM57, Beta 58) and some Sennheiser, with 20 Shure UHF MA and UB wireless models with belt packs and headset microphones.

"We have just received delivery of 32 channels of UR Shure radio microphones to allow for the digital television rollout and digital frequency sale," said Ross.

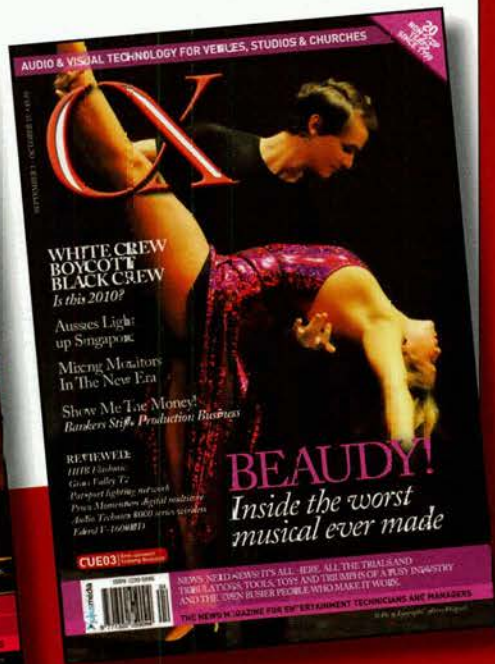
THE FUTURE

With such a vast array of upcoming events and productions including Powderfinger's Sunsets tour, Disney's High School Musical, plays featuring Gary McDonald, Henri Szeps and Max Cullen, dance festivals and a chamber orchestral performance by The Camerata of St John's, Brisbane, the arts are certainly alive in Central Queensland, and now sound better than ever.



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AVOLITES TIGER TOUCH



If you're going to have a touchscreen, why not have a big one?

By ANDY MACKENZIE

Tiger Touch is a new look for Avolites. There are some very obvious similarities in the console layout, but there are plenty of differences. From the very first glance, its Avolites heritage is clear in the general layout, the style and placement of the keypads – the whole look of it. But there are some differences. Fairly obvious differences, like the touchscreen that fills about a third of the control surface.

THE BASICS

Let's start with some basic information. The Tiger Touch is capable of driving up to twelve DMX universes – they all come out on Ethernet in a variety of formats including ArtNet, but there are four standard DMX connectors on the back that can be fed from any of the universes. You can even feed the same universe to multiple outputs if you like.

The control surface is fairly straightforward – the programming section is at the bottom right, and it's absolutely Avolites, with the addition of a third encoder wheel. To the left of this is a row of ten playback faders and a master fader. Typically you'd expect to find the Avolites roller above these, but that's another change. The roller is now a 'virtual roller' on the touchscreen. Same effect, different approach.

Above the programming section are another ten faders – these are effectively the same as the playbacks, as you can load them up with scenes, cuelists or chases, but they're on a single page. This is



Three wheels is a new look for Avolites.

where you park all the stuff you always want accessible like lectern spots, house lights...anything you're going to use over and over and don't want to get 'wrong paged' on.

Below these are another lovely innovation. The ten macro buttons are user programmable, and designed to make your day easier. There are a lot of button pushes involved in programming lighting, and many of them are repeated sequences. Simply program each of the repeated sequences you need into macros and save some wear on your button finger.

TOUCHSCREEN TIME

The rest of the control surface is touchscreen. The screen is big, and it's nicely configurable. Some things are fixed in place – the virtual roller and encoder attributes are always at the bottom and there's various menu windows that crop

up on the right-hand side. The remainder (about half) of the screen is configurable with up to four windows showing useful things – palettes, fixtures and groups, stuff like that. If you can't get enough stuff on the screen to make you happy, you can hook up an external monitor to display even more windows.

The touchscreen is also home to one of the stranger idiosyncracies of the console. Down its right hand side are eight soft keys, whose current function is identified on the screen next to them. The function can be accessed by pushing the key – or the label on the touchscreen. It's not going to hurt anyone or make the console inoperable, it's just weird.

Below the soft keys lives the system/run/program switch. On most Avolites consoles this is a key switch, designed to lock well-meaning operators out of anywhere they can do real damage, which



The programming section will make existing Avolites users feel at home.

makes sense. Here it's a simple rocker switch, which is rather less effective, and I suspect it's only there because the OS gets confused without it.

TITAN

The Titan operating system is the brains behind this device, and as you'd expect it's compatible with the Pearl Expert Titan, so show files can be transferred between them. Like all good operating systems, you don't need to put any thought into it – it simply presents you with the buttons you need to do your job. Show files can be saved to the console's hard drive, or to a USB stick. It also autosaves your show periodically to allow for the fact that everyone's an idiot sometimes.

Another nice software feature is the onboard visualiser, which is very handy for programming tweaks in the hotel or warehouse. I'm not sure I'd like to try programming a whole show on it, but it's great for touchups. The visualiser can be shown in one of the workspace windows or (my preference) on an external monitor.

IN USE

Setup, patching, and so forth are simple and straightforward. Having only limited experience with Avolites consoles, I got myself a little tangled up a couple of times, but it didn't take long to get things under control – and once I did, everything went nicely. If you're an experienced Avolites user you'll pick it up immediately, if not the learning curve isn't violently steep.

The Ethernet option for DMX is particularly pleasing when combined with devices like media servers which can send information back down the line. We had it hooked up to a Robe DT3000, and selecting gobos or other media by poking your finger at a thumbnail image on the touchscreen certainly beats the alternative approaches.

CONCLUSION

This is a high powered piece of gear on a small footprint. The output capacity and configurability makes it suitable for a range of different applications up to a fairly substantial scale. While operators familiar with Avolites consoles may have an advantage in learning, it's a long way from incomprehensible, and all console brands have their particular eccentricities.

The control surface is sensibly laid out and the configurability of the workspaces and macros means you can make it be the way you want it to be. There are a number of convenient design ideas including the macros, the visualiser and the fixed preset faders. All up, the Tiger Touch is a console that offers plenty to like, and does it at a sensible price. CX

BRAND: AVOLITES

Model: Tiger Touch

RRP: Trade \$18,000 ex GST

Product Info: <http://avolites.org.uk>

Distributor: <http://ula.com.au>

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DYNAUDIO ACOUSTICS BM5A MKII



The BM-5A from Dynaudio Acoustics has long been highly regarded – we take a look at its successor to see what's new.

By JIMMY DEN-OUDEM

Dynaudio Acoustics make studio monitors, and their stated corporate vision is that the products they offer are so accurate they may be trusted 100%. And when making monitors is all you do, you get pretty good at it. The BM5A MKII is two way active nearfield monitor speaker, measuring 320mm (H) x 186mm (W) x 320mm (D). At 8.7kg it's perhaps a little more weighty than you'd initially expect, though in the scheme of things it's not that heavy.

Let's begin by looking at what's still the same. The MKII looks the same. Nearly – the giveaways are the MKII badging on the upper right corner and the new waveguide which surrounds the tweeter. Other than that, they're the same size and shape and the new drivers look the same as the old ones. Internal box volume is still 9 litres, crossover frequency is still 1500Hz. The internal amplifiers still operate at 50W RMS per driver.

Around the back, there's still an XLR input, high, mid and low filters to

adjust the speaker's response for room conditions, an input sensitivity control and a big chunk of heatsink. There's also a high pass filter in case you want to use the boxes in conjunction with a sub. The XLR socket seems quite a tight fit – I had some minor trouble using connectors with thin cables attached when the pins slid backward inside the connector backshell. Still, the harder it is to push the connector in the less likely it will be to fall out.

So what makes the MKII better?

MORE IS MORE

The 6.9" woofer has a 75mm voicecoil sitting behind it. That's quite a big chunk of wire on quite a small driver. The original driver had the same sized voicecoil, but the new one has increased excursion. This translates to an extension in low frequency response from 50HZ (+/- 3db) down to 45Hz (+/- 3db). It also likely contributes to the 2db increase in maximum output – now 117db (IEC short term, pair @ 1m). In a nutshell, they're louder down low. But what about up top?

1500Hz is maybe a higher crossover

frequency than I might normally have expected, but it seems to work. Above this frequency, the 28mm soft dome tweeter kicks in. The tweeter is protected a little by a tripod type arrangement of thick metal legs. I wouldn't say well protected, but at least there's something to catch the inadvertent knock against a hard surface. The waveguide has changed since the original version, the reasoning behind this being to provide the listener with a more accurate sweet spot and reduce acoustical reflections.

DOES IT DO WHAT THE BOX SAYS IT DOES?

In short, yes. The BM5A MKIIs do go lower, do go louder, and the top end does sound cleaner and more precise. It may not have taken a whole morning of listening to them to figure this out but it was an enjoyable experience, so I stayed anyway. The MKIIs share their heritage with the originals, they're neutral and accurate. They turn signals into sound, and leave you to figure out how to make



Dynaudio Acoustics BM5A MKII



Rear panel input & setup switches

the signal sound right. I really like how these speakers sound.

But they look funny. Granted, it's my kind of funny and while I quite like it the appearance some users might be discouraged – especially those who buy speakers for their aesthetic rather than acoustic properties. The apparent fragility of the tweeter arrangement also freaks me out a bit, though once installed in a control room or OB truck this is unlikely to be an issue. Just take care getting them out of the box.

The release of the BM5A MKII has provided some proof positive that good things come in small packages. But the last big difference between the new model and the original (and the real kicker here) is the price. The MKII new series box retails for roughly 25% less than its predecessor did. So good value just got better. **CX**

BRAND: DYNAUDIO ACOUSTICS

Model: BM5A MKII

RRP: \$1,795.00 inc GST per pair

Product Info:

<http://www.dynaudioacoustics.com>

Distributor: <http://ambertech.com.au>



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DECIMATOR DESIGN MD-QUAD



*When is a monitor not a monitor?
When it's 4 monitors. Or 10. Read on!*

By JIMMY DEN-OUDEM

With all the SD & HD SDI video sources now floating around the market it wasn't going to be long before someone came up with an effective way to monitor them. You've always been able to connect an HD monitor to a source to view it, and indeed this method can yield excellent picture quality (depending on the grade of monitor you use). But here's the thing – HD monitors aren't cheap. Especially not ones with HD-SDI inputs. Add to that the fact that you're likely to need more than just one monitor (try 8-20 depending on your application), and monitoring HD signals starts to become a very cumbersome and expensive exercise indeed.

I'm not saying HD monitors don't

have a place in this world – for quality assurance purposes you would be hard pressed to find a better option. But for playout operators and video directors, monitoring is really about quantity. This has led to a flourishing market for multi-view devices, and indeed there are a lot of good ones out there. They allow dynamic resizing of windows and routing of sources and all kinds of other stuff which justifies a five digit pricetag. What about the small operators who still need to monitor HD?

ENTER DECIMATOR DESIGN

Formerly known as Redbyte Design, this Australian based company specializes in video conversion. Their latest offering is the MD-QUAD – a 4 channel

video quad split which is SD/HD SDI/3G capable. Each segment of the quad split operates independently, so mixing formats across the inputs is no problem. The MD-QUAD also supports tally, and 16 character UMD (under monitor display – labels for the content) for each window. The basic idea here is that you can take 4 HD SDI sources, plug them into the MD-QUAD, then monitor the output on an affordable LCD screen with HDMI input. Cascade two more units into inputs 3 & 4 of the first

unit, and suddenly you've got a 10 way HD monitoring solution which fits onto one screen. Not only is it a good option for permanent install situations, but it also yields serious weight reductions in monitoring for "flyaway" users. Not only in weight, but serious savings on cost as well. It's a simple solution – you can't log into a webpage and dynamically change which signal routes to which quad, you have to swap the BNC plugs on the inputs.

The inputs on the MD-QUAD automatically detect whether the source is SD, HD or 3G SDI. There is an SD/HD/3G SDI output, and an HDMI output, each can be configured in a variety of output resolutions and modes. There's an RJ45 GPI port, which allows you to input tally information to each segment of the quad split. In its alternate configuration, it allows you to pass any of the input channels through to the output directly. Configuration is done via a system of rotary encoder, a button (thoughtfully labeled "button"), and diagnostic multi-colour LEDs. The unit runs on 5-24V DC. There's also a USB port which allows you to do software updates as well as enter characters on the UMD label fields.

Configuration of the unit is an operation for which the manual is an undeniable prerequisite – without this you'd be guessing what you're changing. The process itself is simple, turn the rotary to select what function you want to set, then push the button until the multi-colour LEDs indicate you have the correct parameter selected. It's kind of a pain, but since most users are only likely to do it once the 10 minutes of fiddly work is likely to be worth it for the saving in cost. It's also nice that it's possible to get the unit up and running in a basic state without needing a computer attached.

All up, MD-QUAD is tiny, powerful, and affordable, and gives users an HD monitoring option which sits in a whole new price bracket.

Thanks to Silk Studios for the use of their HD digital control room to test the MD-QUAD – silkstudios.com.au



BRAND: DECIMATOR DESIGN

Model: MD-QUAD

RRP: \$1,644.50 inc GST

Product Info: <http://decimator.com>

Distributor: <http://avgroup.com.au>



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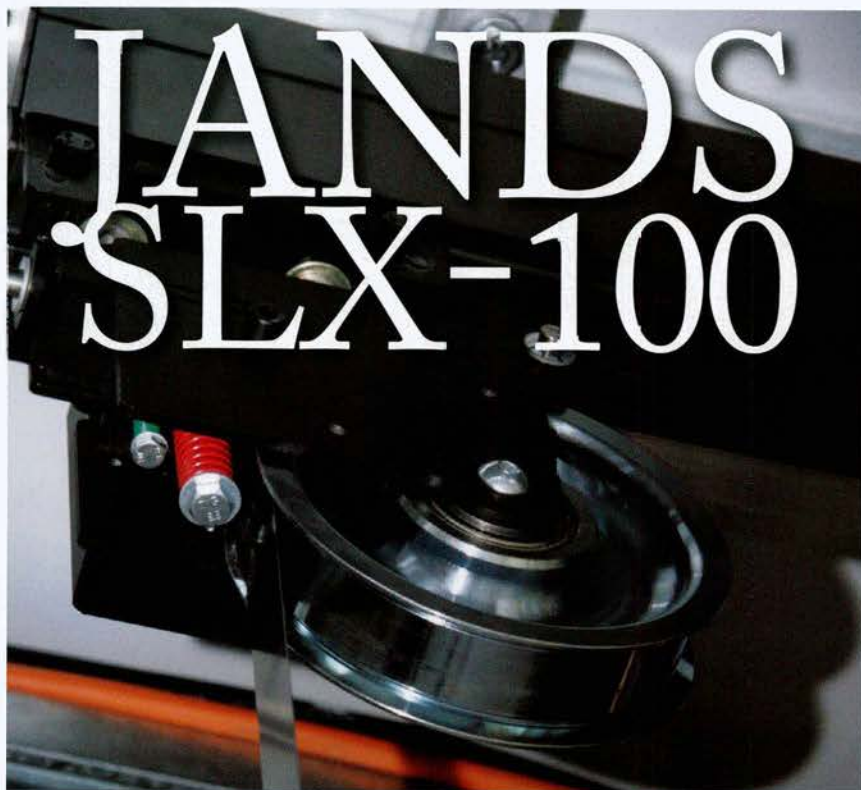
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JANDS SLX-100

Motorised lighting battens are nothing new, but a one size fits all version is. The new 'hoist in a box' from Jands makes a complex business simple.

By JIMMY DEN-OUDEM

Many venues, both new and old, have high ceilings, and accessing fixed lighting bars in such places requires use of an elevated work platform such as a scissor lift or vertical lift. Problem is that these units are expensive to purchase and maintain, and require the operator to be licensed. In a typical school or community situation, you're more likely to find a telescope or worse yet, a ridiculously tall A-frame ladder – neither of which is real good in terms of safety. In fact, they're downright scary.

So it makes sense to bring the lighting position to the operator, rather than the other way around. In the past such solutions had to be custom engineered – a costly process. If the quote for installation was too high, often some well-meaning individual would fashion their own solution based on boat winches, spansets, cable ties, bits of the old hills hoist and who knows what else. Failsafes and safety in general would seldom be considered.

JANDS TO THE RESCUE

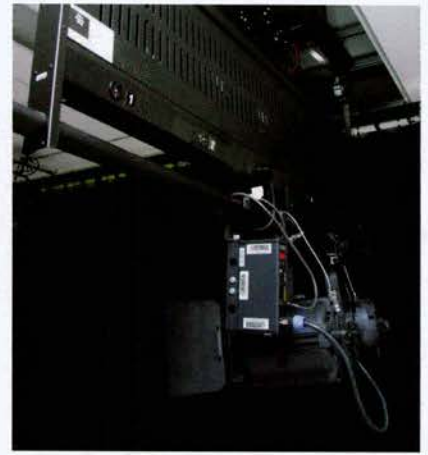
The above situation highlights a need for an affordable solution for lighting in

smaller venues. JANDS saw this need, and responded with the SLX-100. It's a motorised lighting batten with 8m of travel and a 100kg load capacity. The bar itself is 2.35m in length, so more than adequate to rig it to capacity. Cable management is via a concertina cable track which folds into an integrated cage atop the bar, and includes 6x 10A power circuits. Also included in the cable track are runs for the integrated DMX and RJ45 connectors.

The 100kg capacity is good for a couple of moving lights and a few conventionals, or quite a few more conventional fixtures by themselves – even with beam accessories. The assembly itself is the best part of a metre high, so you could mount it on a 10m high roof and dropping it the full 8m travel would bring the bar down to perfect working height. It will get there at a rate of 0.2m per second. The metre high assembly initially bothered me because I was looking at it in the Herkes Electrical showroom in Sydney – with about a 3m high ceiling. In practice of course this wouldn't be an issue.

FIXING AND FITTING

The unit has been designed such that a suitably competent building contractor can install the thing, and a suitably competent electrical contractor can wire



it. Once the unit is installed the drive unit simply connects to a non-RCD protected 10A 240v outlet. Variable drive motors typically have problems with RCDs. Control is exacted by an included cabled controller, which connects to the drive unit using standard Cat5 cable. Following installation the limit switches need to be set to ensure nobody tries to drive the thing through the floor. Additional sensors detect overload on the bar or "slack band", and stop the hoist immediately. The lift operates using steel bands rather than cables – this is because cables have more of a tendency to stretch than bands, thus maintenance is reduced.

The SLX-100 is supplied in 2 parts – the motor drive and mounting assembly and the bar and cable cage. The whole assembly weighs about 80kg, which is quite a lot, but the only part which actually needs to mount to the roof is the chassis and drive structure, which weighs around 35kg – much more manageable! Once this is in, drop the bands down and attach the bar & cage. The unit is also available minus the cage & cable management for lifting flats, drapes and such.

LIFTING THE GAME

The SLX-100 is a good implementation of an existing idea. It's priced to make a safe option for motorised lighting battens available to users who otherwise wouldn't have one. It's likely to be well received, especially in regional areas where specialist rigging contractors just aren't a financially viable option. **CX**

Brand: JANDS

Model: SLX-100 motorised lighting batten (including SBH-150)

RRP: \$10,000.00 plus GST

Product Info: www.jands.com.au

or see it at Herkes, Sydney or Factory Sound, Melbourne.

Distributor: www.jands.com.au

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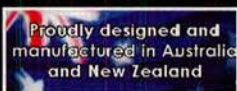
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EPSON EB-450Wi

INTERACTIVE SHORT THROW PROJECTOR



The CX team took a field trip out to EPSON HQ to check out something cool in the world of projection.

By JIMMY DEN-OUDEM

Video projectors are nothing new, but as time has progressed we've seen the technology which goes into them mature significantly. They've become brighter, sharper and smarter, and the EB-450Wi is a good example of this.

The EB-450Wi is designed for permanent installation – hence why we chose to review it on-site. Not that installation is all that tough – bolt the included bracket to a suitable wall then hang the projector from it. Line up is achieved using gear driven adjustment knobs, which allows for accurate positioning with ease. This is important, because the projector is an ultra short throw unit. Really short – from a projection distance of 65cm it will yield an 80" image. This involves some clever internal trickery involving lenses and mirrors, and it works really well – there's no obvious curving along the edges or corners of the projected image.

Ultra short throw projection has a

couple of advantages over its mature counterpart long throw projection, and these are chiefly associated with a presenter standing in front of the screen. The presenter will have the projection shining in their eyes when using long throw technology, and their presence will generate a shadow on the projected image. None of this matters with ultra short throw, as the projection angle is so steep that the presenter need only be a short distance from the screen to be out of the way.

At 2500 ANSI lumens brightness the output is more than ample for most boardroom/conference room/class room situations. We tested the unit with the fluorescent lights in the room switched on and the image was clearly visible, and exhibited good rendition of colour considering the high ambient light level. Lamp life is 2000 hours, or 3500 in economy mode. The native resolution of the EB-450Wi is WXGA, and contrast ratio of the 3LCD system is 2000:1. It's got all the standard inputs you'd expect: Composite, S-Video, twin component

and RGB on 15 pin D-sub. There's also USB, LAN and RS-232. All you'd expect from any current series data projector, complete with remote management via the network port. It's not hard to see this is a product designed to be installed en masse.


REACH OUT AND...

Let's say you're doing data projection and you need to navigate around the desktop to open a different presentation or something. Normally you'd use the computer mouse, hand in one place and eyes focussed on another. The EB-450Wi is supplied with an interactive pen. It kind of turns your whole projection surface into an enormous interactive touchscreeny tablet. It's like the world's most awesome mouse. The pen itself is quite chunky – a bit larger than a standard whiteboard marker, but much smarter. An IR transmitter in the end of the pen sends out a signal, which is detected by a small camera in the projector housing. The end of the pen is spring loaded – pushing the end is the



same as left clicking on your mouse. There's a button on the side for right clicks. The demo projector was linked to a computer with EPSON's Easy Interactive software installed, which basically turns the whole projection surface into a virtual whiteboard. You can draw, erase, highlight, then save or print your creations. You can even flip pages, so rather than rub out what you've written just start a new page, and come back to it later. It's strangely addictive, and what was really impressive was the accuracy with which the interactive pen works. Wherever you hit the projection surface is exactly where the cursor goes – this is because the camera works in tandem with the projection mech. So long as the projector is lined up right, the interactive camera will be too.

ALL UP

The EB-450Wi is cool. It's likely to find its feet in all the places we've been used to seeing interactive whiteboards, and then some. It's also a lot more affordable than alternative solutions which achieve the same outcome. The projector mount looks a bit strange when you're used to seeing one hanging off the ceiling rather than the wall, but aesthetic concerns fly out the window once the capabilities of the unit are revealed. Outstanding. 

Brand: EPSON
Model: EB-450Wi
Price: \$3,999.00 inc GST
Product Info: <http://epson.com.au>
Product Distributor: <http://epson.com.au>

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TANNOY V SERIES

We needed a PA for the CX bash, and a line array just wasn't going to do the job in our particular venue. So we chose something a bit different...



By JIMMY DEN-OUDEM

The CX bunker (location of the big party) really is just that – it's made of concrete and besser blocks, with more concrete on top. Acoustically, it's challenging to say the least. Lots of hard surfaces mean lots of reflections, and the room seems to be exactly the right length to phase cancel low frequencies at around 80Hz. We've tried lots of different systems in the room from very small through to very big, line arrays through to ground stacks, but always struggled to get the results we were after. This time would be different.

We decided a distributed LCR system was the go. More speakers was the answer to our problem, so we used 2 rows of 3 boxes, all flown and time aligned to the front edge of the drum riser. Tannoy VNET12-HP units were selected, combined with three Tannoy VS218DR subwoofers for some low end extension. The whole system was processed with a Tannoy SC-1 network enabled 2 in 6 out controller.

BLACK BOXES

The VNET12 HP is rated to produce 65Hz – 23kHz +/- 2db in full range mode, with an average maximum SPL

of 124db. Dispersion is 75 degrees conical. The 300mm PowerDual driver is internally bi-amplified. Amplifier program power is claimed to be 700W for LF, and 700W (limited) for HF. Ordinarily I prefer to see RMS ratings, but for self powered speakers I think this matters less than how well the speaker actually works. The cabinet itself is what you'd expect – compact but weighty (29kg). The outside is liberally populated with M10 inserts to permit rigging or attachment to the K&M manufactured Tannoy yoke bracket. The design is clean and attractive, and you can even spin the logo around to match cabinet orientation. The speaker can be pole mounted, though a blanking plate must first be removed to do this.

Around the back the VNET12 HP resembles every other powered speaker. XLR input and loop connectors, power and limit LEDs, PowerCon input and dual RJ45 connectors to network the speakers together. A power switch, network LED and "DSP bypass" switch complete the back panel (which is mostly heatsink anyway).

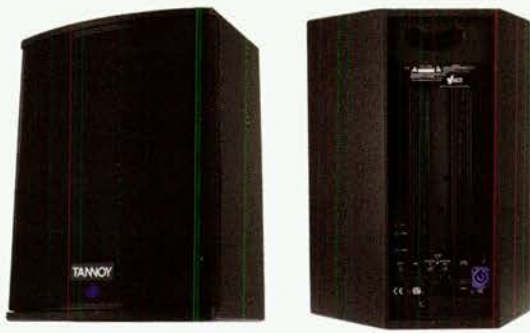
BIG BLACK BOXES

The VS218DR sub is a dual 18" direct radiator construction (there's also a single

18" version), and weighs in at 105kg. Drop it on your hand and it will hurt, as we discovered. Still, it's well constructed, and there are about forty seven thousand handles recessed into each side. This makes a coordinated team lift A) possible and B) easier. Some wheels would make a nice addition – we used a pallet jack.

The front loading was a really important consideration for us. Horn loaded subs produce great results outside our building, but not so much inside. Our aim was to keep the low frequency elements as well controlled as the rest of the spectrum. There's not a lot to say about the physical appearance of the VS218DR other than it looks like a sub. A nice sub.

It's supplied with rubber feet which you can attach at various points, so you can orient it flatways or tallways and it will still work. The front grilles are nice and thick, and again the design is simple but clean. Frequency response is 31Hz-600Hz (-3db), and rated maximum average SPL is a disturbingly high 139db (pink noise @ 1m in half space). Some of this can be explained by the 2000W average power handling capacity. Each of the two drivers can be powered individually off pairs on an NL4 speakon, and there's a loop through speakon in case you want to run more than one.



VNET12 HF 5q front grille on & rear.

There are also terminal strips so you can strap the drivers together and use a single amp channel, or just save on connectors if you're doing a permanent install. Speaking of amps, you'll be wanting something pretty serious to run the VS218DR, we used a Lab Gruppen PLM14000Q.

BRAINY BLACK BOXES

Although all the VNET boxes have internal processing, we were offered the choice of an SC-1 controller so figured we may as well take it. The controller looks much like most 2 in 6 out controllers, though it has the same dual EtherCon ports to connect the VNET network. VNET requires a USB "widget" to hook it into your computer. Installing this under Windows is about as easy as installing a USB printer under Windows. The SC1 controller does what you'd expect it to, and does it well. 3 band parametric EQ is available on each input & output, as well as delay and level control for each output. The front panel interface is downright confusing, but the software is magic and super easy. Even updating firmware in the cabinets is simple and works reliably - the VNET network requires no IP addresses, and daisy chains well. The software also shows you levels for each cabinet on the network, and allows you to power the boxes on or off and mute them remotely.

THE VERDICT

Impressive. Top end distribution was smooth and even left to right. The delays were set up at just the right level to supplement the front line cabs while providing a quieter option for the more timid punter. It all stuck together, it sounded clean yet warm, and it worked in the room. The subs didn't seem disconnected from the rest of the PA, which is one of the joys of the lower crossover points you can achieve with more full-range mid/high systems. Our venue seems to generate a low frequency null somewhere around the centre of the audience but this was less pronounced than usual, and once we had punters in the room it was negligible. During setup we emptied the room of crew, bunged in the ear plugs and turned it up. It slammed hard and still sounded good. We didn't need it to be loud, we just needed it to be good. Still, it goes to show that you can have it all. CX

BRAND: TANNOY

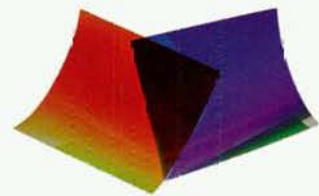
Model: V Series

RRP: VNET12HP - \$4,619 inc GST. VS218DR - \$5,319 inc GST. SC1 w/network - \$2,999 inc GST.

Product Info: <http://tannoy.com>

Distributor: <http://www.audioproducts.com.au>

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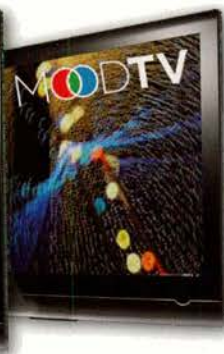
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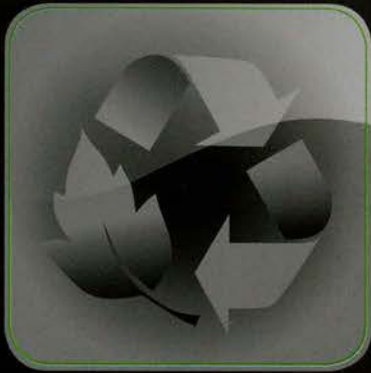


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