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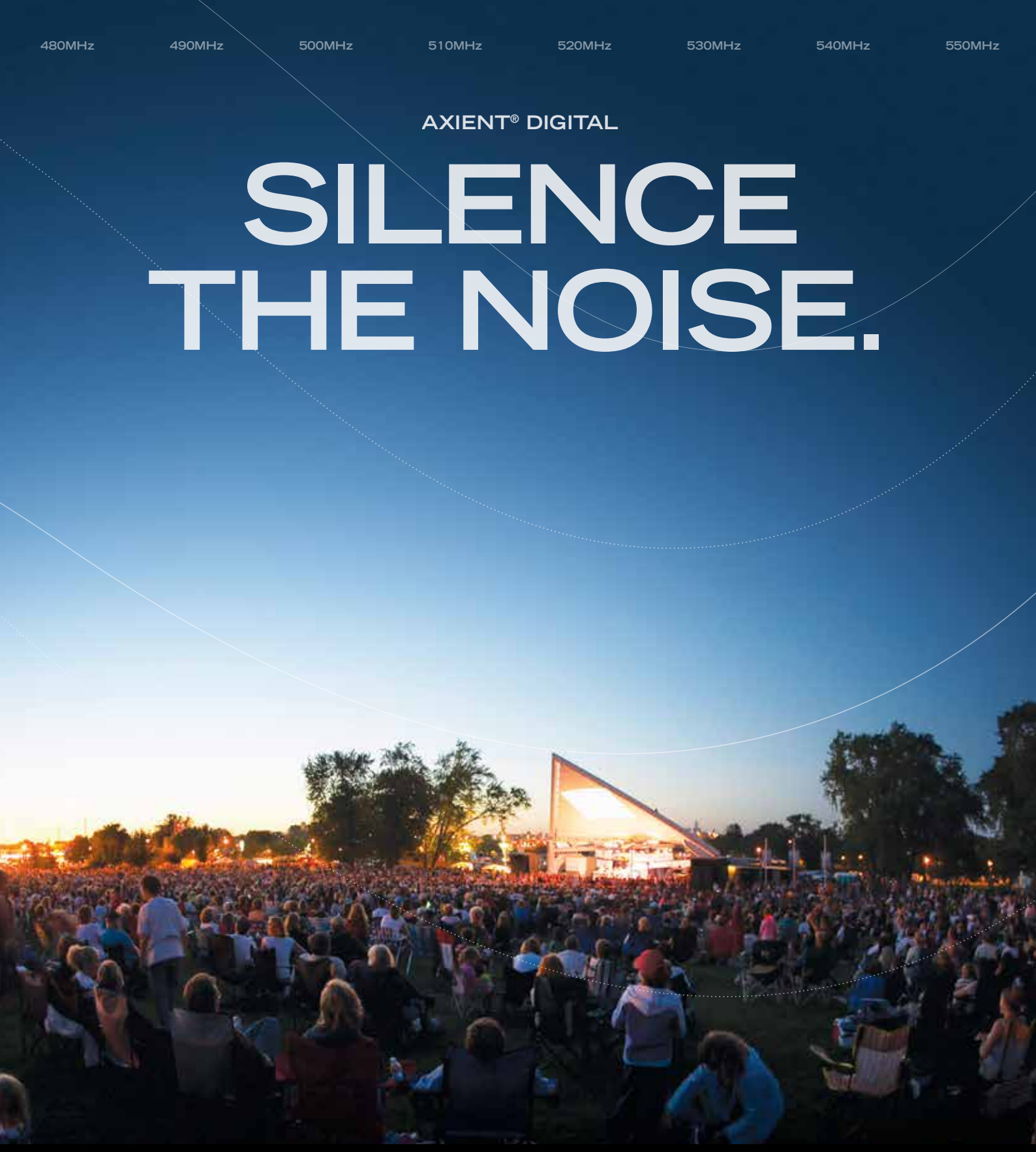

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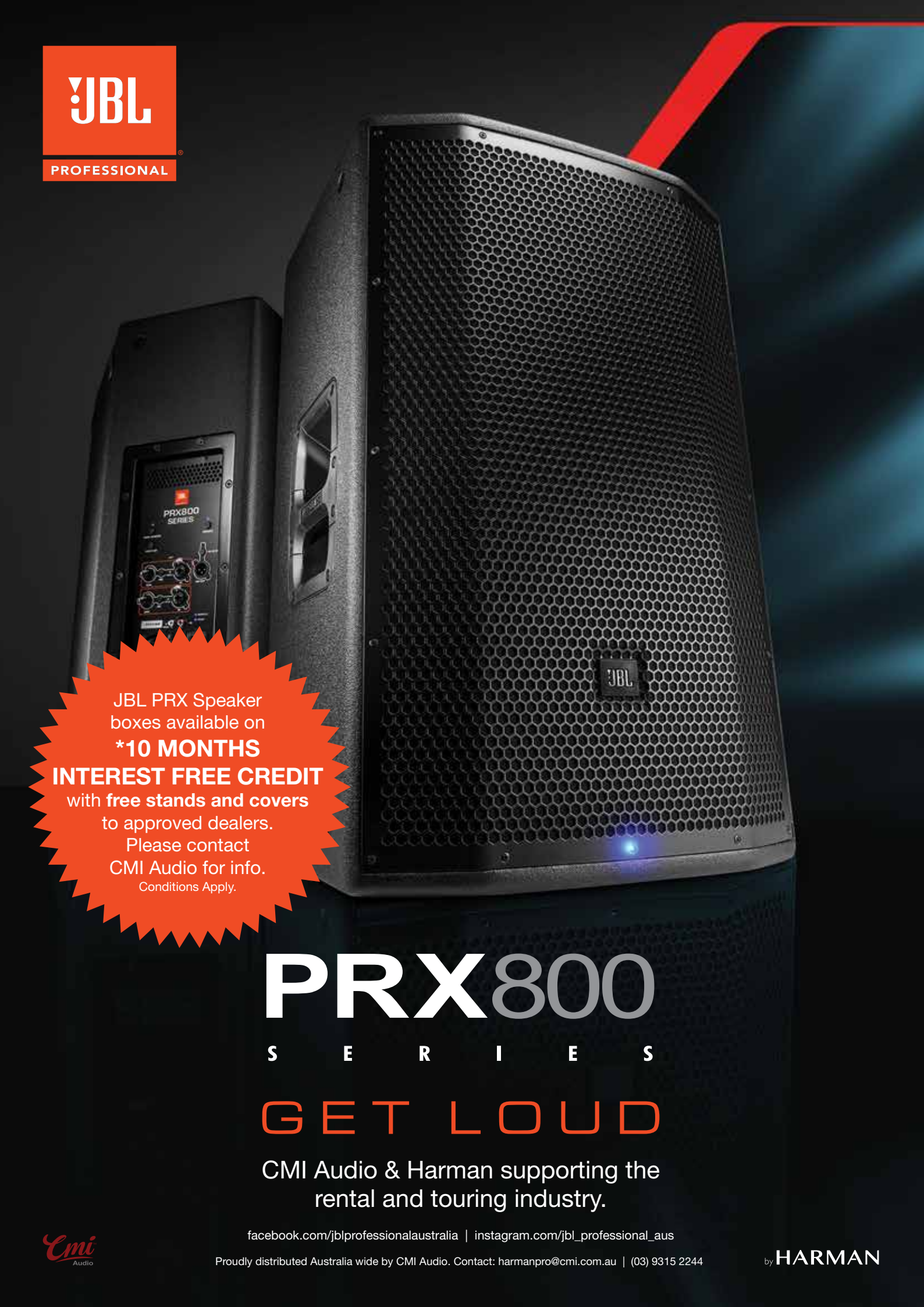
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Panoramic view of Victory Convention Centre, Auckland.

Chroma-Q Inspire House Lighting for Auckland's Victory Convention Centre.

There are plenty of jokes about changing light bulbs, but they usually don't involve 80 fittings. However, that was the brief for Nick Abel and Mike Jones, the managing directors of New Zealand's LS Group, when they were contacted by the management of Auckland's Victory Convention Centre.

The Centre is a house of worship that also features a beautiful timber-lined 2200-seat, tiered auditorium, which is often used for concerts, conferences, symposiums, small exhibitions and expos.

"They approached us late last year to look at options to upgrade their house lighting systems to LED from the old incandescent system, which was installed in the Eighties when the Centre was built," Nick says.

"We did some research and modelling and went back to them with a few different options using the Chroma-Q Inspire multi-purpose creative lighting range. It was the light fixture best suited to their needs because of its ability to run white light, but also run RGB as well, to give them a full colour wash."

Nick says the Chroma-Q LED range also offers major energy savings, which is another reason the client signed off on that choice. The new system is drawing around a quarter of the power that the old system used, and while the cost of installing LED fittings is higher than simply replacing the incandescent bulbs, the new system will pay for itself in time, because of the lower energy cost.

"The other thing we also improved was the light levels in the building. When we did a survey of the original installation, there was an average reading of between 50 and 70 LUX, whereas the room is now operating evenly at around 200-plus LUX, for a quarter of the power.

"And the other side of this too, was the heat calculations. There is a serious reduction in heat output from the lighting by the change."

Nick says the Chroma-Q range has a lot to offer a facility such as the Victory Convention Centre. Size, output and the fact the fittings are convection-cooled rather than using fans, were all part of the reason for the choice.

LS Group mainly used the Chroma-Q Inspire XT for the job. It's a relatively new fitting but has one of the highest quality RGBW colour mixing capabilities on the market. The lights were sourced from Jands (New Zealand) Limited, as part of a working relationship that has been in existence for 10 years.

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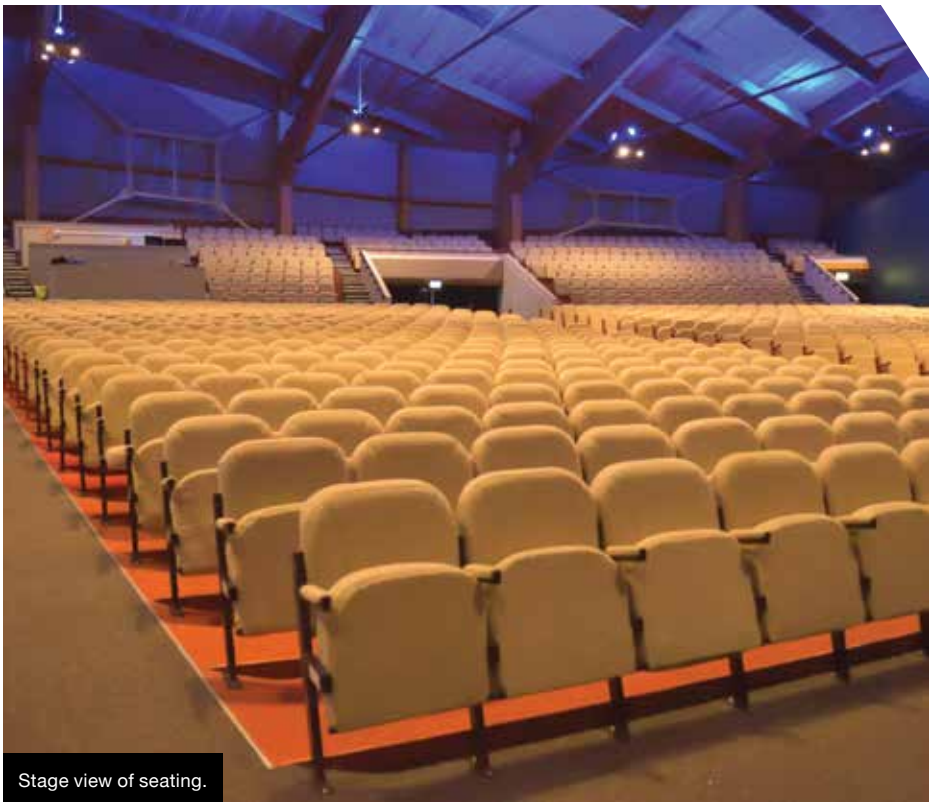

Stage view of seating.

"The main thing was finding the right fitting, for the size, the weight restrictions, for the fact we wanted something quiet, without fans, as well as a high output," Nick says.

"The XT must be one of the highest output fittings of that type available right now. It's versatile, flexible and probably the best bang for the client's buck, for what we wanted to achieve."

The project involved 80 lights and the installation took around three weeks. According to Nick, the real challenge came when they discovered the floor of the Centre has a slope of about five degrees.

"We had to get a special machine to do the job – a spider, which is like a cherry picker with a fully adjustable leg system so you can level it out to get up to the fittings. The process of moving the machine around and getting everything level took a bit longer than we expected."

The new system has been in operation since April this year and Nick says the feedback from the Centre's management and clients has been 100 per cent positive.

Lexair Brings DMXking to Australia

Lexair Entertainment is pleased to announce that they are the new Australian distributor for DMXking. Designed and manufactured in New Zealand, DMXking focusses solely on DMX512 products, with high quality & high specification being their calling card.

"We first used DMXking products for LED pixel control projects as a solution with Green Hippo Media Servers" said Tony Lukeman, Product Manager at Lexair. "The LeDMX4 Pro drivers which each have the capacity to run up to 8,160 RGB pixels or 16 universes of DMX over ArtNet or sACN are an ideal way to harness some of the hundreds of universes available per server with Hippo V4's pixel mapper. We have been really impressed at how versatile and intuitive the DMXking network configuration software is and we've barely scratched the surface of what they're capable of."

Across the range DMXking's products tick all the boxes for functionality that the Australian Market demands. Their LED pixel control products are unique in their level of functionality alongside user configurable USB-DMX devices that support the Enttec Pro protocol and a range of Ethernet DMX Nodes with flexible ArtNet, sACN, RDM, a plethora of DMX merging functionality and onboard show recording.

DMXking's Managing Director Jason Kyle is excited to be represented in the Australian market after some time. "For many years we've wanted an Australian distributor but have never found the right company. I'm very pleased that Lexair approached us and I look forward to a productive relationship" he said.

"Being able to offer such a feature packed range which competes with the big names on specification but priced to beat the lesser known brands is a win-win for us" commented Tony further. "Best of all DMXking is developed, manufactured and supported by a great team in Auckland, New Zealand. Being an owner operated company ourselves we love to work with other small companies to grow our businesses together."

If you'd like to know more about DMXking please contact Lexair on 0477 539 222 or info@lexair.com.au.

Adrian Barnard and Matt Dufty.

Melbourne production and install company Monitor City have joined the rapidly growing world-wide list of Adamson PA rental houses with a major investment comprising E12, S10 & E119 subs, and touring E-Racks, with additional inventory due imminently for the busy summer season. This flagship E Series rig supplemented by S10 is large enough to cover most venues across Australia, and gives Monitor City the flexibility to break into smaller or distributed systems as the business requires.

Monitor City was formed in 2006 by Adrian Barnard and Matt Dufty, sound engineers with 30+ years' experience each. Frustrated with their experiences renting equipment, they invested in their own IEM rig and stored it under the stairs. They grew and moved into the garage, then a warehouse, and now service a broad range of clients including the Falls and Unify festivals, local councils, corporate, and theatre, employing eight staff. "Our company culture is one in which everyone is involved and contributes," says Matt. "We care that when you're at a gig, it sounds fantastic. Anything less than that is not good enough."

Adrian and Matt carefully evaluated all the major players in the PA market before deciding on Adamson for their major purchase. "We looked at factors such as the speed of deployment, the logic of the system, its capabilities, and sonic performance," relates Matt. "Adamson stood out as the best choice. It's rider friendly and acceptable to touring professionals, and there's a growing Adamson network globally. This system will cover our festival work in the upcoming summer months, and can then be split into multiple systems. It fits well with the way we do things, and will definitely help us."

"We wanted to be on the leading edge of a product cycle for this kind of investment," elaborates Adrian. "Adamson have a great reputation; it was Jon Lemon, an amazing individual and arguably the best engineer I've ever worked with, who caught my attention when he spoke highly of them. In a market where some of the competing systems are getting older, Adamson represents a point of difference."

In addition to the famed Adamson mid-range performance, practicalities like rigging and transport were high priorities for Monitor City. "It was important to us that the rigging process was both fast and easy," continues Adrian. "With the Adamson system, we simulate the room, calculate the angles, and our warehouse staff set everything before the contractors even come in. It packs well in the truck, and when it gets to the venue, it hangs fast. It's a real advantage for us – pre-set it, roll it in, pull it up, and it falls into the angles, rather than needing compression. I saw a video of two people hanging one side in six minutes; it'll be a while before we get that fast, but it's something to aim for!"

The Adamson E12 is a 3-way line array enclosure, running two ND12-S 12" Kevlar neodymium drivers in the LF, a YX7 7" Kevlar neodymium driver in the MF, and a NH4TA2 4" diaphragm / 1.5" exit compression driver in the HF. Its modular aircraft-grade steel Autolock rigging system mounts onto the patent-pending skeletal structure, which houses the ultra-efficient mid-high components coaxially mounted on Adamson's modified E12 Co-Linear Drive Module.

The E119 Subwoofer is fitted with a light weight, long excursion, 19" SD19 Kevlar neodymium driver. It employs a dual 5" voice coil for exceptional power handling, and is mounted in an ultra-efficient front-loaded enclosure, designed to reproduce clean, musical, low frequency information.

The S10 is a 2-way, full range line array cabinet containing two ND10-LM Kevlar neodymium drivers and an NH4TA2 1.5" exit compression driver. The S10 produces a slightly curved wavefront with a nominal dispersion pattern of 110° x 10° (H x V). Patent-pending Controlled Summation Technology further eliminates low-mid lobing normally associated with 2-way line source systems.

Monitor City's Adamson E-Racks are each equipped with three Lab.gruppen PLM+ series amplifiers, featuring Lake processing and Dante audio networking functionality. They include Cisco SG300-20 switches which exceed the performance benchmark set by Audinate, and Adamson has set specific configurations designed to optimise transmission of Dante signals and Lake control data.

Monitor City will be supported throughout the life of their investment by Adamson distributor, CMI Music and Audio. "CMI are really excited by Monitor City's decision to choose Adamson, making them the first Australian-owned production company to join the rapidly growing E Series global touring family", remarks Lee Stevens.

"It's been great working with Lee Stevens and the CMI Audio team on this purchase," offers Matt. "They've provided really good support, and are very responsive, which is essential when a business is making a decision on capital expenditure this large. It's vitally important when working on this scale that you've got excellent support from both the distributor and manufacturer. This is just the beginning of a long-term investment, and I know that CMI Audio and Adamson will work with us every step of the way."

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Chauvet COLORado Panel Q40

COLORado Panel Q40 is an IP65-rated rectangular wash light that features 40 15W RGBW LEDs capable of edge-to-edge colour mixing. This rugged indoor/outdoor unit can be manipulated through adjustable beam angles and includes a magnetic flood filter to produce a wider, but still even area wash. Its outdoor rated power and data connectors allows for easy connections without propriety cabling. Control it as you see fit with W-DMX and RDM.

Australia: Showtools International
www.showtools.com.au or (02) 9824 2382

New Zealand: M.D.R Sound & Lighting
www.mdrlighting.co.nz or (06) 355 5073

Chauvet DJ Intimidator Beam 355 Touring Pack

The Chauvet DJ Intimidator Beam 355 Touring Pack is specifically designed for production and hire companies wanting an intelligent lighting solution for their inventory. Included are two Intimidator Beam moving heads and one Intimidator S35X roadcase. The Intimidator Beam 355 IRC is a compact LED moving head fixture with a 3° beam angle, fitted with a 100W white LED light source with 3-facet prism, colour wheel, and rotating gobo wheel. Also featured is a motorised frost filter that quickly converts the beam into a wash for added flexibility.

Australia: AVE
avecorp.com.au
or (03) 9706 5325

New Zealand:
M.D.R Sound & Lighting
www.mdrlighting.co.nz
or (06) 355 5073

NEW

Epson EB-L12000QNL

The EB-L12000QNL is a native 4K panel, 12,000-lumen laser light source rated for up to 20,000 hours with a dynamic contrast ratio of up to 2,500,000:1. A fully sealed optical engine, tilting assist feature, and 4K signal compatible interchangeable connectivity make it easy to integrate into any existing large venue infrastructure. The model is compatible with 4K ready lenses used by Epson's G and L series line-up, and it comes with 5 years manufacturer's warranty.

Australia: Epson www.epson.com.au or (02) 8899 3666

New Zealand: Epson www.epson.co.nz or (09) 366 6855

TourPro LightSky S600 Hybrid

The LightSky S600 Hybrid is a beam/spot/wash fixture that uses the 1500hr Osram Sirius HRI 471w discharge lamp. It has a 2° - 42° zoom range as well as variable frost, CMY and colour wheel, rotating and static gobos, bi-directional and indexable animation wheel, prisms, and 100% linear dimming, all packed in a compact 29kg body.

Australia and New Zealand:
TLC Global
www.tlcglobal.com.au
or +61 (0)7 5539 2142

Electro-Voice EVC

The EV EVC Series includes five base models, available in black and white, with coverage patterns suitable for a wide range of indoor/outdoor sound reinforcement scenarios. Acoustically and aesthetically matched with all the existing series under the EV-Innovation family umbrella – including front-loaded (EVF, EVU), horn-loaded (EVH) and line array (EVA) models – the front-loaded EVC models are compact, cost-effective and versatile options. Automatic Saturation Compensation (ASC) allows the installer to use EV's TK-150 audio transformer to maximise audio signal transfer from the amplifier to the loudspeaker without sacrificing audio performance and is standard on all models.

Australia: Bosch www.boschcommunications.com.au or 1300 026 724

New Zealand: Midwich New Zealand www.midwich.co.nz or 0800 947 336

GEAR

VNS GeoBox

The VNS GeoBox edge blending processor can perform curved edge blending for up to 4 projectors. It was designed with multiple inputs for easy connection of 4K video sources, and 4K UHD loop out for daisy chain connection of multiple units. Users can use keypads, IR controller or Ethernet to perform sophisticated geometry alignment, edge blending, colour fine-tune and non-overlapped area black level uplift. The video wall function can crop source images for each projector with flexible aspect ratio adjustment. Complete curved edge blending can be achieved without a PC or a video distributor.

Australia and New Zealand: ITI-Image Group
www.iti-imagegroup.com.au or +61 (0) 2 9477 5709

Hitachi HILS75204 and HILS65204

Hitachi's new range of interactive flat panel displays have been designed for a variety of uses from boardrooms, classrooms, lecture theatres, foyers, and consultation rooms. Within their clean contemporary black bezel frame, they incorporate up to 20 points of simultaneous touch, a bright LED anti-glare screen, wide viewing angle, PC-less writing and 40W front facing stereo speakers on selected models. They also include a LAN port for control, OPS slot, magnetic stylus pens, and front HDMI and USB inputs. Selected models now feature screen mirroring and annotation. Hitachi's new range of panels are backed by a 5 year warranty.

Australia: Hitachi Australia
www.hitachi.com.au or 1800 448 224

New Zealand: Hills
www.hills.co.nz or 08001 44557

Event Lighting PAR4X12B

The PAR4x12B is a wireless battery operated unit that features 4x 12w RGBWAU LEDs. It comes with its own IR remote for easy use, and can be controlled by an iOS or Android app. It offers four hours of continuous battery-powered operation at full output, or fifteen hours on single colour in Auto Run mode. Its die-cast aluminium. The unit is fan-less and weighs 1.9kg. There is an optional carry bag that fits six units.

Australia and New Zealand:
EVENTEC www.eventec.com.au
or +61 (0)2 9897 3077

Barco F80-4K9

The Barco F80-4K9 is a laser-phosphor light source projector producing 9,000 centre lumens designed for fixed installation in museums, board rooms, and auditoriums. They are 3D capable, and deliver images at 4K UHD resolution. Features include Barco Pulse processing, and less latency due to Single Step Processing (SSP). The F80-4K9 can run in any orientation, and wide array of all-glass lenses and wide lens shift ranges offer flexibility to suit most use cases.

Australia and New Zealand : Barco Systems www.barco.com or +61 (0)3 9646 5833

DMXKing eDMX4 Pro

The eDMX4 Pro is an affordable powerhouse for DMX over Ethernet Applications. Receiving Power over Ethernet, the compact node can act as a 4 Universe Art-Net or sACN to DMX output with RDM support. Via the configuration and test application it can also be used as a multi-port input device, or merge Art-Net, sACN and DMX sources with both HTP and LTP options. The eDMX4 can be used for standalone show recording and playback with the addition of a MicroSD card. The tough metal enclosure can be rigged with a single etherCON cable run to it or rack mounted in a one or two unit configuration with the optional 19" rack sleeve. Available with 3 or 5 pin XLR connections and in a din rail mount version.

Australia: Lexair www.lexair.com.au
or 0477 539 222

New Zealand: DMXking - dmxking.com

Acme Solar Flare XA-1000 BSWF

The Acme Solar Flare XA-1000 BSWF (Beam, Spot, Wash, Framing) is a four-in-one moving head fixture with a 1000W LED engine. Offering both static and rotating gobo wheel, CMY, linear CTO colour correction, colour wheel, four facet prism, motorised linear iris, and frost filters, it produces a colour temperature of 6500K with a beam angle of 5 °to 50°, and a luminous flux of 35000lm, controlled by either 25 or 34 channels of DMX512. The XA-1000 BSWF is covered by a three year warranty.

Australia and New Zealand: ULA Group www.ulagroup.com or +61 1300 852 476 / +64 9 889 3363

Mimo Monitors

avt is proud to announce the distribution of Mimo Monitors in Australasia and Asia-Pacific. Mimo Monitors, established in 2008, is a global expert and industry leader in small touchscreen monitors, displays, and tablets. Designed with a solutions-first approach, Mimo Monitors believe in creating small footprint, high value displays that drive innovation and provide a seamless experience for digital signage, conference rooms, kiosks, point of purchase, point of sale, hospitality, and more. The Mimo Monitors team has deployed solutions in locations throughout the world for Fortune 500 companies, both in the US and around the world.

Australia and New Zealand: avt www.avt.tech or +61 (0)7 5531 3103 / +64 (0)9 415 2257

NovaStar MCTRL 4K

NovaStar's MCTRL 4K is the first and only fully HDR10 capable controller in the industry. The MCTRL 4K supports resolution up to 4K x 2K@60HZ, and has 16 Neutrik Ethercon ports and 4 optical ports. It also has a variety of inputs including 1x DP 1.2, 1x HDMI2.0, and 2x Dual-Link DVI. Additionally, it allows for remote control via webpage, and supports ArtNet. Also onboard are proprietary NovaStar technologies ClearView and 18bit+. ClearView monitors and adjusts the image in realtime on a pixel by pixel basis, improving clarity of the image, while 18bit+ works to improve the grayscale of the image in conditions with low brightness.

Australia and New Zealand: NovaStar www.novastar.tech or +61 (0) 435 970 315

LED Blade CRE:ON-HD

The LED BLADE CRE:ON-HD unit is a power supply and a digital LED strip controller all-in-one as a "hybrid drive", developed specifically for the entertainment and event industry. Powering and controlling up to 1000 pixels per controller with on-board functions including switchable SPI / Artnet Modes, inbuilt test sequences, adjustable IP addresses and loop-through power and networking, all easily configured via the 2.8" Touch Screen.
The CRE:ON-HD simplifies the creative world of pixel mapping LED strips.

Australia and New Zealand: TLC Global www.tlcglobal.com.au or +61 (0)7 5539 2142

ShowPRO Collider Bar FC Strobe

This pixel-mappable RGBW LED strobe batten has 16 individually controllable segments for dynamic effects and visuals. It features a selection of pre-programmed macros and special effects. The interchangeable lens enables narrow (32°) or wide (100°) beam angles. There are two-layer foreground and background colours and effects and it can double as an LED blinder in continuous mode. Continuous operation is possible due to advanced thermal design.

Australia: Show Technology - www.showtech.com.au or (02) 9748 1122

New Zealand: Show Technology - www.showtech.com.au/homenz or (09) 869 3293

NEW GEAR

Shure PSM900/1000

Shure are excited to introduce new bodypacks for Shure PSM1000 and PSM900 Personal Monitor Systems. With the mixing engineer in mind, the P10R+ and P9RA+ provide more headroom, better stereo separation, and higher fidelity due to a new hybrid signal processing architecture. Additional features include system-level RF improvements, an upgraded headphone amp, power save mode and updated volume limiter, volume lock, and a different appearance (grey bezel) than the P9RA and P10R bodypacks to facilitate gear management.

Australia: Jands www.jands.com.au or (02) 9582 0909

New Zealand: NSL www.nsl.co.nz or (09) 913 6212

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20 QUESTIONS

with David Henderson

David Henderson is a freelance audio engineer with 30 odd years of experience in both live production and studio recording.

He has worked with a diverse range of acts including Pardon Me Boys, Gina Jeffreys, The Screaming Jets, Lee Kernaghan, Suzi Quatro and more, whilst also freelancing for several production companies. Recording credits include the Gadflies, Regurgitator, The Screaming Jets, Coldplay live broadcast from the Enmore Theatre and Katie Perry live broadcast from the Opera House.

1. What are the three best things about your job?

The people, music, and travel.

2. And the three worst things?

Stairs, hours, and waiting.

3. What do you never leave home without when working?

My man bag, and laptop as they contain my life.

4. What was the worst nightmare you encountered on the road?

Having no loaders turn up when you're meant to have 22, two semis and an eight tonner. The show went on of course but it was a hell of a day.

5. What has been the strangest request from an artist?

To move an RF receiver closer to him because he could hear the delay of it being three metres away.

6. Who was hell to work with (probably best not to actually mention name but elude to it)?

Always the least talented seem to be the hardest to deal with.

7. What is the most stupid request you've had from a member of the public, artist or promoter?

To mix in a stair well, as the promoter had sold the entire room leaving nowhere for the FOH console, a little PM3000!

8. In your opinion, what's the best show you've worked on and why?

There has been many but 'Back to Back Beatles' was an awesome experience. Incredible band, 21-piece orchestra and some great voices, and a great crew. I was on monitors and it was quite a challenge, but having a DiGiCo SD7 made the job a joy.

9. What is the most bizarre sight you have ever seen at a gig?

A crowd of 45,000 stop in the middle of a rock festival and go silent for an hour of prayer, it was quite surreal from an outsider's view.

10. Who do you admire in the industry and why?

The many great crews I have worked with. They have your back, mateship and knowledge. There is always something to learn from someone.

11. Which venue is your favourite and why?

The Tivoli in Brisbane comes to mind. It's just a great room, great crew, access, and it sounds great.

12. Which recent piece of production gear do you view as a game-changer?

Besides the Digico SD series, especially the 5 and 7, the new range of speakers from Adamson are amazing.

13. What is the most outrageous thing you have ever done on tour?

Work with the late great Pat Pickett … for years…

14. What was the worst weather event you've encountered at an outdoors gig?

Red Hot Summer at Bribie Island last year. Ten minutes before Suzi Q was due on stage a storm hit like I have never seen, 180kph wind gusts for 40 mins. It was scary, eight of us holding the FOH tent down, had to drop all walls on the stage, and the crowd was evacuated.

15. What would your ideal rig contain?

Digico SD7, Adamson PA to suit, and I would be in a happy place.

16. Which band would you most like to work for and why?

Pink Floyd – I would love the quadraphonic experience, and the budget.

17. Do you have a favourite mantra to get you through the day?

There are no problems, only solutions.

18. What do you think of the Australian live music industry at the moment?

It's a bit of a roller coaster but seems to be improving.

19. If you could invent anything to do with audio, what would it be?

Not really audio but teleportation would be handy.

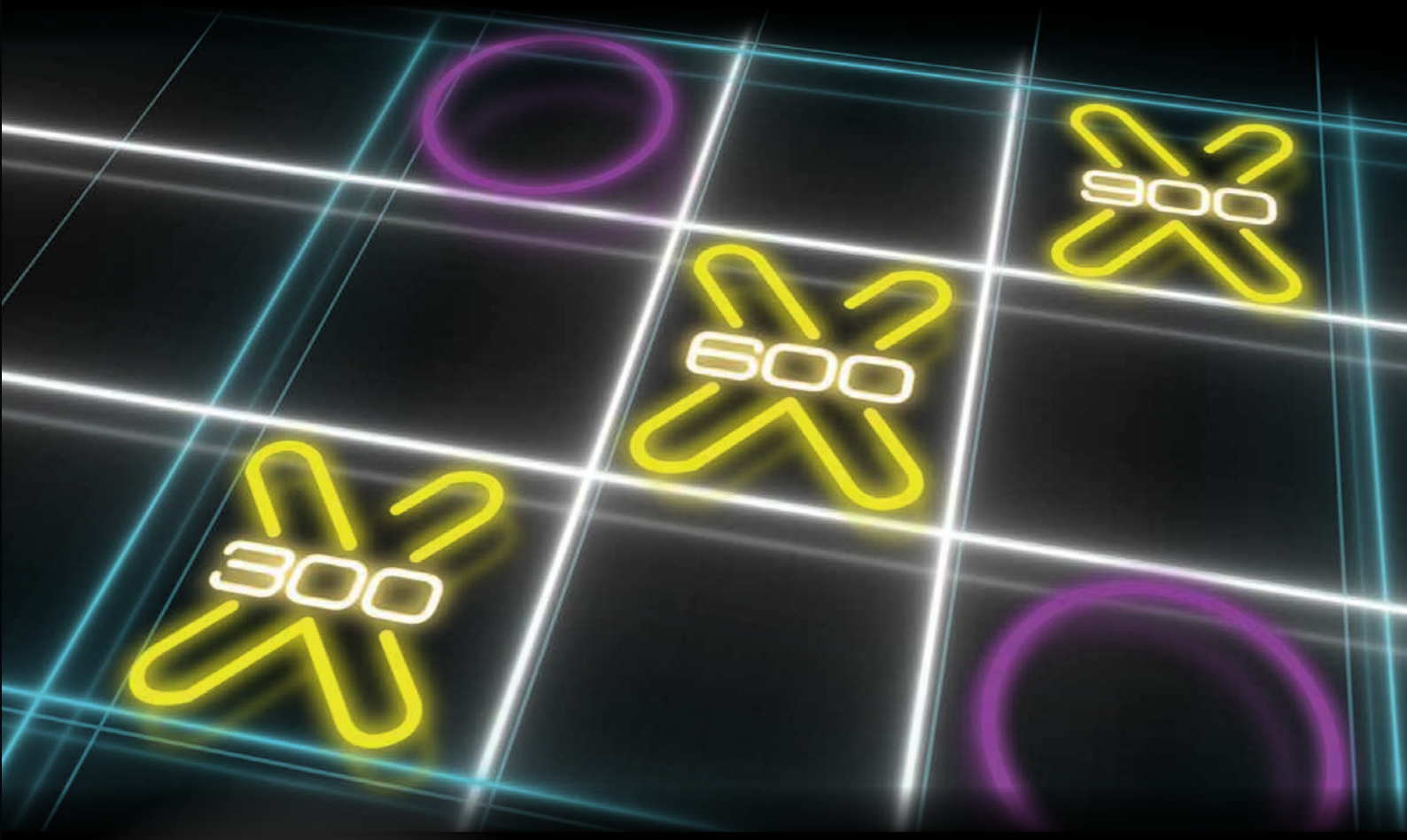
20. What did you really want to be when you grew up?

A pilot of course.


David Henderson

AXCOR PROFILE 600

ESSENTIAL STATE-OF-THE-ART TECHNOLOGY FOR EVERYDAY USE



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CLAYPAKY AN OSRAM BUSINESS

by Julius Grafton

BRUCE JACKSON

Amazing Australian blazed trails with Elvis

Bruce sat stage right mixing monitors for hundreds of shows.

Australian sound and electronics engineer Bruce Jackson was born at the right time to emerge as a leader in lighting and audio electronics during the late 1960s. He was the 'J' in Jands, which became the leading entertainment technology manufacturer and distributor in Australia and remains so today.

Only after his death in 2011 piloting his aircraft out of Death Valley was he widely acclaimed – but he had already won the mantle as 'the greatest sound guy alive', according to Marty Erlichman, Barbra Streisand's manager.

"In 1993 I set out to put together my first concert in 27 years. I knew no one. It was a painstaking task to put together a team of professionals that would enhance and protect Barbra's performance", said Erlichman.

"Though arduous, things came together in an orderly manner except for the sound. After many interviews with scores of potential 'sound experts', one frustrated candidate finally asked; 'You've met all of us, some twice, and you still haven't hired anyone. What exactly are you looking for?' I simply replied, 'The Best!' His answer was 'Then you might have a problem because the best is Bruce Jackson… but he's retired and doesn't do concerts any more. He is now a successful inventor.' I said, 'Then I'll make him an offer he can't refuse.'"

What then happened had the live audio community in awe as auditoriums were carpeted, drapes were hung over hundreds of square metres of walls, and fastidious new tricks were rolled out by Bruce to make cavernous, cold arenas intimate and bring the depth and timbre of his diva's wonderful voice to every set of ears in every paying seat. Money was no object, but Bruce was also no fool and things were done effectively.

Barbra was his final client, in a list that includes the greatest performers and bands on earth, including Bruce Springsteen, Elvis Presley, Johnny Cash, Glen Campbell, Blood Sweat and Tears, Art Garfunkel, The Rev Al Green, Fleetwood Mac, Stevie Nicks, Carly Simon, James Taylor, Cat Stevens, Black Sabbath and ironically The Jackson Five, when Michael was just a kid.

Ms Streisand explained from her perspective why the relationship between a performer and their audio engineer matters so much. "It's sort of legendary that when I step onto a concert stage, I'm concerned with every detail. But it never crossed my mind to worry about everything I depended on Bruce to do. The sound, I knew, would be immaculate. He was someone you treasured as an artist and equally as a person. He excelled at both. I will miss him."

A Legend Made Another

Bruce worked for Elvis Presley for six years until Elvis' death on August 16 1977. In that time he revolutionised Elvis's sound with technical advances, designing and building new equipment and systems that were adopted by every leading band and artist, in fact the entire touring sound industry.

It's the Elvis era of Bruce's life that is the setting in a lush and colourful new book called Bruce Jackson On The Road With Elvis, written by Bruce's younger brother Gary.

"It's written in my voice," Gary said, "framed around the Elvis period as it sat across the most exciting era for live sound, spanning primitive technology with a series of firsts that Bruce innovated."

Along the way, Bruce collected a treasure trove of

Gary (left) and Bruce Jackson in Auckland 1983.

Elvis anecdotes, photographs and memorabilia, telling a close-up story of a performer troubled by his demons, and how he came to trust a young guy from Australia.

The very readable book interweaves the story of Elvis with the story of Bruce. "Elvis expert Evan Mueller has verified the Elvis history," Gary said, "I verified the rest with the help of Bruce's close friends and colleagues."

Growing up in Altona, one of the most amazing harbourside estates in Sydney, Bruce had an insatiable interest in electronics which lead to forming Jands with his mate Philip Storey – the 'S' in JandS.

Across his formative years Bruce combined his skills with a larrikin love of music and women. The wild revolution of sex, drugs and rock and roll that started in the late 1960s comes alive in the reading. As does the procession of world famous bands and performers, laid into the narrative.

Elvis and The Crazy

There are endless insights into the troubles of a legend, seen through the pragmatic and non-judgemental eyes of his young Australian employee. Much of these are in Bruce's words as he was a prolific letter writer who also sent spoken audio cassettes and on-the-road postcards to his mum Mavis, and his girlfriend back home.

Bruce's love of aviation was sparked by sitting with the pilots on tour. When Elvis bought the 'Lisa Marie', a four-engine converted passenger jet, he wasn't happy with the sound system. Bruce was called up to Elvis's suite at the Las Vegas Hilton. Elvis was sitting on his bed in his karate suit. He told Bruce to do whatever he had to do to fix it or he'd shoot it out. Bruce noted Elvis' gold gun on the bedside table. Elvis' people were nervous… it could happen; a potential disaster in a pressurized aircraft. Bruce is pictured at the controls flying the 'Lisa Marie' down to Miami for a replacement system to be installed.

As the loopy became the normal, Bruce continued to design and construct new audio equipment including what was then a world-leading mixing console. He was not only employed by Elvis but also by Clair Brothers where he was regarded as a genius.

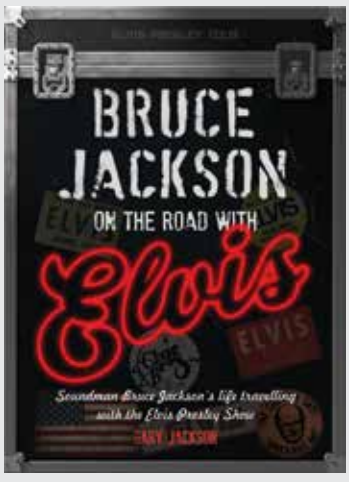
After the death of Elvis he went on to work with Bruce Springsteen whose words appear as a foreword in the book.

Bruce Springsteen (left) and Bruce Jackson.

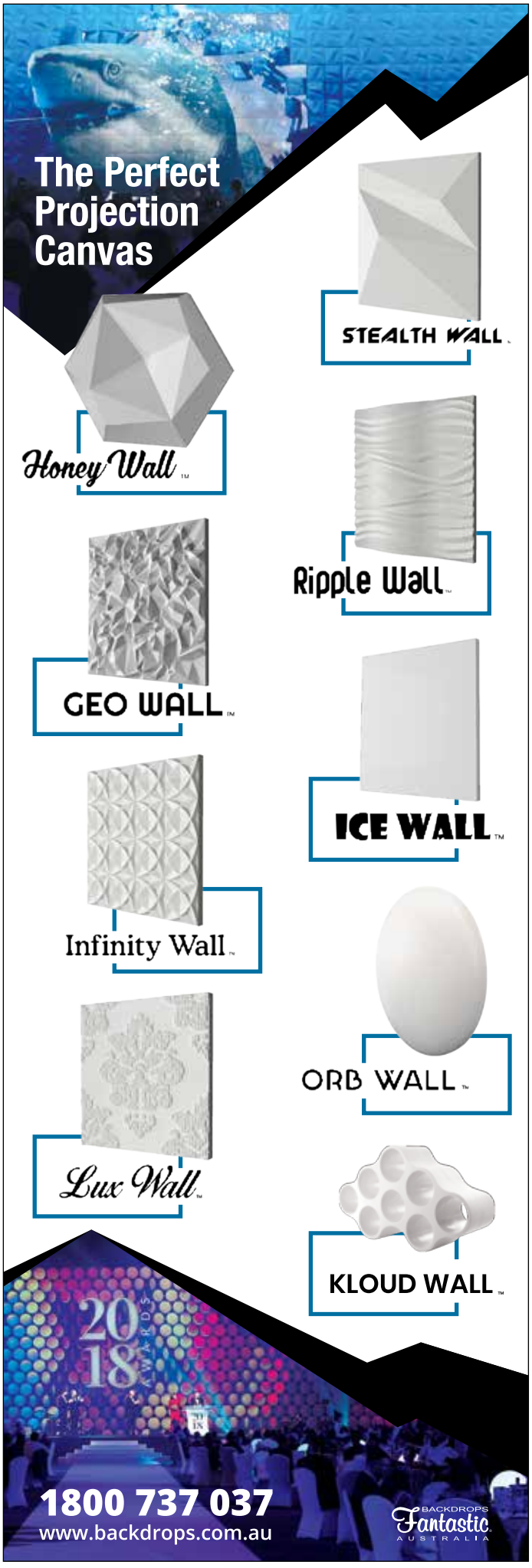
"It was something that always struck me, I'd say, 'I got Elvis's guy! Elvis's man is working for me in the house!' "

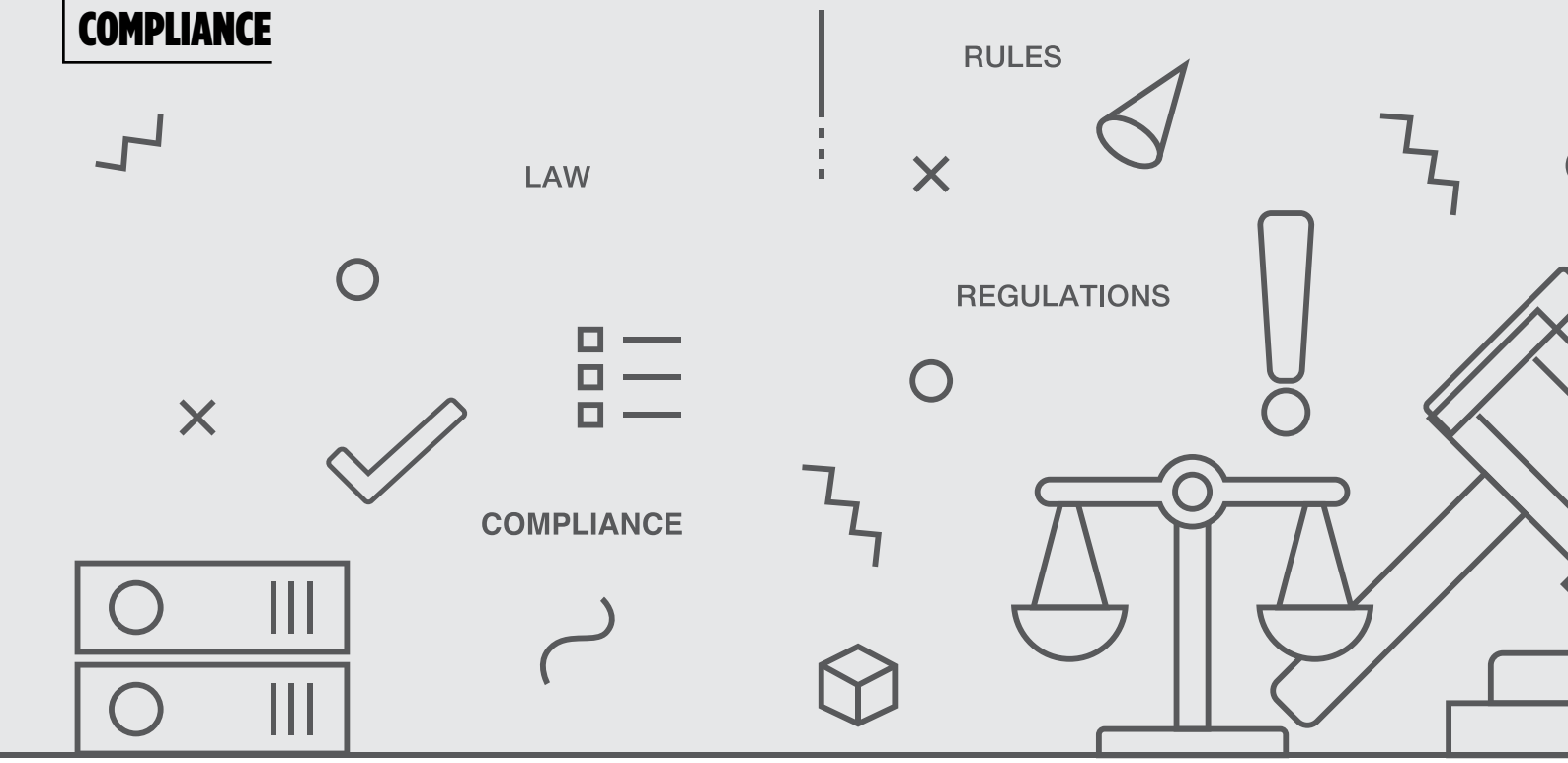
Bruce's postcards, letters and talking tapes provide an intimate insight into Bruce's life on the road with the Elvis Presley Show.

Bruce Jackson On The Road With Elvis by Gary Jackson.
Published by Band Book Publishers.



Bruce Jackson On The Road With Elvis is a large format (240 X 315mm, 222 page) beautifully presented hardback book printed on premium, 140gsm semi-matt art archive paper and comes in a custom made slipcase. This original story, with not only an account of a remarkable Australian's life but also a fresh, new insight into the life of Elvis Presley, will be welcomed by fans who may have thought everything on Elvis's life and career had already been said. Bruce Jackson On The Road With Elvis features many original, never-before-published photographs from the Jackson family collection. Available online at www.brucejackson.com.au bandbookpublishers@gmail.com





Compliance Part Three

ELECTRICAL SAFETY

by Steve Devine

Electrical safety is regulated in Australia and New Zealand by individual states who have a peak body called the Electrical Regulatory Authorities Council – ERAC. Several emerging challenges and problems with the electrical equipment safety systems across Australia and New Zealand led ERAC to commission an independent consultant to conduct a comprehensive review in 2007. As a result of the review, a number of recommendations were made to improve and harmonise electrical equipment safety. This has resulted in the Electrical Equipment Safety System – EESS

The EESS covers low voltage electrical equipment that is

- Rated at greater than 50v AC RMS or 120V ripple-free DC
- Rated at less than 1000V AC RMS or 1500V ripple-free DC
- Designed or marketed as suitable for household, personal or similar use.

The above is designated as "In-scope equipment for the purposes of EESS classification. It is immaterial whether the equipment is designed or marketed for commercial or industrial purposes. The applicable Electrical Safety Australian/New Zealand standard is AS/NZS 3820:2009.

All electrical products in our industry are subject to EESS provisions.

Unfortunately, the EESS has yet to be adopted by NSW which makes for a confusing situation. It won't be long before they get on board so for the sake of simplicity let's assume they are one big happy family of regulators. **Those from NSW can ring their local member and tell them the government's tardiness in joining EESS is causing lots of headaches and making my life a misery trying to write an article dealing with a national situation.**

To import or manufacture electrical equipment in Australia or New Zealand you must be a "Responsible Supplier". This means you must be easily identifiable via an Australian Business Number (ABN) or a New Zealand Inland Revenue Department (IRD) number. A national database has been established and is a key feature of the EESS system. It requires that all responsible suppliers register their details in this database. This will enable electrical equipment to be easily traced to the supplier and its legal supply in Australia and New Zealand to be verified. As part of the registration process, suppliers must also make a declaration that their equipment complies with relevant safety standards.

As with EMC, a three-tier risk classification applies to EESS.

Level 1 – Low risk

Level 2 – Medium risk

Level 3 – High risk.

Level 2 and 3 equipment is as defined in Australian/New Zealand standard AN/ZS 4417.2. All other equipment is classified as level 1. Having said that, I found the information provided in this standard is vague and ambiguous. I concluded that the best way to determine if an item was level 3 was if it was likely to be used by a member of the public, then level 3 applies.

Anybody who is seriously considering getting a product approved should purchase this standard.

Suppliers of new equipment who are the second or subsequent supplier in participating jurisdictions in the Australian and New Zealand supply chain must source their equipment from a registered supplier by law.

Level 2 and Level 3 equipment must be registered on the National Database before it is offered for sale.

For Level 2 equipment a Compliance folder is required. This folder must contain:

a) Description of the electrical equipment including:

(i) Make and model number;

(ii) Design documentation such as descriptions, circuit diagrams, drawings;

(iii) Illustrations and specifications including copies of rating labels or final mark-ups of artwork of labels and colour photographs showing internal and external construction; and

(iv) Instructions regarding the operation, installation, use and safety, etc, of the electrical equipment.

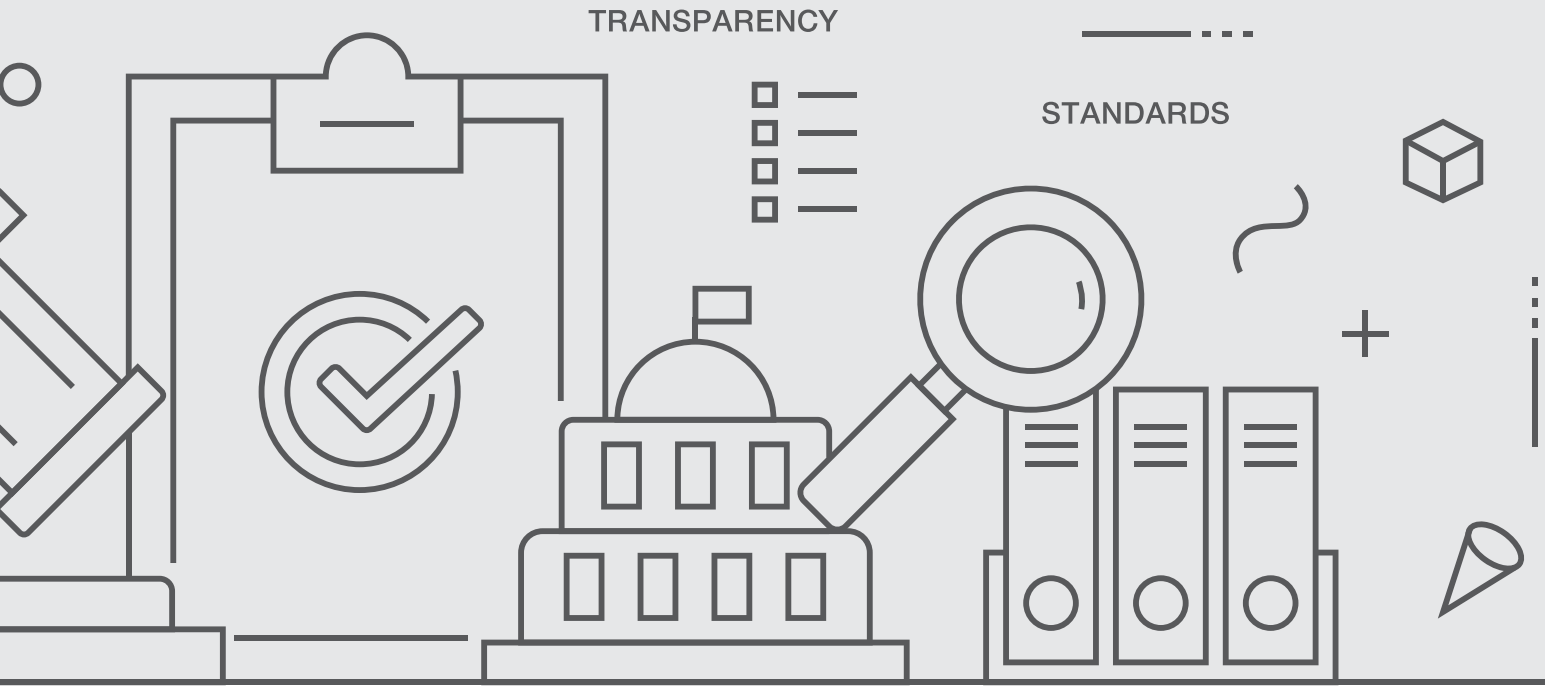
b) Conformity assessment results including:

(i) Description of methods used and results and evaluations of tests, inspection and any audits including reports covering any deviations, concessions, departures and variations

(ii) List of relevant standards;

(iii) Critical component listing; and

(iv) Identification, relevant qualifications, technical competence and accreditation details of any parties undertaking the conformity assessment. And a certificate of Conformity is mandatory. The compliance folder and certificate must be available for inspection within 10 working days.



It is not mandatory to use a testing laboratory for Level 2 devices. You can use an individual who has:

a) A degree qualification in electrical engineering and at least two years' experience in the use of electrical equipment safety standards for regulatory purposes; or

b) An advanced diploma or equivalent qualification in an electrical discipline and at least three years' experience in the use of electrical equipment safety standards for regulatory purposes; or

c) A trade qualification in an electrical discipline and at least four years' experience in the use of electrical equipment safety standards for regulatory purposes.

As you can see this system is extremely difficult for the uninitiated.

For Level 3 equipment a test report is required from an accredited test laboratory and this must be submitted as part of the approval process. If successful an approval number will be issued, and this must be marked on the item.

Fortunately, most of the electrical equipment, amplifiers, lights, etc in the entertainment industry is classified as Level 2.

240-volt Plugs, Sockets, Power Cable, Laptop and wall wart type power supplies are all classified Level 3. I am sure there are others.

Most Australian and New Zealand importers and manufacturers avoid tangling with Level 3 approvals by purchasing power cords and inline power supplies that are already approved by the local manufacturer.

If you take a close look at an IEC power cable you should see the approval number on the plug, socket and the cable.

Pic - A good example of what can happen with unapproved items

I think the best way to explain the mechanics of all this is to use an example.

You decide to purchase some moving lights from company XYZ.

1. EMC Compliancy

Moving lights are a Level 2 item for the purposes of EMC. That means you will need to have a certificate of compliancy and be able to provide evidence of same within 10 days of request.

Most manufacturers are happy to provide a CE or similar certificate of compliancy. This is not sufficient for Australia or New Zealand. You need a copy of the actual test report that was undertaken by the manufacturer to substantiate the certificate. The report needs to state and prove the product complies with the relevant Australian standard. In this case EN55015. Unfortunately, some unscrupulous manufacturers are forging these reports, so you will need to verify that the report is genuine.

A genuine test report for a luminaire should be about 45 pages long. Look to see if any graphs or pictures appear to be photoshopped. The report will have been prepared by a test laboratory. Contact them to verify they exist and verify the contents of the report you have received. If you are in doubt or there is no test report available, you can either arrange to do one here or look for another product. An EMC report will cost somewhere between $3000 and $5000 to get done here.

If the fixture you are importing is relatively cheap it's a good chance the manufacturer will be unable to provide a genuine test report. It's also very possible the item will not pass EMC testing.

The onus is on you to have the correct information when it is requested. The only way to guarantee this is to get the actual reports at the start of the process.

2. EESS Safety

A lot of the cheaper product from Asia uses cheap and dangerous power cable and connectors. These are Level 3 items, so they need to be removed regardless. Once you have swapped them out for local approved items the fixture will then be a Level 2 item for EESS certification. You now need to get the item inspected by a qualified person (refer EESS detail) to make sure it's safe for use and complies with Australian/New Zealand standard AN/ZS 4417.2.

3. ERAC Database

Once you have completed items 1 and 2 its time to register on the ERAC database. This can be done online at https://equipment.erac.gov.au/Registration/

You will need to provide your ABN, company name and or trading name, authorised person contact details and the usual information requested with all these types of things. You will also need to pay the annual registration fee of about $200. As part of the registration process you will need to enter the brand and model number of your device and make a declaration that the equipment meets relevant standards and is electrically safe. There is also a fee for each product you register depending on the period of registration required.

As your lighting fixture is a level 2 device you are not required to upload your Compliance Folder to the database, but you will need to enter the physical location of the folder and it must be available within 10 working days on request by a Regulator.

Having done all of the above you can now place the RCM mark on your light and use or sell it.

It is obvious to me after the extensive research to write these articles that this is an issue that is not going to go away and can't be ignored. The down side for an importer is the wearing of liability and the cost of compliance. There is an upside. In some countries it is becoming mandatory to present the local compliance credentials to customs before an import shipment will be allowed out of the port of entry. South Africa is an example of this. If you try to import a container of stock and can't produce the correct locally approved documentation, there is a strong chance your container will be going to landfill. They are serious about this and are requiring a higher safety test standard than Australia or New Zealand. If this regulatory approach was introduced here, that could mean the end of grey imports and certainly the end of dodgy knockoff electronics.

Maybe worth the pain of compliance after all.

Anybody who is manufacturing or importing equipment in our industry in Australia should become a member of ACETA. Apart from the networking possibilities, a peak body is the only way that you can effectively connect with the regulators. For more information please go to www.aceta.org.au

I would like to thank Susan and Peter Twartz from Jands, Frank Andrewartha from Quest and Andrew Wood from Digilin for their assistance with this series of articles.

AV's New Frontier

HUMAN ANALYTICS

by avt's Head of Strategic Partnerships & Innovation, Graham Barrett

AdMobilize provide processing solutions that can recognise human faces in a camera feed and measure attributes such as age, gender, and mood. This data can be used for everything from targeting and measuring advertising, to getting the most out of meeting rooms in a corporate fitout. This is deep data analytics, and the new frontier in AV integration

If you look closely at many of the digital signs you see in shopping centres, you'll see a little camera at the top of the big stainless steel box. For some time now, AdMobilize has been licensing their technology to digital advertising companies to collect metrics. This is because you sell signage by proving that your ad was delivered to your target audience, and AdMobilize can tell you with the granularity that this number of women between 25 and 40 years of age viewed your ad for this number of seconds on average, and how they likely felt about it.

The important thing to remember about AdMobilize is that it is not face detection. It is human analytics. It's all about demographics, gender, age, mood, and attention. It tracks humans, if you like. There is absolutely no personal identification data created or retained. It is entirely depersonalised. We can then take that information and do something practical with it.

Applications

avt's interest in AdMobilize first began with the possibilities we saw for meeting rooms and classrooms. We wanted to start being able to provide metrics, such as if there are people in a particular meeting room, their age and mood, and then track that in conjunction with other data like calendar information. If we take a room that has a capacity of 12, but the data tells us that the average number of people in there at any given time is three, we know we should be building smaller meeting rooms. More importantly, we can also look at why users are more engaged in some rooms than other others.

The other big opportunity we see is in the tertiary teaching space. One interesting application is to compare the data on the age and gender of the people who turn up to class compared to the people

who are actually enrolled. There's also the ability to track the average class engagement for a particular academic. We've already done some really exciting trials with QUT who are collecting data on a range of classrooms.

Possibilities

When we combine AdMobilize with our Tripleplay digital signage products, we get the ability to provide human-driven signage. This allows our integration partners to deliver that in a much less bespoke and high-cost manner than if you were going through an ad agency, and drive user experience based around the engagement, attention, gender and demographics of the audience.

Tripleplay have very robust and very open APIs that have allowed us to do projects very easily. You can access just about every part of the platform via an API. And when we're talking about something like an experiential environment, it might be you want to play video rather than run a particular piece of signage. This means we have an API from Tripleplay into video-on-demand, and the video that just played is based on the audience measurements from AdMobilize. We can have the demographic of the audience drive exactly what's displayed on screens. You're not just limited to digital signage.

Practicalities

AdMobilize was designed to work on very inexpensive webcams. In a room, you want to make sure that you get everyone in shot, and therefore contributing to the data. You've got to be a little bit mindful of the algorithms in use; AdMobilize works by learning what a face is. If you distort that face that can significantly reduce the accuracy of the data. There are some strict requirements in terms of depth of field and the number of pixels that make up a face. There's also limitations in terms of how far away the people are from the camera.

AdMobilize also make a crowd analysis product, which is quite impressive, because that is all about what makes a human, not just a face. In the case of a crowd, you can have someone who has their back or their side to the camera, and AdMobilize can still determine that they are a person, which way they're moving, or whether they're staying in a particular area.

AdMobilize use a couple of different licensing models. The first is when you stream video from several cameras to a central server, and then have multiple instances of AdMobilize running on that server. The more common approach is to have the camera and computer local to the display, which ends up being quite cost-effective until you get into massive scale. Irrespective of the platform, both of those examples then connect to the AdMobilize cloud solution, which is where the actual diagnostics and data is turned into the dashboard view you get as a client.

The Future

It's all about the data. The real value for signage is in being able to say 'It's predominantly young people in this particular area; let's send this content.' In education, it's being able to say 'Students are engaged with this course, but not that one. Let's make a change'. We see this as the future of AV. Our customers are going to be asking us to provide data and analytics about how effective the technology we sell really is. And with AdMobilize and Triplelplay, we can actually do it today.

TRIPLEPLAY
Digital Signage | IPTV | Video Streaming

AD Mobilize
TRIPLEPLAY

Personalise your
digital signage content
instantly with
AdMobilize and **Tripleplay**

Find out more on avt.tech

avt it's simple

by Pete Lynn

CREATIVE PROJECTION MAPPING

Tips for Young Players

Writer Bio: Pete Lynn leads the TDC Creative Projection Technical Team in the latest advances in projection mapping and design. Pete is Projection Designer and Senior Technical Engineer in the areas of large-scale projection projects with a special interest in creative large format digital projection and media server technology. His resume is as varied as the industry itself, having worked across all industry sectors globally. Pete has been involved in events including White Night Melbourne, Adelaide Festival, VIVID Sydney, Melbourne Christmas Projections, Melbourne Festival, Yuejin Lantern Festival Projections Taiwan, Dubai World Cup, Dubai International Film Festival and numerous corporate events with complex mapped projections.

Respect the Projection

The number one thing I try and teach people is to respect the pixels. With all of the recent advancements in warping technologies, I see a lot of people jump straight to that to solve problems. I think you should be trying to keep things as true as you can to the projector panel size, and be aware that the more distortion you do, the more elongation of pixels you create, the worse the effect on your overall image. Before you use the intricate distortion capabilities that you have available, think about your focal lengths, your zoom ratios, and what you can do with the projector itself.

When you're angling projectors, think about what that does to the light. If you're projecting onto the ground and you have to project from the side, think about how far you can push the projector before it starts to really affect the image quality. You can bring it back in warping, but the bigger the difference in pixel sizes in one projector panel due to the warp, the more it is going to affect the image.

Picking your Projectors

It all starts with the site visit. Looking at the texture of the surface you'll be projecting onto; its colour and reflectiveness is very important. This will have an impact on the amount of brightness that you need to produce a good result. Then you can start to look at how much light you actually need to put on the building. Do you need one projector? Do you need to double them? What technology are we going to use? Are we going to use a lamp-based projector or a laser projector? It all comes back to the different types of surfaces that you encounter.

Luckily for us, light is measurable and scalable. When I visit a site, I'll go at night and bring a small projector. I shoot at the surface, take readings with a light meter, and determine what light level I need to produce for the show.

Working with Content Creators

Consultation is invaluable to get the most spectacular results from content in terms of colour saturation against different surfaces. There is a significant amount of crossover between technical elements and the creation process. There's different types of technology in play when creating for 3D as there are for flat images. There has to be an open dialogue between us and the creators. We'll often create a template for them, or guide them in which technology is being selected to do the job from our side, like which media server we're going to use.

It's again very surface dependent. Sometimes, a content creator can be working on their HD screen at home and everything looks great, but we have to explain how that content will change when projected onto a building, or a surface of a different colour. It's having the big conversation about how colours and light behave on different surfaces.

Media Servers

There's a huge range of media servers out there, and it can feel like there's a new one coming out every second week. They've all got their pros and cons. disguise is very popular at the moment, and so is Watchout. Picking the right media server for the right job is very important, and there's no need to overcomplicate things. If you can keep it simple, then keep it simple. You're often working on these projects at night, and anything that can save you time at 1 AM is valuable. But it's great to have the latest tools available, too; for example, the ability to grade content live instead of having to go back and re-render it is quite a big advantage.

Projectors

I'm a big fan of the laser light source projectors that we've got now. AT TDC we're pretty much exclusively Barco in terms of brands, and their new laser source UDX projectors give us a bit more flexibility in terms of orientation. We can rotate the projectors and hang them at different angles without the risk of lamp flicker. The uniform light output of a laser light source projector is pretty inviting as well.

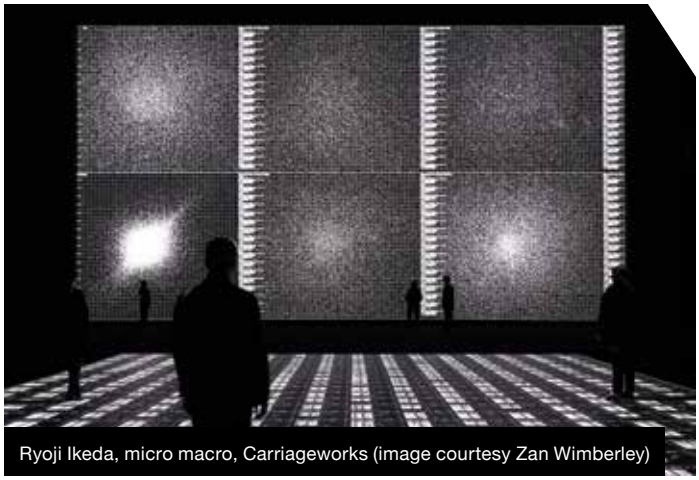
Site Issues

Physically, every project presents itself with its own unique challenges. What objects or obstructions are in the way? The location - is it near salt water? Are we in a high traffic area? Just to get some of these projects installed can be quite difficult if you're dealing with high pedestrian traffic, or vehicles.

We spent a lot of time designing our 'TDC Live View', which is the projection automation system we use on any of our projects. 'TDC Live View monitors the projector's health inside and the atmospheric changes inside our projection towers. The towers are waterproofed, and we use heat extraction methods to keep them nice and cool. We also have ways to keep the towers warm. Our objective isto keep the projectors at an optimum temperature; we don't want them too hot, we don't want them too cold, we don't want moisture, and we don't want humidity.

TDC Sydney Opera House Projection.

TDC Tree Projection.



Ryoji Ikeda, micro macro, Carriageworks (image courtesy Zan Wimberley)

Antarctica WHILE YOU WERE SLEEPING

by Cat Strom

Photo Credits: Joseph Michael

Big Picture Australia & New Zealand and New Zealand artist Joseph Michael translated the scale and awe of Antarctica by using Auckland's War Memorial Museum as the canvas for a full-scale 360-degree projection of a majestic iceberg.

The multi-sensory experience was brought to life with Michael's beautiful imagery and the cracking, creaking sounds of the ice. With a score composed by Rhian Sheehan, *Antarctica - While You Were Sleeping* was a collision of nature and architecture that captured the grandeur of one of the most beautiful and remote places on Earth.

The *Antarctica* project was a four year vision from Joseph Michael, and ran over several nights. Big Picture partnered with Joseph to design and deliver the projection, playback and audio systems for the event.

The project was delivered using 20-plus Barco FLM-HD20 and HDF-W26 projectors, covering all four sides of the Museum. The projectors were arranged in pairs, for redundancy, brightness and to suit the challenging site layout and building shape.

The disguise pre-vis and multi edit function played an important part in this incredible project. disguise was chosen for a number of key features including 3D model texture playback, which never missed a beat, and multi-user projection alignment. The disguise pre visualisation also played a key role; as Antarctica was a 360 degree projection, it was important to see

Aerial view.

how the content would look from any angle at any given time.

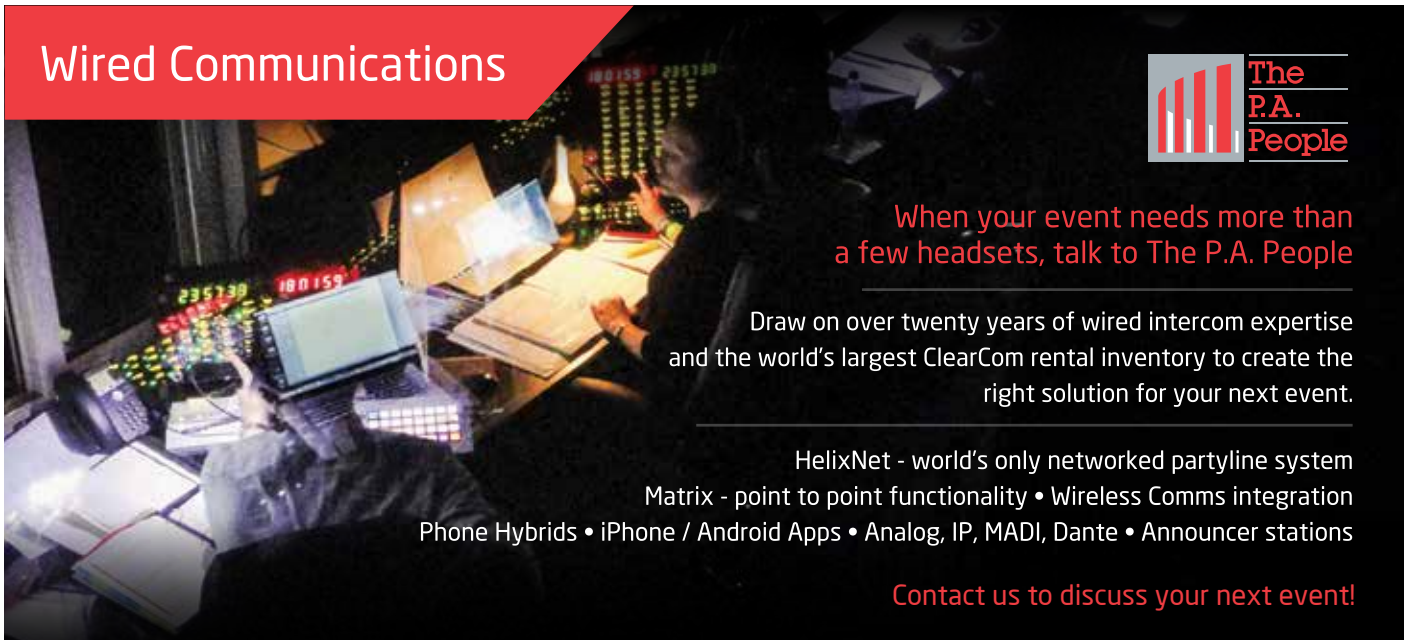
The 1.2TB show file was managed was by three disguise 4x4 servers arranged in main/backup configuration. A detailed 1 billion point laser scan of the Museum was made to UV map the 3D model.

"disguise was chosen because of its ability for the artist to pre visualise the project, and ability to handle the large high resolution show files with ease," commented Paul Carppe, General Manager at Big Picture NZ. Paul designed the projection system and managed the technical delivery.

Site challenges to overcome included the locations of the ten projection towers, as the Museum is located on a hill which includes very steep and uneven gradients. At the same time, mapping around obstructions such as large native protected trees was tricky.

Delainy Kennedy from Nocturnal was a key creative collaborator and managed the onsite delivery and content management of the disguise system.

Wired Communications



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Mark Wadsworth, International Marketing Manager at Digital Projection, offers advice on choosing the best projector.

For over 20 years, Digital Projection has delivered incredibly bright, detailed and colour-correct imagery to some of the most prestigious learning institutions in the world. From illuminating a 12-metre screen with lecture material regarding rainforest research, to displaying interactive organs, rendered three-dimensionally, in order to train tomorrow's surgeons, Digital Projection's precision displays have enabled them all. Digital Projection is synonymous with grand image scale and advanced engineering – such attributes have been embedded into new budget-sensitive, education-grade displays that are now available to serve mid-sized screen venues.

4K DLP Projectors

The introduction of 4K projectors brings a remarkably bright, highly detailed solution for discerning large-screen applications. Lecture theatres and research institutes, where both image detail and image stability are critical, will directly benefit from the 4K advanced resolution together with a solid-state illumination platform. Additionally, applications where image uniformity is critical, such as venues employing the same content across numerous screens simultaneously, will immediately realise value from the 4K laser's consistent solid-state illumination performance. In environments where the projector will be installed in hard-to-access locations, the impressive limited maintenance of the range of 4K laser projectors will save both time and maintenance costs – an often overlooked significant hidden cost.

The Consumer Technology Association (CTA) definition of 4K Ultra HD resolution states the display must have at least 8 million active pixels on screen. For the 4K UHD content to be enjoyed as accurately as possible, all 8 million pixels need to be displayed and not all 4K projectors are equal. However, with Digital Projection DLP, 8.3 million pixels are guaranteed to be displayed on all 4K models.

Laser Phosphor

Today, Digital Projection's projector line-up exclusively uses laser-phosphor illumination in place of the traditional lamp or bulb used previously in most video and data projectors. When one thinks of lasers, one thinks immediately of eye safety; however, the safety of a laser-phosphor illumination system is no different than that of a lamp-based system and no special regulations or waivers are required to use the technology. Laser-phosphor illumination is here to stay because it offers the customer significant advantages:

Steady Long Performance Over Time

- Long lasting, predictable brightness, providing 20,000 hours or more performance
- 20,000 hours = around seven years of operation, 365-days per year, 8-hours per day
- Laser life is based on laser manufacturer predictions when 50% of lasers in a projector will reach end of life
- Power increased incrementally to remaining lasers over time from light sensor feedback results in steady linear brightness drop off – less volatile and more predictable than lamp-based illumination
- Matches and often exceeds lamp-based projectors achieving REC709 or better colour space
- Up to 4x less cost per hour for laser-phosphor versus lamp-based projectors of similar brightness
- Increased warranty cover offered on laser-phosphor illuminated products.

Within DP's Product Line: High Brightness vs. High Contrast Projectors – an Overview

What is a High Brightness Projector?

A High Brightness projector is DP's standard configuration of the projector when it is built. There is no aperture installed in the light path within the projector's optics, or within the lens.

Where do you use High Brightness Projectors?

A major perk to a High Brightness projector is that it can be used in most applications, and delivers maximum lumens to tackle larger screens or venues with ambient light. Here are a few recommendations on appropriate uses for a High Brightness projector:

- Applications with ambient light
- Applications with larger screen sizes, where a lower lumen projector will not provide adequate screen brightness
- Applications that demand specific screen brightness levels to be achieved. Note: Screen brightness is determined by size of the image, gain of the screen surface and light output of the projector. Throw distance and lens throw ratio do not determine brightness
- Applications with extreme screen sizes or large audiences - true large venue
- Conference rooms and residential media rooms – most of these venues include some level of ambient light!


Mark Wadsworth.

What is a High Contrast Projector?

A High Contrast projector is created by adding a custom engineered aperture to the light path within the projector's optics, as well as custom aperture within the lens. The apertures dramatically reduce scatter light within the optical system, which improves system contrast ratios. The apertures also reduce the constructed light that is allowed to enter the optical system, and this serves to further reduce black levels as a result of a linear reduction in the projector's specified brightness.

Where do you use High Contrast Projectors?

High Contrast projectors are best suited for viewing high quality content with vital dark area detail, in a light controlled environment such as theatrically dark venues. A High Contrast projector will sacrifice light output to increase image contrast and reduce image black level. A High Contrast projector works best in applications where no windows are present or in venues where windows can be covered and where lights can be completely turned off. It should be noted that any ambient light falling on the screen elevates the image black level and as a result, eliminates the benefit of the projector's high contrast and black level performance. Here are a few recommendations on uses for a High Contrast projector:

- Applications with no ambient light - if there are windows in the venue, they should be equipped with blackout shades
- Theatrically dark venues such as screening rooms and home theatres
- Commercial applications where optimum video quality is required, and the venue is suitably dark - again, there should be no ambient light in order to gain maximum visual benefit from the enhanced contrast performance of the projector
- Projection array applications, where projectors will be soft edge blended - the lower black level of DP's High Contrast models assures the lowest black level is retained, even in the area of the screen where projected images overlap!

TECHNOLOGY ENGAGES STUDENTS IN LEARNING

presented by Optoma

Keeping students focused has always been a challenge, but in today's distraction-ridden world, it's even more difficult.

Technology can be a source of distraction, but when harnessed effectively, it can enable educators to adopt a more personalized approach to education.

Research has demonstrated that engaging students in the learning process increases their attention and focus, motivates them to practice higher-level critical thinking skills, and promotes meaningful learning experiences. By welcoming technology into the classroom, educators can now take advantage of this, benefitting from increased engagement and better learning retention as a result.

Interactive Projection Empowers Active Learning

Before projectors became common in the classroom, teachers would have to get into class early to write up notes, and constantly erase and rewrite content on the board as the lesson progressed. These regular disruptions often caused students to lose interest, or start chatting among themselves as they waited for the next part of the lesson. Then, more time would be wasted on classroom management.

An interactive projector can be a valuable tool for reducing distraction and increasing engagement. With interactive projectors, each element of the lessons, such as presentations and exercises, can be planned in advance, used for multiple students groups, and shared with other teachers. This greatly decreases the admin burden, and makes it easier to stay organised, both inside the classroom and out.

In addition, interactive projectors are perfect for switching between tasks: it is as simple as switching between tabs on the browser or opening up a slideshow. By breaking up a lesson into shorter, varied segments, it helps students stay focused on the material and learn more effectively.

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Amber TECHNOLOGY

Children engaging with interactive learning tools.

Children engaging with interactive learning tools.

Just like smartphones and tablets, interactive projectors use multi-touch, meaning multiple students can complete a puzzle, or even a task together in class. It greatly improves students' engagement not only with vivid slideshows and video content, but also with interactive presentations, puzzle-type games, and group activities all in one session.

All-in-One Projection Solution Simplifies Student Engagement

To help save the educators the hassle while trying to engage students in learning, an all-in-one projector system is developed to offer unparalleled user experience. Combining the features of interactive white board, television, computer, projector, DVD player, and audio system, the all-in-one projection solution provides all the tech teachers need to keep students concentrating in class. It is a portable, easy-to-use, plug-and-play device that can convert any wall into an interactive surface. With this solution, educators today, instead of taking lots of time and trouble negotiating with multiple suppliers for machine purchase and maintenance, can spend more time improving course content as well as enhancing students' retention. Furthermore, equipped with a host of value-added services, such as interactive multimedia content, virtual experiments, education videos, and even teacher training programs, the all-in-one projection solution empowers teachers with educational resources for upgraded classroom experience.

What's the future?

Allowing students to take ownership of their education is at the heart of active learning. It is obviously much easier for the students to concentrate on something when playing an active role. It taps into students' need to move, interact, and play.

In a classroom that is using specific strategies to target engagement and active learning, students would not be seen sitting quietly at their desks listening to a teacher speak about the content. Instead, they will be participating and exploring, sitting on different types of seats, standing up, using interactive technology, playing games, engaging in discussion, or creating their own projects. The result is that they stay engaged for longer.

As a leader in the projection market, Optoma knows reliable, easy-to-set-up equipment is required to help teach more effectively. It develops and provides a complete education projector range with cost effective, high quality products. From small classrooms to large lecture halls, all aspects of the education environment can well benefit from Optoma's technology solutions, bringing learning to life.

Video Projection History - The Talaria

30 years ago, the brightest video projector available for hire in Australia was the General Electric Talaria.

In the late 1980s they cost about $180,000 and produced a massive 1,500 lumens!

Yes, a $180,000, 75 kilogram machine produced less light output than your cheapest office LCD projector that you'd pickup from Officeworks for $1,000 today. The image was pretty rough too!

If I recall correctly, there were only five of them in the country. Intercity Hire managed three across the country, Darling Harbour had a couple, and Kerry Packer (owner of the Nine Television Network) had one at his Palm Beach house (as you do). Back in those days I worked for Intercity Hire and I was the company's Talaria operator in Sydney. And boy they were horrible, temperamental things to operate!

Light from a Xenon arc lamp was modulated by a light valve consisting of a rotating glass disc that was continuously re-coated with a viscous oil. Yes, a large glass vacuum valve with a rotating disc bathed in oil! An electron beam similar to the one in a cathode ray tube traced a raster on the surface of the oil coated glass, deforming the surface of the oil. Where the oil was undisturbed, the light would be reflected into a light trap. The image raster traced into the oil formed a diffraction grating.

The single lens colour projector use dichroic filters to separate the white light of the xenon bulb in two channels, Green and Magenta. RGB colour separation and processing was obtained using vertical wobbulation (actual technical term) of the electron beam on the oil film to modulate the green channel and sawtooth modulation is added to the horizontal sweep to separate and modulate Red and Blue channels. The green light output was horizontally polarised, and the red/blue was vertically polarised. What could possible go wrong with that? Well a lot.

You had to heat the oil up before you could fire the projector up (it was solid at room temperature). That took about nine minutes. It would then take 45 seconds or so to turn on, and on a good day, another 10 minutes for the oil to stabilise. You'd run the projector for about an hour or so to settle things before the show.

Because of the oil in the light valve, the projector could only be tilted a maximum of 15 degrees. This led to some interesting rigging.

Where the electron beam hitting the oil stopped at the edge of the image, you literally had green and pink oily trails, tailing away from the image like some drug induced psychedelic effect. It looked really weird so you had to have ways to lose that.

You could have any video input as long as it was standard definition PAL. If the video input was unstable, you literally triggered bubbles moving through your image (so 70s cool) so we always ran them with timebase correctors.

A stable power supply was super critical. If it was unstable (and I'm talking only small supply variations) the images would get a green pinkish hue. If the supply variations were big enough it would just shut down. Usually 30 seconds or so into the show!

The Talaria.

Because the Talaria was the brightest projector available in the country at the time, it was booked for the highest profile events. I had a lot of sleepless nights being a Talaria operator! Horrible, horrible machines!

by Simon Byrne

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FROM PROJECTOR TO PLATE

Encore Serve Up A Sensory Feast

Photo Credits: EventPix

Justine Schofield

Projection down the length of the table.

Encore Event Technologies invited corporate clients to 'Experience Encore', an evening of great food, wine and entertainment on Monday 10 September at the National Art School in Sydney's Darlinghurst.

Upon arrival, guests met in the courtyard of the Cell Block Theatre for cocktails and canapés before taking their seats. A spectacular table projection sequence set the scene, choreographed perfectly with the opening track.

Popular culinary personality, TV host, and author Justine Schofield designed the amazing menu inspiring Encore's production services team to develop a dreamlike sensory experience. The audience were transported on a culinary and sensory journey like no other, from kinetic lighting and custom table projection mapping to the food and entertainment.

Encore Managing Director, Tony Chamberlain, and National Sales Director, Michael Magafa, opened the evening and introduced Justine to present her exclusive menu.

Each course had a uniquely themed kinetic light show; the ceviche entrée and matching wine saw tables transformed into a beautiful underwater wonderland. As the second course of sticky beef cheek was announced, the room transformed to reflect a rural kaleidoscope of foliage.

The final dessert course was a delicious panna cotta, designed by Justine, aptly named, 'Encore'. The dish ignited the final animation, a stunning soft pink and white design, wrapped up the culinary experience.

"We were projecting onto two rectangular tables, 120 cm wide by about 10 metres long," said Encore's National Head of Production Dan Lourenco. "We used four Panasonic PT-DZ16K projectors per table running at 1920x1200 resolution. We ran our new eight-core fibre optic cables with two runs to each truss, which saved us time and gave us some spare lines. We also got to use our new Belram HXT2 4K extenders, with four per truss, and the whole thing was all fed by a disguise 4x4pro media server."

Encore initially created a 3D model of the room, including the tables, in disguise's Designer software. This model was exported and given to the content designer, who overlayed their content on the 3D model. Encore staff were then able to play back the content for checking within the model. After it was approved, the content was sent to Encore via their high speed Aspera Faspex file collaboration system, downloaded, and uploaded into the disguise 4x4pro.

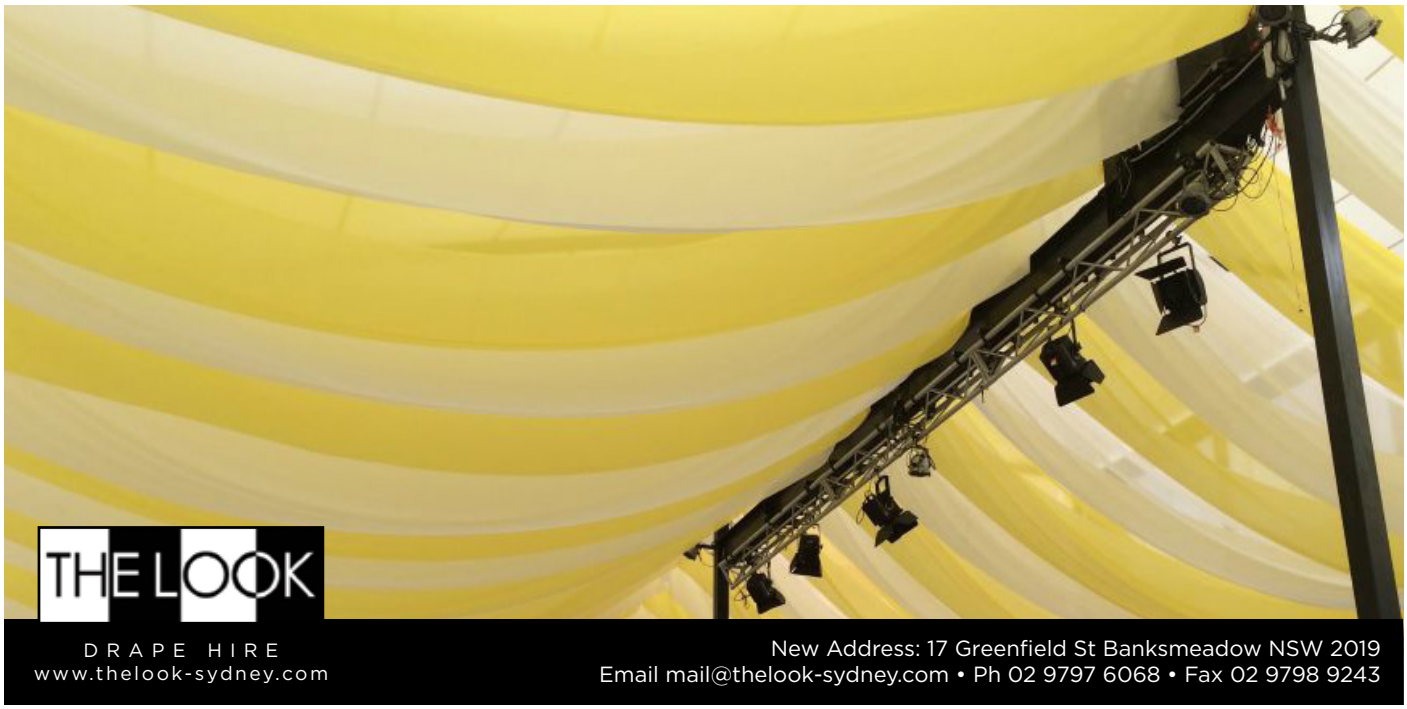
With disguise handling edge blending and warping, the tech staff's attention could turn to other details. "What have you got on the table, that's the important thing," explained Dan. "You need to think about cutlery, glasses, plates, and centrepieces, and how they're interacting with the projection. The idea was to bring the culinary experience and technology together without either one being dominant, so the content and the food were made to complement each other. There were white light scenes in the content so you can see your food. The last thing you want is green lighting on a beautiful piece of ceviche; it'd make the food look terrible."

Vickianne Lane, Principal, Flick It To Me Solutions, said the evening was a truly unique experience that showcased the skills of the Encore team.

"I was taken on a sensory experience – the food, the immersive visuals, the music, all came together so seamlessly. It was wonderfully creative," she said.

Michael Magafa, Encore Event Technologies, said the evening was a great way for Encore to say thank you to their clients.

"The event's aim was to say thank you to our clients by offering a memorable experience in every aspect. I'm always so proud to showcase the creative concepts that our team deliver."



3D MODULAR PANELS FOR PROJECTION MAPPING

presented by Backdrops Fantastic Australia

3D modular backdrop scenic panels created by Gold Coast based event décor company Backdrops Fantastic Australia transform gala, conference and award stages into vibrant backdrops ideal for unique lighting and creative projection mapping. The panels come in eight versatile designs made of light weight ABS, and click together with the use of quick release levers requiring no tools.


Orb build.

The interlocking 3D panels allow the wall to be adapted to any venue, with rated quick release levers and custom designed cross bars that accommodate a multitude of rigging solutions from truss, to drape track, to common AV pipe and base pushups.

The Stealth Wall has become the ideal canvas for lighting and projection mapping for corporate events. Stunning 3D visual animations as seen on outdoor projection mapping projects and festivals such as Sydney's VIVID can be achieved at corporate conference or gala awards.

The matte white finish of each ABS plastic panel is perfect for reflecting and absorbing lighting or projection, and have been meticulously measured and 3D scanned so that each panel is digitally replicated. 3D projection mapping in the corporate market for a conference, awards dinner, or theme dinner is only slightly more complicated to implement than the commonly used wide format projection screen and large format projection blends. Often the standard equipment used industry-wide like a disguise or Watchout media server and two or three 20k projectors are all that is needed to cover a 30 metre wide by eight metre tall modular wall projection.


Modular wall installation.

A wireframe of the wall mapping space is provided by Backdrops Fantastic Australia, making the finishing touches of alignment straightforward, and ensuring custom created animations play back perfectly. Backdrops Fantastic Australia not only provides the digital files for clients to produce their own 3D animation, but has internal and external resources to produce custom content or re-use off-the-shelf animated content that truly makes the wall come to life.

When the projection line-up is complete the true magic of projection mapping is ready to unfold. The possibilities of utilising the walls in a dynamic 3D augmented reality manner are only limited by the imagination. The team have projected 1050 delegate faces onto each panel of a 56 metre wide by 8.4 metre tall modular wall for an opening conference video. Futuristic robot hands have dismantled the wall to reveal a keyed background animation before rebuilding the wall for a space event.

In February the Backdrops Team travelled to the US to accept the prestigious Best New Product/ Technology at the Special Event Gala Awards held

in New Orleans. The win was for the fully immersive undersea themed event that Backdrops Fantastic Australia produced for Clubs NSW held at the Gold Coast Convention Centre in 2016.

Backdrops Fantastic Australia director Thomas Brown says, "Winning the 2018 International Special Event Gala Award for Best New Product/ Technology is such a gratifying feeling. The research and development to produce our modular product line and then adapt the technologies of projection mapping onto them in a corporate event space was an extremely challenging but unbelievably rewarding process. It was a process that would not have been possible without an extremely trusting long-time client who in 2015 allowed us the full creative license to explore and experiment with something she never fully comprehended until she saw it live at the final rehearsals. The Gold Coast Convention Centre also played a major part in the successful win by actively joining us in a real desire to see this concept come to life by lowering existing access and pricing barriers to make it a truly inclusive creative process. Beyond the large corporate client and the convention centre, smaller passionate players invested their time and talents considerably, companies like Ikonix, Pixe Line, and Forum. We are honoured to have been the recipient of this prestigious international award but want it known that it was only achieved by partnering with the amazing flexibility of the venue, commitment of our client and creative talents of our external technical partners to innovate and strive for something different than the same old ho-hum our Australian Industry struggles with every day!"

The win in the US comes shortly after their modular panel product line was launched in Denver Colorado under the name Modular Backdrops USA. Backdrops Fantastic Australia group is a theming event hire company based on the Gold Coast in Queensland, Australia. They are leading suppliers of Australia's finest quality themed backdrops and decorative drapery. Their innovative selection of 3D Modular Backdrops designed and engineered on the Gold Coast have been nominated for a number of awards in Australia and internationally. Visit the website for more information: www.modularbackdrops.com.au

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BORDERLESS PROJECTION IN THE AGE OF LED

by Norbert Schmiedeberg, Managing Director/ CEO, ITI-Image Group

Adelaide Presseball Borderless Screens.

Adelaide Presseball Borderless Screens.

Traditional projection screens have a black border surrounding the image area. This makes alignment easy, since slight overspill in the projection just fade into the black surround. However viewers are increasingly used to borderless LED displays or narrow bezel LCD and may find the conventional projection a bit old fashioned.

Borderless projection screens, such as the Screenline 'OnlyWhite' or '3-in-1' type have been around for some years and feature a wraparound projection surface which attaches at the back of the screen. While this seems to be a simple solution, it is far from it. Critical is the design of the corners, so that the surface does not rip at the edge of the frame. Making the edge too sharp leads to damage or ripping of the surface.

Apart from the more modern look, borderless screens have a number of advantages. One is that LED lighting can be attached behind the frame. This is often a preferred solution in home theatre installation. The other one is that screens can be butted very close to each other and allow the creation of larger panorama screens, shaped screens, or projection cubes, while at the same time retaining the benefit of smaller, individual screens which can be deployed individually.

A common question is around the sizes borderless screens can be made to. We have supplied sizes from two metres wide to 20 metres wide. The larger screens often have additional centre supports at the back to prevent bending.

Borderless screens can be supplied with the usual white surface, but also with high contrast grey or 3D material. One critical issue is concerning the use of perforated material. While the greater depth of borderless screens makes it easier to position centre screens for cinema sound, it must be considered that the frame of the screen will be visible through the holes. So it is imperative to use black frame material.

One important consideration of borderless screens is the set-up. Projectors must be perfectly aligned to cover the screen area without undershoot or overspill. While this is no problem with high end projectors which have alignment tools built in, it is a different story when it comes to lower cost units and even more so in complex set-ups. Here the addition of a blending or warping box may be beneficial with the use of a camera-based auto alignment system.

The VNS GeoBox G-106 is one solution offering single channel warping capability at relatively low cost. More complex units which even have 4k/60 input and blending capabilities are also available in the GeoBox range. On the other side, the use of the VIOSO Calibrator, which is part of the VIOSO Player or Anyblend Suite an be used with a camera based system to create blending. Pixel exact warping is also possible with the VIOSO Calibrator.

Creating large format multi-projection screens using borderless screen technology

With increasingly powerful projectors, we see a requirement for ever larger projection screens. Screen sizes of 10, 15, or 20 metres and wider are not uncommon anymore. However these large screens are expensive to manufacture and may cost as much as a small car. Considering that a 15 by five metre screen covers a surface area of 75 square metres, as much as a small apartment, it is easy to understand why these products are costly.

So for many smaller and medium sized rental companies, the acquisition of such large screens is simply not viable, in particular if they are only used two or three times a year. Furthermore, not many venues can accommodate such large screens. The use of smaller, borderless screens is the solution in these cases.

Let's take the typical 16' by 9' (488cm by 274cm) screen many rental companies use. Combining three of these screens makes a screen 14.6 metres wide. Using the manufacturer provided hinges allows for a very tight fitting of the screens, so that the vertical gap is minimized and is hardly visible in projection. After the event the three screens can be used individually and thus increase revenue earning possibilities for the operator.

An additional benefit is that the screens can be set-up at angles, allowing either a better utilisation of the space or the design of more creative set-ups. These screens could also be set-up in a portrait format, providing in our example a screen of 488cm high x 822cm wide. ITI-Image Group provides the Screenline NewOnlyWhite or '3in1' frame system as borderless screens, both in standard aspect ratios as in custom sizes.

Borderless Screen Application provided by Three Monkeys.

ITI-Image Group serving Australia for 25 years. Specializing in large format projection screen for rental, staging, events and installation, made by Screenline, Italy.

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GOLDEN FEATURES

Golden Features headed on tour with stunning visuals.

by Cat Strom
Photo Credits: James Hughes

Australian deep house / dance DJ Tom Stell, known professionally as Golden Features, has been a regular on the dance touring circuit since 2014. Currently signed to Warner Bros. Records, he has just released his first album *Sect* and a tour of that name saw him perform live for the first time rather than DJ.

The crew on this tour clearly enjoyed every minute with FOH engineer Craig Gordon commenting, "Everything about the show was great, especially the vibe of the crew, so it was a fun tour to be a part of. It was a really good production and they went all out which is kind of cool. Tom had a vision, he went for it, and I think it'll pay out for him."

The tour utilised house PAs, although Melbourne's Forum show was supplemented by some d&b B22 subs from JPJ Audio.

"We ended up with an Eighth Day Sound d&b rig for the Hordern show as we needed a bit more than the house V-Dosc system," added Craig. "However, I'm pretty sure JPJ has since changed the house system to an L-Acoustics K2 so I'm pretty keen to get in and have a go on that."

Eighth Day Sound supplied a touring control package that included an Avid Venue S6L with a Waves Soundgrid server.

"It's not as good as the Waves Card I had with The Presets. It's not as easy to use and is a bit fiddly, but it does the job," said Craig. "You can still use the plugins, which is cool."

Outboard gear included a Puigchild compressor and also a Midas XL42 dual-channel microphone preamp and equalizer, which Craig used as an insert over the main mix buss.

"It's only the parametric EQ I'm using, not the preamp which I normally use it for," he explained. "For this act, I have the stems (drums, kick, bass, synth lines, vocal lines, Korg and Moog) as separate channels which I've mixed down to a stereo and treated it like a DJ at the end result. So the XL42 was inserted over that group and I used it like a parametric EQ, its great sounding and easy to grab when you need to act quickly. The XL42 is kind of a safety blanket for me."

Craig used a couple of Waves C6 Multiband Compressors here and there to correct the top end a little, and as there were no live vocals, there were no effects required.

James Luscombe looked after playback and monitors for the tour. Before he came onboard, the artist had already had a rig built by OCD Labs consisting of a stage box and an offstage rack.

"We used Ableton Live 10 running into two Motus and then into an Orchid switcher for redundancy," revealed James. "We used iConnect to do all of the MIDI. I'd say 90% of the show was all MIDI-controlled by the artist himself which was done by Ethernet between the two iConnect boxes. He had Akai MPD32 MIDI-over-USB performance pad controllers, a Novation MIDI controller, a Korg Minilogue and a Moog Sub 37 which was running into two Strymon effects pedals. Everything was

MIDI controlled for things like preset changes so he was able to play those synths live along with his tracks."

The artist also had a screen with HDMI running over Ethernet so he could see the session in front of him. Off stage, James had a second rig in case something failed onstage.

"Most of my work was done before the actual show so during the performance there was little for me to do other than monitor and potentially fix anything. It was all in Tom's hands."

Monitors, controlled by James on a DiGiCo SD11, were basically a couple of d&b subs with Tom wearing JH16v2 IEMs and using Shure PSM1000.

Lighting designer Nicholas Beachen of Colourblind admits that having just the one artist who stays in the same spot all night allows him much more creative freedom. He added that Tom's style of dance music really allows him to not hold back with lighting and to go a little bit crazy.

"However when you have the one static artist, I find it's difficult to make the stage look different from other DJs," said Nicholas. "I was really happy with the way this one turned out although at times it threatened to be too much. There's a lot of stuff on stage but we managed to keep it clean looking."

Lighting supply came from South West Solutions.

Lighting supply came from South West Solutions and video from Big Picture. The main design is a tiered riser with columns either side and 3D printed beetles as per the album logo. Tom was keen to incorporate candles into the design and together with Nicholas, they tried a few options.

"At Field Day earlier in the year, we tried something that was 3D printed and quite cheap but it really didn't look that great," explained Nicholas. "Tom found a German company called Boogie Light for the candles which are really designed for an install environment rather than touring. They built the candles specifically, sent them over and we cabled them up and built control racks in Australia."

The candles, which are actually made of wax with a small LED chip inside, were re-positioned at each gig, held down by Velcro and controlled through the MA2.

GLP impression X4 Bars are key to the design.

"With Tom now playing live, we were able to program the lighting and video to timecode," said Nicholas. "Coming into the record release, he wanted to spend a fair bit of time creating the live show, designing the set himself, which was built by Standby Go."

GLP impression X4 Bar 20s form a line behind the artist and are also at the foot of the riser and winged trusses.

"We've always used lights on an angle with Golden Features and it has become his look," commented Nicholas. "I wanted to use the X4 Bar 20s this time because they're just great. Tom wanted a lot of light coming from the back and also the side of the stage. Pretty much every light in the rig is for crowd effects with just two MAC Auras and the one Ayrton Wildsun as a key light for the artist.

"I sent a message to Matt Downs of SWS asking what he had in the way of a large face LED unit thinking maybe of an X4 XL and he sent me a screenshot of the Ayrton Wildsun. I was aware of the fixture but didn't realise anyone in Australia had them, but Chameleon had six so Matt sub-hired one. I wasn't 100% sure it would work well but it ended up looking great. I used it to light the artist and to sometimes strobe the crowd, as well as for effects. Tom really liked the light and so did we, it looked really nice in the shot behind him."

As well as having Claypaky Sharpys, Nicholas had GLP GT-1 hybrid lights in his rig predominantly because Matt stocked them, but he found them to be an effective profile unit.

"I drew the profiles as Martin MAC Vipers but was more than satisfied with the GLP GT-1, although there's no other unit I would have liked to have," he said. "Mostly that was because of the gobos. I needed solid gobos rather than what would come in other products. I didn't use many gobos but I specifically wanted a solid lines one."

SWS added more Martin Atomic 3000 LED Strobes to their inventory for this tour with Nicholas saying they are the best and most powerful LED strobes on the market, in his opinion. Nitec 2-way blinders were also a key component in the rig.

A pick'n'mix of smoke producing products ensured a heavy presence when required. Two HES FQ-100 fog generators were pointed towards the stage to send plumes into the room, two MDG hazers onstage for general haze, and two Le Maitre LSG low foggers.

The video tended to have a monochrome colour scheme and so matching colour with the lights was never an issue. Instead of concentrating on matching colours, Nicholas and video director Ken Weston could focus on how the video and lighting complimented each other in atmosphere and intensity.

"Most artists build the video and you have to work the lighting to it, so this was a nice change," remarked Nicholas.

Control was fairly simple for lighting and video. Timecode came out of Tom's setup and ran to FOH where it split to lighting and video. The video content playback was via Resolume triggered by timecode and VJd live, with an MA Lighting MA2 light, with a command wing as back up, to control lighting.

Ken Weston of Lowdown Production was not only the video director for the tour, liaising with Golden Features to produce the visual content. He was also the VJ/video operator for the live shows.

Ken collaborated with Golden Features to create visuals that best portrayed the debut album 'Sect'.

"My brief was 'Forrest Occult' so I let my imagination run wild, drawing inspiration from cult horror directors such as Dario Argento," explained Ken. "The majority of the content was designed for timecode playback but Ken allowed room for last minute updates during rehearsals. Consequently, I needed to be a portable design studio so I could make edits and re-designs on the fly.

Ken noted that it was great to offer an 'on-location' solution for editing and animation as he was able to accommodate any requests from Nick or Tom.

Crew names

FOH Audio Engineer - Craig Gordon

Monitors Audio Engineer & Playback Tech - James Luscombe

Video Director - Ken Weston

Lighting Designer - Nicholas Beachen

Lighting Programmer - Brad Salt

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by Cat Strom

QUEENS OF THE STONE AGE

Photo Credits: David Youdell

Known for their electrifying shows, Queens of the Stone Age toured Australia in support of their latest album, *Villains*, bringing with them a blistering, eye-searing lightshow that pushed the boundaries of conformity.

The lighting design was created by Emmanuelle "Gigi" Pedron, an enthusiastic French lady who now calls Los Angeles home. Her background in photography and her love of the arts is highly evident in her work.

Her lighting design portfolio includes Jack White, Ryan Adams, Tegan & Sara and Jimmy Eat World, but having been an avid fan of QOTSA for years, they were top of her 'to light' list. So remember, dreams can come true!

It is probably because Gigi began her career as a live-music-loving art student who never had any 'proper' training, that her lighting is so unique, and in this world of time-coded perfection, very refreshing.

"From day one I have always just been behind a console starting with a ska / punk rock band in my French home town when I was eighteen years old," she commented. "When I design and operate a show, doing the lights has never been about plugging, patching and focusing. In my head, I want certain shapes and colour at different times in the songs, I don't care how it's achieved I just want it. Having said that, I don't always have my team with me and I can set up my own rig, I'm just very messy at it."

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"The band decided they liked the idea of vertical lines so I kept that and scratched everything else to start my own design."

Each song tends to be dominated by one colour.

Before Gigi was hired to work with QOTSA, they had LeRoy Bennett design a 'mood board' for the show and he came up with the idea of GLP X4 Bars on poles as side lights.

"The band decided they liked the idea of vertical lines so I kept that and scratched everything else to start my own design," she explained. "It took a couple of weeks to get it how I wanted as I went on tour with them as soon as I got the job."

Gigi's lighting is inspired by artists such as James Turrell, and is quite brutal with sharp angles. It is intense and mostly monochromatic with each song dominated by one colour.

The stage set up in Australia was smaller than in the US and Europe, mainly missing a pod system, with four trusses holding asymmetrically rigged Claypaky B-EYE K20s follow the band position onstage, with lines of GLP X4 Bar 20s across the trusses, floor and back.

"I have 70 GLP X4 Bar 20s to create lines and frames all over the stage," said Gigi. "They deliver a solid wall of light which I really like and they have great colour mixing. They contrast well with the B-EYEs which are round and beamy. The X4 Bar 20s are really sharp, like a guillotine, and I like that!"

Whilst the B-EYEs and X4 Bars were Gigi's main fixtures, she also had 30 Martin MAC Quantum Profiles which she described as a great, small, light and bright fixture. These were complimented by 10 MAC Quantum Wash, and 10 RUSH MH10 Beam FX (one on top of each tower) making an all LED rig.

"I needed a blasting strobe too so I went with 12 TMB Solaris Flares as they're so bright, solid and reliable," Gigi added.

Unique to the stage are the custom, interactive LED poles which the band punch and kick throughout the show adding a fresh element of moving light as they bounce back into place. Built by Upstaging, they are lined with LED tape with the poles attached to a spring which, in turn, is mounted to a 27 kilo base.

"They like to play with things so we made lights they could play with and hopefully they'll leave the other gear alone!" commented Gigi.

Out front Gigi has a unique MA Lighting grandMA2 console customised with tape and Marvel images.

"I've been customising my console for a long time now," added Gigi. "I change the theme and colour according to the tour design. It's E-Tape art."

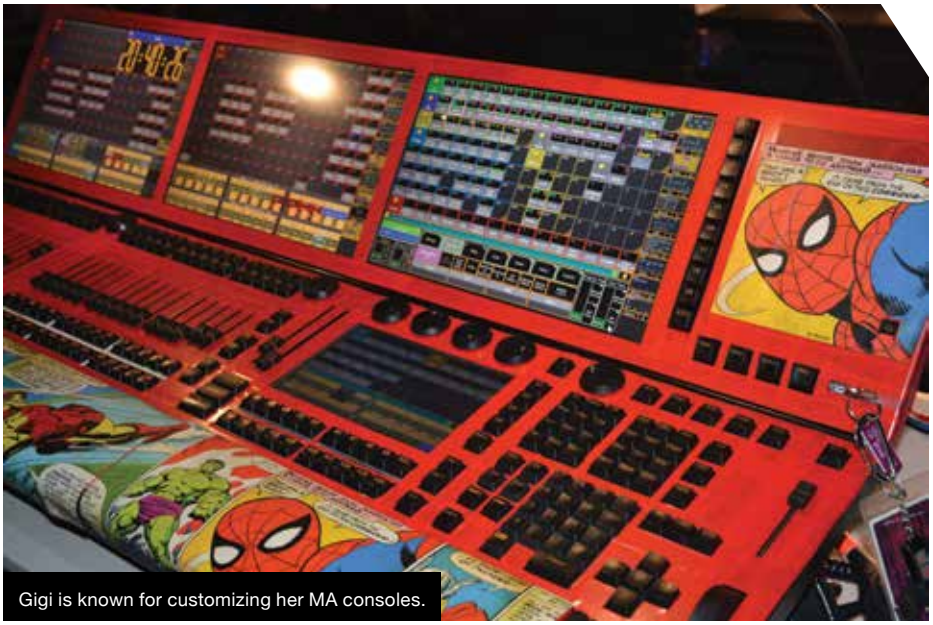
The first console Gigi ever operated was an MA Lighting Lightcommander 24/48 and she has faithfully stayed with the MA platform ever since.

"I've used them all, from Scancommander to the latest grandMA2 running the most recent software versions and very soon I hope to utilize the grandMA3!" she commented. "I like to operate the MA2 as if it's a keyboard with a fader per effect. The band like that I 'play' along with the music."

Time code is a dirty word on this tour with Gigi stating that she would never, ever use it with such a powerful, live rock band.

"My programming is so messy I'm the only one who knows what's happening and I'm the only one who can operate the show!" she laughed. "I change it every day anyway because the band perform differently from day to day and every venue is unique. There are no cues per se, it's just me and the band doing what we do best, so each show is different for every audience. We do have a set list but they rarely follow it. They have a large catalogue of songs to draw from so they do whatever they want!"

Gigi and her LX crew chief, Chelsea Opdike, lighting tech.



Gigi is known for customizing her MA consoles.

FIVE REASONS FOR, FIVE AGAINST.

by Andy Stewart

Some musicians just want to mix their own music. Are they crazy, are they kidding? Well, yes and no. But hang on a sec: nearly every engineer and producer I know started their career doing precisely this (myself included). So who's crazier: the amateur or the pro?

Most of us 'professionals' started out wanting to mix our own music, thinking we'd do a far better job, and for far less, than a professional. But then we started mixing for other people because we loved it (or needed the cash), and now we're the very professionals we once mocked and despised!

So it's ludicrous to argue that so-called amateurs should stay out of the mixing game and leave this critical, life saving work to professional engineers. In truth, if we went down this road, pretty soon there'd be no professionals left. There's hardly a paid engineer out there who didn't start out mixing with only a tiny fraction of the knowledge they now possess. It didn't stop them then, so why should it ever stop others diving in now?

Every day a new mix engineer is born for any number of reasons: economic necessity, mild curiosity, or a strongly held belief that they'd do a better job mixing their own artistic creations than anyone else could. Only a handful seeks out mixing with career in mind.

Regardless of your motivation, if you're thinking of becoming the next person to pick up this crazy baton and run with it, here are five reasons for and against doing it yourself – even though it might eventually lead you to a career in audio mixing.

Reasons For

1: It's Cheaper to Do It Yourself.

Yep, it is. But cheap is cheap. A Great Wall twin-cab ute is cheaper than a Toyota Hilux. It has four wheels that won't fall off (straight away) and it looks fundamentally the same. But it drives badly, breaks like balsa wood and offers a vastly inferior driving experience (particularly if your heart was set on a Hilux). But hey, you might be lucky and get a good one…

Metaphorically, these same scenarios play out when you mix your own music. If you want to D.I.Y. your creations, the risk is that they may not sound all that great. If you want to lessen that risk, make your music shine and compare favourably up against international commercial releases, it often pays to get a professional engineer involved. But here's the problem: 'often' doesn't mean 'every time, guaranteed'. Some mix engineers won't do the job you hoped they would, and sometimes this frustration can lead you to the same thought I had 30-odd years ago: "Stuff this, I'm doing it myself!"

You might be a natural at mixing for all you know, and you certainly won't find this out if you don't try.

Andy Stewart

Andy Stewart owns and operates The Mill, on Victoria's Bass Coast near Phillip Island: a highly credentialed mixing and mastering facility that's produced countless albums and singles. He's happy to respond to any pleas for recording or mixing help... contact him at: andy@themill.net.au

If you're determined (and curious) to have a crack, go for it. You may not achieve the 'perfect' outcome (which doesn't exist anyway) but you'll undoubtedly learn heaps along the way that will serve you in the future in ways you can't yet see.

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2: You Know What You Want

When you mix something yourself, there's no interpreter required to explain the sound you're after. One of the greatest frustrations many musicians suffer is feeling like they don't speak the same language as the engineer. In some cases that, in itself, is enough to drive a musician down the path of the D.I.Y. mix engineer.

But there are lots of multilingual engineers around these days who speak Muso equally as well as Engineer, and a few pigeon languages in between. So if you come across one that doesn't, my advice would be to look elsewhere and try again.

The problem with going it alone solely for this reason is that you may find yourself hemmed in by other language barriers – not least of which is your proficiency in mixing. You won't need to explain what you want to someone else any more, but now you're faced with the task of putting your vision into practice on your own, without a professional skill-set. Which problem would you rather have?

3: The Music & Mixing are All One Process

Arguably this is truer today than it has ever been. Some music projects are so inextricably tied to their software platform, sample libraries, loops, plug-in effects, and so on that handing it all over to someone else to 'mix' is naïve thinking at best.

When a project is deeply woven into the fabric of the software and hardware from which it's derived, it's often far better to leave it in this format, in the idiosyncratic hands of its creator, for mixing. The outcome might differ from what a 'professional' might otherwise derive from it, but in the end choosing which version is 'better' is highly subjective anyway. In this situation, trying your best at mixing yourself might be a worthwhile exercise. Just get someone you know and trust to listen to your mixes when you're satisfied you've done your best. If it's a friend who's experienced at mixing, that might be the best of both worlds.

4: It's Not An Ambitious Project

For some music projects, the professional touch can seem like overkill, beyond the modest ambitions of your latest bedroom noodling. In some of these cases an engineer might tend only to pick apart an artistic work until it's virtually threadbare, finding fault in it from a 'professional's perspective' that really doesn't apply in this instance.

Fair enough. Although I don't generally agree that a piece of music in the hands of a sensitive professional can't be improved to its general benefit, there are certainly situations where 'improvement' often simply sounds 'slicker', and that often winds up sounding out of character with the music itself.

5: D.I.Y.'ing Might Lead to a Career in Mixing

The good news here (or is it bad news?) is that, if you find yourself taking to this mixing caper like a duck to water, you might be able to forge a career in it.

Is that a good thing? I'm probably not the person to answer that question. You'll need to answer that one yourself, but if you love it, sure. Why not?

There are lots of great aspects to the job. It offers you a relative amount of freedom in your working lifestyle. You meet interesting people along the way, and if you're lucky you'll end up working on something people will remember fondly for the rest of your life. You'll contribute to the artistic fabric of society in ways that enrich us all, and you'll hopefully enjoy the ride.

Just don't expect to be highly paid.

Reasons Against

1: Professional Mixes Launch Music Careers

I say this all the time – although I'm inevitably biased, being a professional mix engineer myself – but great mixes can launch music careers. Bad mixes don't.

If you're ambitious for your music to penetrate into the frenetic world around us, frankly it needs all the help it can get. Every advantage you can take you must take, and this includes great mixing.

Trip on this (or any other) hurdle and chances are you're less likely to succeed in getting your music out there. If you want a career specifically as a performing artist, you need to make that your single purpose. D.I.Y.ing the process to include your own mixing is a potentially fraught enterprise.

Put another way, name all the Top 100 albums of the last 50 years in Australia or the US, and of those, how many were mixed at home by the artist? The percentage is miniscule. Of course, it's not the only measure of why these albums were successful. But if the artists had mixed these now-famous albums themselves at home, would our music history books look the same? Probably not.

2: It's Not As Easy As It Looks

If you're a musician determined to mix stuff yourself, in the end, it's your choice. Just don't kid yourself: there are risks involved, and far more to this mixing caper than you might think.

I've been mixing for over 30 years and one thing that's remained consistent throughout is that I've never stopped learning better techniques, and never felt like I've 'known it all' – not even close. I've developed new insights into achieving certain sounds with every album I've made, and improved my skills with hardware and software all the way down the line.

When I listen to mixes made by the countless numbers of 'enthusiastic' non-professionals I meet, two thing always strike me: they're inconsistent (some are great, some terrible) and there are always changes you could make that would improve them, oftentimes massively.

I've seen too many albums thrown on the scrapheap courtesy of D.I.Y. mixing to widely condone it, and I've never been given the task of remixing an album where the client didn't love the outcome.

3: Do you want a career in music as a Performer or Engineer?

Too many musicians wind up recording and mixing other people's music, at the eventual loss of their own musical output.

If you're determined to make it as a musician – even if you can mix things yourself – there's a certain truth to the idea that you should stick to performing, and leave the mixing to someone else you can trust.

It's time-consuming work, and when you only have a finite amount of it, maybe your time is better spent song writing or practicing your instrument.

4: Mixing Is Not Solely About Artistic Preference

Not all mixing choices relate back to the artistic side of the musical coin, and this is one of the greatest traps amateurs fall for. Many of the mixing decisions made by a professional around volume, tone, depth, width and so on, are based on technical questions, not just artistic ones. They take into account things like the way a sound translates across thousands of different audio systems (the big one), how the mix works in mono versus stereo, at high volumes or soft, in noisy environments or audiophile listening rooms.

It's not just about how something sounds in front of you in your own private space that matters in the end. Knowing what your music will sound like everywhere else is the real trick.

5: D.I.Y.'ing Might Lead to a Career in Mixing

The bad news here (or is it good news?) is that, if you find yourself taking to mixing like a duck to water, you might be able to forge a career in it.

LET THERE BE PROJECTED LIGHT

by Simon Byrne

Specifically, let there be focussed light through a lens to produce an image on a projection screen!

Projection lenses work in reverse to camera lenses, but with a few key differences.

In camera optics, the amount of light getting to the image sensor needs to be controlled so a variable aperture (that is a variable size hole), is used to control the light passing through the lens, which arrives on the camera sensor. The smaller the hole, the less light gets through.

Aperture also affects depth of field. In photography, depth of field is the distance between the nearest and the furthest objects giving a focused image. If an aperture is narrow, then only highly collimated rays are admitted, resulting in a sharp focus on the sensor across a wide range of focal lengths.

Collimated? Collimated light is light whose rays are parallel, and therefore will spread minimally as it travels. A perfectly collimated beam with no divergence would not disperse with distance.

Perfectly collimated light could be said to be focused at infinity. A laser comes very close to being perfectly collimated.

A wide aperture admits uncollimated rays into a lens, resulting in a sharp focus only for rays coming from a specific distance. This means that a wide aperture results in an image that is sharp for things at the correct focal distance, and soft (out of focus) for the rest.

In projection though, light is a precious resource so

Short lenses still have their uses where a short throw is the only option such as some boardrooms or rear projection. It just becomes more critical to have the geometry absolutely spot on. Otherwise keystone and even focus will suffer.

we are usually trying to get the maximum amount of light onto the screen. Consequently, projection lenses are used at wide open aperture so as to deliver an acceptably bright image.

Fortunately in projection, we are not worried about a deep depth of field. The projected image out of a projector is usually derived from a DLP or LCD chip, which is a flat plane, and you are usually projecting on a screen which is also a flat plane, so there is no need for any depth of field. The notable exception is projection onto 3D objects but we'll get to that soon.

Fixed lenses (sometimes called prime lenses) are typically sharper, have better edge focus with more light throughput, and are usually cheaper. They are easier to build, have less design compromises and components. Generally speaking, you are always better off using a fixed lens if your installation permits it.

However, the real world often does not permit fixed lenses, so most projector lenses have a zoom range. These lenses have more glass elements, as well as moving parts. They are harder to make, so dollar for dollar, they will not pass as much light, nor focus quite as well as a fixed lens. Despite this, the benefits of zoom lenses overcome these shortcomings because they are so flexible.

Projection distance is a primary factor in producing a quality image. Within reason, the longer the projection throw relative to the screen size, it will produce a more evenly sharp, consistent brightness image with less keystone. There are a few things going on.

Keystone error, is caused by tilting the projector up, down, or to either side of the projection screen's optical centreline. At this point, the plane of the screen is not parallel to the plane of the projector, and an uneven, trapezoidal image results, rather than a rectangle.

You can correct keystone distortion two ways. The first is to make sure the projector's lens is parallel to the screen surface in both the horizontal and vertical planes. Physical keystone correction is always better than electronic. However, this may not be possible, so that is the time you use electronic correction within the projector or an external pixel mapping device which will still deliver acceptable results, albeit with slightly uneven focus.

But keystone error is less with a long lens. Using a long throw lens of say 4:1 throw ratio, the projection distance is four times larger relative to the screen width. Therefore any errors in geometry will be small relative to the image. In very simplistic terms, the keystone error will be the screen size divided by the projection distance, so that is reduced to 25%. However, if you have a very short lens, say a 08:1, keystone errors will actually be increased as the projection distance is less than the screen size, so that the error becomes amplified to 125%.

A medium to long projection throw will also produce sharper results across a building. Because buildings are 3D, a depth of field exists. With a longer projection throw, the light is more collimated which means it can accommodate better a variable depth projection surface, and any geometry errors will be less due to the long projection throw.

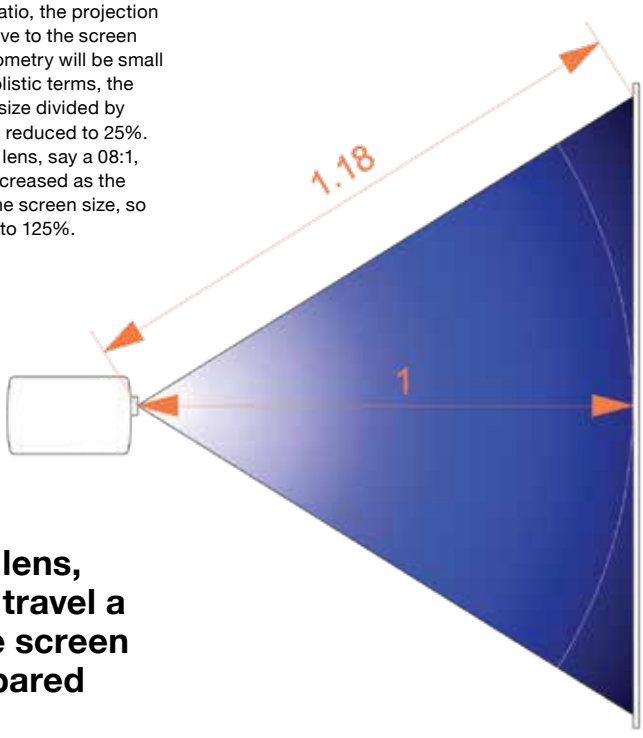
Short lenses still have their uses where a short throw is the only option such as some boardrooms or rear projection. It just becomes more critical to have the geometry absolutely spot on. Otherwise keystone and even focus will suffer.

Short lenses that pass large amounts of light are hard to make too. The tolerances are so much finer, particularly at the edges of the image. This is because, relatively speaking, over the short projection distance, the light is spread widely to the image edges. This means it is bent a lot optically, and has to travel further than the light in the centre of the image.

Using our 08:1 lens example, the light at the edges has to travel about 18% further than to the centre, so that means brightness at the edges will suffer due to the extra distance travelled, as well as the extra optics at the lens edges to accommodate the different focal length (the extra 18% edge distance). You can sometimes see this as a hotspot in the centre of the image, especially with rear projection. By way of comparison, using a 4:1, the difference in light distance travelled between the centre and edges is less than 1% so brightness and focus will be very even.

The sweet spot for lenses is the mid range zoom. About 1.3:1 to around 2.4:1. Fairly cheap to make, good light output, but without the issues that come with short lenses and the cost of long lenses. Most projectors are shipped with a mid range zoom lens and as long as you can work within the zoom range, deliver perfectly acceptable results.

There will always be compromises to be made when selecting projection lenses. Ideally you want your image to be pure as possible right throughout the signal chain. That means get the optics right before employing any electronic trickery to overcome optical problems. Pixel mapping comes at a cost in that you lose resolution, focus at the edges suffers, as will light output.



With a 0.8:1 short lens, the light needs to travel a further 18% to the screen edges when compared with the centre.

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THE PSYCHOLOGY OF COLOUR

Lighting the Stage

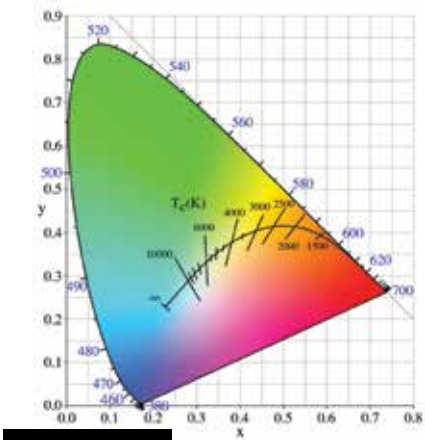
by John O'Brien

Red can produce feelings of anger.

Stage lighting is a mixture of science and art. The science bit (electrical, mechanical) is highly objective.

It's all Ohms Law and Newton after all. The art side is much more subjective and less explored in tech circles. Light and shade, movement and rhythm, and then ... colour. These can be alien concepts for a naive design mind. But they add feel, soul, or atmosphere and can elevate certain moods while suppressing others.

Early on, I watched what other LDs did and looked to the world around me for inspiration. I began to notice the emotional effect that different colour combinations had on me so read up on some art theory. Then I tried putting these ideas into practice on the stage.



Planckian Locus.

What is Colour Psychology? And just how does it relate to the stage?

In art theory - red, green and blue are primary. Cyan, magenta and yellow are their opposites (secondary or complements). ROYGBIV, colour wheels, trichromatic retinal receptors, colour constancy and a host of other arcane theories and tools like **Planckian Locus** can mess with your head. We'll stick to some simple psych theories for this piece.

Colour psychology can be defined as "the study of hues as a determinant of human behaviour". Plainly, colour:

- Carries meaning. (red = STOP, green = GO)
- Can be learned or be innate. (bright colours attract toddlers, nuanced colours an adult.)
- Is automatically perceived and evaluated by the viewer. (emotional not logical response)
- Can elicit colour-motivated behaviour. (red = ANGER, aqua = CALM)
- Changes meaning and effect within differing contexts (colour combinations, surrounding environment, cultural context)

So what has that got to do with lighting the stage? Absolutely everything. The gig of an LD is to enhance the performance in the given physical space (stage). Light and shade, angles and luminance are your basic building blocks. Colour (and movement) add emotion to compliment the performers.

Primary and secondary colours

Red and yellow are warm by nature, signifying emotions from anger (red) to joy (yellow). Red is hot but can be gloomy in the right context. Yellow is bright and happy but the wrong shade can look sickly. White is bright (der...) and lively; it has an 'up' vibe to it. However, it can also be very harsh - the effect of this is punchy (blinders anyone?) and contrasts well with solid colour blocks.

Green and blue are cool and placid. These shades have calming connotations on the psych side. Blue, although masculine, can be associated with tranquility and calmness. Greens can be soft or bold but may make some performers appear ghoulish on stage. Check with your artiste.

Pink - hot, rich, luscious, feminine. Purple - regal, sophisticated, powerful but also soft and tender when bleached out to lavender. Orange - the fire of red with the happiness of yellow. Hot but cheerful, even prestigious (think gold's connotations of riches). Paradoxically, I find the saffron of Buddhist robes quite calming (culture effect).

Different skin types also reflect light in different ways. Lighter skin tones are highly reflective (and hence show the full gamut of the applied colour) whereas darker tones can be less so. Lustre also affects the reflected light quality. Sweat reflects and refracts, while light skin TV makeup renders less reflective to the camera (or eye). Use these differences to your advantage.

Combinations and their effects

Here's where it gets fun - putting the palette together. When mixing two or more shades, you can choose contrasting or complimenting hues. Contrast adds dynamism and excitement. Analogous hues suggest subtlety. Importantly, mixing the colours alters their emotional meaning.

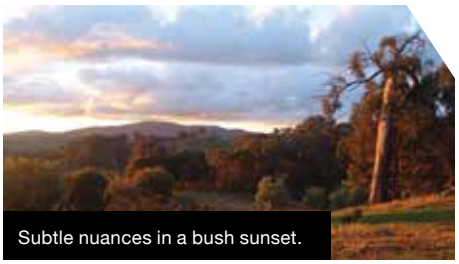
Blue can produce feelings of calm.

Monochromatic mixes give sophisticated looks. Solid blocks of one or two colours have great impact, particularly when contrasted with solid black or white. Advertisers know this well. Take a look at the billboards and signage around you. They rely on punchy primary or secondary combinations with little subtlety. This is great in a rock context but perhaps too bold for a crooner.

Cartoon combos also have their place. Pink/green, yellow/blue, purple/aqua - it's a heap of fun getting garish with acts that suit that aesthetic. Remember though, just because your fixtures have 16 million colours available doesn't mean that you should use them all at once! Even a lairy psychedelic scene will benefit from careful selection of shades and avoid visual vomit. Sometimes less really is more.

All colours can be toned down in feel. Check out a bush sunset for subtle nuances. With analogue fixtures, use less intensity or a lighter gel. With RGB fixtures, change the hue. You can even (counter-intuitively) mix in some white. Hot pink with a little white is bold and strong. Less pink (or a subtler hue) and more white tends more stylish. Dim everything down (to bring out the black) and it all gets moody.

Consider not only the juxtaposition of colours within scenes but between them. In concert, try calmer combinations during the verses and go bright and cheerful in the chorus. Also note the far more powerful emotive effect of major and minor keys in the music. Major keys are happy, bright and positive. Minor keys much more downbeat, if not sad. Select your colours and scenes carefully to match or enhance these moods.



Subtle nuances in a bush sunset.

Use colour to punctuate the music keys.

Pink - hot, rich, luscious, feminine.
Purple - regal, sophisticated, powerful but also soft and tender when bleached out to lavender.

Yellow can produce feelings of joy.

Colour mixing and temperature

Without getting too technical over differences between additive and subtractive colour mixing, it is worth knowing the basics. Essentially, analogue fixtures (Par, Ray, Fresnel, etc and moving heads with CMY mixing) start with white light and then subtract all the colours except the gel hue. This is 'subtractive mixing'. Newer RGB LED lights add bits of red, green and blue together to achieve the desired hue, hence 'additive mixing'. Add them all together to get white. You can use these differences to your advantage once you know that they are there.

It is also worth noting colour temperature and its effects on lighting choices. In a nutshell, different light sources produce different shades of 'white' light. On stage, this difference is subtle. Where it really makes a difference is in the camera. Film and video cameras see these disparities much more vividly than the eye. Video can be easily white balanced in camera, but film requires that LD and cinematographer work together.

What does it all mean to you?

Of course, all of this is highly subjective. One person sees things one way, the next person another. Culture can also play a big part in the perception of colour (pink for girls; blue for boys – in the 19th century, it was the other way around!). Synaesthesia adds even more dimensions to the perceptive possibilities. None of the above takes into much account the wonderful array of features available with modern digital fixtures. Built-in strobing, gobos and beam movement add an action dynamic impossible to replicate with older analogue fixtures. However, the feelings that colours evoke remain the same.

Remember, there are no rules here - this is art after all. Get creative, try something new. Go solid colour, go cartoonish, go pastel mix or go no colour at all. Above all, do so with a deeper understanding of the effect that you are creating.

The colour wheel is an abstract illustrative organization of color hues around a circle, which shows the relationships between primary colors, secondary colors and tertiary colors.

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ULA group

by Jenny Barrett

ROADCASES & JOHN CARTER

- the unsung heroes of the AV business.

Oceania's Kitchen Case.

Nightmare scenarios: the audio gear arrives at the show and it's damaged. You can't get the X!^*ing equipment out of the box. The console keeps cutting out because its overheating in the case. You can't plug the connectors in. You can safely assume that these are not Livesound roadcases. For the last 38 years, John Carter and his business Livesound have been quietly ensuring that audio-visual gear gets from A to B as easily and as safely as possible and is fit for purpose on arrival.

John's path to roadcase royalty began in 1980 when three guys set up a sound rental business 'Livesound', back in the days when they were few and far between. They ran the start-up initially alongside their day jobs at Beverley Bruce and Goldie Ltd, probably New Zealand's oldest and most successful manufacturer of musical equipment. Not a bad place to start out.

John was employed for his cabinet-making skills, manufacturing the amplifier and speaker boxes, and it wasn't long before John's new business partners were leaning on him too. Paul Crowther, later of Crowther Audio started building his own mixing consoles and with roadcases virtually non-existent in both New Zealand and Australia, John found his cabinet-making skills in demand. He began by making a case for Paul, then a couple more and he started to understand the untapped business potential, "At the time I was learning by looking. Whenever an overseas band was doing a show, I'd have a look at their cases and I realised that they didn't have many ideas either."

"After a year or so," recalls John, "more and more people wanted to rent our stuff, and it was wet hire, so with that and my band and making the speaker boxes and cases, I had to quit my day job."

In an effort to improve his designs, John tapped into a global network, sharing advice and information on designing and building speaker boxes with the likes of Dave Martin, founder of Martin Audio, and Rob Lingfield, founder of Hill Audio. Mind you, 'a global network' back then was really a likeminded group of penfriends using snail mail.

This really started John thinking and he set off on a mission. He left the rental business in the hands of his partners and crossed the ditch to Sydney, "I just walked into Jands and asked for a job." The guy on the other side of the counter, Ian Johnstone (who would later run EV and Bosch Australia), explained that they weren't hiring but they got chatting and John's passion worked its magic. "He said he wanted to hire me but that I'd have to wait until after the next production meeting. I waited a couple of days, got the call and started the next day." Which was very handy, as there wasn't a Plan B.

John spent the next eight months building speaker cabinets, "Folded horn cabinets, horn-loaded speaker boxes, all the things that were in fashion at that time. Working with the biggest rental company in Australia gave me way more insight into how boxes should be constructed, and it could all be applied to roadcases."

John called his partners and announced his imminent return. Having successfully managed to run the company between the two of them for the last year, polite concern was expressed over exactly what John would do. "I'm going to build roadcases," was John's answer. By the time they picked John up, they had an order from Roland for keyboard cases, "I quickly started to look for a workshop and Roland took eight cases. I guess I haven't had a day since without an order."

The rental side of the business became its own entity, and John added importing, distributing and servicing to the Livesound portfolio. Since then the manufacturing side of things has seen significant changes, "Processes have obviously changed. Back in the day I'd sketch out my ideas and pick up the saw. Now we use CAD and CNC machines to cut out the parts." The biggest challenge though has been the Chinese breaking into the market, "We used to make smaller cases for guitars, CD players and racks but we don't do anywhere near as many as we used to because of the cheap imports. We can't compete on price, although quality is another matter."

As with many businesses facing the onslaught of cheap imports, John and Livesound have focused on meeting the needs of clients who recognise quality or are after something unique or complex. "We start by thinking how easy it is going to be for the customer to utilise the case in whatever job he is trying to do and take it from there. The Chinese can't do that." Although he does add a "yet".

John explains Livesound's mindset, "We think about how people are going to get things out of the case, put it back in, how they'll want to move the case around during pack in, how they want to store them when they are on the road. A lot goes into it." John and his team of four manufacturers don't scrimp on materials, "We use thick laminate, decent quantities of aluminium for extrusions or edging, recessed latch fittings, handles that last and wheels that work."

Alex Oldham from Spot-Light Systems and long-time associate agrees, "Johnny knows roadcases better than anyone. You can give him a design and he'll really think about how you are going to use something. Then he'll politely say have you thought about this or this. He's just got an amazing level of awareness of what is required in the business."

Alex does buy the cheaper Chinese imports to store the equally as cheap Chinese fixtures that aren't going to be around in a few years, "But when we want roadcases for our expensive gear we use Johnny. We've got cases that are 30 years old and they are still going."

Elliot Stainton from AV Events adds quick turn around to the list of John's attributes, "John is completely reliable. He makes cases to your exact specifications and within a tight frame."

John's emphasis on quality and service has and still does stand him in good stead. Whilst acknowledging that he needs the other income streams provided by the service department and the import business, there is no shortage of orders for roadcases. Much of the business stems from word of mouth and much of it is outside the music industry. Following Sir Peter Blake's 1989 victory in the Whitbread Cup, John made his first trophy cases, for the Whitbread Cup itself and for the numerous others Sir Peter received for walking off with line, handicap and overall honours on each of the race's six legs. Since then he has made many a trophy case for New

John visiting suppliers in Germany

John with Werner and Christian of K&M, last month in Germany in 40 degree heat.

Zealand Rugby and most recently made four LED monitor cases for the NZ Racing Board, “All these organisations talk to each other which is great for us.”

Another angle has been cases for scientific testing equipment. They have just worked with a company who manufacture equipment to run crop analysis and needed a case to take the scales and tablet out into the fields, “They’ve just done a trade show and we’ve now a bunch of orders.”

Interest in cases for drones and cameras are also increasing and can be quite complex depending on what gear they want to carry with the drone.

Even within the entertainment technology industry, requests vary. One recent project has been a roadcase for a mobile kitchen ordered by Norwest Oceania Productions for the lighting crew working on Dancing with the Stars, “They wanted a case to incorporate a fridge, Nespresso machine, microwave, toasted sandwich maker, storage and a stainless steel bench top. The case needed a removable front, the top needed to be partly removable to expose the bench and they needed a hinged access panel at the back for power. The closed up case needed to fit into a standard truck pack with other cases.”

Jason Steel, Oceania’s Lighting Specialist, explains why they came to Livesound, “We’ve used John for many, many years for a whole range of stuff. His designs are impeccable, and he thinks of every minor detail. Plus the end result is bullet-proof and will take whatever we throw at it.” And John delivered. The end result has a convenient footprint of 1195mm x 795mm and is currently very busy keeping the lighting crew fed and watered.

So, any regrets about getting out of the rental business, “Well, turnover dropped once I went out on my own, but only temporarily. Within twelve months it was back up again and I have never looked back. I couldn’t have imagined thirty years ago that the rugby people would say what a good idea it was to build a case for the Ranfurly Shield.”

Nor could he have imagined that he’d have a son working in the business too, “Ben’s grown up in the family business and at some point, he’ll take over the helm. He knows where its at and he’ll have his own agenda. It will be exciting to see where we go next.”

Writer Bio: Adrian Barnard is the co-owner of Melbourne production company Monitor City. Formed twelve years ago to provide bespoke audio packages for touring bands, concerts and festivals, Monitor City have continuously grown and now service a broad range of clients including the Falls and Unify festivals, local councils, broadcast, corporate, and theatre, employing eight staff.

SENNHEISER DIGITAL D6000

by Adrian Barnard

EM 6000 Receiver

Digital 2-channel receiver with equidistant frequency grid and true bit diversity. Digital and transformer balanced analogue outputs XLR, 6.3 mm jack, AES-3, EM 6000 Dante with Brooklyn II Card and Amphenol RJ-45. High-contrast OLED display with LQI (Link Quality Indicator). 19 inch 1RU, 244 MHz switching bandwidth, error correction and audio error masking, AES-256 encryption, automatic frequency setup, integrated antenna splitter for cascading of up to 8 systems.

SKM 6000 Handheld Transmitter

Three frequency variations (470-558 MHz, 550-638 MHz, 630-718 MHz). Sennheiser standard capsule interface, compatible with microphone heads from evolution wireless G3, 2000, Digital 9000, Neumann KK 204 and KK 205 series. Highly effective intermodulation protection, AES 256 encryption and Digital 9000 encryption. Compatible with EK 6042 and EM 9046 in Long Range mode. Li-ion battery packs with 5.5 hours run time. Magnesium housing

SK 6000 Bodypack Transmitter

Three frequency variations (470-558 MHz, 550-638 MHz, 630-718 MHz). Sennheiser 3-pin connector allows connection to a variety of microphones or an instrument. Highly effective intermodulation protection, AES 256 encryption and Digital 9000 encryption. Compatible with EK 6042 and EM 9046 in Long Range mode. Li-ion battery packs with 6.5 hours run time. Magnesium housing.

We first invested in Sennheiser D6000 when we started getting a lot of broadcast work. We were providing audio for the AFL Most Valuable Player broadcast, Family Feud, Dancing with the Stars, and RockWiz Live. Because of that, we needed to provide the equipment and results that those clients were used to. In that market sector, Sennheiser is the dominant brand and it's what their technicians are most comfortable with. In that sense, D6000 was a no-brainer for us. It sounds great, it's easy to use, and it's totally reliable – and when you're doing television, it HAS to work.

Our initial purchase was two EM 6000s, four SKM 6000s and four SK 6000s, plus batteries and chargers. That way, our four channels can be four channels of whatever we need them to be. For example, RockWiz used two handhelds for Julia Zemiro and two belt packs for Brian Nankervis. It gave their techs the 'TV sound' they wanted and they loved it.

Operation

Physically, it's really easy to use, as you'd expect from a high quality product. It's been really well thought out and manufactured; the SKM 6000 feels nice and solid in your hand, for example. Our technicians love it when we send them out with D6000 because it's easy and robust. The bandwidth is very good, as are the amount of channels available, so dropping in four channels of D6000 in amongst a lot of other wireless gear is never a problem. It's very rare that there's only two or four channels of wireless on any job. Even if we're only sending four channels of D6000, there's usually eight or twelve channels of IEMs.

Performance

Sonically, I find the D6000 both warm and creamy. It creates an extremely accurate reproduction of what is put into it. There's no RF artefacts, and it sounds like an extremely high quality microphone hanging off a piece of cable. The wireless components are totally transparent. As such, we tend to only send it out on things that are extremely critical, and will benefit from it, like the more traditional 'sound reinforcement' gigs; typically jazz, blues or folk. Those kind of acts don't want you to colour the sound, they just want it louder. They don't want it to sound any different from how it would sound if you stood next to them on stage. The D6000 does this very well indeed. In broadcast applications, with a nice omni headset on the SK 6000, it sounds like you're sitting right next to the presenter that's talking. There's no colouration or artefacts at all; the result is very, very pretty, which is exactly what broadcast engineers want.

Support

I'm expecting to invest further in D6000 over the next two years, and I feel that it has almost all of the features of Digital 9000 series above it. We've found it to be very robust and have none of the minor issues like bits of plastic snapping off that are typically a product of poor design. It's as good as any wireless product that I've used in my career, and I'm very happy to keep using D6000 and its variants as they are released.

Sennheiser have always been fantastic with any assistance we've needed. They've always been just a phone call away. They've been a great partner to us throughout the years, and our relationship with them and this system is as good as it gets.

Brand: Sennheiser

Model: Digital D6000

Product Info: en-au.sennheiser.com

Australia: en-au.sennheiser.com

New Zealand: en-nz.sennheiser.com

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The Specs

Light Source: 19x15W RGBW LED
Zoom Range: 10° ~60°
Luminous Flux: 3364lm
DMX Channels: 14/26/30
Control Mode: DMX512
Firmware Upgrade: Update via DMX link
Input Voltage: AC 100V~240V, 50/60Hz
Power Consumption: 270W
Power Cable Daisy Chain: 4 Fixture Max. (230V, 50Hz)
Weight: 9.0Kgs
Dimensions: 325 × 189 × 393mm

ACME CM-300ZR II

by Andrew Gayler and Steven Windolf

Writer Bio: Andrew Gayler is the owner of Adelaide's Andy J Sound, a leading supplier of professional sound, lighting and vision to the events and entertainment industry. Andy J Sound's clientele include major festivals, prominent venues and conferencing facilities, and touring acts.

Andrew Gayler

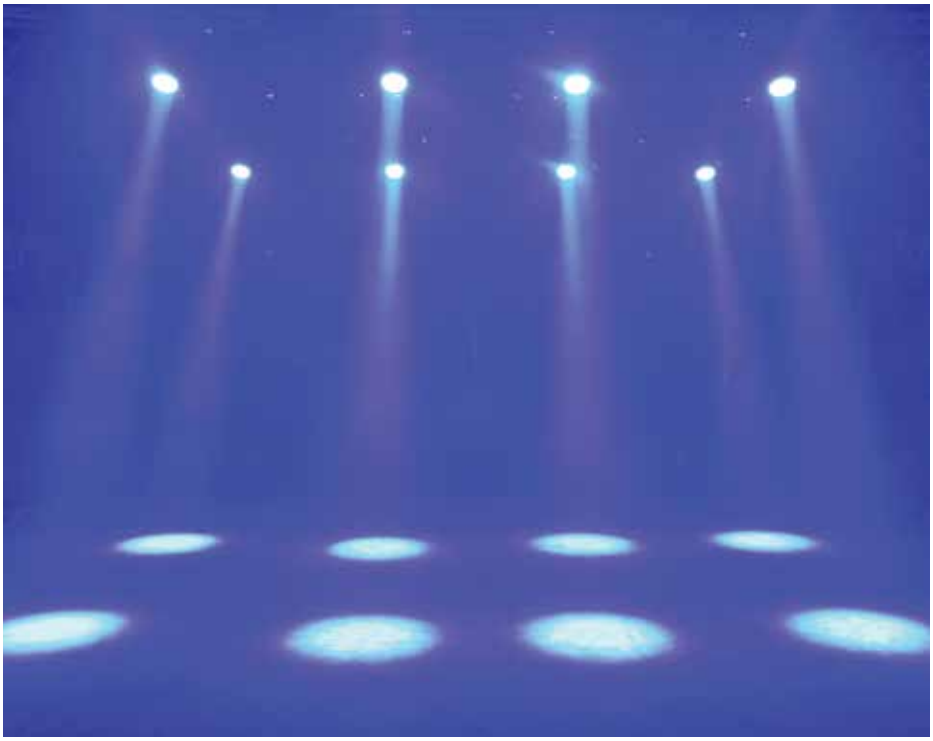
We installed the Acme CM-300ZR II into Adelaide's HQ Nightclub, which was a major fitout that we did from scratch – lighting rig, vision, sound, and control. Aside from four Philips VL4000s, every fixture in the club is Acme; washes, beams, spots, blinders, and strobes.

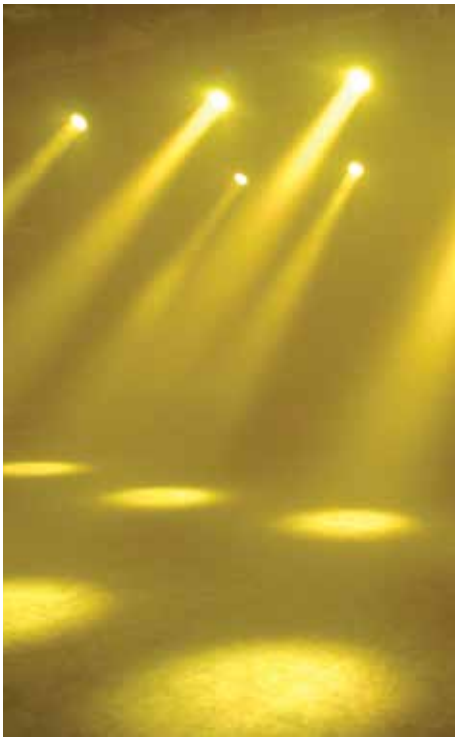
HQ functions predominantly as a nightclub, but also hosts touring bands. The lighting rig really needs to be functional and suit the acts that come through. When a band comes in, we add a floor package, and they can bring in their own lighting desk, or we can provide an MA2 light. They roll in, patch in, and off they go. In over a year, no-one has wanted to change out the house rig.

We have a great relationship with the distributor, ULA Group, and when we were evaluating fixtures to install for this project, they brought us a CM-300ZR II to test. After putting it through its paces, we determined that not only did it do everything we needed it do to as a wash in a nightclub, it was also small, bright, affordable, and came with a three year warranty.

The light it puts out is punchy; the 15W chips are extremely bright for an LED of that spec. Because the fixture is so small, its movement is really fast, so they're very responsive. They've also been very reliable – the club has been open since October 2017 and we've had no problems whatsoever. If you're on a budget, The CM-300ZR II offers incredible bang for buck.

ULA Group provide great service and support, and our staff are now competing to try and sell more Acme fixtures than anyone else in the country!





Writer Bio: Steven Windolf owns and operates AU Music Productions, who provide equipment and service to 90% of the nightclubs in Brisbane's music heartland, Fortitude Valley. A full service company supplying audio, lighting, staging, vision, for touring acts, festivals, and the corporate market, they also offer servicing, repair, sales and installation.

Back view of CM-300ZRII

Steven Windolf

We currently have 24 Acme CM-300ZR IIs in our hire stock, and we have sold them into school installations, including the prestigious Mueller College; they're pretty serious in their performing arts venue as they're running an L-Acoustics Kudo PA and a Midas digital desk!

We have found the CM-300ZR II's performance to be comparable to other products with similar specs, while being significantly more affordable and supplied with almost twice the warranty. They simply do everything you need a wash light to do, and the colours are great.

We've used them on everything from the Big Pineapple music festival as part of the floor package, to corporate, to building washes. We do a lot of DJs and electronic acts, so they're often used with the zoom at the minimum 10 degrees, and they're still a wash at 10 next to a beam that's at 4. I did a corporate gig with them recently where we only had 40 minute bump-in as part of a room changeover and I took the CM-300ZR IIs instead of par cans because I can place and programme them much faster.

In terms of control, I am a ChamSys operator, but the majority of the time the CM-300ZR IIs are out they're being controlled by MA. Fixture profiles have never been a problem, as Acme use MA to programme their range, so there's MA files on the web for absolutely everything.

We do a lot of rider spec shows and we're never had a problem with acceptance, and LDs have generally been amazed with them. Two of our major clients, Colourblind and BBE Touring, both use them. Everyone accepts them, and everyone loves them.

As a result of us investing in CM-300ZR IIs, other local companies have bought them too, and we're all working very well together.

We've been running our CM-300ZR IIs for over 18 months, and we've only ever had one small issue. ULA Group sent someone straight out to pick it up, fixed it, and returned it the next day. It turned out to be a minor software issue. We've had no other problems. The support from ULA is outstanding.

We pack four in a roadcase, they have a standard Omega clamp, we hang them, and off they go. Their affordability means I can buy a whole case instead of just one fixture. They're great bang for buck and create a good return on investment. For smaller companies, it makes a lot of sense.

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Writer Bio: Wesley Hiscock is the Senior Project Manager – Lighting at Adelaide's Novatech Creative Event Technology. In a career spanning over 25 years, he has worked as a freelance chief electrician and lighting designer across the corporate and entertainment markets, been Chief LX at the UK's Grange Park Opera, and spent four years as a Senior Lighting Supervisor for Opera Australia.

ELATION PROTEUS HYBRID

by Wesley Hiscock

The Elation Proteus Hybrid is an IP65 rated, moving head, three-in-one fixture; beam, spot and wash. Novatech had an outdoor project come up, and we needed something reasonably priced and reliable to sit outside and wash some buildings.

We liked the look of the Proteus Hybrid on paper, and asked distributor Lexair to send us a demo unit. We rigged it up on the truss in our warehouse, and did a head-to-head comparison for our own benefit. We were happy with what we saw, and decided to proceed. Lexair and Elation were very easy to deal with; the lead time for the order was very short and it was just a couple of weeks before we had the Proteus Hybrids in the warehouse. We were pretty happy about that, as it can take up to eight weeks to receive orders from some manufacturers.

The Proteus Hybrid provided us with that little extra we needed while staying within the budget's range. You can spend a huge amount on an IP65 rated moving light, but the Proteus was a cost effective fixture that fitted the brief, could be rolled out ASAP, and didn't need to be put in a dome.

Performance

For their first gig, they sat out on Adelaide's North Terrace for over a month as part of the Adelaide Fringe Festival's 'Parade of Light', washing buildings with a lot of colour and movement, using some breakups and slow rotation. The gobo projection was really crisp, and the fixture is very bright, even when using the prism. There was a lot of ambient light, and we were projecting across a six lane road in the CBD onto an LED wash, but they really cut through, and you could see everything we intended. They are a decent fixture with good optics, and the zoom is brilliant. We didn't have a single problem with any of them for the duration of the event, even though it rained quite a bit.

Build Quality

Their next test was at the Commonwealth Games on the Gold Coast, sitting on the foreshore for four weeks. The weather was terrible; the rain was coming in sideways and there was literally water dripping off these units, and again, not a single problem. It's a testament to the quality of their construction; build quality is a major factor on anything IP65 rated. We had other gear come back which was full of salt and needed to be properly stripped down and rebuilt, whereas the Proteus Hybrids needed only very minor cleaning.

Flexibility

We're now heading into the summer season, and we'll definitely be using the Proteus Hybrids on all our outdoor gigs, including New Year' Eve and

The Specs

Source: Philips MSD 21R 470W 8,000K Lamp, 1,000 Hour Average Lamp Life

Photometric Data: 80CRI | >23,000 Lumens, 13,375 LUX 1,243 FC @49.2' (15m) (3.0° Spot), 233,000 LUX 21,646 FC @49.2' (15m) (2.0° Beam), 11,500 LUX 1,068 FC @16.4' (15m) (4.0° Wash)

Effects: Full 360° Bi-Directional Animation Wheel, Rotating Prisms and Prism Macros, Frost Filter Hybrid Wash Effect, Motorised Focus and Auto-Focus, High Speed Mechanical Shutter and Strobe

Colour: 14 Dichroic colours Including CTB, CTO, and UV. Full CMY colour Mixing and Linear CTO colour correction

Gobos: 8 Interchangeable Rotating / Indexing Glass Gobos, 14 Static-Stamped Metal Gobos

Control / Connections: (3) DMX Channel Modes (24 / 26 / 37), 6 Button Touch Control Panel, Full Colour 180° Reversible LCD Menu Display, 8 / 16 Bit Resolution Adjustable Movement, DMX, RDM, Art-NET, and sACN Protocol Support, Elation's E-FLY Internal Wireless DMX Transceiver, IP65 5pin DMX In/Out, IP65 RJ45 etherCON In/Out, IP65 powerCON TRUE1 Power In, Wired Digital Communication Network

Dimensions: Length 445mm, Width 572mm, Height: 800mm, Weight 38 kg

Electrical / Thermal: AC 100-240V - 50/60Hz, 700W Max Power Consumption, -10°C to 45°C]

Australia Day. I'll be hanging them on the front trusses of all of the stages that are a bit more exposed to the elements. I'm confident that they're reliable enough to use on WOMADelaide next year. I've found that they're just as good indoors as well. They're a very bright fixture for the size, and versatile. I recently took them to the Adelaide Symphony Orchestra's Star Wars concerts at the Adelaide Entertainment Centre, rigged them over the stage, and employed them as both a wash and a profile.

Improvements

The one thing that I think should be incorporated, and not just on the Proteus Hybrids, but most fixtures, is handles on the yolks. Sometimes when you pick lights up from the base and they're sitting flat, they become very top heavy. With yolk handles, you can just pick them up and they're much easier to move around, especially when they're sitting on the deck.

Brand: Elation

Model: Proteus Hybrid

Product Info: www.elationlighting.com

Australia: www.lexair.com.au

New Zealand: www.lexair.nz

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CX 141 | October 2018

by Duncan Fry

SNOW JOB

The projector from the Smithsonian

It's been a great season for the snowfields this year, so my gf said "Let's go to the snow for a long weekend. We can stay in the town, and catch the shuttle bus up the mountain. What do you think?"

Ah, the snow. Freezing cold, high prices, crowds of people crashing into each other (and me!) What's not to like? But it's hard to say no when she's wearing her snow bunny outfit! So of course I agreed.

The last time I had been to the snow was on a two week snowfields tour with some band, a long, long time ago (drifts off into a haze of memories...)

Somehow the band had organised that rarity of touring - a night off! So on this night the Inn's management decided to put on a movie.

I was hanging around the bar in the afternoon, getting stuck into a couple of jugs of après ski, when a wizened old man in a dust coat wheeled in a movie projector and set up a screen on the stage. The projector could easily have been one of Thomas Edison's factory rejects (Crazy Tom's Projector bargains - come on down!), and when he turned it on it wheezed, groaned, and then started clattering like a team of castanet players on speed.

Satisfied that the thing actually ran, the projectionist carefully placed a tiny speaker box on the stage. It looked like an early 40's Gibson guitar amp, with scrollwork on the speaker grille, and a whopping 6-inch speaker!

The thin sound that came out of it barely covered the clattering noise of the projector, so I went up to the projectionist.

"Why don't we run the sound through the PA?" I asked.

He shook his head. "No, mate, you can't do it. The last band here told me it's got a special plug, and it wouldn't match up with their system."

"Hmm, let's have a look at this 'special' plug then," I asked. How different could it be? He uncoiled the lead and showed me.

It was a guitar jack!

"Well, it'll be a bit tricky mate," I said, trying hard not to laugh, "but I think we'll be able to match it up somehow."

His face lit up.

"Gee, do you reckon you'll be able to do it, then? That would be great. Thanks a lot young feller"

He shuffled off, probably for a training session with the geriatric bobsled team, and left me to it.

The movie was Uncommon Valour, a rip roaring adventure where Gene Hackman goes back into the jungles of Vietnam after the war to retrieve some M.I.As (Missing In Action). It should have been subtitled 'Travel the world, explore other cultures, meet interesting people...and kill them!'

Chuck Norris had also made a string of 'Missing in Action 1, '...2', '...3,' 'Missing in Action goes to Hawaii' 'Missing in Action and the Temple of Doom' movies with a similar theme, not forgetting the Lord of the Mumbles Sylvester Stallone in Rambo 2. So there was to be plenty of action.

First, I ran his signal (with the 'special' plug!) from

the projector into the mixing desk, and from there into a couple of bi-amped monitor wedges, placing one each side of the screen facing the audience. The sound was a vast improvement, but I wasn't finished yet.

I took a line out from the first channel and ran it into a gate, a compressor, and then out to the main system, a couple of Series 2 ARX 1812's, big all horn loaded boxes with a couple of 18's for bottom end. I wound up the level of the low frequency end, carefully set the thresholds on the gate and compressor, and then went out to roll around drunk in the snow, just like everybody else!

At showtime that evening, I fronted up to the mixer just as the old projectionist was hand cranking his projector. I pushed up the levels to where I had marked them in the afternoon, and settled back to watch the movie.

For the first twenty minutes of the movie there was just dialogue, which came from the two monitors, and the audience seemed quite happy with the sound of things.

But with the first explosion of the movie, BANG, the whole PA system erupted into life, with an enormous amount of bottom end, quite literally knocking everyone backwards in their seats!

It sounded great. Each time there was an explosion, or machine gun fire, the main PA would turn on, and then go back to the monitors for dialogue.

The audience loved it, and so did the chalet's management.

"Wow, that sounds fantastic," they said, coming up to me during the movie and shaking my hand. "How much would a system like this cost? We've got to get one." However, when I started counting off on my fingers in thousands, they became distinctly less enthusiastic, and the idea was never mentioned again!

It was the last gig at that venue so we had to load out that night. Of course, it hadn't snowed for the last five days so what happened - it started to snow like shaking a giant snow-dome and we had to load out in a raging blizzard!

The chalet was at the top of a long steep driveway. I backed the truck up to it as close as I could so there was less far to stagger in the snow with all the gear. It took us so long that there wasn't a soul around when we finally got all the gear in the truck. We had a couple of drinks and then fell into our bunks.

The next morning we were off to Cooma in the Snowy Mountains, so we were up bright and early and into the truck. There was snow everywhere, and the battery was so flat that the starter motor solenoid wouldn't even click.

"We'll have to roll start it." I announced. Chris looked grim, tightened his seatbelt and gripped the dashboard. I put the truck into second gear, switched on the ignition and put the clutch in. Seven tons slowly lurched forwards. As we got halfway down the driveway I lifted the clutch, the truck shook, jerked and rattled but wouldn't start.

There was a right angle corner at the end of the driveway which turned on to the road, also completely covered in snow. The truck lumbered to the corner. I tried the clutch again - no go. I left the clutch up, hit the brakes and spun the wheel, and we executed a perfect four-wheel drift (actually six-wheel!) around the corner. I straightened it up and we rolled off down the winding mountain road.

'Jeez I hope this thing starts,' I thought, because without the engine we've got no brakes! I pulled the choke out as far as it would go, and tried again. After a few horrendous jerks, when I fully expected to see the engine launch itself through the bonnet, the engine finally fired. I gave it a couple of seconds to settle down, then I cautiously tapped my foot on the brakes.

All six wheels locked up instantly, and all seven tons of us slid sideways. I looked across at Chris. His face was whiter than the fresh snow outside.

"Brakes work OK,' I yelled, wrestling with the steering wheel to bring the juggernaut back onto a straight line. "Maybe I'll just leave it in second gear until we get below the snow line."

"Good idea," muttered Chris through his gritted teeth, never once taking his eyes off the winding expanse in front of us.

As we came around the next corner we could see tyre tracks leading over to the edge of the road, and just make out the back end of an EH station wagon sticking up out of the snow.

It had obviously slipped off the edge, and three or four people were milling around it scratching their heads.

"Hey look", said Chris, "Some poor bastard's gone over the edge. Let's check it out."

"OK" I said, but I didn't have to move the wheel - it seemed to have a mind of its own.

"Shit!" I yelled, "I think we're going to join him!" and we drifted slowly along the same tracks that the car had left. The people saw us getting closer, and closer, and they scattered in all directions when they realised we couldn't stop.

At the very last second the tyres bit into the road and we managed to steer our way around the corner, although as I looked in the rear view mirror I could see that the rumble of our passing caused the car to slip another couple of lengths down the mountainside!

I turned to Chris.

"No problems, see?" I patted the dashboard. "We'll get the old tub through. How's the underwear?"

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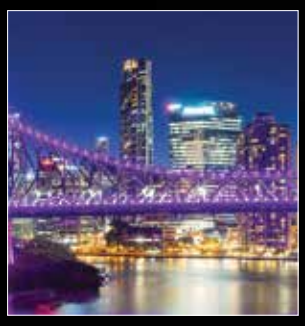

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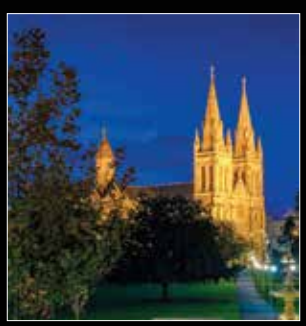

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