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The CMI warehouse crew and their electric forks

IT'S TIME TO SWITCH TO SOLAR



CMI's solar system



As Andy Stewart pointed out in the last edition of CX Magazine, installing solar power generation for your business is “the easiest form of income your business could ever receive. All you have to do every day is convince the sun to rise. It’s like an employee that you never have to pay, and from whom there is never a single complaint. It’s a total no-brainer. Any Australian business that hasn’t considered where their power comes from, how they might use less or generate at least some of it themselves via a renewable energy system... is frankly, missing out financially.”

With Andy’s studio, The Mill, well on the way to becoming self-sufficient in terms of electricity, it’s now adding dollars to his bottom line in the form of untaxable passive income. Andy has calculated that since he installed his first

solar system back in 2008, it has “paid for itself about six times over (not including inflation). By my calculations, that’s about 35 grand... for doing zip.”

This has sparked a broader conversation in the industry as a whole. I spoke with two distributors, running their own warehouses and offices, that have gone down the same path, with undeniable environmental and financial results.

Peter Trojkovic, CEO & Executive Director of CMI Music and Audio

Both pro audio and MI wholesalers, CMI are best known to the CX readership as distributors of HARMAN (JBL, dbx, Soundcraft, Crown, AKG, Lexicon) as well as Adamson, Fohhn, OptoCore, and Tascam. CMI started going green back in 2013 by replacing all of the lighting at their Brooklyn, Victoria HQ with LED. That one change dropped their power bills by 30%, which they've been tracking ever since.

After watching the technology develop and analysing the economics as they changed, CMI made the leap to generating electricity with their own solar panels in 2018. "I was watching the time it took for a solar system to pay for itself drop and drop over the years," relates Peter Trojkovic. "We made the decision to invest when that period hit around five years. It's now down to four years or less."

CMI opted for a 57kW system which produces much more than their needs at this stage. Panels are installed on the rooves of multiple buildings at their site; office, warehouse, and sheds. Since installation, power bills are now on average 40% of what they were in 2013, and that doesn't even take inflation or electricity price rises into account.

Operating their own offices and warehouse on-site, air conditioning is CMI's single largest electricity expense. The warehouse runs six forklifts, with five of them electric and recharged from the solar array. The team are currently investigating battery storage options. "We've just had the solar system audited to make sure it's running correctly, and to get recommendations for battery back-up and storage," adds Peter. "As we've paid off the solar array, we can then spend on a battery, and then pay that off. This system is paying for itself as we go along. Our aim is not to need the grid at all, are there's no reason we shouldn't be able to do this."

I asked Peter what to be aware of if you're considering the move to solar for your business. "Be careful, and get a few quotes," he advises. "There are, unfortunately, a lot of dodgy operators in the field. Our solar panels are European-made, our inverters are US-

made. It's important to ensure any system you invest in is not cheap garbage. The bottom line is, if you can pay for it over four years, you then get at least another six or more years of electricity free. Now, it wasn't a cheap exercise, but I felt it was something we had to do as an environmentally responsible organisation. It was a matter of not if, but when."

Maxwell Twartz, Sales and Marketing Director, TAG

TAG, distributors of QSC, Allen & Heath, Audio-Technica, and Martin Audio, have well-established social responsibility and environmental credentials. After acquiring the title to their Kings Park, NSW warehouse over a year ago, TAG was able to implement its sustainability agenda.

"A big part of that agenda was all solar, all electric, and we were lucky to be able to find a warehouse with a 100kW solar system already installed" explained Max. "After we finally consolidated all of our inventory in one place, TAG now generates enough power to run Kings Park, and offset our HQ in Stanmore, NSW and office in Collingwood, Victoria."

"We're actually producing a little more than we use," Max continues. "All of our warehouse vehicles are electric, and that's five forklifts, two WAV pickers, one scrubber, and a sweeper. We're currently putting in a fast vehicle charger so anyone who pulls in can charge up their EV, be they staff or visitors."

The next step in electrifying their work vehicles is the purchase of an 8-tonne delivery truck from Australian company SEA Electric, who manufacture electric commercial vehicles in Melbourne. "We do a lot of pallet deliveries straight to site," illustrates Max. "We've put the order in to SEA, and we're expecting delivery in July. They're cranking out around five trucks a day, getting great reviews and doing a fantastic job. SEA partnered with Hino, and you're essentially getting a Hino with an electric drive train instead of diesel. They've got a 120 km range, which is all you need for Sydney."

TAG are in a similar research mode to CMI when it comes to battery storage. "We haven't fully gone down the path to a battery yet," shares Max. "Lithium batteries are expensive



CMI - Brooklyn



TAG - Kings Park

but light, so are great for mobile and portable applications, but you don't need that in an install. We are starting to see that purchasing second-hand lithium batteries that are end-of-life for vehicle applications and only charge to 50%, for example, might be the way forward. Lead acid batteries are not environmentally great but are another solution. There's a bit of research and advancement still to go with batteries, but I don't think the answer is new lithium."

While TAG are generating more power than they are using and slashing their energy bills, it's not necessarily about the dollars for Max. "It's not just an economic argument, it's a sustainability argument," asserts Max. "And I think the sustainability is more important. I also encourage anyone to come down to Kings Park and get a free charge of solar in your EV!"

cmi.com.au

www.tag.com.au

seaelectricvev.com.au



Responsible recycling at CMI





GROUP TECHNOLOGIES WELCOMES NEW TECHNICAL PRODUCTS MANAGER

Group Technologies has been a market leader in the Australian professional audio industry for over two decades. Due to continued growth in both the technical and digital mixing markets, GT has recently appointed Scott Jamieson as their new Technical Products Manager. With 30 years of Pro Audio solutions experience, Scott's technology-focused background finds him perfectly placed to understand and assist with much of GT's portfolio, with powerhouse digital mixing console brand DiGiCo front and centre.

Scott's early years were spent dabbling in community radio and running mobile PA and DJ setups, before beginning a sales role for local pro audio equipment business Audio Oz. From here Scott progressed to multidisciplinary Audio Visual equipment supplier Soundcorp (now known as Soundcorp, A Diversified Company) where he took on the role of Professional Audio Products Manager, eventually transitioning to a Sales Executive role specializing in the Media and Entertainment sector.

During his time at Soundcorp, Scott spent plenty of time running DiGiCo demos at the GT booth during both local and international trade shows, where his interest in DiGiCo continued to grow.

"My first experience with a DiGiCo console stretches back to 2006 with the Soundtracs DS3, where it was love at first sight. I've been a keen DiGiCo advocate ever since. And now, after spending 30 years as a 'generalist'

reseller, I'm able to take advantage of this opportunity to become a product specialist. I'm looking forward to doing a deep dive into a series of systems and technologies that I've been passionate about for a good portion of my career," explains Scott.

"After working with Scott in various roles for over a decade, Scott's passion for audio and his exceptionally professional work ethic can't be overstated," says Anthony Touma, General Manager of Group Technologies. "We are very excited to see Scott become an instrumental member of the team, and we are delighted to welcome him on board."

When he's not reading DiGiCo manuals ("Yes," says Scott, "I am one of those people who reads the whole manual!") or keeping up with the latest tech trends, Scott enjoys true crime podcasts and taking care of his two kids, wife, horse, three dogs, one cat, twelve birds and a menagerie of other animals!

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ŌTAIRONGO

SONIC PORTRAITURE



Sound artist Maree Sheehan pushes the boundaries of sound art into 'inner worlds' and immersive experiences using sound technology from Sennheiser and Neumann. Sheehan's extraordinary exhibition, Ōtairongo at Toi Tu Toi Ora, harnesses their technologies to bring audio portraits of Māori women (wāhine) to life.

An avid user of Sennheiser and Neumann equipment, sound artist Maree Sheehan (Ngāti Maniapoto-Waikato, Ngāti Tuwharetoa, Ngāti Pākeha) is pushing the boundaries of audio and sound through contemporary sound art. Her practice is built on years of experience in the research of 'audio portraiture', a method of capturing someone's identity through immersive sound experiences, that eventually led to the creation of her debut solo exhibition Ōtairongo (presented by Artspace Aotearoa in association with the Auckland Arts Festival) and then as the only sound artist in the prestigious Toi Tu Toi Ora exhibition at Auckland Art Gallery.

Collaborating and producing sound art using Sennheiser and Neumann equipment for over three years now, she has created work alongside the likes of Chelsea Winstanley (Ngāti Ranginui). Now, and together with Sennheiser, Sheehan wants to pioneer sound technologies with her art to create a sonic and music community worldwide.

Music Career

From growing up amongst a family of musicians, to attending classical piano lessons since she was eight years old, Maree was stirred by audial art from a very early age, "I

have always been inspired by music since I was a child. My parents loved it, so it was always a strong part of our family. This gave me a great foundation in music theory, which I find useful now purely for communication," says Sheehan.

Maree earned considerable acclaim from the onset of her music career. She was nominated for Most Promising Vocalist at the 1993 NZ Music Awards and Best Maori Song in 1996, as well as awarded the Whangai Award for her contribution to Rangatahi (youth) in music.

Over the course of her career Sheehan dedicated her time to teaching and mentoring young composers, whilst creating her own compositions for screen in which she became a widely regarded singer-songwriter in renowned documentaries and short films such as *Disrupt*, *Pluck*, and more recently the *Home, Land and Sea* television series.

Off the back of her successful screenwork, Maree was a recipient of APRA Professional Development Award 2021, which is allowing her to be mentored by more established composers and sound designers such as Dave Whitehead and Chris Fauima (MU, from Fat Freddy's Drop) and to experiment with new technologies and sound production for screen.

Making a statement in the music industry through immersive technology

Fast forward to 2021 and Maree's career has continued an upward trajectory. Her audio content is increasingly popular, and she has expanded into the contemporary art industry using immersive sound.

One of her first pieces of work, contemporary dance *Hōkioi me te Vwōhali* (From Spirit Eagles Land) premiered at the New Zealand International Arts Festival in which Maree collaborated on the music composition and immersive sound design for Ōkareka Dance Company and Exhale Dance Tribe (Cincinnati, USA). The piece fused choreography, music, tikanga Maori and performance practices, AV, lighting, and performance design.

The 3D audio and binaural recording Maree composed for the performance utilised immersive sound design with the Neumann KU 100 binaural head and the Sennheiser AMBEO VR Microphone, allowing her to "vividly capture Indigenous people from both New Zealand and Cherokee Nation playing traditional flutes, drums and vocals, alongside the sounds of the lands such as streams, lakes, stones, birds and animal life," says Sheehan.



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The KU 100 is a binaural head microphone for a truly immersive listening experience with headphones. Although it uses only two channels, its spatial depiction appears three dimensional and shockingly realistic.

Having also recently completed a PhD at Auckland University of Technology, 'The sound of identity: Interpreting the multidimensionality of wāhine (woman) Māori', Maree, Tyrone Ohia and Extended Whānau earned the prestigious 'purple and gold pins' for the Best New Zealand Design Awards. The study takes particular interest in a new form of audio portraiture that interprets and represents the identity of wāhine Māori – the inspiration behind 'Ōtairongo'.

"The utilisation of sound and music, especially immersive and binaural technologies allow spatial intimacy and provides a connection to the unseen, the sonic senses that connect us to emotion. Sound has the nuances and ability to provide experiences that go beyond the visual," says Sheehan.

Capturing breathtaking moments with Sennheiser & Neumann

'Ōtairongo' debuted at Toi Tu Toi Ora: Contemporary Māori Art; the largest exhibition in the 132-year history of Auckland Art Gallery Toi o Tāmaki. With over 140,000 visitors, it was the first exhibition to take over the entire gallery and held more than 300 artworks by 110 Māori artists.

In Ōtairongo, Sheehan seeks to interpret and represent the identity of wāhine Māori through audio-portraiture, experienced within the realm of Hine Raukatauri (the Goddess of Flute Music). "Ōtairongo was the only sonic art and audio portraiture within the Toi Tu Toi Ora exhibition. It was the first of its kind in terms of sonic art and from Māori women's creativity

and expression and therefore curator Nigel Borell invited me to be a part of the biggest exhibition at the gallery," says Sheehan.

"Sennheiser was pivotal in the utilisation of immersive sound technologies, thanks to the Neumann KU 100 binaural head and Sennheiser AMBEO VR Mic, which provided excellent reproduction of sonic and spatial elements, which was so important to get the full connection to the audio portraits," says Sheehan.

The easy-to-use AMBEO VR Mic is an ambisonic microphone with a special design that allows you to capture the sound that surrounds you from a single point. As a result, these recording tools enable the capture of fully immersive sound, whether for virtual reality concerts, video games, films and more.

The Neumann NDH 20 is a closed-back headphone combining excellent isolation with a carefully balanced sound image and outstanding resolution, ideally suited to monitoring and mixing tasks, even in loud and noisy environments, with circumaural memory foam ear pads for long-term wearing comfort.

Contributing to the creation of the immersive experience in the audio-portraits, Sennheiser and Neumann provided a means for recording 360-sound spheres of both interior and exterior environments relative to each wāhine. Maree explains, "listening back to the reproduction of these 360-degree Sennheiser AMBEO sound recordings using my NDH 20s created a spherical spatial depth, whereby a listener is able to feel immersed in the same location as the material was recorded."

Moreover, Sennheiser's ambisonic sound capture increased the sonic texture and emphasised a unique experience of space and time in her work, "Sennheiser's

ambisonic sound capture was an important technological application, enabling me to record environmental ambient spaces relative to the participants personal, cultural and social settings," she says.

Going global during the COVID-19 pandemic

The impact of COVID-19 on physical art spaces gave Maree the opportunity to engage with audiences from around the world and experience her art by digital means, "It didn't change my art, but I did utilise the Internet to create a platform for Ōtairongo to be heard as the galleries were closed," says Sheehan.

Though Ōtairongo remains a digital experience for audiences, Maree continues to plan for the exhibit's future, stating "I also want Ōtairongo to tour worldwide, I am interested in looking at many galleries and artistic festivals once the world is in a healthier state from COVID-19 to position this experience."

The future of immersive sound

While Sheehan continues dedicating her time to lecturing at Auckland University of Technology and mentoring young composers, as well as creating her own compositions and writing for screen, she is laser-focused on the future of immersive sound technology.

"As much as I would love to disclose the project's full details, as yet I can only say that I am currently exploring ways to use Neumann and Sennheiser's AMBEO and binaural products in audio mapping of environments and also looking to see what new sound technologies can be used underwater."

www.otairongo.co.nz



Hokioi me te Vwōhali - NZ Festival 2020. Photo Credit: Matt Grace



Neumann KU100 Binaural Head



Sennheiser AMBEO VR Mic

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**GROUP
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ADVANCED CAMERA TRACKING FOR TEAMCONNECT CEILING 2

Audio specialist Sennheiser and 1 Beyond, industry leader in camera tracking solutions, have announced the release of a new camera tracking solution that offers voice-activated camera tracking for rooms of any size: classrooms, boardrooms, multi-purpose meeting spaces, and more.

Customers are enjoying the integration of the 1 Beyond Automate VX and Sennheiser's Team Connect Ceiling 2 (TCC2). Integrators have deployed the pair at financial institutions, universities, and hospitals.

This solution leverages the audio quality and accurate beam position information provided by the TeamConnect Ceiling 2 microphone array combined with 1 Beyond's advanced camera positioning algorithm to offer close-up shots of people speaking in a room, whether they are seated or standing anywhere in a room.

Multiple ceiling microphones can be combined to cover larger spaces and up to 12 cameras can be placed anywhere to get the best camera angles regardless of where the speaker is located.

An intelligent switching algorithm means with multiple cameras, the remote participants see broadcast style cuts and no camera movement. No camera presets need to be set manually; the units auto-configure based on the room design, but the installer can select how tight or broad the camera angles should be.

Using the microphone's reported height as well as horizontal position of the talker, 1 Beyond's tracking can distinguish between seated and standing participants. The beam can point to up to 700 unique positions, giving more precise audio location information.

"1 Beyond offers advanced camera tracking that pairs perfectly with the TCC2

microphone array," explains Charlie Jones, Global Alliance and Partnership Manager for Sennheiser. "Unlike other products in the market, the TCC2 does not limit the number of zones you can use for camera tracking. This allows the real-time positional information from the microphone to automatically switch the cameras to the optimal view, regardless of where the speaker is located in the room, ensuring a lifelike meeting and classroom experience for remote participants. 1 Beyond has even automated the system setup resulting in a system that is extremely powerful while still easy to deploy."

"1 Beyond's Automate VX solution has been on the market for over four years and is a mature product with many advanced features," says Terry Cullen, CEO/Founder, 1 Beyond. "We're excited about this partnership. The combination of Sennheiser and 1 Beyond technologies really advances the state of the art for voice-tracking camera solutions".

"In 2022, we will see the hybrid model of work and education continue to transform," says David Missall, Insights Manager, Business Communication at Sennheiser. "In the last two years, the AV and IT industries came together to enable remote collaboration unlike ever before, and we will continue seeing this space innovate with new ecosystem-driven solutions. We will see industry players across the hardware and cloud-based software spaces come together through integrations that make audio and video conferencing more seamless than ever. This increase in interoperability and efficiency comes as AV and IT professionals must toggle between in-person, hybrid and remote environments on a dime."

"We will also see new and



David Missall

existing solutions issue updates that minimize the manual setup and configurations of hybrid environments via automation. Whether that is pre-programmed room analysis, biometrically activated presets, or automated exclusion zones in a room, meeting technology is continuing to get smarter. A great example of both of these trends is Sennheiser's integration with 1 Beyond. This integration allows hybrid meeting spaces and classrooms to stream unified video that follows the speakers voice, wherever that may be coming from."

See the solution in this short video demo: www.1beyond.com/automate-vx/



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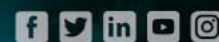
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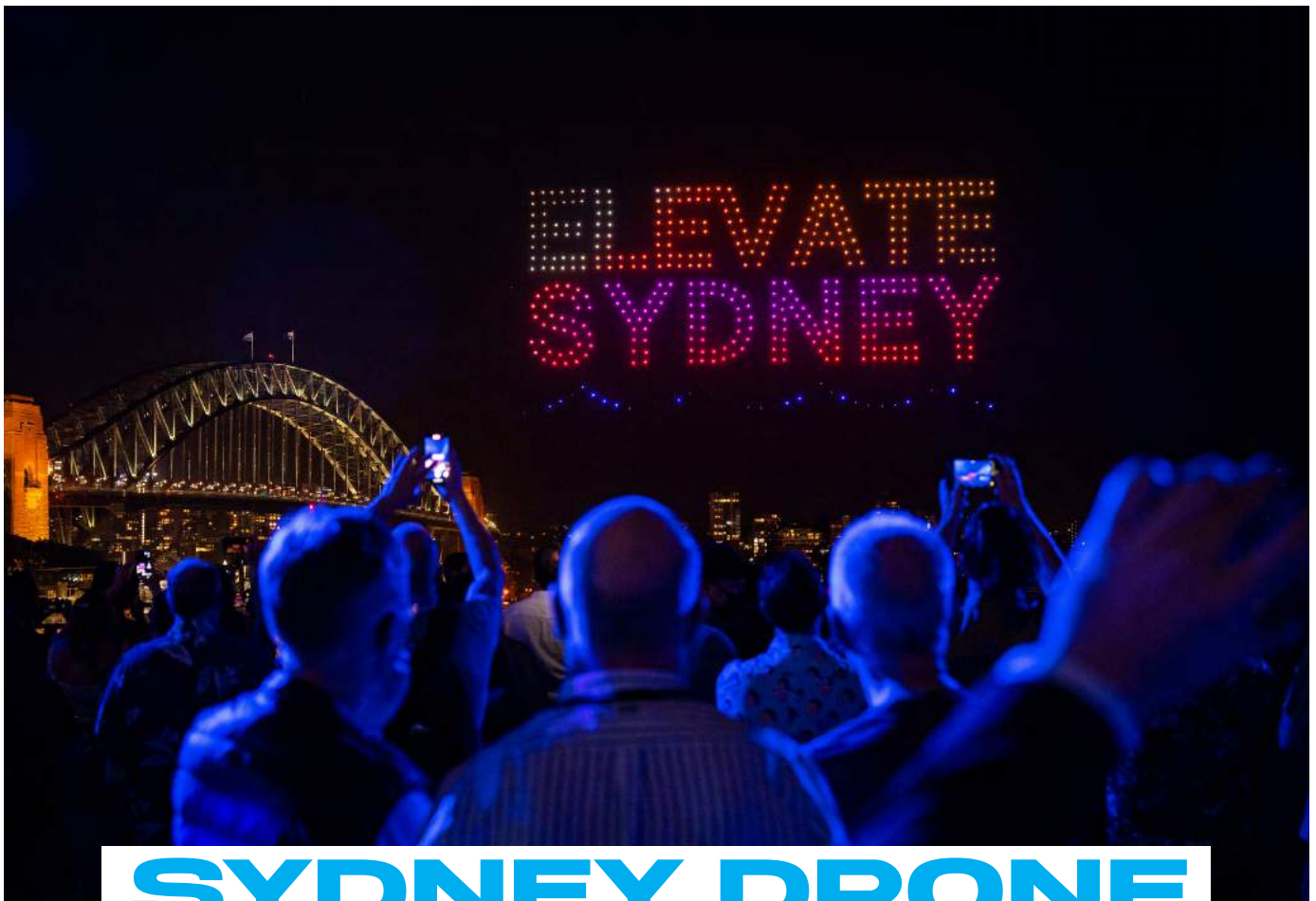


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SYDNEY DRONE SPECTACULAR SETS NEW VISION

ELEVATE Sydney, a new festival held 1-5 January 2022, unveiled the largest drone display in the Southern Hemisphere. The ELEVATE SkyShow lit up Sydney Harbour with 500 drones, revitalising people's imagination in a time of uncertainty.

Featuring cutting-edge technology, art, and a First Nations narrative, the inaugural ELEVATE SkyShow blended art and technology to create an entirely new form of night-time entertainment. The 500 Intel drones performed between the Sydney Opera House and the Sydney Harbour Bridge to a powerful and moving soundtrack.

AGB Events was commissioned by the NSW Government through tourism organisation Destination NSW to create and produce ELEVATE Sydney. This summer festival was designed to activate Sydney's CBD and AGB's SkyShow provided an epic conclusion at the end of every night for thousands lining the Sydney Harbour foreshore.

AGB Events assembled a team of leading creatives to design the show, comprising Anthony Bastic Creative Director, First Nations Advisor Rhoda Roberts AO, Rhyann Clapham

(DOBBY) and Senior Producer Olivia Bradley.

Set to an original soundtrack composed by artist DOBBY, the drones danced to powerful orchestral sounds, energetic beats, and indigenous language, bringing First Nations culture to the forefront. The drones served as flying pixels animating an authentic and thrilling narrative of Greater Sydney, paying homage to the ancient wisdom of the Eora People, the unmatched beauty of the Australian flora and fauna and the pure joy of experiencing summer in Sydney.

To bring the breathtaking vision to life above Sydney Harbour, AGB Events collaborated with Australian drone consulting company Mirragin and world class drone experts from Intel.

Intel, the technologists responsible for the spectacular display at the Tokyo 2020 Olympic Games and the PyeongChang 2018 Olympic Winter Games, deployed specialist pilots to

Australia from Germany, United States and Finland specifically to program the Sydney show.

"The innovation and technology offered by drones is really exciting. They are environmentally friendly with zero emissions. You can create a narrative and tell a story, and the possibilities are endless. They really are the future of major events," says AGB Events CEO, Anthony Bastic.

"The collaboration created a first for Sydney resulted in something special," adds Anthony. "The coupling of technologies and applying them to outdoor public events greatly enhances the audience experience and will certainly set a benchmark for future Australian events."

To set the perfect scene over stunning Sydney Cove, Mandylights was brought in to enhance the Sydney night skies with striking



Lewis Capaldi, SSE Hydro, Photo: Zak Walters/Produktion FE Live.

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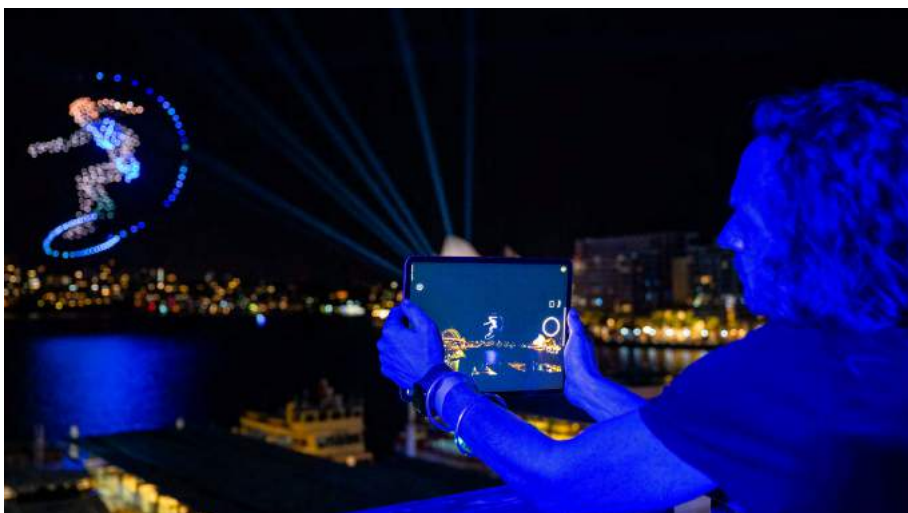
“You can create a narrative and tell a story, and the possibilities are endless. They really are the future of major events.”



Anthony Bastic



ELEVATE Sydney



light projections, programming sixty mBeam searchlights from multiple locations around the Harbour.

As a further enhancement, AGB engaged international augmented reality artist Charles Clapshaw of Future of Art to overlay an augmented reality experience to the drone show. Visitors scanned the QR codes on site and enjoyed added visual elements, further enhancing their live experience.

In addition to commissioning by Destination NSW, the ELEVATE Sydney SkyShow team was also supported by key landowners and government agencies, including the Civil Aviation Safety Authority, Transport for New South Wales, the Overseas Passenger Terminal and Ports Authority, and NSW Place Management.

“We’re very grateful for the support and efforts of the many agencies who have worked with

us to realise this project. This is an industry we really want to nurture and promote, the Intel Pilots travelling to Australia and sharing their knowledge is an amazing opportunity to grow the expertise of local drone operators.” Bastic concludes.



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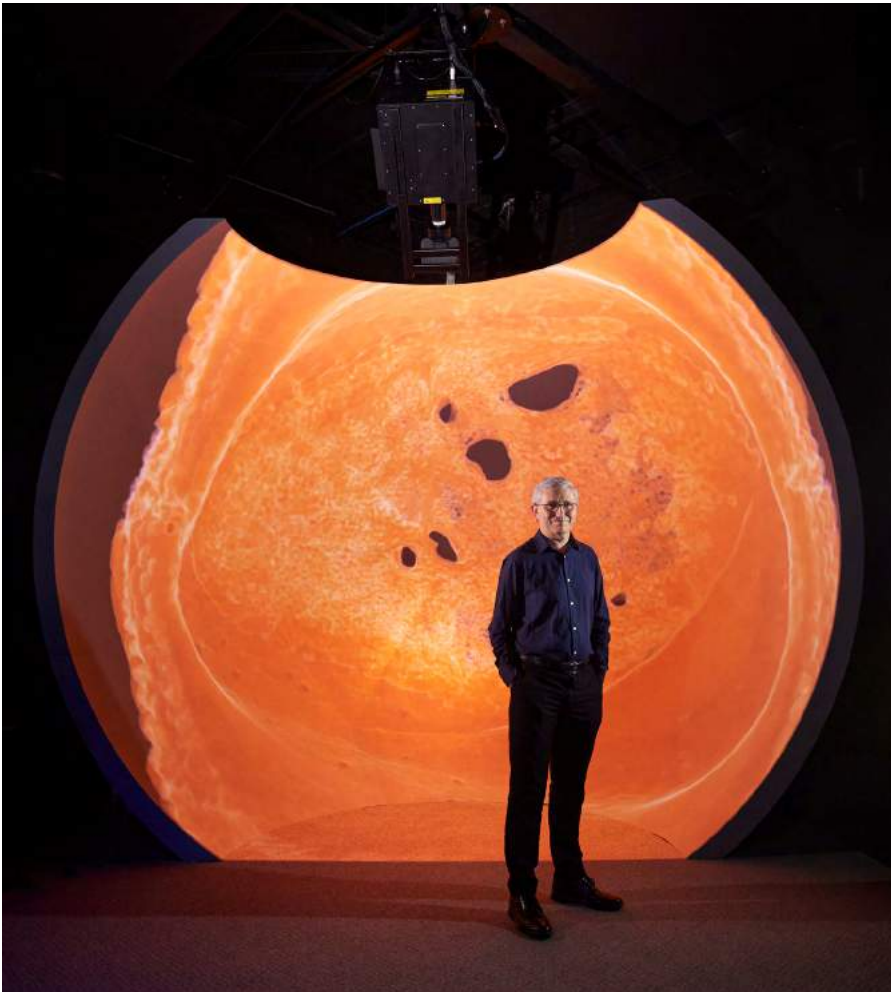
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PERTH'S CURTIN UNIVERSITY IN PROJECTION WORLD FIRST



World-leading visualisation hub Curtin University HIVE, whose facilities have supported pioneering research in space exploration, health sciences, education, and engineering, recently celebrated another milestone: the world's first installation of Digital Projection's cutting-edge new Satellite Modular Laser System (MLS) projectors.

The HIVE (Hub for Immersive Visualisation and eResearch) at Curtin University in Perth, Western Australia, is one of the most advanced visualisation facilities of its kind, and the only one in the world that contains five different large-scale visualisation displays. Its work with technologies such as virtual reality (VR), augmented reality, data and scientific visualisation, photogrammetric 3D reconstruction, and volumetric imaging

has been used to, among other things, help patients with spinal cord injuries, investigate consumer behaviour and create virtual experiences of shipwreck sites.

"Essentially, it is a sandbox offering university research staff the opportunity to explore a wide range of visualisation technology options in research projects across all expertise areas," explains associate professor Andrew Woods,

manager of the Curtin HIVE, who also served as the client lead for the upgrade project. "The facility was originally established in 2013, so it was definitely time to update the HIVE AV systems with the latest projection technology," he adds.

The display facilities at the HIVE, located in a 15m x 15m former gallery space, comprise the Dome display, a 4m-diameter half-dome which fills a user's primary and peripheral field of view; the Cylinder display, a wrap-around 3D display providing a VR experience for up to 50 users; the Wedge display, a pair of 3.8m diagonal 3D displays used mainly for scientific visualisation; the Tiled display, which with 24MP resolution is used for super high-resolution visuals; and the Hologram Table, which provides two users with 3D visuals that project out of its tabletop display surface. The upgrade project focused on the Dome and the Cylinder displays.

"The HIVE Cylinder display is the flagship system in the facility," continues Woods. "The Cylinder display uses three projectors to light a 3m-high, 8m-diameter, 180° cylindrical projection screen. In upgrading the HIVE Cylinder display, in particular, we were keen to increase the display resolution to use native 4K projectors, which would provide a four-fold increase in displayed pixels, and to increase the brightness, all while maintaining the existing 120Hz stereoscopic 3D capability of the display."

After talking to Digital Projection, the team at InDesign Technologies, the project's consultant, realised quickly that Digital Projection's Satellite MLS was the only projection system that met the HIVE's requirements (full 4K with 120Hz compatibility, and not subject to the exclusion zones that would be necessary with a class-3 laser product) – to the extent that Curtin University was willing to wait for it to come to market rather than compromise by specifying a different system.

"The Digital Projection Satellite Modular Laser System was still in development as a technology when discussions commenced," recalls Tanya Hall, business development manager, integrated solutions, for Amber Technology, Digital Projection's distributor in Australia and New Zealand. Hall worked

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closely with Woods, InDesign, integrator Vizcom Technologies, and Emilijo Mihatov, regional sales manager for Digital Projection, to discuss and scope the technology requirements of the project, and VIOSO to develop a solution for the unique requirements of the HIVE Cylinder install.

Launched last summer, the unique Satellite MLS separates the light source from the small, lightweight projector 'head', giving integrators greater freedom, particularly where space and access are restricted, while reducing noise and heat from the audience location. This technology makes high-end RGB laser illumination accessible at a cost-effective price point.

At the HIVE, three Satellite MLS systems are installed in the Cylinder display, with a further system deployed in the Dome display. Taking advantage of the Satellite MLS's modular nature, which allows up to 100m separation between the projection head and light source, InDesign was able to hang the unobtrusive satellite projector heads at the display sites while locating the light sources around 15m away in a server room containing the other AV and computer equipment.

"There was a requirement for the projectors to make as little noise impact to the space as possible," explains Scott Wrightson, project manager for Vizcom Technologies. "This made the Digital Projection Satellite MLS systems invaluable. By having the main laser processor housed in the central comms room it made the operating noise level of the projection heads very low, which in turn suited this project perfectly."

"The Digital Projection Satellite technology allowed us to meet our needs and more, with a small head size, minimised audible noise from the head because the light source is in the server room, rich laser-light engine visuals, and cinema-quality three-chip DLP images at a reasonable budget point," adds Woods.

Amber Technology worked with, and were supported by, Digital Projection at a very high level throughout the project timeline, say the Amber team. There were many hours of communication with the Digital Projection team to tap into their expertise on the specification, solution scope and system commissioning. In particular, the Digital Projection team's insight into how the system would interact with the HIVE's existing infrastructure was invaluable, they add.

Not that it was always plain sailing – working with such a new technology was bound to bring certain challenges. The projectors required specialist lenses that did not, at that time, have any local distribution representation, so with the help of Emilijo Mihatov from Digital Projection, Amber Technology were able to contact the lens manufacturer and establish a trading arrangement to bring the required lenses into Australia for this project.



Allen & Heath AHM-32 and AHM-16

Harnessing technology from the AHM-64 Audio Matrix Processor, the AHM-32 is built on a 32x32 matrix with 12 local analogue inputs and outputs. The AHM-16 features a 16x16 matrix with 8 local analogue inputs and outputs. Both models feature processing tools including Automatic Microphone Mixing, Ambient Noise Compensation, Priority Ducking, an 8-band parametric EQ on every input and zone, plus speaker processing options. An optional AEC module is available. Both units include a 96kHz I/O port for audio expansion and networking, and an SLink card can be fitted for connection to Allen & Heath's Everything I/O ecosystem.

A range of remote-control options are supported, including an array of PoE remote controllers and the BYOD-friendly Custom Control app, enabling tailored user interfaces for multiple user and device types.

Australia:
Technical Audio Group
www.tag.com.au
or (02) 9519 0900
New Zealand:
Jansen Professional
Audio & Lighting
www.jansen.nz
or (09) 377 3663



NEW GEAR



Roland AeroCaster

The AeroCaster is a powerful wireless production solution with hardware control surface, audio interface, and full-featured iPad app. Switch up to four wireless devices simultaneously, plus the camera on the host iPad. The AeroCaster supports wireless camera connections from up to four supported iOS and Android smartphones and tablets, and can wirelessly share screens from computers and mobile devices via the Google Chrome web browser. It includes an intuitive hardware control surface and audio interface with two XLR inputs, 3.5mm stereo input, and headphones and monitor outputs.

Users can switch between cameras, media, and scenes with a variety of transition effects, save and recall 30 scenes with titles, graphics, and picture-in-picture windows, and stream directly to YouTube, Facebook Live, Twitch, and custom RTMP channels over Wi-Fi or 4G/5G cellular networks.



Roland UVC-02

The UVC-02 is a convenient and affordable desktop docking station to upgrade business streaming with pro-level audio and video. It features inputs for a DSLR or other high-quality camera, an XLR microphone input, and stereo audio sources. HDMI video input supports embedded sound and features automatic scaling for different video resolutions. With plug and play operation, the UVC-02 automatically appears as a webcam and audio source in your favourite streaming software.



Roland CGM-30

The CGM-30 Gooseneck Microphone is the perfect partner for the UVC-02 Web Presentation Dock and VR-1HD AV Streaming Mixer, providing a high-quality desktop solution that eliminates the need for an external mic and stand. Ideal for livestreaming and online presentations, the mic features a condenser design that delivers superior audio performance in a low-profile package. The CGM-30 runs on phantom power and plugs directly into the top-panel XLR input on the Roland product.

Roland VC-1-DMX

The VC-1-DMX automatically generates control commands for your DMX lighting setup based on input from video and audio sources, eliminating the need for a dedicated lighting operator. Colour and brightness change based on the current video image, and lights and mirror balls operate in sync with the music tempo. And if you want to dive deeper, the VC-1-DMX supports external MIDI operation from hardware control surfaces, electronic musical instruments, and computer-based production software.

Australia: Roland Australia proav.roland.com or (02) 9982 8266
New Zealand: Music NZ musicnzl.co.nz or 0800 775 226

Neutrik FIBERFOX

The Neutrik Group has announced the addition of the FIBERFOX range of expanded beam technology connectivity systems to Neutrik's portfolio of fiber optic solutions. Designed to meet the requirements of MIL-DTL-83526 military specifications, enabling multiple interconnections with other expanded-beam solutions, the Neutrik FIBERFOX Fiber Optic Connection System is the ideal solution for use in harsh environments, with performance of the expanded beam fiber optic connectivity being exceptional in wet, dirty, dusty, high and low temperature environments.

Australia: Amber Technology
www.ambertech.com.au or 1800 251 367
New Zealand: Amber Technology
www.amber.co.nz or +64 (0)9 443 0753



NEW GEAR

Panasonic PTZ Cameras

Panasonic has announced its new range of PTZ cameras. The improved range, consisting of five new models (AW-UE80, AW-UE50, AW-UE40, AW-UE20 and AW-HE20) cover the developing needs of educators and businesses operating remotely. Demonstrating compatibility with the Panasonic ecosystem, key features include secure and stable video communication, support for the latest video protocols, easy installation, and a versatile operation system. The new PTZ range also integrates Panasonic's widely used AW protocol and streaming protocols to ensure the ability to integrate the cameras with most leading recording devices, software, video conference platforms and room automation systems. The complete PTZ camera lineup will be available to customers via resellers from February 2022.

Australia: Panasonic
www.panasonic.com/au/ or 132 600.
New Zealand: Panasonic
www.panasonic.com/nz/ or (09) 272 0178



Neumann Miniature Clip Mic System

Neumann.Berlin have announced their first product range designed especially for close miking instruments. The new KK 14 electret capsule has minimised self-noise and an extremely high maximum sound level of 152dB. The system includes nine mounting solutions that make it possible to find the optimum positioning for acoustics while simultaneously protecting the instrument. Thanks to connection cables with either a 3.5mm jack, Lemo, MicroDot or 4-pin mini XLR connectors, the system is compatible with all standard bodypacks for wireless setups. The list price of the KK 14 capsule is \$579 AUD/\$649 NZD. Prices for sets start at \$1,349 AUD/\$1,479 NZD (capsule, gooseneck, cable, mounting system, XLR adapter and windscreen).

Australia: Sennheiser en-au.sennheiser.com or 1800 648 628
New Zealand: Sennheiser en-nz.sennheiser.com or (09) 580 0489





Highlite Showtec Spectral Revo 6

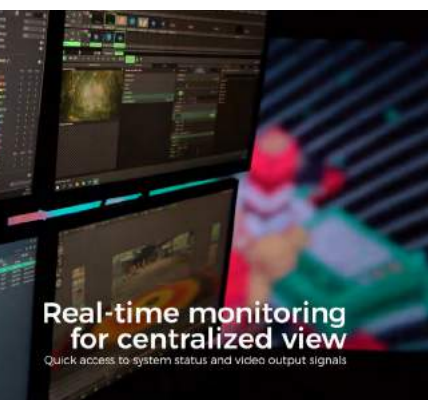
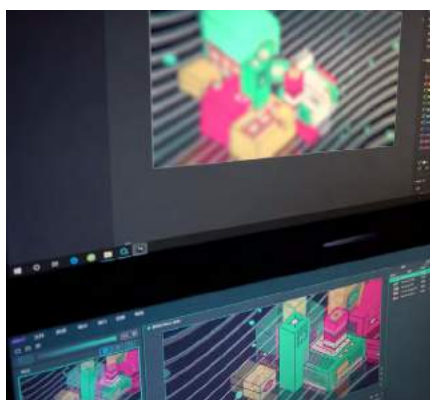
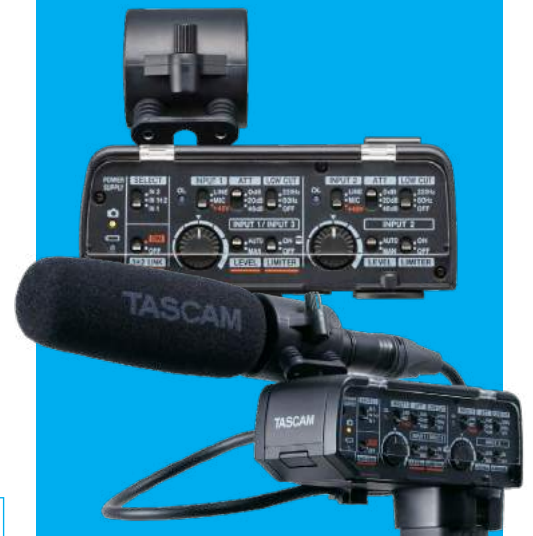
The Showtec Spectral Revo 6 is a compact full colour LED fixture offering precise colour temperature control from 1800K to 8000K, and full spectrum colour rendering from its custom 6 colour OSRAM RGBALC source. The unit offers an even homogeneous wash with its PC lens optics. The Revo 6 is an ideal key, fill, and area wash option. With an IP65 rating, it's a versatile option for indoor or outdoor use. The light comes ready with a floor stand and is compatible with a quick-lock bracket for hanging applications. The Revo series also comprises Tungsten tuneable (2700K to 4500K), Daylight Tuneable (4000K to 6500K) and UV fixtures.

Australia: Clearlight Shows
www.clearlight.com.au (03) 9553 1688
New Zealand: Kenderdine Electrical
www.kelpls.co.nz or (09) 302 4100

Tascam CA-XLR2d

Tascam's CA-XLR2d are three models of XLR microphone adapters for mirrorless cameras developed in collaboration with Canon, FUJIFILM, and Nikon. They enable high-quality audio and smart voice recording by transmitting digital audio directly to the camera via an accessory shoe that supports digital transmission, freeing editors from the work of synchronising images and sound in post-production. When connected to a compatible model, the CA-XLR2d is powered by the camera, eliminating need for a dedicated power supply.

Australia: CMI Audio
www.cmi.com.au or (03) 9315 2244
New Zealand: Direct Imports
directimports.co.nz or (06) 873 0129



NovaStar MX Series

NovaStar's MX Series solution pairs its all-new VMP software with a new processor; the MX40 Pro. VMP integrates design, management, and monitoring into one single platform. When paired with the flagship MX Series controller MX40 Pro and A10s Pro receiving card, an incredibly professional LED solution is realised. With precise colour adjustment and an intuitive software experience, the combination represents a totally new solution for managing high-end applications such as fine-pitch LED installation, studio broadcasting, touring, corporate events, virtual production and E-sports. The MX40 Pro includes 3 × HDMI2.0 Loop inputs, 1 × 12G SDI Loop input, and 1 × DP1.2 input. Outputs include 20 × EtherCON and 4 × 10G OPT. Working with VMP, features include Image Booster 2.0, dynamic booster, full grayscale calibration, colour adjustment, quick and easy mapping, genlock, XR, dynamic booster, full grayscale calibration, HDR, LED image booster, pixel-level brightness and chroma calibration, and individual gamma adjustment.

Australia and New Zealand: ULA Group
www.ulagroup.com
 or AU 1300 852 476 / NZ +64 9 218 6532

QZ AM PA R

Robe T11

The Robe T11 is a static fixture available in three versions (Profile, Fresnel and PC) designed to replace existing 'generic' lighting rigs and upgrade to the latest LED technology. The MSL-TE 350W LED engine generates 16,760 lumens, giving 9,500 lumens from the T11 Profile, 9,600 lumens out of the T11 Fresnel and 9,400 lumens for the T11 PC, and being a TE light source, brings all the advantages of straightforward exchange or replacement. A rapid-change front lens system transforms the T11 into the Profile, Fresnel or PC variants. T11 has a virtually controlled CCT range between 2.700K to 8.000K. Calibrated whites and tungsten emulation ensure perfectly rendered skin tones every time due to the T11's high TLCI and TM30-18 ratings and the exceptional CRI of 95+.

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

New Zealand: Jands NZ jands.nz or 021 674 601



Redback A 6531 and A 6541

Redback audio have expanded their range of automation wallplate controllers to include new glass bezel versions and a jumbo size 7" version for permanent audio visual installations. Each wallplate can be connected to a hub offering serial, infra-red and relay control of connected devices. Each plate is fully customisable with your own layouts and button graphics, plus multifunction macros, providing the ability to operate multiple devices at once from a single tap of the screen. Both units are available in black and white versions to suit existing décor and are compatible with standard single and double gang electrical wallboxes for the Australian market.

Australia and

New Zealand: Altronics

www.altronics.com.au

or +61 (0) 8 9428 2122

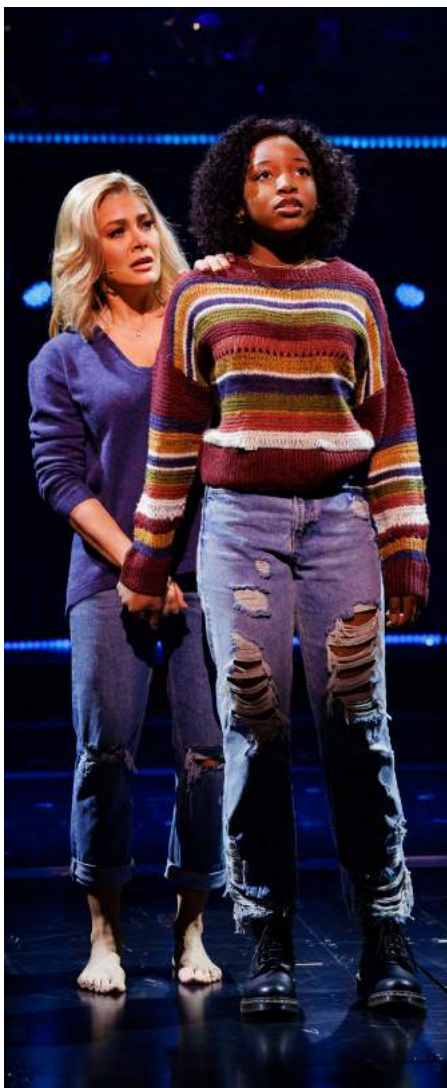


SSL BiG SiX

BiG SiX is a 16 channel studio grade mixing console that combines features and technologies from legendary large-format SSL consoles with full USB integration, additional processing and advanced routing capabilities. In addition to 16 channels of 96Khz/24-bit USB conversion which the user can reroute to external inputs, stereo cues and pre/post fader options, BiG SiX also features fully balanced insert points on all SuperAnalogue™ inputs, full size 100mm SSL console grade faders, Mix Bus Inject for cascading additional SiX and BiG SiX, and dual independent headphone outputs. As well as offering four SuperAnalogue™ Mic/Line/Hi-z inputs with polarity switch, the four stereo inputs can be individually switched to dual mono, adding further recording flexibility.

Australia: Amber Technology www.ambertech.com.au or 1800 251 367

New Zealand: Amber Technology www.amber.co.nz or +64 (0)9 443 0753



JAGGED LITTLE PILL



Jagged Little Pill, the 15-time Tony-nominated musical inspired by the Grammy-winning 1996 Alanis Morissette album, premiered at the Theatre Royal Sydney in December 2021.

Jagged Little Pill is a musical that takes a fearless look at what it means to be alive in 21st century America. Powered by Morissette's beloved hits including You Oughta Know, Hand In My Pocket and Ironic, the show also includes two brand new songs written especially for the stage.

Justin Townsend's lighting design was nominated for a 2020 Tony Award, the same year he won for Moulin Rouge! The Musical. Unfortunately, COVID prevented Justin from travelling to Australia to shepherd the production, relying on the internet to participate in the evolution of his design.

"It was a completely new way of working for me and my Australian Associate Designer, Hugh Hamilton," admits Justin. "The plan is for the Australian show design to be replicated for a touring version in the US later this year. This production of Jagged Little Pill has a beautiful new scenic design by Riccardo Hernández which is the same as the original - but different!"

The main scenic change is that the roving panels that were used as a projection surface are now sliding LED screens.

"Some of the tricks we used with the panels on Broadway such as uplighting a panel to provide three dimensional depth to a projection had to change," says Justin.

Justin is known for using colour to shape and identify the world around the characters, so it was essential to ensure the hues remained constant.

"However, it's not a case of simply handing my associate a disk and away he goes," he adds. "Before you try to recreate the 'paint by numbers' version, you need to understand the



GEAR LIST

- 54 x Martin MAC Encore Performance Cold W/ Cti Tophats
- 58 x Martin MAC Quantum Wash W/ Cti Concentric Ring Tophats
- 14 x Martin MAC Aura XB
- 24 x GLP Impression X4 Bar
- 20 x GLP Impression X4 Bar 10
- 18 x GLP JDC-1 Strobe
- 37 x Chroma Q Colorforce 72 (First Generation)
- 5 x Chroma Q Colorforce 12 (First Generation)
- 32 x Martin RUSH Par 2 RGBW Zoom
- 16 x ETC Source 4 Par Wfl Worklight
- 12 x ETC Source 4 36 Worklight
- 4 x Robe BMFL Followspot "Long Throw" With Side Operation Controls
- 2 x MDG ATMe Haze Atmosphere Haze Machines (new style)
- 3 x MDG ATMe Haze Atmosphere Haze Machines (classic style)
- 7 x Martin AF-1 Fans
- 1 x ETC EOS Ti 40K lighting console
- 1 x ETC RPU "3" Ti 40K lighting console

spirit of the show. Fortunately, as we've used the same equipment, the colour shows up the way it is supposed to."

"I've never had a designer throw so much to me, albeit in a lovely way!" chuckles Hugh Hamilton. "It was a fun process, and we would have been in a tougher place if we hadn't kept the same equipment, especially as the only colour reference for the show was from the common equipment. We had different LED tape and a completely different layout of everything, but if we hadn't had the colour palette and cue structure we would have been up against the wall."

When cueing the light and the movement, it needed to be seamlessly interwoven with the choreography. The lighting is used extensively to suggest the environment, in particular the suburban house much of the show is set in. The iconic shape of the roof of the house became the unifying design idea, and two hung trusses full of Martin MAC Quantum wash lights are used to create an overhead

structure. Martin RUSH PAR2 are used as truss toners.

This ceiling of light flew in and out during the action, creating compressed spaces as well as completely flying out to the grid, creating a giant black void.

A fourth truss is hung above the band platform. Martin MAC Auras are located beneath this platform with GLP JDC-1s atop of said platform. GLP X4 Bars are also under the band platform as well as on the edge of the platform.

"The X4Bars and JDC-1s do the eye-candy, flashy, flashy stuff," says Hugh succinctly.

The front and sidelight are delivered by Martin MAC Encores with four Robe BMFL Followspot Long Throw also out front and Justin is thrilled that they enable him to tune the colours to a racially diverse cast.

"Now we can say 'What do we need for each person's skin colour to make them look spectacular in a particular cue?'" says Justin.



"Because it was such a long throw and I needed headshots that lit only the head, Robe made a huge effort, working throughout the Broadway technical rehearsals and into the night, to reduce the iris size and get tighter shots from the followspots."

Chroma-Q ColorForce 72 sit in troughs in the deck and were originally added to uplift the sliding panels.

"We've invested a heavy amount of gear in the deck itself which allows a different angle to

simply front and backlight," explained Hugh. "As there's this company of actors who are always on stage as a collective, having a low uplight angle was critical."

An ETC EOS Ti is used for control with a large amount of RGBW pixel tape, broken into 100mm chunks, gobbling up much of the console's capacity.

The show was programmed on Broadway by Brad Gray, with Robert Cuddon programming the Australian version. Lighting equipment for

the show has been supplied by Chameleon Touring Systems. "Chameleon has been great," concludes Hugh. "Tony Davies and Luke Cuthbertson have been fantastically supportive and have bent over backwards to make things happen. I would also like to say it is great to have the Theatre Royal back up and running, and busy!"

Jagged Little Pill is now running at Melbourne's Comedy Theatre before travelling to Perth in May and back to Sydney in July 2022.



THE LOOK

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MOULIN ROUGE



Moulin Rouge! The Musical at the Regent Theatre. Photo Credit: Michelle Grace Hunder

MORE IS MORE

The phenomenon that is *Moulin Rouge! The Musical*, winner of an astonishing 10 Tony awards on Broadway in 2021, utterly overwhelms Melbourne's Regent Theatre in the best possible way. The Gothic, Louis XVI, and Baroque interior of The Regent is the perfect fit for a show that takes over the entire auditorium. Let's talk about the literal elephant in the room, in the prompt side Juliet balcony.

While staying reasonably true to the 2001 Baz Luhrmann movie, the creative team have updated the music to include hits from the intervening years, so the jukebox musical now hums along with cuts from Beyonce, Sia, Outkast and more.

There's a 15 minute pre-show, during which the audience feverishly Instagram the incredible environment they've walked into. Dancers slink onto the stage, pouting while wearing mainly fishnets and not much else, both boys and girls. There are actual cages in the auditorium that are danced in. It's kind of like *Rocky Horror* but with an unlimited budget. And then the iconic opening number *Lady Marmalade* kicks off like a rocket. All of the lights, all of the sound, and most of the cast. You are pinned to the back wall, where you will happily find yourself repeatedly through the evening.

Being a tale of debauchery and excess, the scenic, lighting, and sound design have all taken their cues from the subject matter. Every department has been given the brief to go OTT. For example, there are well over

220 loudspeakers in the production, from the main Meyer Sound FOH line arrays down to tiny K-Array Lizard ultra-miniature speakers concealed in table lamps in the VIP audience seating in the passercelle. The result is the finest sound I have ever heard in a theatre outside of a *Cirque Du Soleil* show in Las Vegas.

All of this razzle-dazzle is contrasted with intimate moments, as are the huge looks by some surprisingly old school lighting. Making the transition from screen to stage, The Police's *Roxanne* is one such moment. It's like *A Chorus Line*; bare stage, ground row, and some excellent beam work. There's at least one of everything in the lighting department, including miles of festoon, starcloth, and a veritable fleet of Mac Vipers and GLP Impression X4s.

Australian Lighting Design Associate Gavan Swift

New York based Associate Lighting Designer Nick Solyom realised Justin

Townsend's lighting design assisted by local associate lighting designer, Gavan Swift. Programming was by Brad Gray, assisted by local programmer Robert Cuddon. "Justin couldn't make it to Melbourne, so we set up a permanent camera feed to him and the original director," relates Gavan. "We had three loops of comms, which Justin patched into directly, and it was almost like having him at the production desk. Through excellent production management, we started working in July and kept working all through Melbourne's lockdowns. We didn't get to do previews or have an audience, but we did manage dress rehearsals, promo shooting for TVCs, full production photos, and all of the moving light documentation before we shut down in September. We started up again after lockdown lifted in November."

With the theatre almost splitting at the seams with all of the extra rigging and gear, one of the biggest technical challenges was the sheer scale of it all. "It was all of the everything," chuckles Gavan. "Full credit must go to production electrician Dale Mounsey. He



The cast in *Backstage Romance*
Photo Credit: Michelle Grace Hunder



Alinta Chidzey (*Satine*) in *Diamonds*
Photo Credit: Michelle Grace Hunder

was the one who figured out how to get it all in and make it run through the console. It's tight backstage and we go all the way to the back wall and out to the front of the dress circle. There's a lot of gear over the audience, particularly over the passerelle, which is where the orchestra pit normally is. There's moving scenery, festoon everywhere, a windmill, the elephant, and table lamps with LED lights. The sheer amount of electrics built-in means no piece of the show is untouched by the LX department."

With so many moving parts, teching the show for its Melbourne home was a long but rewarding task. "The Regent is physically larger than the theatres in London and New York where the show has run previously," explains Gavan. "It needed to be adapted and adjusted, and there was a significant amount of programming involved to update it. For example, all of the bulbs festooned around the proscenium, passerelle, Juliet balconies, boxes, and stage are LED and individually controlled. In New York, all of that was a four-channel chase. So that had to be programmed from scratch."

Unsurprisingly, that kind of rig means lots of data. "It's really up there in terms of size," agrees Gavan. "It takes up around 59 Universes of DMX; it's massive! But it all fits in the ETC EOS Ti, and it all works!"

The incredibly tight technical production is most often achieved by syncing to SMPTE timecode coming from the musical director's computer, which is running Ableton. "Sometimes the band triggers us, sometimes it's the sound desk, and sometimes we trigger them," Gavan elaborates. "Traditional cueing for some of the bigger numbers would be impossible to call. Timecode is the most accurate and repeatable way to get the spectacle right."

"The unofficial motto of the lighting design in Moulin Rouge is 'More Is More', and it takes a skilled team to put that together and make it look seamless," articulates Gavan. "We had the cream of the crop working on the show, and everyone on the LX team is at the top of my list to work with. That's where success came from; everything was done the right way. And it was the same in every department. All in all, a collegiate effort."

"If anything, the pandemic has brought us closer," concludes Gavan. "We got to keep working, and all credit to the producers for keeping us going. There was not a terse word spoken by anyone through the entire production period because we were all so grateful not only to be working, but on a show that is unlike anything else. Every single performance now feels like a victory."

THE LIGHTING RIG

- 6 x High End Solaframe 3000
 - 66 x Mac Viper performance
 - 12 x Mac Viper Wash DX
 - 12 x GLP Impression X4 L
 - 40 x GLP Impression X4 XL
 - 16 x Martin Mac Aura
 - 22 x Clay Paky Sharpy
 - 11 x GLP X4 Bar 20
 - 21 x Ayrton Magic Dot
 - 3 x Lycian 1295 followspots
 - 35 x Altman 10" Scoop
 - 2 x Arri Compact 2000w tungsten 7" Fresnel Black
 - 21 x Mini 10 (Mini Flood)
 - 36 x ETC S4 Par XWFL 750w
 - 12 x ETC S4 Par WFL 750w
 - 2 x Altman 6' 3 circuit R40 Flood Strips
 - 2 x ETC S4 MultiPar NSP 2'
 - 3 x ETC S4 MultiPar NSP 8'
 - 48 x Color Kinetics Colorblast 12
 - 73 x Chroma Q Colorforce 2 12"
 - 7 x Chroma Q Colorforce 2 48"
 - 35 x Chroma Q Colorforce 2 72"
 - 10 x ETC S4 Lustr 2 5degree
 - 24 x ETC S4 Lustr 2 10degree
 - 2 x ETC S4 Lustr 2 14degree
 - 2 x ETC S4 Lustr 2 26degree
 - 8 x Martin Atomic Strobe 3000 w/ Scroller Control - ETC EOS Ti
- Rig provided by PRG. Set electrics by TSA Adelaide Scenery Workshop and OPTO Projects



Alinta Chidzey (Satine), Des Flanagan (Christian)
 Photo Credit: Michelle Grace Hunder

Australian Sound Design Associate David Greasley

With theatre specialists System Sound at the helm, *Moulin Rouge* was always going to sound as expensive as it looks. Original sound designer Peter Hylenski made the trip to Melbourne to help the locals achieve his goals, and System's David Greasley was at his side.

"Peter's mindset for the show is 'If in doubt, go more,'" attests David. And more is right. I boggled at the amount of loudspeakers that the team had managed to fit into the auditorium. The surround speakers were mounted everywhere around the walls; 62 of them in all. The main left-right mid-high and sub arrays were proudly visible and tastefully covered in screen printed fabric that is actually from manufacturer Meyer Sound, blending them into the set. Then I looked up and saw multiple models from the Meyer Sound range covering every inch of the room, including three venerable MSL-4s, a loudspeaker I was

using on gigs 25 years ago. "Peter's really into MSL-4s," confirms David. "Their top end is so forward and their Q is really tight. They're an old model, but Peter's been talking hire companies out of getting rid of them."

What you can't see outnumbers what you can. There are huge amounts of fill speakers hidden in the passerelle and VIP seating areas, along with the aforementioned tiny K-Array Lizards in the lampshades. Similarly, there are upwards of 40 foldback speakers concealed in the stage and scenery.

With all that firepower, *Moulin Rouge* delivers an incredible immersive audio experience, without actually using immersive processing per se. The show is mixed dynamically and keeps its full power and huge bass extension for the really big moments. The sense of acoustic space is manipulated masterfully throughout the show, shrinking and expanding to fit the mood. The effects are dazzling. The attention to detail in the mix is impressive;

for example, when leading lady Satine sings *Diamonds Are Forever* in her best Shirley Bassey, the reverb is a totally convincing replica of the iconic 1971 recorded original.

"We're sending a 32 by 32 matrix to the Meyer Galaxys, but we're not using Meyer Sound's immersive mixing tool Spacemap Go," reveals David. "The Galaxy system is just like a big router, which address zones. The stage is zoned vocally according to where the performers are standing, and all of the action is happening in the desk. Some of the surround effects are coming from the musical director's Ableton, and some we're running from QLab. There are three reverb units that are capable of some type of surround panning."

The band are not in the pit, but a room at the front of the theatre on the top storey that overlooks Collins Street. Signal is transported back to the DiGiCo Quantum 7 from the DiGoCo SD Racks and DiGiCo Orange Box via an OptoCore fibre system. The band consists



THE SOUND RIG

Main FOH line array:
28 x Meyer Sound Leopard

FOH sub arrays: 15 x Meyer Sound 900-LFC and 2 x Meyer Sound 1100-LFC

Fill speakers: Meyer Sound UPQ-D and Ultra-X40

Front fill (stage and passerelle):
48 x Meyer Sound MM-4XP

Delays: Meyer Sound UPM-1XP and MM-10ACX

Stalls delays:
20 x Meyer Sound UPJuniors

Circle Delays: 4 x Meyer Sound UPQ 1P, 4 x Meyer Sound 750-LFC

Rear delays: 3 x Meyer Sound MSL-4

On stage foldback:
36 x Meyer Sound MM4-XP

Scenery trucks: 4 x Meyer Sound UPM-1XP, 4 x Meyer Sound MM4-XP

Passerelle table lamps: K-array Lizard ultra-miniature line arrays

Surrounds: 62 x d&b audiotechnik E8

Audio Matrixing:
11 x Meyer Sound Galaxy 816

Console – DiGiCo Quantum 7 with DiGiCo X-Q7-EXP EX-007 Expander

Radio Mics:
36 channels of Sennheiser Digital

Comms: Clear-Com HelixNet and Clear-Com FreeSpeak II wireless



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of drum kit, two keys, trumpet, cello, violin, two brass, two guitars, and bass, plus some additional parts via Ableton.

With the all-singing, all-dancing cast, the radio mics and headset frames are integral to the success of the show. So much so that the sound team have built their own. "We've found that off-the-shelf headbands and frames tend to sit too low at the back of the head," observes David. "That makes them susceptible to collars pushing them up. We've made our headbands

go around the mid-point behind the ear so they don't move. We customise each headband and frame to each performer. Each principal is wearing two Sennheiser MKE1 capsules, and each principal also has a spare rig. The Sennheiser digital radio systems we're using have such great battery life that we didn't need to re-battery during tech, which meant we could reset for evening tech in a quarter of the time it usually takes us, which was a huge gain."

Between the radios, band and FX, David counts around 160 input channels. "But that's a combination of mono and stereo inputs, so the actual count is likely more than 200," he clarifies. "Same for the outputs. There's over 60 auxes, 32 groups, and the 32 by 32 matrix, and some of that is stereo too. It's all about control; Peter built in this level of details so anything can be assigned anywhere."



CLOCKWISE Tim Omaji, Alinta Chidzey, Des Flanagan, Simon Burke, Ryan Gonzalez, Andy Cook. Photo Credit: Michelle Grace Hunder



Simon Burke (Zidler)
Photo Credit: Michelle Grace Hunder



Alinta Chidzey (Satine), Des Flanagan (Christian) and cast in Elephant Love Medley
Photo Credit: Michelle Grace Hunder

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Spacemap Go



Meyer®
Sound



BOY SWALLOWS UNIVERSE WITH SPACEMAP GO



“The show’s composer and sound designer Steve Francis embraced the fantastical nature of the material, with local sound designer Matthew Erskine of CrossPoint Sound working with Steve to chose Meyer Sound’s immersive mixing platform Spacemap Go to place characters in abstract space, distort time, and create a unique sonic experience.”

Trent Dalton's multi-award winning 2018 novel *Boy Swallows Universe* tells the harrowing but ultimately joyful and uplifting tale of a 12-year-old boy growing up in a crime and heroin-fueled outer suburb of Brisbane in 1983. The Queensland Theatre, Brisbane Festival, and QPAC co-production was a runaway hit, becoming Queensland Theatre's biggest selling show

Adapted for the stage by Tim McGarry, directed by Sam Strong, and described as 'phantasmagoric' and 'surreal', the inner world of main character Eli Bell is often depicted as being suspended in time, as he deals with the traumas of his complicated life, soundtracked by 'banging' 1980s pop hits. The show's composer and sound designer Steve Francis embraced the fantastical nature of the material, with local sound designer Matthew Erskine of CrossPoint Sound working with Steve to chose Meyer Sound's immersive mixing platform Spacemap Go to place characters in abstract space, distort time, and create a unique sonic experience.

Of course, being 2021, Steve couldn't actually be in the Queensland Performing Arts Centre auditorium to tech *Boy Swallows Universe* due to cross-border COVID restrictions, so Matthew Erskine stepped up to be Steve's hands and ears in the room.

"Working with Steve remotely was a lot smoother and more productive than we all expected," concedes Matthew. "Steve was sitting in on rehearsals via video link while still working with his full sonic palette in his studio. Steve would trust our director and I for spatial reference and balance in the room. Steve and I had an open line so we could chat about cue points and durations during plot and tech. Steve's QLab programming and meticulous paperwork made it easy for me to decipher what his intention was for any given moment. If a cue sequence needed to be re-composed or re-worked, Steve was able to do that while observing via video link and have the new version to me by the next morning at the latest. In some cases, Steve was able to have a new version ready within minutes."

With the whole cast mic'd with DPA 4061 hairline microphones and Shure UR transmitters, and 14 stems of playback coming from QLab, Queensland Theatre's Yamaha CL3 sat at the heart of the audio system, outputting to Meyer Sound GALAXY 816 and GALAXY 408 processors. Eight Meyer Sound UPM-1P loudspeakers were used as surrounds in the auditorium with further surround feeds sent to loudspeakers from Genelec, Bose, and EV as specialised fills and overheads. The house's FOH PA (including left/right, centre, fill, subs and delays) is L-Acoustics. A mixture of Meyer Sound UPA-1Ps, UPM-1Ps, and L-Acoustics X12s were used onstage for foldback and effects.

"I used the GALAXY processors in Spacemap mode, but split the inputs so I had some 'safed' to be used in a more traditional way," explains Matthew. "I then used the matrix system in the GALAXYs to route to discrete lines to each zone, ie. FoH left, FoH right, stage effects, and surround channels. I ended up having a total of 23 outputs from the Spacemap Go system. This encompassed the entire system from on-stage effects to surround and the overhead auditorium system. Not all of these outputs were included in my Spacemap Go maps though. I didn't want to include my main FoH system in my Spacemap Go surround system just in case there was a routing overlap at some point. In hindsight, I will probably incorporate some of the main FoH system in the Spacemap Go Surround map now that I better understand how I want to use the system."

"I ended up having 12 stems from the CL3 into the Spacemap Go

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system,” continues Matthew. “These were a combination of main system stems and ‘SMG Specials’. It’s difficult to go into specifics about how each SMG Special was used, as their use changed throughout the show. Sometimes it was a single stem moving around the space, and sometimes it was multiple stems doing different movements with a combination of shared content and unique content. I really tried to explore all aspects of the creative spectrum using Spacemap Go.”

With acoustic and dramatic requirements ranging from barely whispered emotional speech through to full headspinning psychedelia, what did Matthew need Spacemap Go to achieve in the service of the story? “I used Spacemap Go for everything

from atmospheric ambience to big whooshing effects,” clarifies Matthew. “Steve and I both like to have the sound localised to the stage, from where the story is being told. As such, I tried to avoid bringing any of the sound design out into the audience unnecessarily. This was reserved for the more surreal moments. The immersive aspect of the system was gradually introduced for particular moments to enhance the development of the story.”

Being completely new to Spacemap Go, what did Matthew think as a first-time user? “I found Spacemap Go quite intuitive and easy to learn. It’s the type of system that will allow you to be as simple or as complex as you like,” observes Matthew. “Compared to plotting purely with QLab, it was significantly quicker. The ability

to simply draw a movement on the iPad saved hours in programming time. I already have a plan to incorporate Spacemap Go into my main vocal bus programming next time.”

“I designed my Spacemap Go system and Spacemaps in a way that, if the workload became too much, I could just program everything as though it were a traditional QLab based system,” Matthew adds.

“This became the basis of my design. From that, I was able to gradually add more and more movement and ‘weirdness’ to the design.”



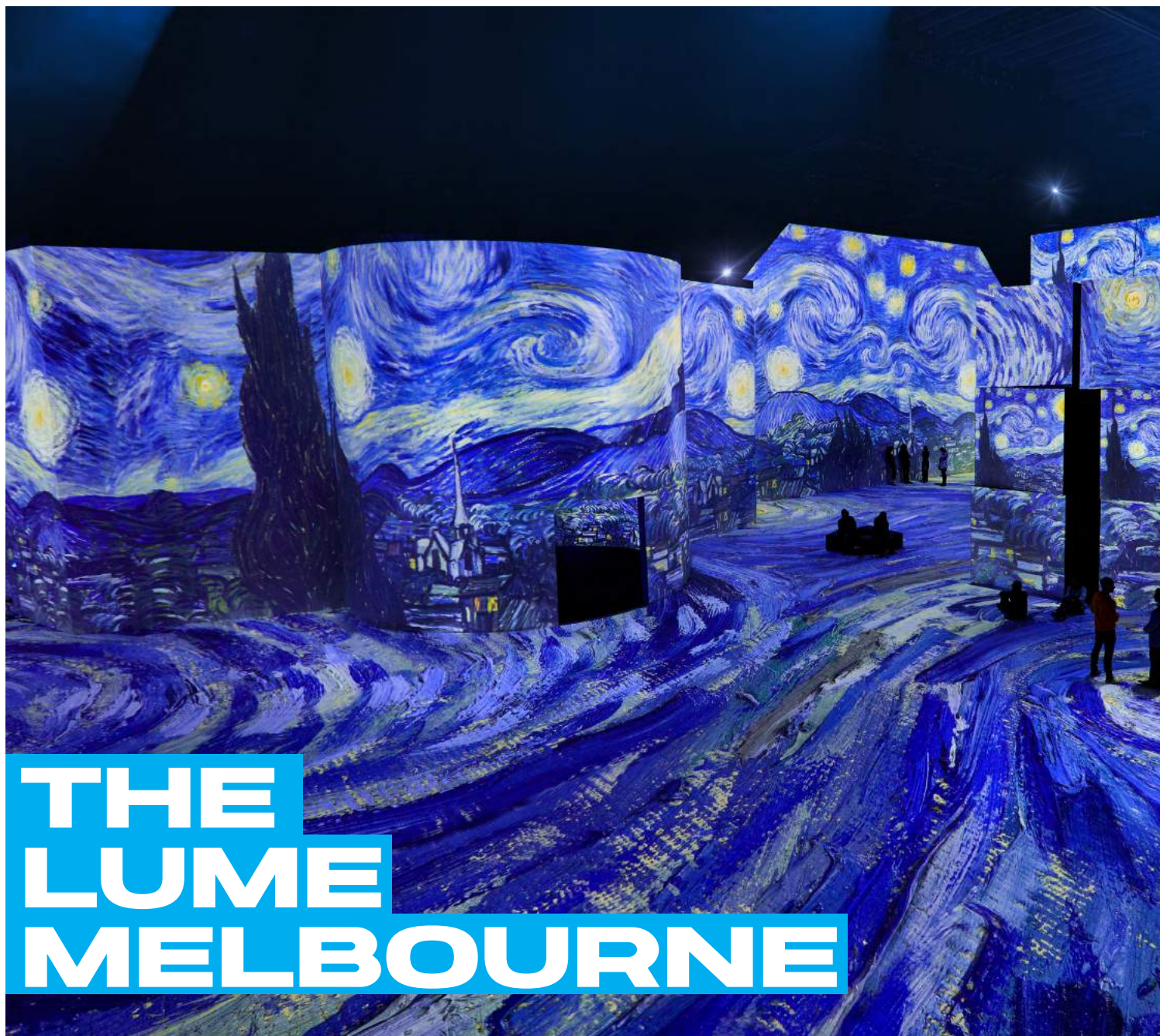
With four different brands and around a dozen models of loudspeaker integrated into the system, how did the GALAXY processors and Spacemap Go help unify the systems tonality and level? "The main system engineering and tonal matching was done in the traditional GALAXY side of the system," Matthew outlines. "Once this was done, I was able to fine tune the trims of each speaker within my Spacemaps independently of one another. This meant that if I had built a Spacemap with all the Nodes and Trisets (the mappable space between three real or virtual Nodes) working as planned in all zones except one, I could simply trim one zone up or down as necessary without affecting any other Spacemaps or system engineering."

Once the run had commenced, Matthew didn't need to live monitor the Spacemap Go system during the show. All Spacemap Go cues were triggered by OSC from QLab, and pre-show checks were done by connecting an iPad to the Spacemap Go system, triggering the various OSC cues to check connectivity, and sending noise through each speaker.

With the entire surround system and such sonically unhinged subject matter to play with, what was Matthew's favourite bit of Spacemap Go-plotted sound design in the show? "I honestly thought my favourite would be a big whoosh or something, but it was actually the more subtle effect of a bell ringing out which became more and more 'messed up' as the story developed," confesses Matthew. "A

similar effect was used on a few other aspects of the sound design as the story unfolded, and it really became a very important narrative device in the design."

Having braved COVID and put on a hugely successful run from 4 Sept to 3 Oct 2021, Matthew and Steve are both justifiably proud of their achievements. "We all felt very proud and privileged to be able to finally get this story on stage," concludes Matthew. "While COVID posed several hurdles for the team, we specialise in finding creative solutions to unique problems. This process was definitely out of the ordinary, but it proved to us that being forced out of the box can open up a whole world of opportunities."



THE LUME MELBOURNE

Grande Experiences' blockbuster Van Gogh experience opened at THE LUME Melbourne, a purpose-built space in Melbourne Convention and Exhibition Centre (MCEC), in November 2021. Grande have built an enviable international reputation for exhibition tech, but THE LUME Melbourne takes their immersive projection model and ramps up the scale from 'impressive' to 'breathtaking.'

And I mean breathtaking. When I first set foot in the vast, projection mapped space, I was so overwhelmed I gasped. Accompanied by

Grande's Head of Production & Technology, Craig Smith, I eventually managed a tiny, squeaked "oh my!" Craig grinned the grin of a man who knows he and his team have kicked major goals. The Van Gogh experience runs 90 to 120 minutes, depending on the visitor, and completely envelops the visitor in the story of the troubled genius's life and art, somehow managing to be simultaneously tasteful and utterly monumental.

Craig's career started in audio after a skills-based apprenticeship in 2000 through the TAFE system. After 10 years in audio working through what was then Staging Connections (now Encore Event Technologies), Crown, and tech director and project management roles, Craig joined Grande nine years ago as production manager.

"Grande Experiences started out doing artefact-based exhibitions," outlines Craig. "They still tour, and include exhibitions based on the work of Leonardo da Vinci, and

another called Planet Shark. About 10 years ago, Grande started producing projection environments. I came onboard as that side of the business expanded, and I honed the touring process for the technology-based shows. I spent five or so years as a touring production manager, taking care of what still are multi-channel projections with audio and lighting systems. That's the standard touring footprint."

"Our touring paradigm is to approach design from a modular, scalable standpoint," continues Craig. "Technology is chosen on its ability to scale up and down. They are turnkey systems transportable in two shipping containers with basic venue requirements of footprint and roof height. We install, commission, train, and then hand over to the local team to run the exhibition day-to-day. We support our tech remotely, and eventually come back to pack up and move on. We need high quality, robust gear that runs with minimal intervention."

Starry Night



Grande has dubbed its immersive projection, lighting, sound, control, and delivery platform 'Sensory4TM', which is a mixture of custom and off-the-shelf technologies. The point of difference is Grande's approach to planning and implementation. While Grande employ standard industry workhorses such as laser projection and robust media servers; in reality, they are a content creation company with an integrated production department who exist to serve and deliver the all-important cultural message. Grande's founder Bruce Peterson's stated aim is to get more people engaged in art and culture, which is why Grande tours projection shows featuring the art of Da Vinci and Van Gogh.

Under The Hood

With two Grande 'THE LUMES' in the world (the other is Indianapolis, Indiana), and more to roll out in 2022, the projection specs are impressive. The immersive exhibition projection maps every custom-built wall and screen in the vast MCEC space, as well as the floor, and is covered by an astonishing 150 Barco G60-W10 DLP laser phosphor projectors kicking out 10,000 lumens each. "THE LUME was in development for a long time, during which we went out to key suppliers and did our due diligence. THE LUME projection spec was particular in terms of resolution and brightness. We wanted to run at lower brightness to get sustained, long-term brightness and colour consistency. We chose the Barco G Series because we love their colour, reproduction, and footprint."

The all-important media server and control is Dataton Watchout, with servers supplied by Interactive Controls. The timeline-based workflow runs all video and audio, with a Barco IOSONO spatial audio engine running 96 channels synced via timecode, as is a grandMA lighting console

Audio

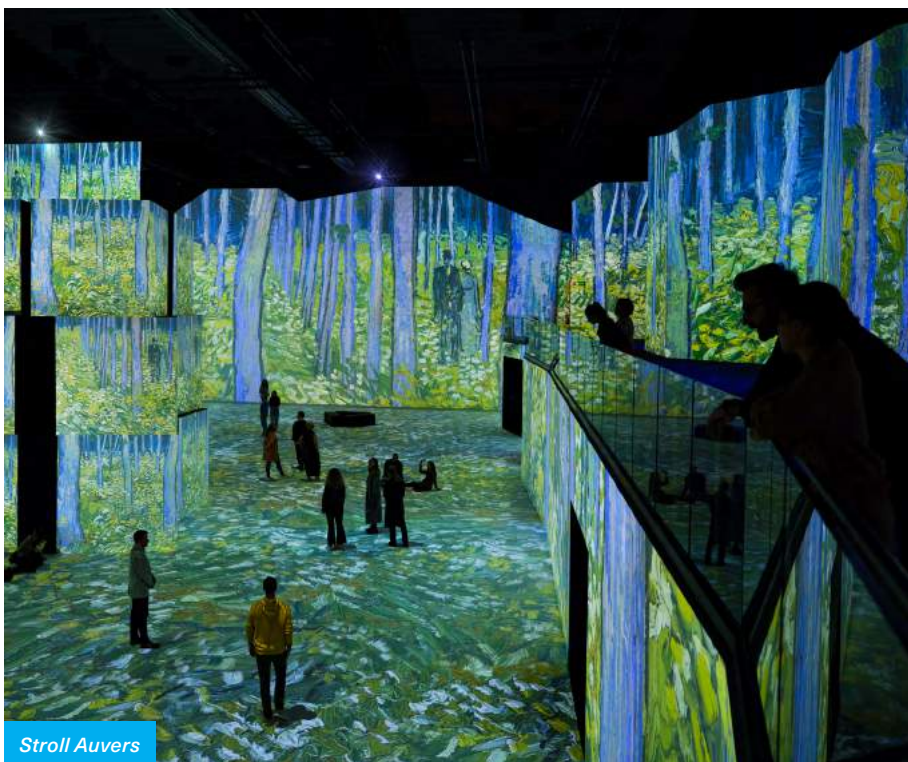
The massive immersive sound system powered by the IOSONO runs off a Dante backbone, with 66 JBL SRX812W loudspeakers augmented by 20 JBL SRX818SP subwoofers. Four Tascam ML-32D analogue to/from Dante converters can take a whopping 128 channels and put them on or take them off of the network. 24 Tascam ML-4D/OUT-X converters each output four channels of analogue from the Dante network via XLR and are used as drop-boxes throughout to get signal to the JBL's amps. Two Tascam MM-2D-X two analogue in, two out, with DSP, are on hand to get into or out of Dante as required, with processing. According to Tascam and JBL's Australian distributor, CMI Music & Audio, this is the largest implementation of Tascam's M Series Dante utility converters and processors in Australia.

"We chose JBL SRX because it met all of our key performance requirements plus weight, functionality, and price," states Craig. "We love that we're not worrying about amps and speaker cabling, which means our cabling is mostly Cat6 and power. We convert back to analogue through the Tascams, and the on-board processing means we don't have to add another device in-line. While JBL was new for us for THE LUME, we've started rolling out JBL into our newer touring kits as well. Its quality, footprint, and weight ticks the boxes for touring."

In a self-contained area of THE LUME known as The 360, interpretive content showing the real-world inspiration for Van Gogh's works are shown in-the-round, complementary to the main content in the rest of the room. This space utilises a small Fohhn Airea networked speaker system, also supplied by CMI Music & Audio. "It's hard to find high quality, high SPL, small footprint loudspeakers," contends Craig. "Airea's single cable PoE and signal is great in



Almond blossom



Stroll Auvers



Irises



Sunflowers

environments like The 360, where the tech is close to the visitor and cabling and weight is problematic. We also have other Airea systems out in the field in similar bespoke spaces.”

Lighting

THE LUME's lighting rig features many models from Show Technology's ShowPRO range, including LED Fusion Wash Q XLVIII, LED Fusion Wash Q XXVII, LED Profile FC, LED Profile VW, LED Profile HP/FC/VW, and LED PixPAR 2 IP RGBW Zoom. Martin MAC Encore Performance WRM fixtures provide a

flexible stage wash that can be changed and controlled without disturbing the all-important projector alignment.

“We started working with Show Technology back on our Alice – A Wonderland Adventure exhibition,” relates Craig. “That was a lighting-heavy exhibition with a lot of movers and custom gobos. Their product range and offering fit our requirements well, especially considering we generally install for 12 months before anything changes. We pick a fixture based on performance, and while our touring kits have a core inventory, lighting can be very venue dependent when it comes to ceiling

height and rigging. The breadth of Show Technology's range mean we can always source a fixture that will work for the venue.”

Power

“One of the challenges of touring the globe is that it can be fickle with its power,” Craig diplomatically understates. “Having a standard touring kit that can be in any region and do any install is tricky when it comes to power.” Grande have addressed this thorny and fundamental issue by powering their exhibits with LSC Control Systems APS intelligent



power supplies and REDBACK dimmers. “We made the move to exclusively LSC power supplies and dimmers six years ago,” attests Craig. “One of the things that drew us to LSC was that fact we can use their products anywhere on Earth. The monitoring, under and over voltage protection, to balance loads and have a degree of protection is very welcome.

LSC APS system powers everything at THE LUME, with 12 APS wall-mounted 12 channel units patched to 204 channels of LSC REDBACK dimmers, providing the installation with patchable power from ceiling to wall.

Takeovers

If you’re feeling like blowing away your customers or team with one of the largest projection and sound environments on the planet, you can rent out THE LUME Melbourne and run your own content on it! “We factored corporate takeovers into the design,” Craig divulges. “Obviously there’s a lot of complexity in the system, but the way we’ve approached it is with the ability to simply patch in over the top. You can switch presets without causing any issue to the experience. We’ve leveraged NDI live feeds for overlays, and they’re run

through secondary channels on the projectors. You can run IMAG or PowerPoint, and that gives you a solid foundation for most events. There’s a library of holding states available from our own design team. For 90% of corporate events, it’s accessible, quick, and easy.”

[thelume.com/melbourne/
grande-experiences.com](http://thelume.com/melbourne/grande-experiences.com)

by Jason Allen



ADELAIDE SYMPHONY ORCHESTRA'S FESTIVAL OF ORCHESTRA

It was an audacious COVID recovery idea months in the planning; take the ASO outside, put them on a huge stage with giant IMAG screens and a massive PA, and produce six crowd-pleasing yet diverse orchestral gigs for a COVID-safe audience of 5,000 per show. Heart, soul, sweat and some RISE funding made it happen over two weeks in November and December 2021.

Adelaide Showgrounds saw the stage set up in the main arena. Practicalities like the times the sun would set, prevailing wind direction, the angle of the stage in relation to direct sun, and a myriad of other factors that EDM festivals

and rock shows don't think about were meticulously taken into account. The programme affectionately now known as FOFO kicked off on November 24 with 'Classical Spectacular', a glorious return to the stage that finished the concert off with a literal bang; Tchaikovsky's 1812 Overture was performed complete with perfectly timed cannons and fireworks. Two days later, Ministry of Sound: Classical, the global phenomenon that sees major club hits arranged for orchestra, DJ, and live vocals got its groove on. The day after that, Carmina Burana, Carl Orff's 1936 runaway hit cantata (its opener, O Fortuna, has starred in countless ads and movies), got a rare live performance complete with 200 strong choir.

The week after, A Night on Broadway served up exactly what it promised, Symphony of Angels saw legendary Aussie pub rockers The Angels meet the ASO, and the series concluded with BBC Blue Planet II, a live

scored BBC nature documentary hosted by the beloved Dr Karl Kruszelnicki AM. Novatech Creative Event Technology were the production providers for the series, having been ASO supporters for many years. "It's testament to the thought and planning the ASO put into this festival that the result in its first year was phenomenal," praises Leko Novakovic, managing director of Novatech. "They knocked it out of the park; from arrival to departure, everything was beautiful. It was an inspiring series, which is what we all needed in these uncertain times. And the 1812 Overture! They had the army handle the cannons, and when they went off in perfect time along with the music and the fireworks, I got goosebumps. I felt sorry for every resident of Goodwood, but it was absolutely spectacular, and they nailed every aspect."

With ASO tech liaison Paul Cowley working with Novatech on all the details, Jayden Sutherland of The Bakery Design Co came onboard the project as lighting and staging



designer, also getting on the tools as lighting operator. Novatech sister company Nexstage worked closely with the ASO on creating the right staging, risers, and scrims. "The ASO were very interested in the aesthetics of this festival," relates Leko. "They wanted it to be both clean and special. There was tremendous attention to detail. For example, at the Rose Terrace entrance, there was a VIP area, food trucks, a stage for community performances that hosted things like big bands, and an area for the family days they held on Sundays, teaching kids about the orchestra."

The impression on the punters in the main arena was in every sense, massive. "We had to maximise the seated audience numbers, which worked out to 5,000 per show with the social distancing requirements approved by

SA Health," elaborates Leko. "So this meant a really big area, just with a lot less people in it than we would normally have had. But that meant screens and PA still had to be large enough for that space."

These requirements translated into "boatloads" of L-Acoustics PA, a big channel count off the stage, big audio consoles, tons of mics, and lots of monitoring. Lighting was a big rig, with every show requiring different floor packages and other changes. The stage was flanked by ROE LED screens for IMAG that were 11 meters wide, joined by an upstage screen 10 meters wide.

"Everything was big," confirms Leko. "Comms were big; we had our Riedel Artist system with smart panels, and tons of people on Riedel Bolero wireless packs. Haze was big; we got

to use our MDG TheOne hazers, which are perfect for big stages that need to be low noise. We brought a big, complex camera rig, run from our OneSystem Constellation rack from a Blackmagic Design control surface, with full HD Sony and Marshall camera chains."

Fortune favours the brave, and all six concerts were blessed with good weather for outdoor shows. 22,000 audience members experienced FOFO, and even classical music critics who notoriously and instinctively dislike amplified sound were glowing in their praise. "We were proud to be associated with FOFO," concludes Leko. "The reactions were so positive. We had the ASO thanking us, and laypeople complementing the video direction. They were picking up on the fact that the camera switching was directed by ASO

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FACT: Most Australian tech crew and roadies have attempted or considered suicide¹!

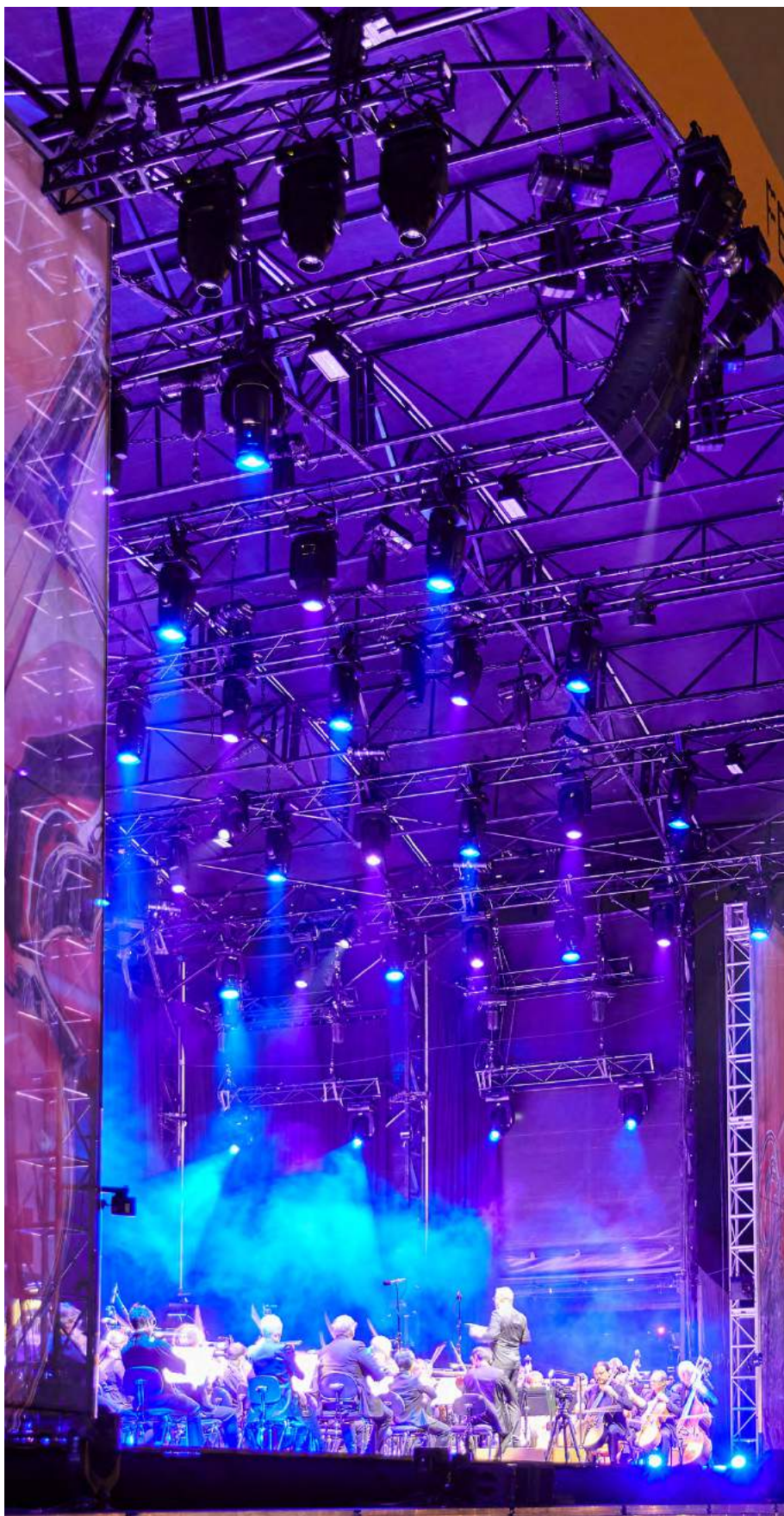
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¹Passion, Pride, Pitfalls Dec 2014

www.entertainmentassist.org.au

Supporting the mental health of Australian entertainment industry workers



staff who knew the score, meaning cameras switched perfectly to orchestra members playing solos and the like. It was that attention to detail, and everyone's hard work, that really made these gigs special."

"Festival of Orchestra is possibly the ASO's largest ever undertaking," says Vince Ciccarello, Managing Director of Adelaide

Symphony Orchestra. "Having worked with Novatech for over a decade, they really understand our business. Orchestras are unique beasts which have very special needs. Novatech has been brilliant at understanding those and delivering on them. It's hard to imagine how we would've delivered this project without a local partner like Novatech

AUDIO

Main Left/Right:
32 x L-Acoustics K2 (2x 16 hangs)
Centre Arrays: 12 x L-Acoustics KARA
Subs: 16 x L-Acoustics SB28
In Fill: 6 x L-Acoustics KARA
Out Fill: 6 x L-Acoustics ARC
Delays: 36 x L-Acoustics KARA
Stairs Delays: 4 x L-Acoustics SYVA
Stage Monitoring: 16 x L-Acoustics X8,
12 x L-Acoustics X15 HIQ
IEMs: Shure PSM1000, 8ch
FOH desk: DiGiCo SD5
Monitor desk: DiGiCo SD10
Stage mics: DPA, Sennheiser, AKG,
Shure, Audio-Technica
Radio Mics:
Shure UHF-R L3E+ Beta58, 8ch
Signal Distribution: OptoCore fiber

VIDEO

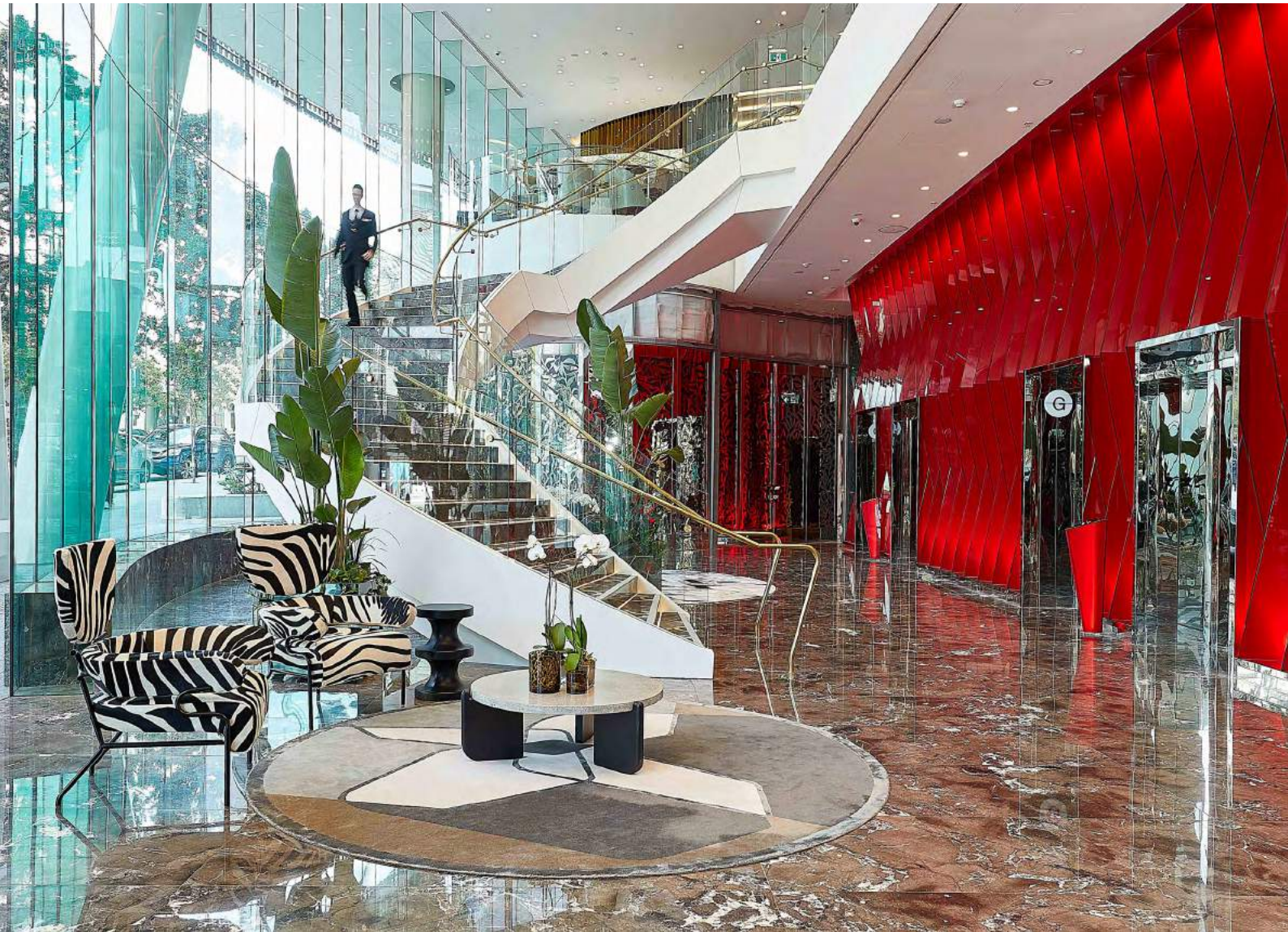
IMAG Stage Right:
52 x ROE CB 5.77mm LED
IMAG Stage Left:
52 x ROE CB 5.77mm LED
Upstage Screen: 72 x ROE CB5 LED
Rear Surtitle Screen: 19 x ROE CB5 LED
LED Video Processing: Brompton SX40
Camera Switching:
Novatech OneSystem Constellation Rack
Cameras: 2 x Sony Broadcast HD
HXC-100, 8 x Marshall CV568 Miniature
1080p 3G/HD

LIGHTING

4 x GLP Impression X4
10 x Elation Proteus Hybrid
11 x GLP JDC-1 LED strobe
20 x Vari*Lite VL3500W
15 x Clay Paky Scenius Unico
11 x Martin Mac Viper
21 x Kupo 2lite DWE blinders
8 x Vari*Lite VL3500Q
17 x Clay Paky Sharpy PLUS
8 x Clay Paky Sharpy
Control: grandMA2 full-size,
grandMA2 Light

on the ground. The fact that Novatech is local means that they not only know this venue and site, they've been able to do recces at short notice. They've been able to plan, meet, get onto issues as they arise, and be out on site on a regular basis with the attention to detail that has been critical for such a big undertaking."

THE EMPORIUM HOTEL



Brisbane's Emporium Hotel at South Bank is an experience in a class all its own. Step into the foyer or, better yet, into its surreal elevators or any one of the stunning public spaces, and you will soon see the Emporium Hotel is, in its own words, "an exhibition in elevating amenity into an art form and a showcase of making a place into an experience." Exquisite craftsmanship and detailing are everywhere, matched by an aural encounter that is invisible yet enveloping and unmistakably Bose.

Emporium developers, the Anthony John Group, helmed by architect Tony John and interior designer Francine John, have a unique approach to design and construction. They personally oversee every aspect of design and closely manage the fit-out themselves, ensuring every part of the project meets their exacting standards.

Anthony John Group's CEO Daniel John explained their fastidious attitude to sound, "Audio is extremely important for us at Emporium Hotel," he noted. "We aim to provide the best guest experience possible. That includes not just the service and the rooms. For us, audio and visual are extremely important, and we ensure we get them right."

This means great visual impact balanced with superior audio was key to creating the ideal guest experience. From the Emporium's interactive lifts to the framed mirror televisions in the suites, the result is a feast for the eyes and the ears.

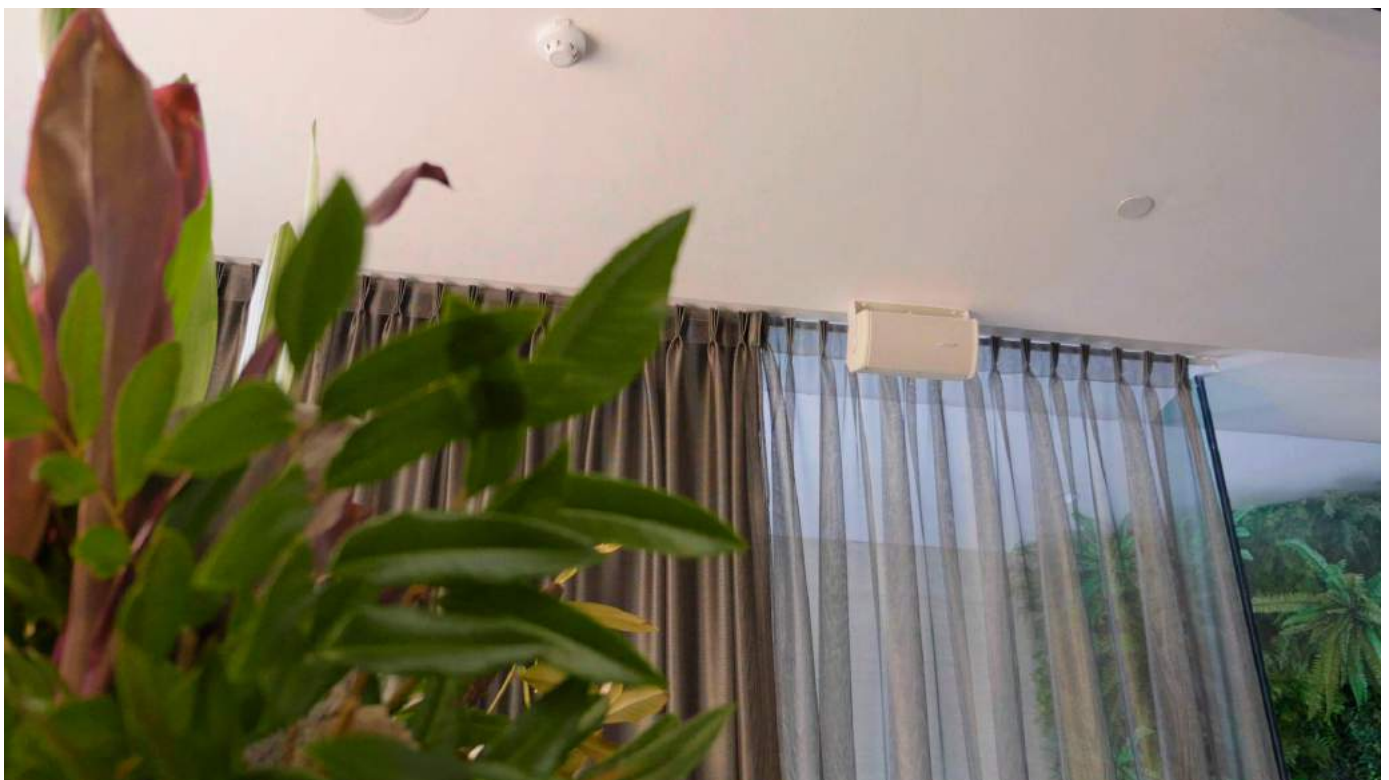
The Bose Professional Solution

JVG Sound Lighting and Visual, the audiovisual company partnering on the project, immediately grasped the importance of the hotel's quality-first design objective. "We are a Bose platinum dealer Australia-wide and in New Zealand. So, we will always put Bose upfront for any hotel," revealed Jade Golar, JVG director. "Given the Bose warranties, their quality and the customer support, we naturally put Bose forward to the Emporium for both the in-room experience and public areas."

Bose audio permeates the public areas, bars and restaurants and is front and centre in every guestroom. Complementing the in-room mirror television in each suite is a Bose Smart Soundbar 300. “We chose the 300 series as it was the number-one best seller worldwide and able to deliver full-range sound without the need for a subwoofer,” Golar said. In common with other Bose in-room products, the soundbar allows maximum volume levels to be preset, ensuring the optimum experience without disturbing other guests.

Bose FreeSpace 3 Surface-Mount Satellite loudspeakers are throughout the hotel. These proved ideal in situations where the ceilings ranged from nine metres in the lobbies to three metres in the corridors. With its spectacular translucent gunsmoke onyx bar, the Piano Bar leverages a live music sound system, combining the Bose RoomMatch Utility RMU105 and RMU208 loudspeakers with recessed FreeSpace 3 Series II Acoustimass ceiling subwoofers, all powered by PowerMatch PM8500 amplifiers.

Both Daniel John and JVG’s Jade Golar consider the brand alignment between Emporium Hotel and Bose Professional to be a perfect match. “The decision to place Bose throughout the hotel had a lot to do with my personal experience,” John recalls. “Having Bose throughout my home, I knew the product and particularly the sound quality. The option that JVG gave us to align with Bose throughout the hotel was definitely something that was highly regarded, and I’m glad we went down that pathway.” He continued, “We felt to align with the amazingness of our rooms, we needed to have amazing sound and a product that would blow the guests away,” he continued. “Guests love the Bose equipment, and it’s a talking point for most.”



Sometimes it all gets too much...



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ST PATRICK'S BASILICA

St Patrick's Basilica, otherwise known as Oamaru Basilica, is located in Oamaru, New Zealand, and was designed by renowned architect Francis Petre. It's known as perhaps the best example of his work. First opened way back in 1918, the term 'basilica' (for those readers not entirely full bottle on ancient Roman history) refers to a style of architecture known as Roman Renaissance, and is heavy on ornate columns, arches, a classic portico entrance and three large domes that have become a landmark of the town. Of course, being built in Oamaru, it's mainly constructed

of the legendary Oamaru stone that's quarried just outside of town.

So, it's an historically famous building by a famous architect, incorporating a famous landmark, and built with the famed construction equivalent of crumbly feta cheese. A project needing patience, finesse, and some really, really, long masonry drill bits.

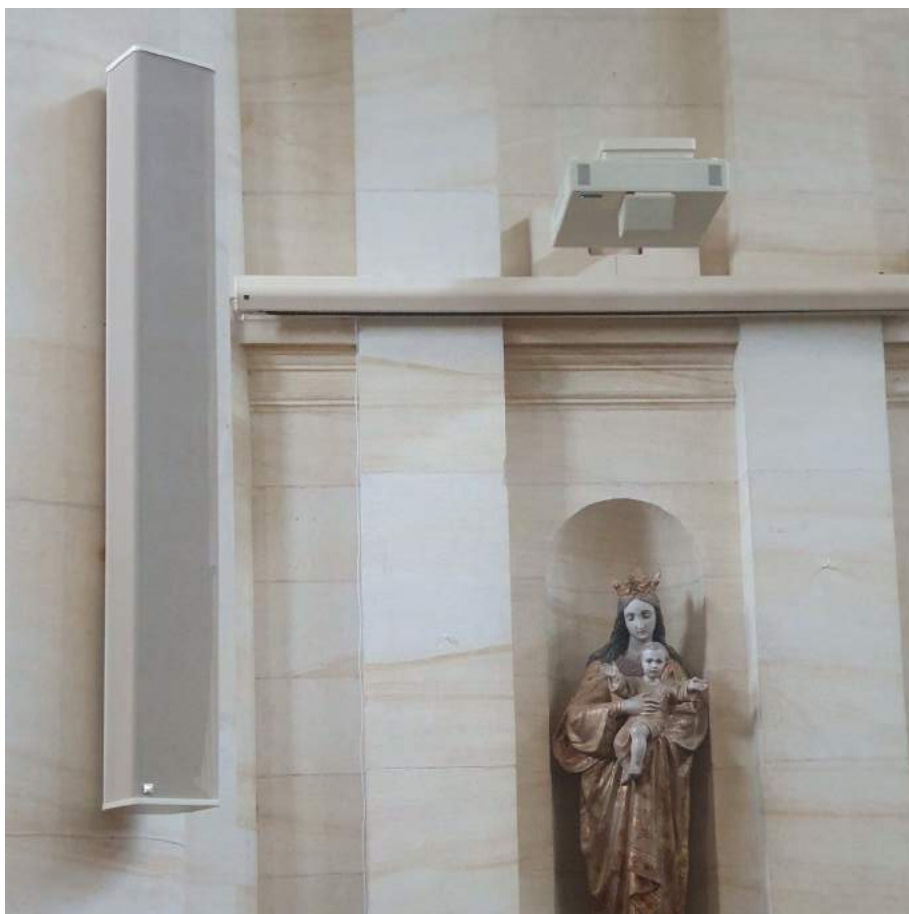
Good news travels fast amongst the religious fraternity in New Zealand, and it was Monsignor John Harris of the Catholic Diocese in Dunedin who brought together the Oamaru

Basilica and Mark Patterson of Lifestyle AV, because Mark had successfully done a similar project in St Paul's Cathedral.

During the early discussions and site inspections Mark just happened to have a d&b audiotechnik speaker system in the back of his car, as you do, and set up a quick demonstration. The quality and clarity of the audio were instantly impressive, and Mark was pretty much commissioned on the spot, then a field trip to see and hear the d&b system in St Paul's sealed the deal.



As Mark explains, "I wanted all the technology to be borderline invisible so that people could still enjoy the building."



The Challenge

The expanded purpose of the new equipment catered for the obvious pulpit sermons, a variety of wireless microphones for reinforcing musicians and a choir, plus capturing it all for a live stream system that Mark was also installing. On top of these were a state-of-the-art projection system designed more as a visual aid for the audience, rather than a broadcasting platform for external sources.

All up, there was a lot of cabling and equipment that might clash with the historical aesthetics

of the Basilica. As Mark explains, "I wanted all the technology to be borderline invisible so that people could still enjoy the building." In this regard, the Roman Renaissance design provided some answers instead of obstacles. The myriad of carved ledges and decorative stonework often created a nook or cranny where cabling could be tucked away. Where these weren't available, as he did in St Paul's, Mark carefully colour-matched everything to blend in with the Oamaru stone. By 'everything', that meant the wiring, the speakers, and even the projectors. In

some situations, holes were bored through walls using drill bits 1.5m long. Fortunately, Mark could get advice from a local Oamaru stonemason who works with the church and incidentally helped patch the damage left from removing the older equipment.

THE FIX

Covid 19 restrictions inevitably impacted the project. On the downside, Mark once again became an installation team of one, doing the majority of the work alone. On the upside, access to the church was easier because the

Basilica was closed to the public. Mark gives NAS Solutions a gong for going “above and beyond”. Apparently providing audio visual gear even for an historic church refit doesn’t rate as an ‘essential service’ and just shipping the equipment to Mark was problematic, but NAS persevered.

Last, but not least, a well-known chap who’s familiar with the church once said, “It is easier for a camel to go through the eye of a needle...” Fast-forward a couple of thousand years and he might have been talking about getting a hydraulic platform through the back door of the church. Countless reverse-turns cribbed a millimetre every time. It seems the Romans never used scissor lifts.

The four d&b 24Cs covering the main area easily provided the clarity and SPL needed, while a d&b 8S was placed at the very front as a kind of ‘stage fill’ for people taking part in any proceedings. There’s also a d&b 12S subwoofer, but that’s mainly with any musical performances in mind. Powering the 24Cs,

8S and 12S is a d&b 10D amplifier. An Ashly Protea ne24.24M runs processing across the whole system.

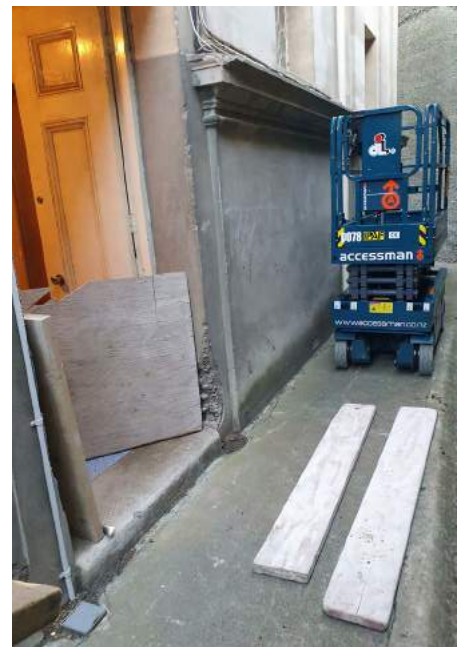
It’s worth mentioning that the ceiling is made of embossed zinc panels; lightweight plates which contribute to the building’s excellent acoustics.

The Result

The final result exceeded even Mark’s expectations, and he’s the kind of dedicated professional who expects a lot.

Mark kept all the controllers and choice of equipment simple so that anyone can operate the system. The painstaking colour-matching and careful cabling has paid off allowing everything to blend perfectly with the 100-year-old stonework.

The history of St Patrick’s Basilica was in safe hands and kept intact, while the future thanks to d&b is definitely focused on the digital age.



GEAR LIST

d&b 24C column loudspeaker

6x 4-Inch Drivers, 6x 1.1-Inch Tweeters
Max. SPL: 126dB
Freq. Response: 110Hz – 17kHz
Dispersion: 90° x 20° (H x V)
Weight: 9kg

d&b 8S loudspeaker

8-Inch LF Driver, 1-Inch Compression Driver
Max. SPL: 124dB
Freq. Response: 70Hz – 20kHz
Directivity: 100° conical
Weight: 7.4kg

d&b 12S subwoofer

Single 12-Inch LF Driver
Max. SPL: 124dB
Freq. Response: 45Hz – 130Hz
Power: 300W RMS
Weight: 16kg

d&b 10D amplifier

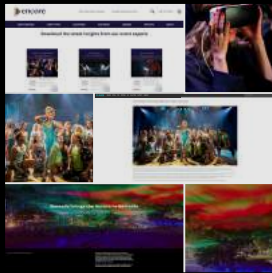
Four-channel amplifier
Input Gain control for each channel
Two 16-band EQs
Input & Load monitoring
Web interface control

Ashly Protea ne24.24.M processor

Expandable up to 24 channels
Mic/Line inputs
24-bit A/D-D/A conversion
31 preset locations
Intuitive user interface

<https://nz.nas.solutions/>

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SOUNDSCAPE UNDER THE STARS



Brian and Roger Eno rely on d&b for their first joint performance

A 360-degree d&b Soundscape system was deployed at the iconic Odeon of Herodes Atticus amphitheatre in Greece for the first-ever, joint live performance of producer and artist Brian Eno and his brother, pianist and composer Roger Eno.

Brian Eno's reputation as a musician and producer for the likes of David Bowie, U2 and Talking Heads, precedes him, as does his long career as a pioneering solo artist, especially in the field of ambient music. He recently collaborated with his brother, Roger Eno, a solo recording artist and film and TV composer, releasing their first ever joint album 'Mixing Colours', a project that spawned this live show.

Their first live performance as a duo took place in the legendary open-air performance space, the Odeon of Herodes Atticus, a renovated stone amphitheatre originally constructed in the year 161 AD. "Due to the age and size of the amphitheatre, I thought that it would be a real challenge to analyse how the sound spreads in the space, and how we would manage coverage and reflections," commented Chris Hamilton, Front of House Engineer. "Luckily, because it's such a historic venue there has been a lot of studies done on it and someone had previously conducted a full audio study for the space, so we had great audio info to work with."

Hamilton had previously been introduced to Soundscape by Massimo Carli of BH Audio and suggested to use it to achieve power and clarity for this challenging outdoor venue and make this historic musical moment an

unforgettable experience for the audience. "I spoke with management about the opportunity we had to do something really special here and something that no one has done before," said Hamilton. "The challenge was more reassuring them that this will be simple, easy to install, and reliable, and the audience won't even know it's there, but they will hear it. We definitely took a risk together, but there was trust and the results spoke for themselves."

d&b Soundscape is powered by the DS100 Signal Engine, a revolutionary audio system processor based on a powerful Dante-enabled signal matrix that provides unparalleled creativity through its two software modules, En-Scene and En-Space. d&b En-Scene is a sound object positioning tool allowing for the individual placement and movement of up to 64 sound objects. It accurately depicts stage scenarios so that each sound object

corresponds both visually and acoustically. d&b En-Space is an in-line room emulation tool which creates and modifies reverberation signatures for any space. These reverberation signatures are emulations derived from acoustic measurements of nine internationally renowned performance venues and convolved within the audio processor.

For many, including Hamilton, this was their first show back since restrictions had been lifted, so anticipation was high. That being said, the audio and performance was very well received, with fans and the band alike praising the show. "After the show, everyone was beaming and saying how good it sounded,"

Hamilton remembers. "The future for me is all about spatial audio tools such as Soundscape. Soundscape helped me build not just volume but spread and movement as the show built. The clarity you get compared to a standard L/R setup is wonderful. It's definitely something I'm looking to bring in for more shows with other artists in the future."

"There is nothing like experiencing 360-degree audio for the first time, and having introduced Chris to Soundscape a while back in our studio in Italy, I'm pleased he finally got to try it out in the 'real' world - and with such compelling results," concludes Carli.

Components Used

Main system - V8/V12 + V-SUB

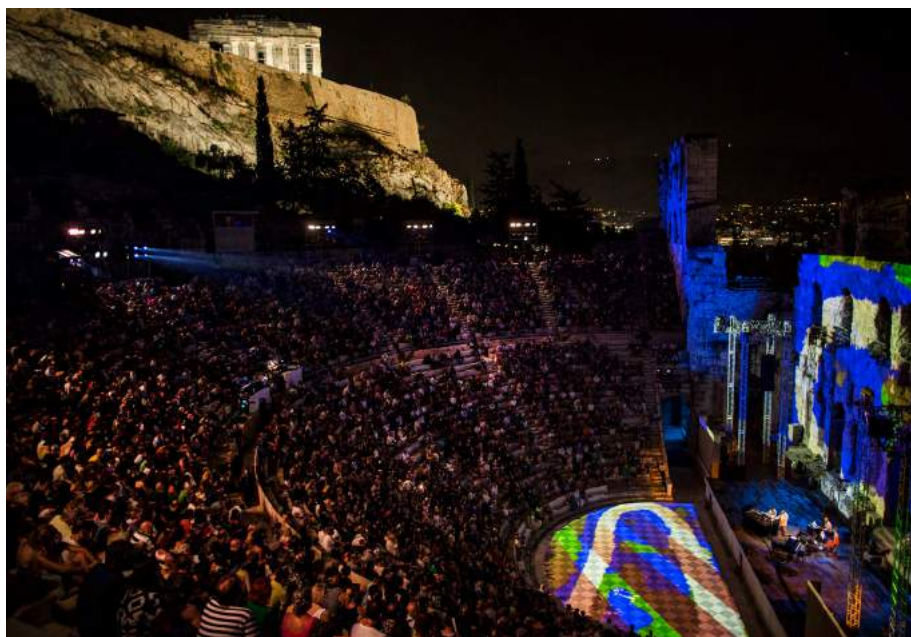
Front fills - V8

Out fills - V8

360 - V10P

DS100

DS10





LIGHTS THAT DON'T GO WRONG

“For Mischief’s Magic Goes Wrong, it is the show that is comedy chaos on stage,” opens its lighting designer, David Howe. “It must never be the lights that go wrong!”

Co-written by Mischief and international magicians Penn and Teller, *Magic Goes Wrong*, first opened at London’s Vaudeville Theatre in 2019 before touring the UK since July ’21. A West End version returned to London in October with a relaunch at the Apollo Theatre that will run until February 2022. The comedy play is presented as a fundraiser and features a string of inept magicians doing their best acts to raise money for ‘disasters in magic’. The result is a fast-paced variety show with high production values and great audience interaction.

David Howe has been involved in the production since 2018. “The show is a deliberate overly theatrical comedy; a colourful, glitzy event that accentuates the comedic mishaps of the characters. From a lighting perspective, in addition to giving shape and support to the actors and essential magic lighting, I have many different scenic elements to work with from deep rich velvet house tabs, multi slash curtains and, to quote the opening introduction, ‘a quantity of glitter that some may find offensive.’ The writers are constantly evolving the play at each incarnation and so I am able to look and refresh my design and

fixture choices for each production.”

Howe originally designed the production with other lighting fixtures before he was introduced to Ayrton products. “It was White Light that suggested I consider using Diablo. I had seen it before and remember being impressed. It is so, so bright. Super, super bright; exactly what I was looking for. I needed a moving light with that sort of intensity and the speed of movement that Diablo delivers. The colour saturation is excellent and it has great gobo rendering; perfect for the colourful and dynamic look that drives this show. Its compact design and lightweight build ticks yet another set of boxes for handling and rigging in tight theatre spaces. We did a shoot-out and the Diablo jumped out at us – this was the one!”

Howe chose to rig a dozen Diablos as front light downstage of the proscenium, using them as key lights in addition to adding vibrancy and punch to the glitzy stage set. “They are a total treat - we can put strong colours wherever we want them, and we have fitted them with custom gobos which work equally well in hard or soft focus. They cut through everything else on stage so well we have even used them as follow spots on occasions for tricky positions.” Ayrton’s famed reliability and almost silent movement has not gone unnoticed either. “This is a play and for the comedy to work we need the audience to be focussed on what is being said so rigging moving fixtures front-of-house requires them to be both quiet and reliable. Swapping lights out in the auditorium



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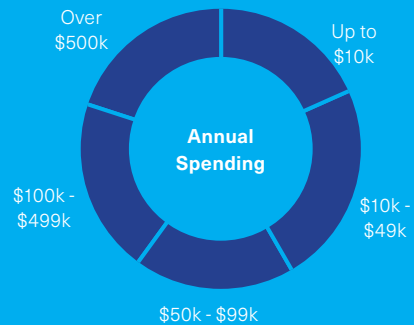
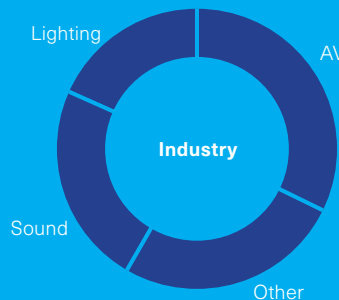
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is awkward and time consuming and audiences don't want to be distracted by the whirring of fans and motors, particularly during quiet dramatic moments on stage."

Howe succinctly sums up his experience of choosing Ayrton's Diablo. "We were lucky to be able to access the Diablo. These were the first ones purchased by White Light, and I have not regretted our choice for a moment. Brighter than bright, so quiet, small yet with a zoom from 7° to 53° that is extremely useable. I would

be just as happy to use them in a straight theatre production as in a fast-paced musical event. They are LED but you can programme them in CMY mode so I'm not worrying or thinking about RGBW. It's a great little unit that fits well in our world. Put simply, Diablo ticks all the boxes."

"We're really pleased the Diablo proved such a hit on its first outing with David and we're already planning to increase our rental stocks over the coming months," says White

Light's technical director, David Isherwood, who bought the Diablo fixtures from Ayrton's exclusive UK distributors, Ambersphere Solutions after the demo from Briony Berning. "We can see applications across all of the areas we service, which is one of the main drivers for our investment in new products – they cannot be too niche. We've already seen particular interest from Broadcast and Theatre, where the combination of size and feature set fits really well."



GOLDEN RUN: NEW FESTIVAL SERIES LAUNCHED

World's biggest dance and Drum and Bass acts hit the regions



by Jenny Barrett. Gold Rush Festival photos courtesy of Radlab.

Tom Anderson, freelance Production Manager, talks to us about the new Golden Run series, keeping it simple whilst out to impress, and how good it feels to be back in the saddle.

Launching a new series of festivals during a pandemic

Hamish Pinkham who leads the team behind Rhythm and Vines had been talking about bringing the R&V magic to the rest of the country for a couple of years, but most were surprised when he announced mid-pandemic that he was launching a new festival series in January 2022. Promoted by Endeavour Live and Live Nation NZ, the Golden Run was born

with Gold Rush in Waihi on January 3rd, Golden Sounds at Lansdowne Park in Blenheim on the 5th, and Golden Lights at Truists Arena in Henderson, Auckland on the 7th.

The festivals featured Wilkinson, Skream, Prospa, Lee Mvttthews, Mollie Collins, Sin, Syrup, Emwa, Poris, Rayne, Ana Agiüs, Grommie, and Hazey. At the last minute they unfortunately lost Dimension from all three events, and 1991, Culture Shock and K Motionz from the Waihi show, due to Ministry of Health COVID requirements.

Tom Anderson took on the challenge of making it all happen.



Tom Anderson. Photo by Damian Alexander.

Keeping it simple

For Tom, familiar with many of the acts from Rhythm and Vines, production managing the festival tour during a pandemic was all about creating a concept that was simple enough to be able to make changes, possibly frequent changes, "It was essentially the same show in three different locations. We knew that due to COVID-19 there would be line-up changes throughout the process, and we wanted to cater for that." At the same time, he didn't want to scrimp on the grandiose look and feel you would expect at a drum and bass event, "We wanted to impress and include stages that were bigger than at the other festivals with IMAG and Notch. Using tried and trusted suppliers was going to be key."

Tom worked with Jason Steel from Negative Space as designer and tour operator to develop a standard design for the three festivals that the acts would be happy to work with. Being all DJs meant explicit requirements from the acts were minimal, "Ones that did have specific requests were amiable to using the house package with minimal adding and

subtracting. I think in light of the conditions we are currently working under, the acts were definitely very receptive to our ideas."

Jason based the design around the recent Wilkinson tour with a five by five diamond riser in the centre and a six by six diamond truss above, six by six upstage screen and IMAG running on both sides, "We added the festival feel with eight G flames, ten Co2 jets and six ten watt lasers with Pangolin BEYOND software for the post sunset sets. Jason used a GrandMA2, D3 Server and Notch to run the show taking full advantage of its capability to control the overall look for the lighting, vision and cameras."

Tom worked with different suppliers for the three locations and Dexta Hancox was brought in as Blenheim Production Manager, a fellow freelancer who frequently works on festivals like Homegrown and Electric Avenue. For Gold Rush at Waihi, Oceania provided audio, video, and lighting, with Negative Space supplying the lasers, and Live FX supplying the Live FX G-FLames and Co2. Similarly for Golden Lights in Auckland, but with Western Audio taking over the audio supply. For Golden Sounds at

Blenheim, Sound People supplied the audio, AC Lighting added the lighting and SFX, and Illumination and Optics supplied the video.

Tom adds, "As we were outdoors and all audio suppliers used d&b audiotechnik (J at Gold Rush Waihi and Golden Sounds Blenheim, and KSL at Golden Lights Auckland) with D80s and array processing, we mapped all sites using d&b NoizCalc which allowed us to keep sound consents in order whilst providing great punter experience at the stages."

And the result, "It looked and sounded amazing and logistically it worked really well, thanks partly to luck being on our side in terms of COVID, but also to the staff who worked on it. Everything ran smoothly from the production side. We had great stage managers and everyone worked as a team. For many it was the first show in months and the team worked really hard to make it a success. We definitely got it where it needed to be but the time commitment compared to pre-pandemic festivals was significant. Site visits can be complicated during lockdowns." Cue ironic laughter.





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Back in the saddle

The real highlight for Tom was the feeling he got as everything came together for the final set with lasers, flames, Notch, and IMAG going hard out, "It was such a special reminder of why we still do this, even in these 'interesting' times. Not just for the audience but for the large group of people who make it happen."

Caring for the crew was an important part of pulling the festival series together, "Not just the COVID-19 factor meaning a closed stage, masks and so on, but we were also concerned with people working longer days for the first time in a while and in brutally hot conditions. The team had to get used to being on their feet again all day or programming through the night, so we shifted things around to make sure everyone got enough rest. It worked really well and by the third one we were an hour quicker at load out."

With Bay Dreams cancelled, Rhythm and Vines and the Summer series both postponed, Endeavour Live and Live Nation



NZ's commitment to bringing these festivals to fruition has to be admired. Not just for audiences desperate to let their hair down and enjoy a mass dance party, but for the behind-the-scenes crew. There is every intention to

repeat the series next year, "The series made an impact, we kept the quality consistent across the different regions and we'll be back next year, bigger and better."

PARTICULARLY PECULIAR POTENTIAL POWER PROBLEMS

PART 2

Last month we learnt some important facts about Earth Leakage Currents (ELC) in modern entertainment systems.

Switch mode power supplies (SMPS) create earth leakage current (up to a maximum of 3.5mA per device) making them the nemesis of the RCD (Residual Current Device). An RCD is there to ensure that the circuit is protected from any leakage to earth, such as what happens when a human touches a live wire, but if you put enough switch mode power supplies on one circuit they will generate enough ELC to trip the RCD.

The amount of ELC created by a SMPS is not included on the specification sheet, so you cannot calculate how many SMPS you can connect to a single RCD without risking an ELC overload.

Other factors including long cable runs (particularly multicore cables) and high humidity increase the ELC in a system.

The 30mA rating of an RCD is the maximum trip current. This is the exact opposite of an MCB (Miniature Circuit Breaker), where a rating of 10A is the minimum current at which the breaker will trip. According to the AS3000 standard, it is acceptable for a 30mA RCD to trip with as little as 15mA of earth leakage current.

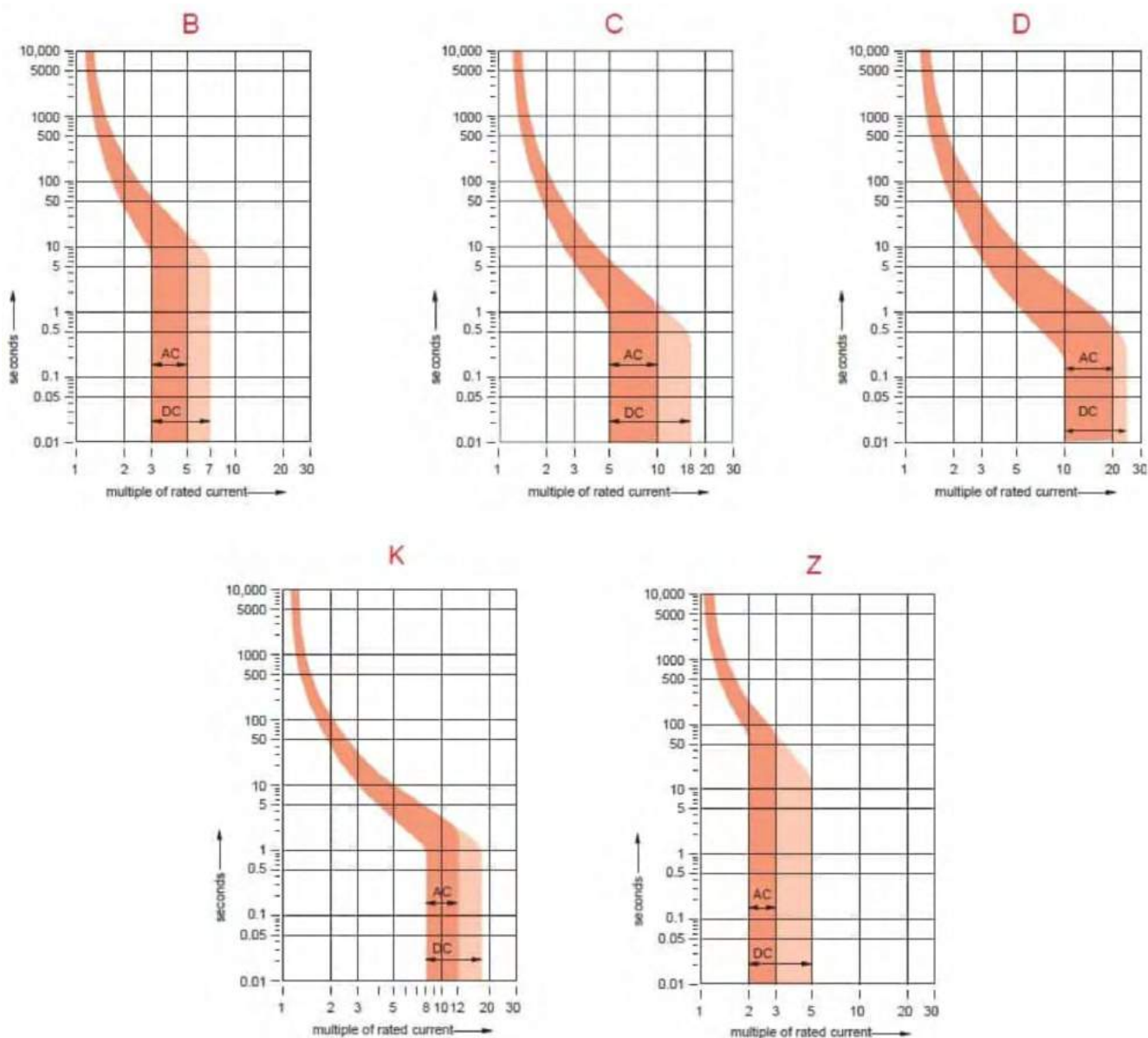
These factors add multiple layers of complexity in designing a reliable touring power distribution system.

Another factor that needs to be considered is inrush current. Both conventional and switch mode power supplies draw very large currents, typically 10-20 times the rated current, for a

very short duration when power is first applied. This is usually due to the capacitors in the power supply needing to be charged. An empty capacitor is virtually a short circuit and will draw large amounts of currents for a short period of time whilst it charges. Similar issues occur when you power up filament lamps. The

cold filament has a very low resistance which results in a much larger current flow until the filament warms up and the resistance rises to the normal level.

Just like fuses are available in slow-blow, normal and fast versions, MCBs are available with different trip characteristics.



The MCB trip curves, also known as I-t tripping characteristic, consist of two sections; overload section and short circuit section. Overload section describes the trip time required for various levels of overload currents and the short circuit section describes the instantaneous trip current level of MCB.

The trip current rating is the minimum current at which the MCB will trip instantaneously. It is required that the trip current must persist for 0.1s.

<https://www.electricalclassroom.com/b-c-d-k-and-z-mcb-trip-curves/>

The larger the trip current the better the MCB can cope with inrush current. It seems logical then to choose the MCB with the greatest trip current rating, but the reality is very different. Nothing in life is free and MCB curves are no different. A higher trip current also means a higher overload current in general. As per the chart below, a C-curve breaker has a trip current of 10-20 times the rated current and an overload current of 5-10 times. The D curve breaker has a trip current of >20 times and an

overload current of 10-20 times the rating.

The D-curve MCB is designed for motors and inductive loads and may not be suitable for protecting the electronics of a video wall or other entertainment system. Additionally, the higher overload rating may not be suitable when used with 1.5mm multicore cables, due to the risk of the cable overheating when too much current flows. The decision of what trip curve to use in a system must be made by an electrical engineer who is equipped with all the pertinent information of how the system will be used.

In Australia, almost all power distribution manufacturers use a C-curve MCB to ensure the best compromise between trip (inrush) and over current protection. Changing an MCB from the device supplied by the manufacturer and replacing it with a D-curve MCB will not only invalidate your warranty, it may also invalidate your insurance and leave you open to prosecution.

We have all seen the effect of inrush currents. You turn on a bank of 6-10 MCBs to power up

a rack of audio amplifiers or LED screens and a couple of the MCBs immediately trip out. Usually, the second turn-on works perfectly but occasionally it takes 3-4 attempts before the MCB will hold. In the famous words of the late Professor Julius Sumner Miller, "Why is it so?"

It is because it all depends on the exact point of the AC waveform that you turn on the MCB. An AC voltage is a sine wave that changes from a peak of +338v to -338v and back again fifty times a second. During each cycle of the wave the voltage passes through zero twice. This is known as the zero-crossing point of the waveform. If you happen to turn on the breaker as the voltage travels through the zero-crossing point, or close to it, then the current increases slowly as the voltage ramps up towards the peak. However, if you happen to turn it on when the voltage is at the 338v peak, or close to it, then the inrush current will be at its maximum and the MCB will most likely trip. The frequency of the mains in Australia is 50Hz, and the period of a 50Hz sinewave is 20mS meaning the zero-cross occurs every 10mS. Due to the sinewave characteristic of

the waveform the voltage rises rapidly from zero and the window of opportunity where the turn on voltage is low enough to prevent an inrush trip is ~2ms, making it impossible to do manually. It is only the luck of the draw that you get it right and is the reason it often takes a few attempts to get the breaker to hold. Luckily each attempt passes a short burst of current, so that the inrush is reduced on each subsequent turn on. Even if you turn on the breaker at the peak every time, by the 3rd or 4th attempt the inrush current will be low enough that the breaker will hold. Whether this rapid on/off/on/off/on cycling causes any damage to the attached equipment is an area of much online debate.

Combine this with the fact that an MCB is not designed to be used as a switch (due to the limited life expectancy - 1,000/2,000 cycles for an RCBO/MCB compared to 100,000 cycles for a switch) and it becomes clear that a better method is needed.

The same inrush problem exists for ELC

as well as conventional current. SMPS will create a short peak of higher ELC at power up. Because an RCD must trip within a very short specific time (300ms for a 30mA RCD, 40ms for a 10mA RCD) this ELC inrush can be even more troublesome than conventional inrush current.

As an aside, **AS/NZS 3760 stipulates that RCDs should be integral trip button tested every 6 months and injection tested every 12 months.** This second test requires an RCD tester that not only applies an ELC, but also measures the time taken for the RCD to trip. If it takes longer than 300mS to trip, then the RCD is deemed to have failed and should be replaced.

Just like MCBs have different curves, there are variations in the Types of RCD. The most common types seen in Australia are AC and A. Type AC is suitable for simple AC waveforms, but only if they are pure AC. These were commonly used in Australia until a few years ago but are not really suitable






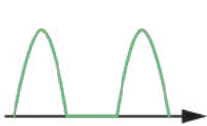
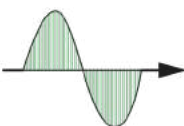
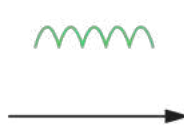
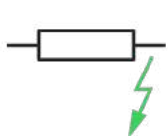

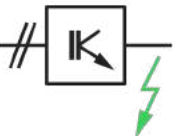

for the entertainment industry. As per the specification below, a Type A can deal with pulsating DC residual current, such as that produced by power supplies in electronic devices. Power distribution systems using Type AC RCDs may not provide adequate protection from electrocution, as the DC component may cause the RCD to not detect an earth leakage fault correctly.

Type AC

Type AC RCDs detect residual sinusoidal alternating currents. Type AC RCDs are suitable for general use and cover most of the applications in practice.

Type A

In addition to the detection characteristics of type AC RCDs, Type A RCDs detect pulsating DC residual current. Such waveforms can be caused by diode or thyristor rectifier circuit in electronic loads.

Type	Type			
	AC 	A 	F 	B 
I fault				
Load				
	linear	single phase rectifier	single phase frequency converter	3 phase rectifier

https://www.electrical-installation.org/en/wiki/Types_of_RCDs

When an MCB and RCD are combined into a single device they are known as an RCBO (Residual Current Breaker with Over-current). These are now the de-facto standard in entertainment power systems since they are the same size as a standard MCB, allowing for 12 devices to easily fit into a 19" rack chassis.

RCBOs have both a Curve and Type rating. This is commonly shown as the curve letter followed by the overload current. A 10A C-curve breaker would be described as C10 and the RCD section as either Type A or just the symbol (as per the Type symbols in the

diagram above). The ELC mA rating must also be shown.

It is also important to note that some states of Australia have additional rules for RCBOs. ESV (Electrical Safety Victoria) has a prohibition notice on RCBOs that have not been tested and approved by ESV. **Since 2018 it has been illegal to sell a non-compliant RCBO or any product that contains a non-compliant RCBO in the state of Victoria.** If a product needs an RCBO replaced it must be a compliant RCBO, even if the unit was purchased before 2018 and the remaining RCBOs are non-compliant.

In our conversations with ESV they have stated

that anyone importing a device into Victoria that was built/purchased after 2018 and contains a non-compliant RCBO is liable for prosecution. **This is deemed to include any production company sending equipment into Victoria for a temporary event.** The complete list of compliant RCBOs is listed here <https://esv.vic.gov.au/technical-information/electrical-appliances-and-equipment/compliant-rcbos/> and any production company working in Victoria should check to ensure that their products comply.

In the next instalment we will look at ELC frequency and why this makes it harder to design a reliable power distribution system.



OMICRON VERSUS THE OMNICHORD

It seems pointless trying to predict how things will unfold in 2022. Maybe it's time we all focussed solely on what we can control, rather than spending another trip around the sun frustrated by the world around us. This year has already proved far more volatile than any of us had hoped for, or anticipated.

Regardless of everything that's been happening over the summer break, I've decided 2022 is the year I just put my head down and go for it. I can't spend another day reacting to the news cycle, filled as it is with the sound bites of utterly talentless, amoral politicians talking Class-A rubbish about the various imminent threats to our very existence.

Nor can I waste another second thinking about the similarly pointless protests of anti-vaxxers, conspiracy theorists and erstwhile crackpots over the tragic loss of their ability to have a

bespoke flat-white served to them at just the right temperature in their favourite Thornbury café.

Sorry to offend if that sounds like you, but I've had a (Christmas-sized) gutful.

It's time to switch off the news, install my K-Series SSL and get to work. I've waited long enough.

But before I do any of that I'm taking a break.

As I write I'm by the seaside down in Walkerville, south of Melbourne, surfing, snorkelling, wrangling kids and riding bikes on the sand. I've been collecting shells on the beach rather than looking (yet again) at seven-day COVID trends, rehearsing alone with my acoustic guitar and even practising the Omnichord (not Omnicron) whenever I've had the chance.

I've been enjoying the great outdoors rather than climbing the walls; hopefully tomorrow we'll see some whiting, cow fish and weedy seadragons in amongst the shallow reefs and rock pools. We might even find a fossil or two...

This is me trying to sound positive, by the way.

I've avoided the C-word in my articles as much as possible for the last couple of years – and the illness itself thus far – and under instruction from CX's illustrious editor, Jason Allen, I've been trying to find a good news story to tell of my experiences over the summer. And I thought I had a doozie... but alas.

Myer Music Bowled Over

No sooner have I started getting excited about playing on stage to a big crowd with my good mate Kutcha Edwards on the 26th of January at the Myer Music Bowl (this was going to be my exciting, good news story) it has just been announced that the gig is off; postponed until July (if it happens at all now), thanks to the recent Omicron outbreak. I'm gutted. All that rehearsal thrown on the scrap heap, yet again (I've lost count how many times that's happened). All the planned (and purchased) accommodation is up in smoke, all the organisation around family; kaput. It's quite beyond belief, galling and infuriating, and yet so utterly predictable.

I suspect this will be the first of many such announcements. We're supposed to be playing



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at the Arts Centre in Melbourne a couple of weeks later, WOMAD in March and Port Fairy Folk Festival immediately after that. Will any of these gigs go ahead? I have no idea now, but I very much doubt it. And with the name of the recent Covid variant being so close in name to one of the instruments I'm playing at all these gigs, the aforementioned Omnichord, I may be banned from the stage regardless! "I'm playing Omnichord, you idiots; I don't have Omicron!"

So, here we all are, once again trapped inside some dystopian nightmare, trying our best to plan the year ahead and working wherever possible while the playing field constantly shifts under our feet.

It's hard, really hard, especially after two years of relentless stops, starts, reinventions and cancellations, to face yet another year of uncertainty. All around me friends in the industry, including half the readership of this magazine, are facing cancelled gigs, 'delayed' tours and broken contracts. The general sense of foreboding is growing daily.

You'd have to be Shane Warne to spin a good news story out of all the mayhem 2022 has dished up thus far. Maybe other writers have managed to retain some optimism in different pages of CX; I can't tell from where I'm sitting right now, but I guess I've got to try.

So here goes nothing.

New Skills & Concepts

This is it. The year of the rebuild, the reimagining, the redoubling of effort.

I'm rebuilding my control room at The Mill, with the help of some local carpenters, along with Jason Hawkins (from Sennheiser – who's helping with the acoustics) and Al Smart, who's a wizard with audio design, repair and studio layout. I am privileged to have these latter two individuals offering to contribute their expertise to the project. In truth, I wouldn't even attempt it without them.

At the centre of the room will be the aforementioned K-Series SSL; a 56-channel super analogue console, circa 2004. This will be having its power supply fully restored, and a hot-off-the-press, custom-built, redesigned computer system retrofitted to the board thanks to the friendly folks at Tangerine, in Canada. They're installing their own proprietary version of K-automation to the console that will talk to ProTools and the SSL simultaneously, as well as save a snapshot of the board, a la the original Total Recall system. All this information is apparently saved to the brand spanking custom Tangerine computer, which entirely replaces the old bespoke SSL clunker. This will effectively make the K-Series behave more like an SSL Duality in some respects. The best of both worlds you might say.

Personally, I can't wait for this to happen. At that point, not only will I have a supreme analogue SSL console at my fingertips, I'll also

have a ProTools automation system, which, let's face it, is far more sophisticated than any analogue console ever was, that interacts dynamically with the console itself, rather than having the console sit passively, oblivious to any digital automation that might be occurring inside the computer. This has always been a crude marriage of convenience in the past, mainly because either the dynamic thresholds of all the analogue compressors and gates would go out the window the moment your computer-based automation was ridden up or down, or you had two automation systems running side by side that didn't communicate with one another at all. With the Tangerine system, all the ProTools automation is reflected on the console's moving faders.

Surrounding the console will be a new PC running the latest ProTools software (which I'll be writing about in detail next issue), a collection of old and new outboard gear, most of which I've owned for at least a couple of decades, some two-track tape machines and a crazy collection of instruments. I'll be adding a couple of choice analogue pieces to the setup too: a couple of 1176s, a PYE mono compressor and a Bricasti M7 reverb unit (the sound of which is truly breathtaking) to sit alongside my other main reverbs: a 480L and an AKG BX20.

Wrapping its arms around all this equipment will be a newly designed control room, that will be oriented 90 degrees to the original layout. This will be 'factoring in' Dolby Atmos acoustics, although it's not entirely clear yet whether I'll be diving into that world in 2022, or not. The Atmos format has certainly started making serious inroads into the consumer music market, but like everything else, Covid

hasn't done it any favours, it seems. Right now, I'm hesitant to commit 100% to the format, but I probably need to clarify my position on all that quick smart.

But should the whole world start to fall apart again, which, I sincerely hope it doesn't, I'm going to dive into some new music projects with a couple of locals I know who live within a 10-kilometre radius of the studio, and continue to mix remotely as I've mostly done for the last couple of years.

As an industry, all we can do to survive, and indeed flourish, in 2022 is our very best to innovate and expand our horizons in ways that may not feel entirely comfortable to us at first.

I'm sure if we all work hard to push ourselves (yet again) we may come out the other side of all this mayhem stronger, and embedded into a far larger, more diverse market than we contributed to in decades previous. The most obvious aspect of this is our capacity to reach into the homes of people both here and overseas, rather than assuming they'll be coming to us.

I suspect the main form of transport most people will be using for some time yet will be virtual... followed soon after by electric cars.

2022: the year we innovate our way out of this mess.

Andy Stewart owns and operates The Mill studio in Victoria, a world-class production, mixing and mastering facility. He's happy to respond to any pleas for pro audio help... contact him at: andy@themill.net.au or visit: www.themillstudio.com.au



Andy Stewart



GETTING OFF THE GROG

Here we go again. A new year and a new fear. Have you recovered from NYE jollities? Did you need to? Did you go on a tear or just keep it quiet? Were you even awake for the big moment at 12 or were you already passed out from excess? I ask because I have recovered from alcohol abuse. In our industry, alcohol is freely available and can be a trap for some. It was for me.

What goes up...

The laws of physics suggest that every time you go up, you come down again. In my teens and twenties, I was an indulgent naughty boy and drank too much, a bit too often. When young and fit, the hangovers sucked but were manageable enough to bounce back for another session. And another, and another, until one day I woke up with no recollection of the previous evening beyond leaving the front door. This wasn't the last time that an empty wallet matched with empty memories either. The occasional blackouts became regular, turning into an ongoing pattern over many years.

Fortunately, I'm a happy drunk. By all accounts, I had a brilliant time. But a complete lack of recall seemed pointless, and jovial enquiries to my mates about "what happened?" became embarrassing. Recoveries trended emotional and social as much as physical. I was never formally diagnosed as an alcoholic but had all the symptoms.

After a decade of this madness, one day I just stopped. Not one drop for two years. I made a point of still going out, sticking to water only

and resisting the temptation for 'just one'. It was far from easy but paid off in feeling better physically and better about myself. At the time, it was a necessary evolution.

When I did eventually risk a tippie, I found I didn't 'need' another. That was the big step, being able to take it or leave it.

I'm no wowser since - I can now have a drink or three and stop at that. But, with a few notable exceptions, they are rarely blinders anymore. The trails of unremembered self-destruction are long past, along with mornings of crusty-mouthed, gurgle-gutted, brain-dead horrors.

The mother of all hangovers

I was touring during a lot of that party phase, the craziness adding equal parts fun and complexity to both personal and work life. My signature rockpig tune was "Excess All Areas." At one point, I had whizzed back to Melbourne hometown on a tour leg and was out whooping it up between shows. It was a good friend's birthday and, at midnight, became my birthday. So, we hit it hard. My girlfriend had joined us from interstate and we were the last to be kicked out of the club. It was nearing dawn - no big problem if starting late in the day - but I

had a matinee show to do. This one was being televised and was a big shot for the band and me, both on the rise at the time.

We copped a few hours sleep-of-the-dead until we woke to screaming alarms telling me that I was due at work in 10 minutes. Oh crap! That's a 25-minute trip in a fast car and I didn't even have a slow one. I was doomed. Right then my stomach contents went over the balcony. And again. I rang the TM with the bad news. He was fuming. Rightly so - I'd let our team down badly and done myself no professional favours in the process. And that wasn't the worst of it.

The evil geyser didn't stop and was soon streaming nothing but bile. This continued for many hours. I was obviously very unwell. So, this is what alcohol poisoning is like? My poor girlfriend was nursing a decent hangover herself while trying to contend with me in a delirious state. Meanwhile, sweating and shivering, gut muscles screaming from the endless retching, the realisation that I'd just made a massive professional faux pas set in. Not only had I let the band down, but I had also missed a perfect opportunity to showcase my own talents on the national stage. I don't know if I've ever felt worse.

Further insult to self-inflicted injury

Compounding all of this, I was due to travel with the stage gear that night via road to Brisbane. We were kicking off a national tour with our favourite international act. I could barely make it off the bed to fill the bucket, let alone drive for 15+ hours. When my co-driver turned up, he took one look and said: "You're screwed." He meant my dire physical state, but I also took the message more existentially. I bailed out of the Brisbane leg and two days later made my own way to Sydney for show #2. All the grovelling apologising in the world barely eased the mood of my friends and employers - the very ones I had so underwhelmed. I behaved sheepishly for the rest of the tour and made some peace. But the damage had been done; they no longer trusted me implicitly.

The band had a lull in their schedule to record an album. While they chilled in the studio, I went back off on the road with another act. Freelancer gotta pay the bills. With zero days off when we restarted, I was so frayed at the edges, ego got the better of common sense. This idiot chucked a wobbly with the TM over a trivial matter. I'd completely lost the plot, forgetting my place in the grand scheme. Marching orders came the next day. A month later, the rest of them headed off for a six-month tour of the US without me. Fair enough in hindsight, but it stung like a swarm of hornets at the time.

Some lessons are not learned easy. So it was for me. At first, I blamed everyone else and got even more out of it to compensate for my

losses. But the truth eventually dawned. I had to get my act together, to sober up. Things were barrelling out of control. My character was becoming a caricature. I cannot pin down which bender it was that did it, but I vividly remember the feeling when I realised there were only two options: get real or lose my friends, health, career, and pride on the way to an early grave.

Getting real

Going at it one day, then one week, at a time, was a tough exercise. But every day, I felt better in body. Every day, my mind slowly became clearer. Socialising booze free, a few hard truths about how we humans alter with a drink or two too many were now obvious. Watching the chaotic mayhem get louder, slurrer and sleazier as the nights unfolded was intriguing. That was me just recently, after all. Experiencing that environment in an unaltered state, I learned much more about myself; about what I wanted in life.

I started studying martial arts and found a better buzz than in any bottle. Newfound self-control blossomed there. That helped me to ease up on the other drugs as well, then remember how to read books, chill in the garden, and contemplate my navel. I took up photography again, learning to use the colour palette that I now understood from lighting stages. I kept touring but was selective about being with more mature minded crew. Unfortunately, this often came with MOR acts which, to be honest, bored me witless. The buzz of live music with tunes you love is an easy motivation. Strip the love out and it can become a chore. Which it did, so I moved onwards to enjoy a different work pace.

How this relates to 2022

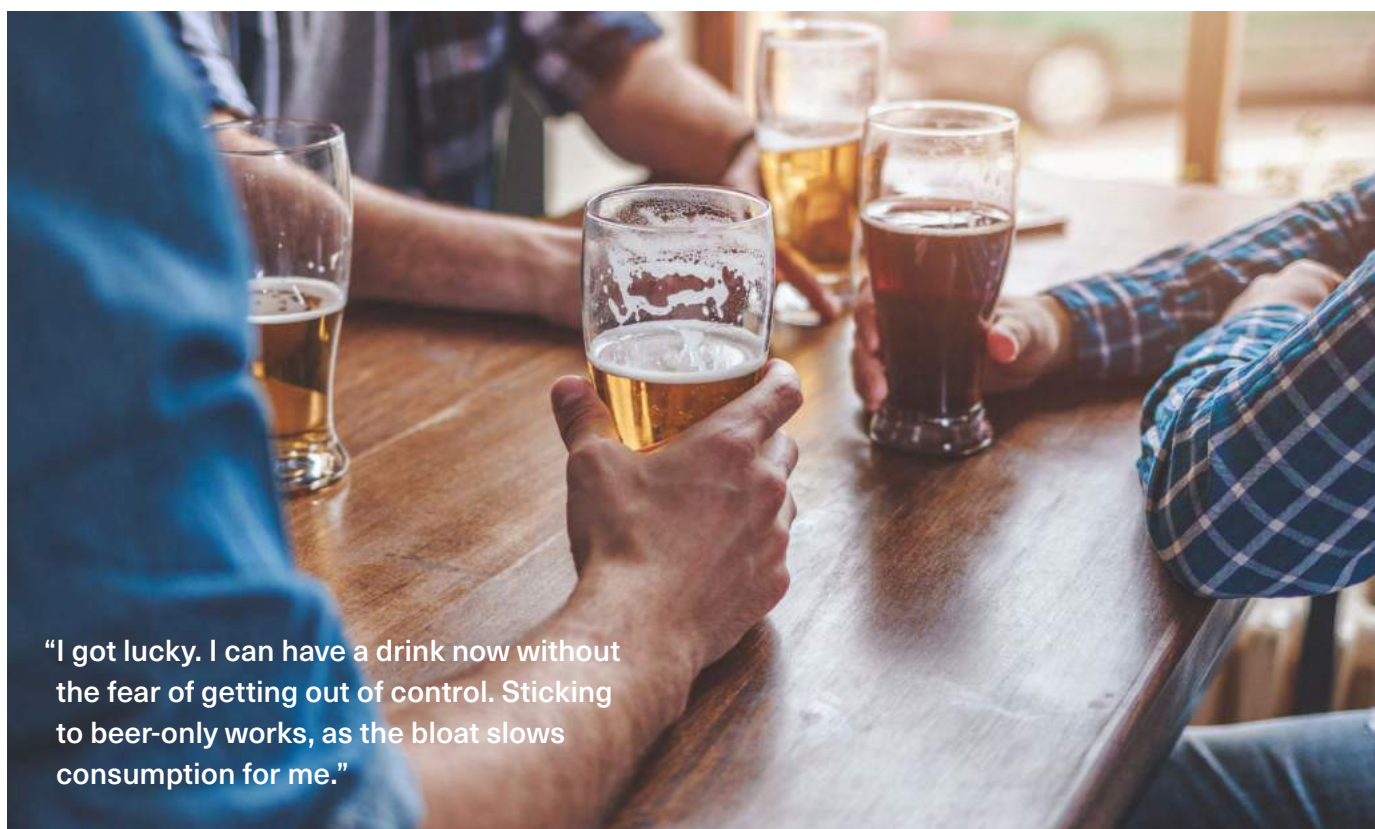
I got lucky. I can have a drink now without the fear of getting out of control. Sticking to beer-only works, as the bloat slows consumption for me. It is often months between drops, and I miss it not a bit in between. The other key is not drinking rubbish. If I am going to have one, it best be enjoyable.

My NYE was very peaceful. Not one dram and certainly no drama. As my dearest slept on the couch next to the pooch, I reminisced about how little I've enjoyed this annual ritual of blotto. I also remembered the many friends that I've lost to drink. One of them I recently wrote off after 25 years of his self-indulgent drunken antics got too much. The others wrote themselves off for ever - mostly way too young - either by misadventure under the influence or with exploded livers or general organ failure. We'll never get the chance to talk again. I miss them all greatly.

If you are facing similar problems with alcohol, please take some time out to see if you can conquer this beast. For it is a nasty one; little good comes of it longer term. Seek whatever help appropriate. And don't be too hard on yourself if you fall off the wagon more than a few times. It's not easy.

In my case, learning to control the demon was more luck than anything. But it shows that it is do-able, and it is worth doing. Good luck to you in your recovery.

Helpful Resources:
<https://www.healthdirect.gov.au/drug-and-alcohol-rehabilitation>



"I got lucky. I can have a drink now without the fear of getting out of control. Sticking to beer-only works, as the bloat slows consumption for me."

FIFTY WAYS TO LOSE YOUR AGENT

Snippets from the archives of a bygone era

My first band gig was with a 17-year-old bass player who refused to wear shoes, and a stand-in drummer who'd drank half a bottle of Jack Daniel's and took a loaded weapon into the venue.

Our performance, which was a fill-in job at a trendy beer garden in Sydney's eastern suburbs, didn't evoke the appreciation we had anticipated. Neither the audience nor the management were impressed even though I had all my Status Quo guitar licks down and the barefooted bass player had additionally removed his shirt in an attempt to thrill the conservative audience.

Ironically, it was our unshod bass player who later attracted a club agency that was in need

of a rock 'n' roll band to do some regional work. I got the feeling that the agent who turned up at our scout hall rehearsal wasn't all that elated. However, he hinted that if we came up with a glossy promo he might be able to get us into some of those club gigs in the bush.

We engaged a professional photographer to do the shoot, and a printing company to do our four-page promo for the agency. How could they resist? We found another drummer and virtually overnight we became a touring band.

It was 1976. This was the year Elvis did his last show at the Las Vegas Hilton, John Lennon won his permanent residency in the US, and Peter Freedman, founder of RØDE microphones, was selling Dynacord and Freedman PA systems out of his father's music shop in Ashfield, NSW. I eventually decided on a Peavey PA-400 six channel with column speakers, and we hired our first lighting rig from Julius Grafton at Barratt Lighting.

This was long before photo IDs and Julius humorously quipped, "Don't forget to bring it back or Luigi break your arm."

The band floundered from gig to gig, all the time landing regional club gigs where we weren't all that well-received and we were continually being asked to turn down the volume. Most clubs at the time seemed to be experiencing an extended hangover from the 60s. If we were forcibly made to play a barn dance we'd do The Rolling Stones' Dead Flowers, but we drew the line at playing club standards like Zorba the Greek, Hava Nagila, and the most hated band song in history Running Bear.

As 1976 was morphing into 1977 we got a \$300 New Year's Eve gig at a Sydney RSL club. As was often the case our music was a bit raw for your average club patron. Our second drummer had departed and on this occasion the fee allowed us to attract a stand-



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in drummer who was much more musically advanced than we were. Midway through the gig the Club Manager announced to us that we were to back the main act.

"I'm guessing you guys don't read sheet music," he said.

This was something house bands did in those days, but we didn't even know there was a main act.

The act was the Frank Crisafi Trio, billed as an international variety trio. "I'll just take bass and drums," said Crisafi. It was a stroke of luck that our stand-in drummer could read charts. Then the bass player chimed in. "I'll do it," he said.

I took the bass player aside explaining to him that he could neither read sheet music nor chord charts, and to drive the message home I pointed out that he could barely name the strings on his bass guitar. "So how are you going to manage this?" I enquired. He came up with the novel idea that I could stand behind the rear stage curtain and shout out the chord progressions. He would then simply play the root note of the chord. What could possibly go wrong?

I set up the Shure 545 and 588 microphones on my Peavey PA for the two singers and one to mic up the grand piano. The act began with the female lead bursting into a rendition of Jezebel. I took my place behind the curtain and began to shout out the chord progressions. We'd only gotten a few bars into the song when

the bass player turned and said, "Mate, you didn't plug a lead into her microphone."

The singer was too far into the song to stop so I had to take the microphone from the piano and hand it to her. "I thought it was one of those new wireless microphones," she whispered. Meanwhile, the band played on with the bass player vamping on one note anxiously awaiting my return.

Returning to my hiding place behind the curtain I continued relaying the chords: "A, D, G, Bm," but the bass player stalled at Eb, crying out, "Where the f*ck's that?" Needless to say, the act wasn't too impressed with the backing.

News kind of filtered back to the agency, which for some reason tolerated us through all the turmoil. Perhaps it was the heavy PR I did, often dropping in and chatting with the girls, or taking them champagne at Christmas. I was forever making excuses for adversities that even extended to mass walkouts by patrons at more than one club.

Late '77 we merged with a metal band adding another guitarist and a drummer who brought with him a kit with multiple rack toms. Our repertoire went from Status Quo and The Kinks to Thin Lizzy, Aerosmith, and Black Sabbath. The grinding onslaught from Marshall amps and speaker stacks combined with the hard-hitting drumming and the bass player's barefooted, bare-chested theatrics got us into even more hot water. Ultimately, the bass player didn't want to do the club gigs anymore and he moved on.

The band often indulged in excessive alcohol consumption and other abusive substances to the detriment of the performances. Those Pink Floyd lyrics, 'And when the band you're in starts playing different tunes,' became a reality for us one evening when we realised the second guitarist was actually playing a different tune to the rest of us. Then there was the time the bottom end completely dropped out because the drummer had left the stage to throw up in the band room toilet.

The guys started objecting to continually being asked to turn down in the agency club gigs. They insisted that I invite our agent down to re-evaluate the band. It was the year that Elvis died, and after our agent witnessed what we'd become it was also the death of our agency gigs. They never booked us again!

In desperation we took a low-paid residency in a western suburbs hotel where patrons would imbibe until they could no longer pronounce the name of their drink. Ultimately we got shafted after one of our roadies got into a scrap with an employee. Things went downhill rather quickly after that. Our last gig was a disaster and we unanimously decided to disband with all of us realising that we had lost our way, and the alcohol and substance abuse didn't sit well in the music mix.

Footnote: Some names, including those of people, venues and other entities have been withheld due to the inevitability of variations in versions of events. After all, it was the 70s.

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