

# CX

INTEGRATION | AUDIO | LIGHTING | VIDEO | STAGING

## NW GROUP AT THE GAMES OF THE XXXII OLYMPIAD

# THE POWER ISSUE

- > POWER PROBLEMS PROBED
- > PEAK PORTABLE POINT SOURCE
- > BACK TO THE FUTURE!
- > POWER TO THE PEOPLE!

### REGULARS

- Andy Stewart's Listen Here
- Tech Talk
- John O'Brien's Backstage
- Brian Coleman: The Gaffa Tapes

### NEWS

- The Winners – AKG C414 Giveaway!
- Lockdown Wind-Down – Now Comes The Reckoning
- Visual Focus upgrades with Harman
- Standardisation for Spatial
- L-Acoustics opens APAC Office
- Sound West - Australia's First Music + Technology Festival

### ROAD TEST

- Bose VB1
- Earthworks FMR500



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# CONTENTS

## NEWS

The AKG C414 Giveaway – The Winners!	4
tm stagetec systems distributes Bolin Technology	5
SOUND WEST – Australia’s first Music + Technology Festival	6
L-Acoustics opens Singapore Office	8
Off to the Races with Absen	10
Lockdown Wind-Down: Now Comes the Reckoning	14
Visual Focus upgrades with Harman	16
Standardisation for Object-Based Audio	18

## NEW GEAR

## FEATURES

San Francisco’s Outside Lands	26
Elation Proteus Hybrid runs non-stop for 17,000 hours!	29
NW Group at the Games of the XXXII Olympiad by Jason Allen	30
Techs On The Beach: Cali Beach Goes Large by Jason Allen	33
GlasGLOws in the Dark by Louise Stickland	50
Ministry of Sound Classical	54

## THE POWER ISSUE

With great power comes great responsibility by Richie Mickan	36
Peak Portable Point Source Power by Jason Allen	39
The Power of Love: d&b goes Back To The Future	41
Power to The People by Jason Allen	44

## REGULARS

Listen Here: Time To Switch On, Off And Over by Andy Stewart	24
Tech Talk: Soundcraft Ui16 Console by Austin Hamilton	46
Backstage: What’s your superpower? by John O’Brien	63
The Gaffa Tapes: Puttin’ On The Glitz by Brian Coleman	65

## ROAD TEST

Bose VB1 by Tristan Herrod	57
Earthworks FMR500 by Mark Patterson	60



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# The AKG C414 Giveaway – The Winners!



Last month, we put out the call on the web and in our weekly CX News email that we were giving away a shiny new AKG C414 XLS (RRP \$2099 inc GST) to the CX reader who could tell us the best story about using a C414 live or in the studio.

An industry legend since 1971, the large diaphragm condenser has been used in thousands of studios and on stages the world over. Revered for its flat frequency response and incredibly handy switchable polar patterns, the C414 loves acoustic instruments and vocals.

We asked: what's the best sound you've ever got out of a C414? What were you recording or amplifying? Who was involved, and what happened?

The runners-up have won a three-year subscription to the print edition of CX Magazine, and the winner is taking home a three-year subscription AND an AKG C414 XLS courtesy of Australian distributor CMI Music & Audio.

## Runners up – each receive a three-year subscription to CX Magazine

“I was recording a progressive band back in the day and they wanted the guitar to sound like it was underwater. When I came back from lunch that day, the boys had put a condom on the 414 and placed it in a (relatively clean) fishbowl in front of the guitar amp. The mic was owned by the singer so I didn't really mind and was curious to hear what it sounded like. It was barely

distinguishable as guitar and unusable by itself, but mixed with a normal mic and after some creative mixing, it did have an interesting underwater sound. The singer recently told me that the mic still smells questionable.” - Locky Beresford

“I was Stevie Nicks sound engineer for over 15 years. The only mic we ever used in all of her home studios was the C414, as it was the one mic she loved. Her voice through that mic was crystal clear and very even sounding through all frequencies. We used it for over 15 years and many of her famous songs were recorded through it. Even when we went into bigger studios, we used the C414 because she loved it so much. It was also very useful that it had other polar patterns, because I recorded all of her back-up singers through it as well, sometimes with three of them on the mic at the same time.” - Lance Krivé

## And the winner is...

“Maybe not the most amazing sound but certainly an interesting application of a AKG C414, if my memory serves me right.

In 1984- 85 I was the sound designer for the opera Doktor Faustus by the Dutch composer Konrad Boehmer. I was the head of the audio and video department of the Dutch Opera in Amsterdam. Initially I only programmed the Oberhein OBX and Yamaha DX7 but there were a few other tricky things in the score and I was asked to create a sound design, a very rare occasion in those days. It was a co-production between Dutch Opera, Paris Opera and the English National Opera and the

production had its' world premiere in the Paris Opera Palais Garnier.

Where it gets interesting, and the C414 gets involved, is that in the underworld there was a punk band, TC Matic, fronted by Arno Hintjes. The percussion backline was very 'post apocalypse' and made up of car rims and a huge fridge. And inside the fridge was the C414 to amplify the bashing of it and slamming the door as part of the score. Hey, it was the 80's!

Initially I had been looking at one of my Neumann U87s, but was a little uncomfortable leaving that in the fridge for the duration of the season. So, I used a C414 to amplify a fridge on the Paris Opera stage.

Interesting side details, the Paris Opera didn't have a sound system at all. It had four small speakers around the stage it used for sound effects but nothing else. I brought in a system with a Tascam desk and Altec 'Voice of the Theatre' stacks. None of the Paris Opera crew spoke English and I had to translate manuals to French because they did not have a clue how to hook-up a PA. I was only there until opening night before they ran the season.

During one of the rehearsals somebody noticed some very fine white dust falling from the Rodin ceiling. It appeared the ceiling didn't like the subs much, and some heavy EQing was required after a tense discussion with the venue.” – Roderick van Gelder

Awesome story Roderick! Your shiny new AKG C414 XLS is in the mail!

# tm stagetec systems distributes Bolin Technology

tm stagetec systems has been announced as an Australian distributor for the new Bolin Technology D Series Dante AV Line. This partnership brings with it a further way for tm stagetec systems to enhance its position as a Dante networking expert and offer superior systems integration to clients in the Australian market.

Bolin Technology designs, manufactures and distributes high performance industrial and professional grade integrated pan, tilt, zoom cameras for use in security and audio-visual industries. With over 15 years of experience, Bolin Technology brings together the latest in high-definition imaging, precision engineered controls and performance driven design to deliver the most durable, intelligent, PTZ video products.

With U.S. headquarters in Brea, California, Bolin has developed the D Series Dante AV Line. The line includes the Bolin D Series Dante AV PTZ camera. The world's first Dante AV hardware enabled pan, tilt, zoom camera. This interfaces video and audio in

a standard 1 Gbps network, and provides uncompromised video quality with extremely low latency and AV synchronisation. The device is fully compatible with existing Dante systems.

tm stagetec systems' aim has always been to bring technology together and this new product range will work to further enhance this. tm stagetec systems is a networking and Dante specialist, and the engineers within the company are experts in the best practices for installing and maintaining Dante audio networks. The addition of a range of devices that can add video into a Dante system is an exciting development for TMS to offer to the Australian market.

Mark Lownds, General Manager at tm stagetec systems, had this to say; "At TMS we are constantly working on our team being Dante networking experts. We are thrilled to announce this partnership with Bolin Technology to distribute their D Series Dante AV Line as this brings the video component to our already extensive knowledge on the audio

side of Dante networking. Adding another high quality, value adding product line into our offering only furthers our aim of integrating technology systems for seamless operation."

For more information on the range of Bolin Technology D Series Dante AV Line products or any tm stagetec systems products or services, please contact tm stagetec systems.

[www.tm-systems.com.au](http://www.tm-systems.com.au)





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# SOUND WEST

## Australia's First Music + Technology Festival

Australia's first major Music + Technology Festival was announced by The Hon. Stuart Ayres, Minister for Tourism and Western Sydney with The Hon. Dr Geoffrey Lee, Minister for Skills and Tertiary Education and one of Australia's most important and ARIA nominated hip hop artists L-FRESH The LION. SOUND WEST will bring together the powerhouses of the Australian music and concert touring industries alongside tech innovation and will take place in the City of Parramatta from March 30 – April 3, 2022.

The five-day landmark festival will feature intimate and large performances from established and emerging artists and a two-day music and technology conference at CommBank Stadium, including sessions, workshops and mentoring from some of Australia's biggest tech brands and music industry leaders.

NEC Ambassador Dylan Alcott OAM, along with Greater Western Sydney talent comprising hip hop star L-FRESH The LION, multi-platinum Grammy nominated producer and composer Khaled Rohaim and digital NFT artist Serwah Attafuah, are amongst the first to be announced in an impressive lineup of presenters and performers for the event.

The Hon. Stuart Ayres, said the landmark event will be a pivotal moment of recognition of the immense talent in the region and technology driven roots being laid down in the "engine room of Sydney."

"This region is going from strength to strength through industry development, investment in research and innovation, and a rich cultural foundation that makes for a dynamic city to live, work, visit and host events," Mr Ayres said.

"SOUND WEST is the first of its kind in Australia and will bring together brilliant minds, industry leaders and music enthusiasts to share ideas, network and enjoy the creativity of home-grown artists."

Minister for Communications, Urban Infrastructure, Cities and the Arts, The Hon Paul Fletcher MP, said:

"I'm pleased that with \$375,000 in support through the Morrison Government's Restart Investment to Sustain and Expand (RISE) Fund, SOUND WEST will shine a light on the talented and culturally diverse musicians of Western Sydney. The RISE Fund is helping to reignite the arts and cultural sector through grants such as these, which continue to unlock job opportunities, stimulate venues and showcase this nation's talent."

### SOUND WEST Technology & Music Conference

The SOUND WEST conference will provide young music enthusiasts, creators, professionals and entrepreneurs within the technology and music industry the opportunity to explore and experience the unique pathways that exist in their fields in 2022. The conference will incorporate keynote addresses, workshops, panels, one on one mentoring sessions, live podcasting and unique interactive activations.

### SOUND WEST Live Music + Events

Additionally, SOUND WEST will come to life through a number of live music experiences running from the 31st March - 3rd April 2022, featuring local, national, and internationally established and emerging artists. The festival will be a mix of stand-alone events, integrating existing live event promoters, live performance venues, festival / tour promoters, music companies, brands and industry bodies who will produce their own events.

Appearing on behalf of SOUND WEST foundation technology partner NEC Australia, Dylan Alcott OAM will discuss his groundbreaking endeavour Ability-Fest,

**SOUND WEST**

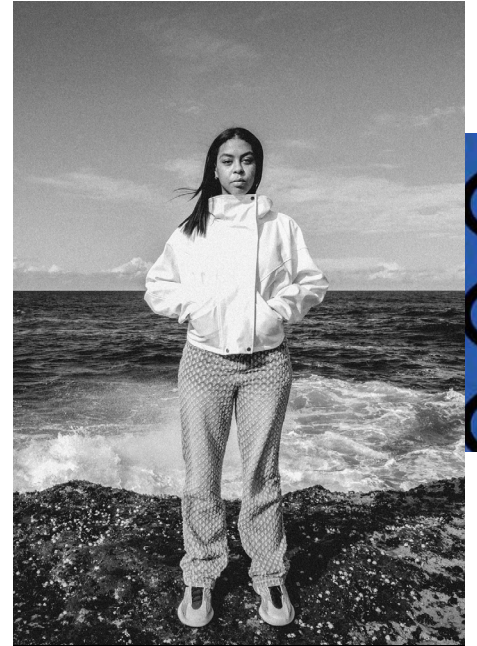
**MUSIC + TECH FESTIVAL**

**30 MAR - 3 APR 2022**

**COMMBANK STADIUM + PARRAMATTA VENUES**



Khaled Rohaim, Producer and SOUND WEST Conference speaker



Serwah Attafuah SOUND WEST Conference speaker



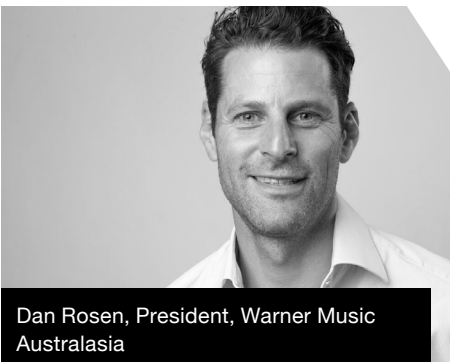
Dean Ormston, CEO APRA AMCOS



SOUND WEST Executive Producer Samuel Jackson



David Borean, NEC Australia Vice President, Brand Customer Experience. SOUND WEST Foundation Partner



Dan Rosen, President, Warner Music Australasia



Amanda Brisot, GM, Western Sydney Business Connection



Lord Mayor Steven Issa, City of Parramatta

the world's most accessible music festival, L-FRESH The LION will collaborate with APRA AMCOS on a variety of Western Sydney songwriter initiatives, producer Khaled Rohaim will talk about his journey producing music from his Western Sydney studio for some of the world's biggest artists including Rihanna, Ty Dolla \$ign and Australia's own The Kid Laroi. Serwah Attafuah, with

her recent notable achievement being her participation in Sotheby's 'Natively Digital': A Curated NFT auction, will be educating audiences about her work in NFTs and its significance in the music industry.

SOUND WEST will feature brands such as NEC Australia, The Edge (ARN), TikTok, Shopify, Warner Music, Universal Music Australia, Live Nation, Rolling Stone, SAE

Creative Media Institute, The Area Movement, Apple Music, ARIA, APRA AMCOS, ACCLAIM and Complex, The Music, Purple Sneakers, The Brag, Information and Cultural Exchange, who will host sessions, workshops and activations.

Expressions of Interest are now open for producers and promoters to hold live music events during SOUND WEST.

From left to right: Chung Wah Khiew, Applications Engineer, Tim Zhou, CEO, David Cooper, Sales Director and Yen Shu Ong, Head of Finance & Accounting at L-Acoustics APAC



# L-Acoustics Opens New Office in Singapore

## Timothy Zhou named CEO of Asia Pacific Region

Demand for high performance in audio is driving healthy growth for L-Acoustics technology across Asia Pacific, with the region rapidly contributing to a third of the world's economic progress. To foster continued expansion, strengthen existing relationships and develop new markets, L-Acoustics has appointed industry veteran Timothy Zhou as CEO of L-Acoustics Asia Pacific and will inaugurate a new regional office in Singapore. In addition to the creation of a new APAC hub, Zhou will also manage a growing team that is dedicated to serving local partners as well as building awareness of the brand's innovative technologies in key vertical markets, including those in residential and architectural applications.

To accompany Zhou in his mission, L-Acoustics has named two key team members to director roles. Alvin Koh has been named Director of Application Projects, APAC, supporting clients and projects across the region while David Cooper takes on the Director of Sales, APAC role and will relocate to Singapore to provide elevated support to clients. The team will nurture existing relationships with L-Acoustics partners while also developing business by creating new partnerships in key vertical and geographical markets. "In the coming years, we aim to serve customers and partners in the region more efficiently," says Zhou. "We want to strengthen ties with our current network

of partners in APAC, with the ultimate goal of becoming a hub that is an ideal base of support."

The new regional office is located just a few kilometres away from Singapore's central business district, close to local partners in the nearby Lavender and Kallang areas, but also centrally located for partners and clients across Southeast Asia, where demand for L-Acoustics products is strong and growing. "We have established markets and seen remarkable brand growth in China, Korea, and Japan. Today, Southeast Asia represents one of the most dynamic regions of the world for L-Acoustics," explains Zhou. "The new office and expanded team will help us meet the demand for L-Acoustics signature range of products, to attain the highest levels of quality for our partners and clients, as well as create unforgettable experiences for audiences."

"Establishing a hub in Singapore is the logical next step in L-Acoustics' growing support and commitment to the APAC region, in line with our philosophy to think globally and act locally," explains Laurent Vaissié, chief executive officer of L-Acoustics. "Our local partners have helped us establish L-Acoustics as the leader in high performance audio, offering rider-friendly local options for global tours, exceptional sound for high profile events and elevated experiences for fixed installation theatres, houses of worship,

theme parks, and live music venues.

"A premium brand can only be sustained by an elite team that supports and represents its values. Hervé (Guillaume, chief executive officer of L-Acoustics Group) and I are confident that the team of Tim, David and Alvin will lead our APAC partners into the future of sound with brio," he concludes.

For over 15 years, Zhou has led marketing and business development teams for professional audio and home entertainment brands in Asia. His priority at L-Acoustics is to build a local hub that reflects the unique culture and origins of the company in this new home. "We want to go beyond the physical product, to show that L-Acoustics sound systems can provide real joy in experiencing music," Zhou states. "Our mission is to represent the brand values to our partners and help them to bring their creative and innovative ideas to life through the art of sound," he continues.

"When visitors and colleagues walk into L-Acoustics Singapore, they will have the same experience as they do when visiting any of our other L-Acoustics homes," Zhou concludes. "There is a unique culture at the company, a natural outcome of a commitment to our scientific origins and to the beauty and shared emotion of art. The greatest success of the new APAC team will be to represent that culture in the region."



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# OFF TO THE RACES WITH ABSEN

**Situated in Sockburn, seven kilometres west of the centre of Christchurch, Riccarton Park is New Zealand's finest full-service racing complex and the country's most versatile events centre. Renowned for its excellence, the racecourse now boasts a state-of-the art Absen LED screen, which delights punters and spectators alike.**

Riccarton Park Racecourse is delighted with its brand new Absen LED screen, the latest of Absen's new A Series, which comprises its A1021 panels, designed for medium to large DOOH installations.

Boasting an ultra-high 10,000-nit brightness and a 10mm pixel pitch, the Absen A1021 provides amazing image quality even in direct sunlight, allowing spectators to clearly see the displayed content, which includes health and safety messages, live race streams,

and results, as well as information about upcoming races and events and event sponsors. The end user originally specified a 7x5m LED screen, but finally opted for a larger screen measuring 9.92x6.08m, made up of 56 LED panels, which creates a bespoke resolution of 992x608. Thanks to the high contrast ratio which delivers diversified and saturated colours with smooth transitions, the series is designed to display a high image quality even in direct sunlight. And at a 15,000Hz+ refresh rate and 16bit grayscale,



advertisers can be assured that vivid, eye-catching images are guaranteed.

Absen's A series is not only fan-less (thus reducing power consumption by 40% compared with previous models), but it is also extremely light, weighing only 25kg per sqm. This undoubtedly helped with the installation, which was expertly carried out by advertising agency and Absen's local PVAP partner VAST (VAST Billboards Limited). The Absen LED screen comes with a five-year warranty, bringing peace-of-mind to the end user.

Thanks to its IP65/IP54 rating, the front and rear serviceable LED screen is able to withstand harsh weather conditions, including rain and extreme temperatures from -40 to +50 degrees Celsius. It can also withstand the huge amounts of dust produced at the races.

Perfect for installation within any DOOH space, whether for a stadium, the roadside, or attached to buildings, the new A Series promises to draw the eye of anyone near or far.

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TUESDAY 16 AUGUST

AUCKLAND  
THURSDAY 18 AUGUST

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PRESENTS



# LOCKDOWN WIND-DOWN

Now comes the reckoning. By Julius Grafton

**The shopping list of problems faced by the thousands of small businesses and suppliers to events and entertainment has one thing at the top of the list: liquidity. For those still standing and preparing to reopen, deferred loans, leases, and staff entitlements are a potential time bomb.**

Last month, representatives of the Business Events Council of Australia (BECA) had a conversation focused on BECA's three key priorities of business survival. These are retention of specialist industry skills, risk mitigation and confidence. Recovery needs to stimulate demand.

Deputy Chair Geoff Donaghy stated, "Given the significant lead time required for the national restart of the business events industry, many parts of our critical supply chain will be faced with the challenge of surviving without functional revenue, noting that any deposits received for future activity must be securely held until services are delivered. These businesses will continue to run at a loss for another six months or more."

My events company is one of them. Our solution was to downsize the family home. Fortunately, the property market in Australia defied gravity and boomed through the pandemic, exactly the reverse of predictions. And BECA nailed the problems; now we can't

touch event revenues until after the event. Prior we would pay wages as we collected deposits, relying on the insurance we held.

Insurance is a major issue facing promoters, producers, and event organisers as we can't buy insurance that pays costs if a government shuts down a city. We have NINE Governments, which all do their own thing. While lockdowns look less likely (once W.A. opens), they can't be ruled out. Other countries have recognised the problem and underwritten insurance packages.

The Federal Government appears oblivious to the events and entertainment industries, evidenced by lack of response to submissions from BECA who have only managed to meet with opposition shadow ministers, who can say anything because they have no power.

A partial reason for the finger flip from the feds is that they don't measure our industry in the Census or against tax revenue. There is no industry code for what we do (ask your accountant) so we are not on any radar.

Individual businesses I have spoken with list the issues they face. Staff entitlements is a big one. These are not reported on balance sheets and become a blind-sider if business goes bad. There are many employers in our sector who have not, or cannot, pay accrued holiday or long service leave. They certainly can't pay retrenchment packages either.

Deferred loans and leases simply become more expensive as interest is capitalised, at a time we can least afford extra expense. There is a lot of money owed to equipment distributors, many of whom have simply stood back to wait and see what happens next.

Now we are 'open', Government assistance is stopping, and as BECA tell it, the valley between now and earning money is about six months deep.

I've traded through the 1970s recession, and the one we had to have in 1989, The Gulf War, 9/11, and the GFC. All of them spanned my business, but none of them come anywhere near the complete absence of turnover since March 2020. There is a reckoning a'happening, and like a very thick rubber band, you can only stretch so far.

The final and by no means small problem flagged by BECA is retention of specialist industry skills. I can already see this as a problem as I am suddenly in demand as a live audio engineer at age 64, which before Covid was unimaginable. Fortunately for me, I have managed to transition and cope, earning \$40 an hour mixing sound.

Strap in, this will be a hell of a ride.

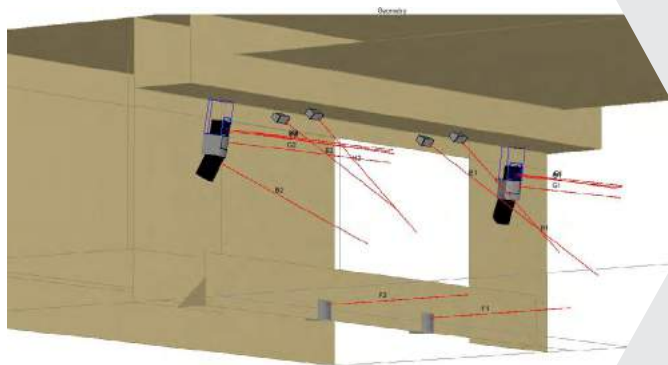
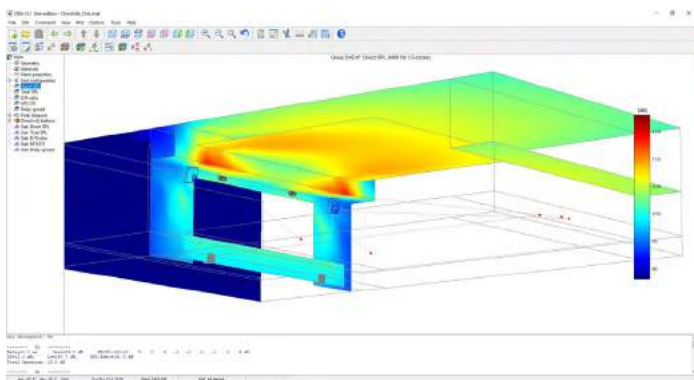


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20 **novatech**



# Visual Focus upgrades with Harman

**Chinchilla is a rural town situated 300kms from Brisbane within the Western Downs Regional Council area of Queensland. With a population close to 7,000 people, Chinchilla is an important agricultural and forestry hub for the region.**

The Chinchilla Cultural Centre provides a fully air-conditioned multipurpose venue catering for all event styles with the Soldiers Memorial Auditorium seating up to 550 in theatre mode and 350 in banquet mode for corporate events and gala balls. The in-house sound and lighting capabilities make the Soldiers Memorial Auditorium the ideal regional venue for anything from a corporate conference to a full touring stage production.

With the increased technical requirements of modern productions, an audio system upgrade was needed to meet the current

standards expected by touring companies.

Visual Focus of Toowoomba was engaged to design and install a state-of-the-art solution to meet the technical requirements and budget of venue landlord, the Western Downs Regional Council. Part of the technical challenge with older building structures is a lack of suspension points for loudspeakers, so careful attention was needed in product selection and system design.

Visual Focus selected a JBL Application Engineering 7000 series loudspeaker package for the main system. The stadium grade

AM7315-95 three-way system with Differential Drive technology delivers full-range, high SPL with very controlled dispersion due to the large Progressive Transition Waveguide for the mid and high frequencies. Custom suspension bracketry was designed to support the AM7315-95 loudspeakers. Matching Differential Drive AM7115 subwoofers were installed into custom designed cabinets under the stage lip to create a high impact, concert grade package.

To cover the front rows of seats in theatre mode and dance floor when in banquet mode, JBL AC18-26 loudspeakers from the Application Engineering Compact series were selected and installed on the proscenium arch. The rotatable Progressive Transition Waveguide and very wide 120-degree horizontal dispersion make the AC18-26 ideally suited for stage fill or under balcony fill applications.

Due to the long cable run, high-power amplifiers were needed to offset loss over distance. Crown XLi amplifiers were selected to cover this requirement and meet the power

needs of the JBL AE loudspeaker system package. Delivering over 1300 Watts per channel, these amplifiers are up to the task, providing all the power required for the system as well as easy maintenance.

For overall system control, the BSS Soundweb London family of products were installed. With 12 inputs and 8 outputs, the BLU-100 gives complete control over various aspects of the system covering all required loudspeaker processing and room equalisation as well as full system control and monitoring.

The audio package design allows the end user to select from many different pre-sets to suit the venues various presentation modes. Combined with a BSS BLU-DA, the BLU link audio pathway is Dante enabled to future-proof the digital system.

Prior to the installation, acoustic modelling was produced using HARMAN's Digital Directivity Analysis Software package. This modelling process gave an understanding of the venue acoustics and allowed loudspeaker systems to be compared virtually. It informed ideal placement of subwoofers for maximum coverage ensuring the plan offered the best acoustic outcome for the venue.

Ralph Atkinson, Managing Director of Visual Focus reflects on the project...

"The client's brief was to provide a versatile sound system that would suit the variety of regional arts touring groups, local dance and schools' performances as well as corporate presentations and functions."

"Limitations of existing rigging locations and weight loading was a significant factor in our speaker selection. Using the Digital Directivity Analysis modelling, we were able to try a few different configurations to find the best system coverage with pattern control, whilst utilising the existing left-right speaker mounting locations. Having used JBL AE series on previous jobs, I was confident it would provide the best outcome and deliver on what the client was looking to achieve."

"To meet Council requirements, it was important to provide the flexibility of a professional digital sound desk for touring groups and local theatre hirers. It also required an interface for simplified control to allow small events and functions to use a couple of radio microphones and audio from video sources. This bespoke programmed interface has been integrated to deliver a simple-to-use AV control system for the venue video, audio, and lighting."

"The BSS Soundweb with the Dante bridge provided a very cost effective yet powerful DSP that integrated well with the audio-visual control system. The Soundweb gives us enough inputs for signals to be processed directly within the Soundweb using a side stage touch screen interface for corporate functions or, alternatively, send signals out via Dante to the digital sound desk in the Bio Box."

"Visual Focus has experience using BSS Soundweb over many years and across many diverse AV projects. We have found them to be extremely reliable. When installing systems in regional cities over two hours round trip away, it is extremely important to install systems that are reliable. While product warranty is important, if the system fails at a critical time, the client's confidence in their audio-visual system is impacted and our company's reputation takes a hit. Whilst Visual Focus has a dial in support capability so our technicians can get users back up and running quickly, a hardware failure could mean lengthy travel times for equipment replacement. It is super important to Visual Focus to recommend and install proven reliable products and systems."

#### Products Used

JBL Application Engineering AM7315-95  
 JBL Application Engineering AM7115  
 JBL Application Engineering Compact AC18-26  
 Crown XLi3500  
 Crown XLi2500  
 BSS BLU-100  
 BSS BLU-DA

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# FLUX:: and L-Acoustics Lead ADM-OSC Standardisation for Object-Based Audio

With today's entertainment consumer hungry for rich, immersive experiences, immersive audio continues to become a viable and sought-after element in various production workflows. However, the prevalence of so many platforms and proprietary communication languages has been a stumbling block to widespread adoption of spatial audio, and a challenge to interoperability amongst production tools. Indeed, to quote an old tech industry joke, the nice thing about standards is that there are so many of them.

Now FLUX:: Immersive, L-Acoustics, Radio France, and other major industry manufacturers have joined in an initiative to standardise Open Sound Control as a streaming protocol for interoperability among immersive audio systems.

The ITU BS.2076-2 Audio Definition Model (ADM) is a solution for the archiving and interoperability of immersive audio productions. ADM-OSC provides an implementation that follows the ITU standard, allowing the ability to stream positioning information of audio objects in real-time using the Open Sound Control protocol.

Led by use cases from Radio-France, FLUX:: Immersive and L-Acoustics have joined forces to initiate a common language to ease system integration within the production process.

"Since 2018, Radio France has been experimenting with object-oriented audio productions of electronic music concerts," explains Hervé Déjardin, audio innovation project manager at Radio-France. "These trials have highlighted the need for a common protocol between the different elements of the chain. The objective is to be able to address the metadata streams to different rendering engines without using translators."

ADM-OSC offers a universal communication language among object-based audio software for live and post-production. A technical workgroup with industry peers has been created to advance on this proposal and collaborate on the parameters. This workgroup has received the support of multiple manufacturers and the ADM-OSC language is currently implemented in some audio software.

As Hugo Larin, FLUX:: Immersive Business Director, explains, "Few things are more of a roadblock than trying to build an integrated workflow that incorporates multiple manufacturers and getting stuck in a proprietary communication portal. We felt there was a need to adopt a common communication, a common grammar, between industry peers." With this in mind, FLUX:: Immersive has added ADM-OSC as a supported input or output OSC communication option within its SPAT

Revolution platform.

"We clearly hear in the field the challenges of integrating multiple object editors and/or renderers delivering for various stream formats in a production," Larin observes. "Allowing for the selected tools of choice to interoperate in the environment of the day or at different stages of a project is one of the things that this audio object language can brilliantly achieve."

Guillaume Le Nost, L-Acoustics Executive Director, Creative Technologies adds: "As an industry, we need to nail down the immersive workflow to enable the next generation of productions. I am really glad to see that many pro audio manufacturers have reacted positively to our initiative, from Digital Audio Workstations to Broadcast systems. I am really looking forward to providing a super strong ecosystem, where users can easily use several audio renderers at the same time, or easily move into post-production with ADM files at the centre of their workflow. It is still early days for ADM-OSC, but users and manufacturers can already try an initial ADM-OSC implementation in our L-ISA Controller software."

A GitHub repository with specifications and a testing tool can be found at: <https://github.com/immersive-audio-live/ADM-OSC>

# NEW GEAR



## Bolin Technology D Series Dante AV PTZ

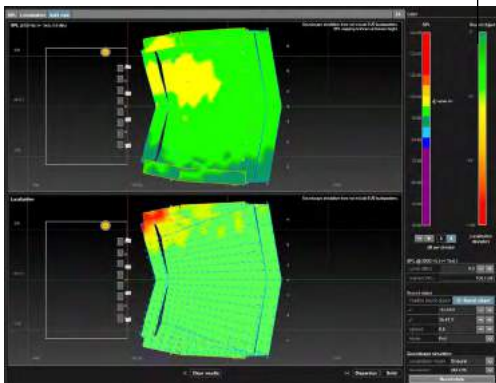
The Bolin D Series Dante AV PTZ camera D412/D220 is the world's first Dante AV hardware enabled pan, tilt, zoom camera interfacing video and audio in a standard 1 Gbps network, providing uncompromised video quality with extreme low latency and AV synchronization. The D Series Dante AV camera provides high quality colour image up to 4K60 / Full HD. Designed to seamlessly integrate into an existing Dante audio ecosystem, the D412/D220 PTZ is managed using the Dante Controller Software with the flexibility to independently route audio and video with sub-microsecond accuracy to minimise time alignment issues.

**Australia: tm stagetec**  
**tm-systems.com.au or (02) 8011 0500**  
**New Zealand: tm stagetec**  
**tm-systems.com.au or (09) 887 0381**

## d&b audiotechnik En-Scene Simulation Tool

d&b audiotechnik have added Soundscape Simulation, SPL and localisation mapping within an object based workflow to their ArrayCalc simulation software. This new intuitive visualization tool accurately models a Soundscape system's real and perceived acoustic performance within a space. The En-Scene simulation tool enables d&b users to evaluate how the spatialisation created with a Soundscape system will be experienced by the audience, enabling them to optimise the system design early in the planning phase of a production. The En-Scene simulator also demonstrates Soundscape's ability to improve the overall production and listening experience through object-based processing.

**Australia: NAS <https://nas.solutions> or (03) 8756 2600**  
**New Zealand: NAS <https://nz.nas.solutions> or (09) 414 4220**



## Absen Clear Cobalt Series

Absen's Clear Cobalt Series (CL Series) supports 2K/4K/8K for higher HD display requirements, producing stunning visuals for control rooms, corporate lobbies, TV studios, large conference rooms, and luxury living. CL Series also incorporates flip chip technology that increases power efficiency and reduces heat generation. Available pixel pitch ranges from 0.9mm - 1.2mm, brightness is up to 1200 nits, and Absen's black coating and calibration technology create a deep black, non-reflective surface.

**Australia and New Zealand:**  
**Audio Visual Distributors**  
**[www.avdistributors.com.au](http://www.avdistributors.com.au)**  
**or +61 (0) 7 5561 7530**



## Event Lighting Festoon

The FES10 is a 10-metre black festoon string featuring 10 bulbs with 0.9m spacing, E27 Base and an IP44 rating. Bulbs are available in both traditional filament types (7W) or LED (2W) with plastic exterior and are sold separately. Spacing from ends to first and last bulb is 0.5m. With a 6 amp rating, one power cable can run up to 720m using LED festoon globes, or 200m using the filament globes. Festoon extensions are also available in 10m lengths, allowing distance between power and the lights. The Festoon is also available in white (FES10WH).

**Australia and New Zealand:**  
**Eventec [www.eventec.com.au](http://www.eventec.com.au)**  
**or +61 (0) 2 9897 3077**

## Event Lighting LED Flex Tape

Eventec now offers professional quality LED flex tape featuring COB LEDs, available in either RGB or CW/WW. Sold in 5 metre rolls, Eventec's flex tape is IP67 rated with LED spacing of 2.5mm. The tape is cuttable every 25mm and comes with double sided tape for easy affixing to any surface. Power supplies are available in 100w and 150w, as well as 400w for installation jobs. There are RF remote controllers for both tapes, as well as a DMX controller for installations.

**Australia and New Zealand:**  
**Eventec [www.eventec.com.au](http://www.eventec.com.au)**  
**or +61 (0) 2 9897 3077**



## Hytera H Series

Hytera's next generation H Series of DMR terminals are designed to meet the increasingly complex and demanding communication challenges facing a number of industries including events, production, broadcast, and theatre. The newly developed hardware platform and software architecture delivers improved radio performance and optimises the user experience to provide more intuitive, practical, and easy to operate functionality. This allows users to focus on the task in hand and provide better, safer and more efficient outcomes for the organisations and communities they serve.

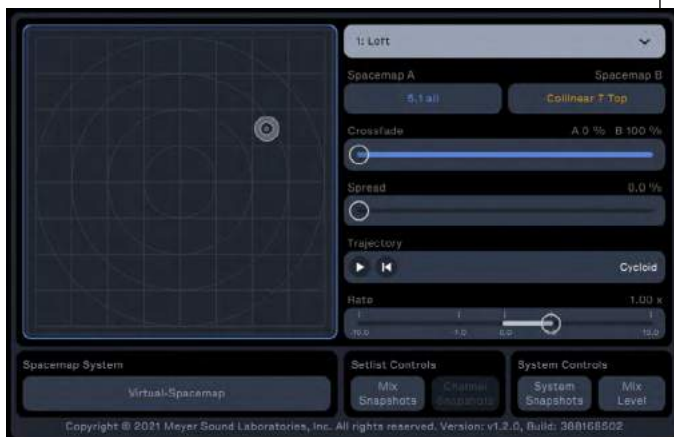
**Australia: D2N Technology Solutions [www.d2n.com.au](http://www.d2n.com.au) or (02) 9837 6748**



## Meyer Sound Spacemap Go Plugin for Avid

Meyer Sound has announced a new Spacemap Go plugin for the VENUE 7 software platform and the Pro Tools digital audio workstation. Available immediately, the free AAX plugin enables users of Avid VENUE | S6L systems to directly access functions of the Spacemap Go spatial sound design and live mixing tool from the console's built-in touchscreen and control surface. In addition, the new plugin allows integration of Spacemap Go snapshots into the VENUE master show file to create virtual loudspeaker layouts and automate dynamic panning within the immersive sound field. Also, the parallel introduction of a plugin for Pro Tools, the de facto industry standard for digital audio workstations, allows creation of audio projects incorporating Spacemap Go functions.

**Australia and New Zealand: Meyer Sound [meyersound.com](http://meyersound.com)**



# NEW



## Symetrix xIO Bluetooth RCA-3.5

The xIO Bluetooth RCA-3.5 is the latest fully integrated member of the Symetrix xIO family of Dante endpoints, allowing complete configuration, including Dante routing, from within Symetrix Composer software. 3.5mm and gold-plated RCA connectors provide stereo analog audio IO for convenient connections of user-supplied devices. The Bluetooth can be configured to allow media-only connectivity, phone bridge connectivity, or both, while the analog IO can be configured to use the RCA, 3.5mm, or various mono-sum combinations.

**Australia and New Zealand: PAVT [www.pavt.com.au](http://www.pavt.com.au) or +61 (0)3 9264 8000**

## Redback CF2138

Redback audio have released a new model of their popular One-Shot 8" ceiling-mount, fire-approved speakers. The CF2138 is a 15W 100V line speaker utilising a coaxial 2-way drive with power taps up to 15 Watts for BGM, PA, and announcement applications. The design uses Redback's patented One-Shot mounting for a neat sag and vibration-free finish every time in all types of ceiling tile. The One-Shot design is a real time saver for installers, eliminating the need for screws and fasteners. The CF2138 will be available early 2022.

**Australia and New Zealand: Altronics [www.altronics.com.au](http://www.altronics.com.au) or +61 (0) 8 9428 2122**

## Highlite Showtec Polar 300 Hybrid

The Showtec Polar 300 Hybrid is a powerful and fully featured 300W LED hybrid moving head that can easily change from a highly focussed 3° beam to a wide 30° spot or wash. It is IP65 rated, suitable for indoor and outdoor applications. Equipped with a frost filter, dimmer, strobe, and 5-facet speed adjustable circular prism, the Polar 300 Hybrid can create a wide range of vibrant effects. All features and effects can be controlled via DMX512, Art-net, RDM, sACN, and W-DMX.

**Australia: Clearlight Shows [www.clearlight.com.au](http://www.clearlight.com.au) (03) 9553 1688  
New Zealand: Kenderdine Electrical [kelpis.co.nz](http://kelpis.co.nz) or (09) 302 4100**





### JBL EON700 Series

The EON700 Series leverages the latest acoustic science, transducer designs, cabinet materials and advanced DSP and control technologies to deliver a fully professional, highly flexible, easy to use, portable system. With four models available, including the 10-inch EON710, the 12-inch EON712, the 15-inch EON715, and the 18-inch EON718S subwoofer, the series is powered by 1,300 (loudspeakers) or 1,500 (subwoofer) Watts of Class D amplification. EON700's DSP package provides comprehensive control over EQ, limiters, delay, dbx Automatic Feedback Suppression, ducking and other speaker functions. Access settings on-speaker using an integrated backlit LCD screen, or from anywhere in the venue using the JBL Pro Connect App. Built-in Bluetooth 5.0 audio streaming (full-range speakers) and control take advantage of the newest protocol's security features, low latency, broad range and improved audio fidelity.

**Australia:** CMI Audio [www.cmi.com.au](http://www.cmi.com.au)  
or (03) 9315 2244

**New Zealand:** JPRO [www.jpro.co.nz](http://www.jpro.co.nz)  
or (09) 275 8710

# GEAR

### QSC Q-SYS Video & Control Products

QSC has added NC Series network conference cameras and TSC Series Gen 3 network touch screen controllers to the Q-SYS Platform. Native to the Q-SYS OS, these scalable products seamlessly integrate with any Q-SYS system to meet the unique needs of any modern, high-value collaboration space.

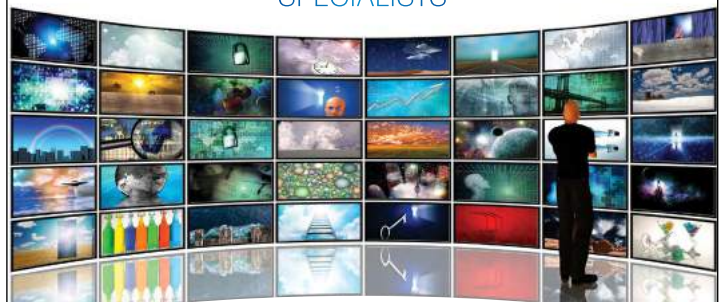
The new NC Series includes three models. The Q-SYS NC-110 is the first fixed-lens, ePTZ camera available for Q-SYS, featuring a 110° horizontal field-of-view (hFOV) with digital zoom capabilities for smaller, wider rooms. The new Q-SYS NC-12x80 (12x optical zoom, 80° horizontal FOV) and Q-SYS NC-20x60 (20x optical zoom, 60° horizontal FOV) both offer motorized pan, tilt, and zoom (PTZ) functionality to enable a broader range of room layouts, sizes and purpose.

The Q-SYS TSC Series Gen 3 is available in three sizes, TSC-50-G3 (5-inch), TSC-70-G3 (7-inch) and TSC-101-G3 (10.1-inch), featuring increased resolution with significantly improved screen transitions, integrated ambient light sensors for brightness, and a sleek new design. In addition, the 7-inch and 10-inch offer customizable RGB LED status to indicate call/mute status, room-in-use, etc. as well as proximity sensors that wake the screens on approach.

**Australia:** TAG [www.tag.com.au](http://www.tag.com.au) or (02) 9519 0900  
**New Zealand:** NSL [www.nsl.co.nz](http://www.nsl.co.nz) or (09) 913 6212



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### SRS Power TD Series 72 Way PDU

The SRS Power TD Series 72 way touring rack comes fully loaded with everything you will need to power even the most complex lighting systems. From the intuitive integrated safety features that allow the user to customise what features they want to use depending on the venue or power source, through to the easy-to-use and solidly built touring frame and quality Siemens RCBOs, the TD Series will keep your fixtures powered and working. TD Series racks also come in 48, 36 and 24 way models.



### SRS Power Pro 6 PDU

The SRS Power Pro 6 PDU is equipped with Powerlock inputs and thru connectors, 6x 32A Wilco outlets and 4x 10A Auxilliary outputs. Additional safety features include PFPN neutral fault detection, Siemens breakers, user configurable mains RCD protections, RCD isolation, and full monitoring of amperage and voltage, all of which are accessible by FTP remote access.

**Australia and New Zealand:**  
Showtools [www.showtools.com.au](http://www.showtools.com.au)  
or +61 (0) 2 4646 1199



### SurgeX SQUID

To meet the unique needs of small meeting rooms and huddle spaces, as well as digital signage and video applications, the SurgeX SQUID power management system from Ametek is packed with an array of power quality tentacles. The SQUID provides completely contained, boxed network control and AC/DC protection in a compact design. Combining AC and DC outlets with advanced surge protection, power conditioning, power management and analytical software, the SurgeX SQUID creates a complete and intelligent power base that can be set up quickly.

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

# NEW GEAR

### SSL Live L450 & L650

In line with the latest advancements in immersive and object-based mixing for live sound, Solid State Logic will begin rolling out its new SSL Live L450 & L650 consoles, focused on providing production solutions for the next generation of touring, events, houses of worship and installed sound. The new L450 console sits above the more compact L350 in terms of processing power, while the L650 is the most powerful SSL Live console to date. The new L450 and L650 consoles will offer the same superior sonic performance and outstanding operator experience that is found within the entire range of SSL Live consoles.

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



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# Time To Switch On, Off And Over

by Andy Stewart

**Has anyone in the audio industry ever stopped to consider where their power comes from? I'm sure many of us in audio have a far better general understanding of power delivery than the average Joe on the street, but I'm not sure we're any better at using it more wisely, let alone generating it ourselves. Should that change?**

When I look out the window of my studio on days like today when the sun is shining and the wind howling, renewable energy seems almost limitless. The Southern Ocean is a true powerhouse; a force to be reckoned with, of inexhaustible wind energy that very few of us manage to harness directly.

Indeed, Mother Nature provides too much of it sometimes, for free no less (though not always with a smile). The other day she took out a mature cypress tree right outside my studio door, which thankfully fell away from the building rather than towards it. If it had fallen on the studio's roof, I hate to think how much the disaster would have set me back in time and lost income.

## Blowin' In The Wind

It got me thinking... how much power (if I could convert it into kilowatt hours) was required to knock that tree over, and if I could add that figure to my next electricity bill, how much would I have been charged in dollars and cents? Moreover, given that the tree acquiesced to a single gust in about ten seconds flat, how much power (again, measured in kilowatt hours) swept through here that night?

And more importantly, why aren't I capturing some of that power to help mitigate, or otherwise eliminate, my extortionate electricity bill, which is only set to grow in 2022 with the installation of my new 56-channel K-Series SSL console?

So, I made some enquires.

What I gleaned was that domestic wind turbines remain far more costly than solar panels, both in terms of an up-front

investment and ongoing maintenance costs. I also learned, somewhat disturbingly, from a neighbour that a blade had recently flown off one of their turbines in a storm, sliced clean through the roof of their house, and lodged like a giant dagger half in and out of their lounge room ceiling! Yikes...

I think wind will remain unharnessed up here, for now at least.

Giant flying daggers aside, I still plan to generate more power by 2022 onwards than my studio, The Mill, requires. If wind remains too costly and difficult still to harness, more solar panels are the only other option – a new 13-kilowatt system has already been discussed with my local supplier to augment the 4.5-kilowatt system I currently have on the roof of our house.

Given how much utility companies charge for peak power these days, it's fair to say that the more money my business can make (or at least not spend) by harnessing the sun's rays that shine directly on the studio's roof, the more economically viable I will remain over time. Think of it this way... imagine the sun's rays were dollar coins. Would you harvest them then?

I learnt years ago that a passive solar system could be viewed more accurately as a passive income for my business. It ticks over year in year out, and once the initial investment is paid for, it's effectively a form of untaxable income for my bottom line. Based on my rate of electricity consumption back in 2008, I calculated that a 4.5KW system would pay for itself in about 18 months to two years. In 2021 this has meant that the system has now paid for itself about six times over (not including

inflation). By my calculation, that's about 35 grand... for doing zip.

It's 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 – most likely solar power – is frankly, missing out financially.

Not only that, but it's also vastly better for the environment.

## 2022 Hindsight

This year (and last) was a time for forced reflection for many of us about who we are, how we live, and how we managed to park ourselves at the nexus between Global Warming and Covid-19, both of which directly threaten our livelihoods (at best) and our very lives (at worst). We've all been through the wringer to some degree or other in the last two years; coming out the other side it would be a great pity if we squandered the wisdom this involuntary sabbatical has provided us.

Planet Earth has given us a wake-up call – on that I think we can all probably agree. For my part I've come to realise that I've done nowhere near enough to mitigate Global Warming and preserve the planet for future generations. That must change immediately.

I still pay a power company to burn coal 100 miles to the East on my behalf. I drive a twin-cab diesel ute that uses a different type of fossil fuel to the household (but which is every bit as destructive to the atmosphere) and my family consumes enough plastic to build a small island in the Pacific. We recycle it as much as possible, but where does it end up? If I'm honest I have no idea.

And I consider myself a bit of a leftie...

The point I'm trying to make here is that although the solar system I've had on my roof here at The Mill has helped pay the bills and save me money over time, more insidiously, it has subconsciously convinced me that I've been doing my bit for the planet, when in truth I haven't been doing nearly enough.





significant financial outlay at first, but I can't in all conscience have a picture in a magazine of me sitting in front of a power-hungry recording console ever again if I can't at least say that it's powered by the sun (and the moon in the evenings until I can install a battery system).

I'm probably going to have to sell a few things to pay for it, unfortunately. First cab off the rank will be my pristine Yamaha CS-60 synthesiser (sorry Jason), followed by my Neve 5014 console, and a couple of other valuable pieces of outboard gear, including a Fairchild 600. Oh well, I can't have everything. I have too much already...

I still like the idea of harnessing the power of the wind down here too, but not if it comes at the cost of a 10-foot dagger through the studio roof when I least expect it.

What is your business doing about its power in 2022? I'd love to hear from you about any plans you might have.

'til then.



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](mailto:andy@themill.net.au) or visit: [www.themillstudio.com.au](http://www.themillstudio.com.au)

A 4.5KW system barely supplies my greedy house and studio setup with one third of the electricity it requires, nor can it supply any at all once the sun goes down!

And with the arrival of my 2004-manufactured K Series SSL console, which is infamous for its power consumption specs, that percentage is about to drop like a rock! It's hard to pin down specifically what the SSL's consumption figure will precisely be until I run it for a few months, but you know you're in for a fright on your next power bill when, in the interim, you've had to install a new 40 Amp circuit just to run one item in the studio.

It's as if my brain is somehow incapable of maintaining the causal link between my personal actions and the wider problems we collectively face. If I'm typical of this disconnect, which is like a form of environmental disobedience in some respects, then we're collectively in real trouble.

My neighbour recently joked that when I turn on the new console it will dim the lights in the town down the road. It was funny at the time, but now I can see how crazy running a giant analogue console is, particularly if I choose to

do nothing to offset my consumption.

The bottom line is this – I must.

It's high time I accepted that what I do personally ultimately affects the whole planet. It's no longer good enough for me to argue that what I do individually can't hope to influence the outcome of Global Warming either way in a sea of nine billion. That's rubbish – always was.

By that same logic, why would I vote, or bother fighting any more fires in the summer? Why would any of us bother recycling or driving more fuel-efficient cars? Frankly, why would anyone bother doing anything for the greater good? Because if we all contribute something to turn the tide, we succeed.

For my part in this crazy point in history, I'm committed to changing what I drive, I'm adding 13KW's of solar panels to the roof of the studio and making every effort from now on to use only as much power as I generate on the property. The new system will be made up of about thirty-three 390W panels, and the system will have a 5KW export ceiling for supplying excess power back into the grid.

It's going to be hard to pull off, and a

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# SAN FRANCISCO'S OUTSIDE LANDS

Meyer Sound Supports Festival for Thirteenth Year

Photo Credit: Steve Jennings

## The Outside Lands Music and Arts Festival, San Francisco's premier music event now in its 13th year, returned to Golden Gate Park for a special Halloween weekend edition.

For three days, more than 74,000 concertgoers flooded into the park's vast lawns to experience sets by headliners The Strokes, Lizzo, and Tame Impala, along with more than 80 additional acts performing on four stages and in two tents.

Since the event's inception, festival producer Another Planet Entertainment, Bay Area rental company UltraSound, and Meyer Sound have worked in close collaboration to provide a world-class audio experience.

### Meyer Sound LEO Powers Main Stage

Since the inaugural festival in 2008, Meyer Sound systems have supported the annual festival's main stage, with strategic system designs meeting the duelling goals of providing clear, consistent sound and keeping the sound contained within the sprawling urban park, which is surrounded on three sides by residential neighbourhoods.

"In 2019 we did a system redesign, which really helped out with noise mitigation, which is something each year that we really work hard on to try and improve upon," says

Josh Osmond, Director of Operations at UltraSound. "This year we did a repeat of the same design, which includes a combination of LEO and LYON main hangs left and right and LYON side hangs. 1100-LFC subwoofers are flown left and right, and we have a sub arc of 1100-LFCs in the pit and LEOPARD front fills."

The distributed system incorporates five delay towers. The front three employ LEO and LYON loudspeakers, with the back row of two towers consisting of MICA loudspeakers to deliver consistent coverage throughout the audience area. LEOPARD, UPA, and UPJunior ground stacks and arrays cover the large, two-story VIP tent and cabanas lining the three-quarter-mile field.

### DJ Sets Take Over New Soma Tent

Converting a large comedy tent into the full-time dance Soma Tent presented new sound-management challenges, namely, creating a high-energy environment with low-end-heavy programming without significantly impacting the surrounding neighbourhoods.

"After our successful efforts to control the

sound leakage at the Lands End main stage, Another Planet asked us to drive this sound design," says Bob McCarthy, director of system optimisation for Meyer Sound. "They were very clear: the sound design comes first; all of the lighting and everything else came second, because noise control is key to the event's success."

"We created a unique design where all of the mains are oriented on the side of the tent that faces away from the street," he explains. "Then, we have loudspeakers mounted on the back of those, pointed toward the street, that are timed, phase-aligned, and set to cancel." Downward-firing surround speakers created an immersive experience inside the tent, while acoustic draping helped contain sound.

Tightly controlled 1100-LFC and 900-LFC low-frequency control elements brought critical low-end energy. "EDM has a need for maximum bass at all frequencies, to use an old phrase. And the 1100 is the king of dishing that out," says McCarthy.

### Visiting Engineers Experience Quality Sound

In the weeks leading up to the event, UltraSound worked with visiting engineers to help them prepare for seamless experiences. Festival environments can be anything but predictable, but Jade Payne, front of house engineer for Texas indie darlings Khruangbin,

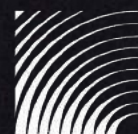
# It's a Piece of Cake



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## INTERNATIONAL

says the accuracy and quality of the Meyer Sound system made it easy to translate her mixes. "You never know with different PA configurations," she explains. "I use a lot of condenser microphones on stage, which isn't very common, and those can easily pick up a lot of sub energy. But I know Meyer Sound systems and this one here is just very directional. The sound goes where it should go, and that is a tremendous help for the band to perform better. I really appreciated not having to spend the whole set doing damage control; I could actually enjoy myself."

"Essentially the goal is to give the audience and the traveling engineers and the bands the best possible experience they could have," says Osmond, "but also keeping our neighbours happy and make it so that everybody is having a good experience over the weekend."

It's an ambitious objective in a challenging year, realised through collaborative efforts across the Bay Area. "The city, the community, all of our production vendors have really just rallied around this festival," says Mary Conde, Another Planet Entertainment's Senior Vice President and Director of Production. "And through all of the challenges, we have been able to get this going and doors open."

"We have a tradition at Outside Lands," continues Conde.

**"We play 'Here Comes the Sun' when doors open; that's a homage to Bill Graham, who used to play that song at all of our Day on the Green events. So, it makes me a little sentimental. I get a little tear in my eye when I hear 'Here Comes the Sun,' and it's a beautiful, sunny day and 74,000 people are going to come here and have a wonderful time."**

The Outside Lands Music and Arts Festival will return to San Francisco on August 5-7, 2022.

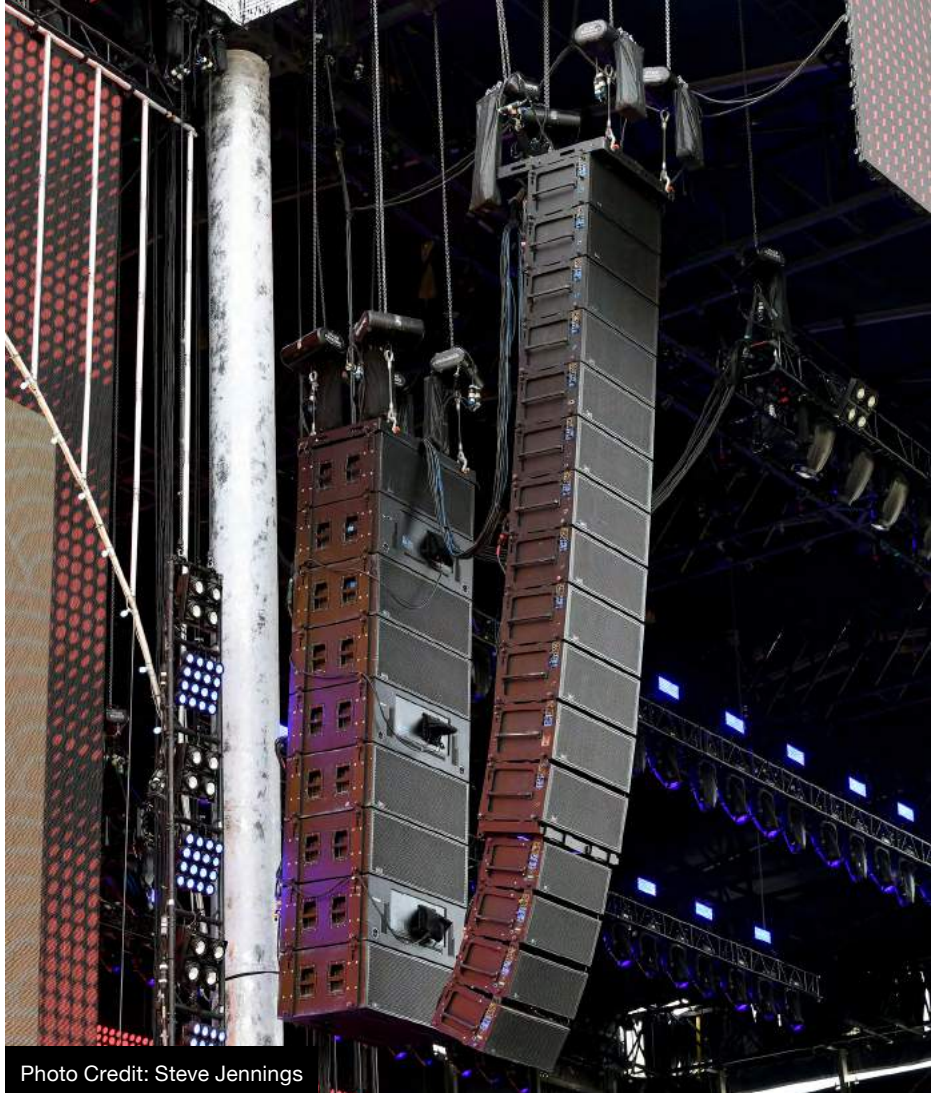


Photo Credit: Steve Jennings





# Elation Proteus Hybrid runs non-stop for 17,000 hours!

**In November of 2018, Elation Professional took one of its award-winning Proteus Hybrid IP65-rated moving heads, mounted it to a small truss on the roof of the company's headquarter building in Los Angeles, and left it there, exposed to the elements, for three years. For nearly two years of that time, the unit ran continuously, some 17,000 hours!**

Check out a video of the rooftop Proteus Hybrid at [www.youtube.com/watch?v=mKFYOHJPMBE](https://www.youtube.com/watch?v=mKFYOHJPMBE)

"It started off as a test subject on top of our roof but as time went on, we decided to just leave it up there to see how it would do," explains Zachary Santana, a Research and Development Technician at Elation. "It's proven to be a long duration process of non-stop testing and has given us some valuable feedback on how the fixture operates when pushed in an outdoor environment. There's really no better way to test an IP unit than to

expose it to real world elements."

Don't think Southern California's weather is a walk in the park for outdoor lighting fixtures though. The Proteus unit has been exposed to torrential rains, searing sun, wind, dust and other pollutants for a full three years. Even during times of sparse rain, the R&D team kept water testing the unit by fabricating a sprinkler system to provide a constant shower of recycled rainwater onto it. Over the three year period, operation has varied based on whatever parameters and features were being analysed but, according to Santana, usually



the unit has run on a pan and tilt swivel at full-on with intermittent run throughs of its feature set and the occasional bulb change.

Meanwhile, on the opposite coast of the US, at an amusement park in Florida, sits another rooftop Proteus Hybrid going through similar testing and reportedly going strong. For the Elation headquarters rooftop unit, there are no plans to take it down anytime soon. "We'll keep it up there and keep testing," Santana says. "I'm really proud of this light. It's gone through a lot but just keeps going and has proven itself to be a great fixture."



Steve Caldwell, John Watterson, Ian Shapcott, Chad Lynch, Ian Cooper

# NW GROUP AT THE GAMES OF THE XXXII OLYMPIAD

by Jason Allen

**NW Group are no stranger to the Olympic Games. Tokyo 2021 (or 2020, it's confusing) marked the company's fifth Summer Olympiad, with the Vancouver Winter Olympics in 2010 also under their belt. Of course, this one was a little different...**

Partnering with local suppliers Hibino Sound and working under the aegis of producers Dentsu & Denstu Live, NW flew a crew of seven straight into two weeks of hotel quarantine back in May before embarking on almost two months of prep and rehearsals before the opening ceremony on 23 July.

"We met the crew from Hibino Sound back at the Rio Olympics in 2016 and have developed a great working relationship," says Andrew Marsh, Director of Special Projects at NW Group. "They had a pre-existing relationship with Dentsu & Dentsu Live, and while their

capabilities are exceptionally strong, an Olympic Ceremony is different, and this is where we come in. This came down to redundant large scale audio transport and IT networking solutions, RF management, timecode generation and distribution, amongst other things."

Hibino contracted NW Group to handle all these specialist requirements. Working on the opening and closing ceremonies of both the Olympics and Paralympics, NW Group brought the specialist equipment that the major global event would need; custom RF

antenna distribution designed and built by NW's Steve Caldwell, IEM amplifiers, Pyramix replay systems, networking gear, and "a load of Optocore," according to Andrew.

#### Getting Enough Fibre?

According to Optocore itself, "The Tokyo 2020 Summer Olympics Opening and Closing ceremonies almost certainly represented the largest deployment of Optocore audio network devices ever seen." It's hard to imagine a bigger system being deployed anywhere, for anything. "Part of the reason it was so large is that we've moved from running an analogue backup to implementing a second backup Optocore network," explains Andrew. "The two systems are identical, both fully redundant and discrete rings. So if there's a problem with the 'A' system, we'd switch to the 'B' and it would be exactly the same. The fibre loops also connect the audio LAN, which through a network of around 50 switches, provides monitoring and control of everything from radio mic and IEM units to amplifiers and uninterruptible power supplies,

## Crew

**Andrew Marsh**

Project Manager/Network designer

**Ian Shapcott**

FOH Engineer

**John Watterson**

Patch/Optocore Network Engineer and designer

**Chad Lynch**

Patch assist and monitor advisor

**Steve Caldwell**

RF Engineer

**Ian Cooper**

Replay Engineer

**Alana Sentinella**

Replay Engineer 2

## Equipment NW Group provided to Hibino Sound

- Dual 21 node Optocore networks – M12, X6R-FX, DD4MR, DD32R, X6R-TP
- Audio LAN Networking
- Computers for audio equipment control
- Full UPS power backup for Norwest and Hibino equipment
- Multitrack MADI recording
- Pyramix Replay Systems
- QLab SFX replay systems
- Rehearsal QLab systems
- Custom radio mic distribution and antenna systems
- In Ear Monitors and custom RF amplifiers
- Custom lectern microphones with RF backup
- Timecode distribution and readers
- Time of Day distribution and readers
- Control room monitors
- Feeds to broadcast including sample rate converters

**Optocore solutions are now distributed in Australia by CMI Music & Audio: [cmi.com.au](http://cmi.com.au)**



Opening Ceremony Drones



Ian Shapcott and Yoko

even the colour of a timecode display on the other side of the stadium. ”

With two systems of 21 nodes, additionally utilising Optocore’s SANE functionality, the correct connection is never far away. “The heart of our Optocore network is the M12-BNC MADI switch,” says Andrew. “The ecosystem is just getting better and better. Since the initial M12 release in 2015 and the further addition of integrated SRC capability in 2020 we have been able to expand the capacity of our systems, and though the networks are getting bigger and more complex, being able to handle everything within Optocore means they’re also simpler and more robust.”

One of the M12-BNC’s main roles was to get signals in and out of the multiple DiGiCo consoles on the job, which included main and backup SD5s at FOH. “The SD5s were completely full,” observes Andrew. “There were up to 64 playback lines, then there were 32 radio mics, including shout and choreography. With dual RF receive locations

at FOH and on the field of play, you double the amount of RF input channels too. Then you still have to fit in everything else you need to make a ceremony work. Getting the audio for the ceremony to the world was also achieved with Optocore via nodes placed across the road in the broadcast compound and connected with 1km fibre cables. Optocore really does enable us to do things in much better ways than before.”

**Keeping Time**

One of NW Group’s major responsibilities was to create and distribute timecode safely to everyone. As it was running the whole show, there was a lot riding on it. “We worked very closely with the creative team,” relays Andrew. “Our replay team deals directly with the music department and anyone providing audio or video content. We then stripe those tracks with timecode that we play out to everyone via Pyramix. During rehearsals,



If the stage manager wanted to make changes to timings, we were involved in the conversation. There was a long rehearsal process that we helped with, making sure everyone had the right rehearsal files to play off their laptops. Given how integral timecode is to the show, we ended up being closely involved with all departments, including choreography, stage management, and music teams, as well as the overall tech director for Dentsu.”

Timecode was run in the standard Japanese video format of 29.97 drop frame, which is the spec all content was created to. “We worked closely with the video team, which included Panasonic and ETC from France,

who we’ve done many ceremonies with,” outlines Andrew. “The video crew had the greatest need for specific things to happen to timecode, and we also ensured it got to broadcast safely.”

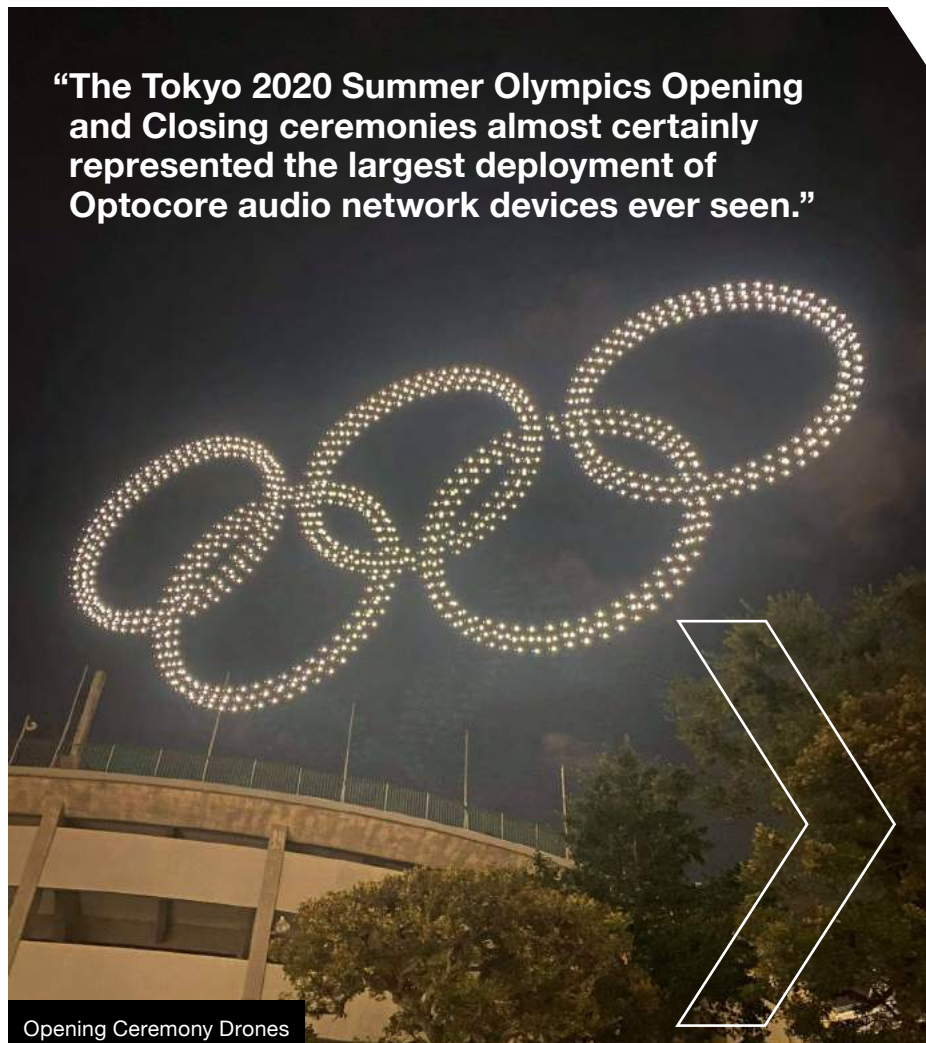
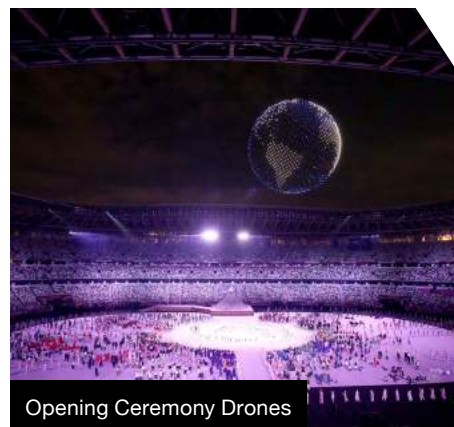
### On The Air

Andrew describes the RF environment at Olympic Stadium as “Busy, but well-regulated. It was all about carving out space between TV channels. Our RF Engineer Steve Caldwell had many meetings with the RF coordination team about spacing and acceptable intermodulations, explaining why we grouped things the way we did. For monitoring, we were running 24 channels of IEM, using RF amplifiers designed and built

by Steve. They transmitted eight frequencies each, and can be linked together with a failover mode to provide full redundancy.”

### The Pandemic Olympics

And of course, there was COVID to deal with. “Apart from quarantine and regular mandatory testing, COVID didn’t really make the job any harder,” admits Andrew. “Having no crowd at the ceremonies, which we only found out was the case after we set up, didn’t really make a difference either. We just tailored the PA to suit while still providing atmosphere for the small audience of family members, VIPs, and athletes. I’m happy to report, all four ceremonies went well, with smooth sailing for the NW Group team.”



# TECHS ON THE BEACH

The Gold Coast's newest Day/Night Club gets the full treatment

by Jason Allen

**In an act of pure post-pandemic optimism, Artesian Hospitality, owners and operators of multiple Gold Coast venues, have brought something familiar yet new to Australian shores. Sun-kissed hedonists familiar with Vegas and Ibiza will recognise the format immediately; it's a day/night club, on the beach (in reality, four storeys in the air), ripe with the promise of cabanas, pools, luxury bottle service and pumping DJ tunes in the pool.**

Beach clubs are a familiar sight around the world anywhere the young, rich, and tanned congregate, but no council in Australia will allow any beach to be built on, let alone let a private business charge for entry. This massive 5,500 sqm space was previously leased by a hotel next door and had sat idle for years before Artesian swooped in to secure it. With the lease signed, designing the ultimate outdoor club experience was next.

AV Integrators The Prestige Group have a longstanding relationship with Artesian, and took the call. "We're building this; make it work. That was pretty much the brief," says Nathan Wright, General Manager at The Prestige Group. What Prestige had to make

work was an outdoor space with multiple pools, bars and hospitality spaces that could function as both a club and corporate event venue with all of the AV that normally entails, but outside in the salt air and weather. The full club audio experience please, but don't annoy the neighbours.

#### Turn Down For What?

"The biggest issue in any outdoor venue is audio," explains Nathan. "The club needed a high-quality sound system that would survive the conditions while being easy to control. JBL distributor MadisonAV came to the party. All of the loudspeakers chosen for this project are designed for this harsh environment, and JBL is a brand with a long-established

reputation for quality and reliability."

"Prestige contacted us and said they had a 'small pool project' we might be interested in," chuckles Benjamin Page, National Business Development Manager - Audio at MadisonAV. "After some discussions, we put together a design, and started modelling in both Harman's DDA (Digital Directivity Analysis) software and EASE."

The biggest challenges for the audio design were weatherproofing, noise, and bass. Bass is needed for the club atmosphere, but with residences and a hotel next door, the design aimed for 50Hz but no lower, and that only where it's really needed. A major part of the brief was that the system had to sound exactly the same everywhere, regardless of whether you're swimming in the middle of the pool or dancing in front of the DJ.

A range of JBL all-weather models were deployed to hit the brief, including Control-14CTs, AWC62s, AWC82s, and AWC15LFs for the lows. CBT70J and CBT1000 steerable arrays were used for the DJ booth and cinema, providing high SPL with controllable directivity.

"The JBL all-weather loudspeakers are constructed with stainless steel, zinc, and aluminium," outlines Benjamin. "All of the cable entry points are waterproofed and sealed. The distributed design meant we achieved constant directivity but wide dispersion, courtesy of the AWCs and CBTs."

"The support we received from Ben and

## Audio

- 16x JBL Control-14CT
- 15x JBL AWC62
- 50x JBL AWC82
- 8x JBL AWC15LF
- 4x JBL CBT70J-1 + 70JE-1
- 2x JBL CBT1000
- CROWN CDi BLU link Amplifiers:
- 8x CDi4/1200BL
- 1x CDi4/600BL
- 2x CDi4/300BL
- 1x BSS BLU-DA Dante Bridge

## Video

- Screen 1 – VuePix Infiled MV6 – 6.9mm pixel pitch – Cinema screen – 8m wide x 4m tall
- Screen 2 – VuePix Infiled GX3 – 3.9mm pixel pitch – Screen for the DJ Box – 2m wide x 3m high
- Screen 3 – VuePix Infiled MV5 – 5.9mm pixel pitch – Pool Screen – 10m wide x 1m high
- NovaStar H2 Video Processor
- ArKaos MediaMaster Pro6 Software

## Lighting

- 12x Acme Cetus IP65 rated beam moving head
- 32x Acme StagePAR Colour 100 IP66 full colour Par fixture

## Effects

- 6x DJPOWER HF-210 Flame Machines
- 6x DJPOWER H7D Fog Machines
- 2x DJPOWER X4 CO2 Jets



Scan the QR code to check out the MadisonAV Cali Beach video case study!

MadisonAV was great,” confirms Nathan. “All of the JBL products have behaved exactly as we expected from the modelling. And the SPL its certainly doing its job to create the club vibe!”

### Big Screen Energy

With a massive 8m x 4m cinema screen dominating a back wall by a beach volleyball court, video is a major star at Cali Beach. A letterbox-style 10m wide by 1m high screen addresses partygoers in the pool, while a portrait mode 3m high by 2m wide screen sits behind the DJ. A NovaStar H2 processor handles all of them.

“We chose VuePix LED Panels for all of the screens because of their outdoor reliability and local support from distributors ULA Group,” states Nathan. “The cinema screen is also designed for corporate events and is viewable from the bar as well as the cinema seating area. All of the supporting structures and screens have been engineered to cope with high winds. We have ArKaos Media Master on hand for DJs and VJs, and we

have free-to-air TV and Nightlife available as sources. We’re soon going to add NDI sources so anyone can plug in to the network and move video around.”

The cabanas all include their own 55” Samsung LCDs which are set by default to receive visuals from the DJ. They have the ability to switch to any of the other video inputs, as well as supporting BYOD for meetings and corporate functions. Cabana guests can also blend and mix their audio sources with the DJ feed.

### A Matter of Truss

The beautiful curved truss above the dancefloor really brings home the club vibe. Not an original part of the design, it was designed and installed by Clifton Productions after other options fell through. “The custom truss is capable of taking a 500kg point load,” explains Nathan. “It’s a 16 metre curve with 14 metres between each point. We’ve added a camo net, and the rig can support aerial acrobatic performers. All up, it’s about 4 ½ metres off the deck. It took a bit to get it done,





but it's come up beautifully! On the day it went in, it all fitted perfectly with no packing; it all just worked. Clifton Productions did an awesome job, and it really gives the venue that club feel."

### Light It Up

Hanging off said truss you'll find 12 Acme Cetus IP65 rated moving lights, a lamp-based fixture being used for beams, colour, and movement on the dancefloor. Dotted around the venue are 32 Acme StagePAR Colour 100 IP66-rated full colour LED Pars used for general wash duties. As the venue requires most daily performances to happen without the services of an LD, Osram's e:cue control system is programmed with a variety of cues and presets that are triggered from Osram's Action Pad app.

"e:cue and the Action Pad makes life easy," illustrates Nathan. "It can trigger shows, run countdowns, and fire off sequences. It just works. If we need something more elaborate,

there's Art-Net throughout the venue, so anyone can come in with a lighting desk and address the fixtures."

It's not just lighting that can be fired off. It wouldn't be a club without fog, Co2 and flame, and Cali Beach has all three. "There are two DJPOWER CO2 jets, five DJPOWER fog machines, and six DJPOWER flame machines powered by isopropyl alcohol," reports Nathan gleefully. "We've mounted four of the flame machines in custom white boxes on the dancefloor truss, one on the southern tower, and another's just going in."

### In the VIP

With a full singing-and-dancing AV and lighting rig to be run by hospo staff from iPads, control smarts are important. "The back end we've designed is flexible enough to do a lot of different things," Nathan elaborates. "We have a Q-SYS Core 110f driving all systems. Audio interfaces via a BSS Dante bridge. There are two channels

of Shure QLX-D radio mics that staff can control. The cabanas have their own custom touch panels for their TV and audio, while floor managers have an iPad that can control anything. Q-SYS can trigger presets in the NovaStar processing that can change configuration of the screens. All of the NDI feeds will be routed into ArKaos, which now supports NDI natively in Version 6."

Cali Beach is already pumping with corporate functions and bookings. DJs and performers are streaming through and thriving in the atmosphere. "Artesian Hospitality are loving it," concludes Nathan. "They've been pleasantly surprised by how even and controlled the audio is over its 38 individual audio zones, even with the pools being giant reflective surfaces. Being outside, everything is still very weather dependent, and if you get a strong wind blowing the wrong way you might get sound where you don't want it. But, hey, it's the Gold Coast, where even the mayor says 'If you don't like the noise, move somewhere else!'"



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# With great power comes great responsibility

(and potential problems)

by Richie Mickan, Product Manager, LSC Control Systems

**Walking along the top of a cliff looking over the ocean and enjoying the spectacular view is just one of the many ways to enjoy our amazing country. As long as your eyes are wide open and there is a safety rail, this activity is both safe and enjoyable.**

Would that activity still be safe if you were blindfolded and the safety rails were removed? Of course not, as you would have no idea if you were 10m or 10mm from the edge of the cliff. At any moment you could step out over the edge with no warning.

Modern power distribution can be a bit like this. Things go wrong but we cannot always see why. Most of us understand over-current faults, but when it comes to earth leakage, we generally have little knowledge of what causes it, and that there is almost always earth leakage occurring in our rigs even when

there is nothing wrong.

Have you ever been on a gig and had a circuit breaker or RCD trip for no logical reason? During set-up have you ever turned on a breaker and had it immediately trip out, but at the next gig with the exact same load, it worked perfectly first time? Have you prepped and tested a rig in the factory, only to have mysterious breaker trips when it is rigged in the real venue?

The company I work for has spent the last 18 months of lockdown looking into these questions, as many of our customers reported

these as common problems that they did not understand. This article is the first in a series that will share this knowledge with you so that you can provide a better show to your clients.

Let's start with a few facts that may surprise you.

- Every switch-mode power supply leaks some current to earth in normal operation.
- The AS3000 wiring rules Section 2.6.2.1 states: RCDs may operate at any value of residual current in excess of 50% of the rated residual current. This means a 30mA RCD/RCBO can trip with an earth leakage current flow as low as 15mA!
- Long cable runs, particularly multi-core cables generate additional earth leakage currents.
- MCBs, RCDs and RCBOs are not designed to be used as switches. As per the chart below, Hager rate their RCBO for 2,000 cycles and their RCDs for only 1,000 cycles (a cycle is turning the device on/off/on).

Product reference	RCBO (MCB + RCD)				RCCB (RCD)	
	ADC3xxT	Axx9xxT	AD1xxT	Axx5xxT	CDxxxT	CExxxT
Approvals	AS/NZS 61009.1				AS/NZS 61008.1	
Breaking Capacity (IEC 61009.1)	6kA		10kA		n/a	
No of Pole / Module	1	2	1	2	2 or 4	
Neutral Switching	No	Yes	No	Yes	Yes	
Magnetic Tripping Characteristic	C curve				n/a	
RCD Type	A	A	A or AC	A	A or AC	
Rated Current (In) A	10, 13, 16, 20, 25	10, 13, 16, 20, 25, 32	10, 16, 20, 25, 32	10, 13, 16, 20, 25, 32	n/a	
Rated Residual Current (I n) mA	30	10, 30	30	10, 30	30	100
Operating Temperature	-5 to 55°C	-25 to 40°C	-5 to 40°C	-25 to 40°C	-5 to 40°C	
Calibration Temperature	30°C				30°C	
Rated Operating Voltage (Un)	240V				240 / 415V	
Rated Operating Frequency (f)	50Hz				50Hz	
Rated Insulation Voltage (Ui)	250V				500V	
Rated Impulse Voltage (Uimp)	4kV				4kV	
Electrical Endurance	2000 cycles				1000 cycles	
Mounting	35mm DIN rail				35mm DIN rail	
Working Position	Vertical, Horizontal or Flat				Vertical, Horizontal or Flat	

[www.hagerelectro.com.au/files/download/0/41744\\_1/0/TECHINFO\\_RCBO\\_S\\_RCCBS.PDF](http://www.hagerelectro.com.au/files/download/0/41744_1/0/TECHINFO_RCBO_S_RCCBS.PDF)

If we go back to when I started working in the industry (1980s), life was simple. Circuit protection was almost always a fuse and almost all electronic equipment used a transformer, which was mostly a resistive load.

Fuses were great. When a standard glass fuse blew, you could look inside and deduce how it blew. If a fuse had a short piece of wire at each end that did not meet in the middle, the fault was a minor overcurrent. If the inside of the glass was covered in blue/black residue then the fault was a dead short.

The one big disadvantage was the myriad of variants and ratings. In simple glass/ceramic fuses alone there were multiple sizes (3AG, 5AG, M205, BS1362) as well as different speed ratings (F for fast, T for slow) and of course different currents (1A, 2A, 3.15A, 5A, 10A, 15A, etc). There were also cartridge and HRC (High Rupture Current) fuses, which were much larger and massively more expensive. I had over 100 spare glass fuses in my toolbox, all organised in 35mm film canisters, but I was still caught out on occasions without an exact matching replacement.

As we moved into the 1990s, most power distribution systems thankfully got rid of fuses and replaced them with MCBs. At the same time a lot of amplifiers, CRT monitors (remember those things?), smoke machines and other equipment replaced their fuses with push button circuit breakers. It was no longer possible to easily work out why they tripped, but at least they could be reset quickly to get back up and running once you did find the problem.

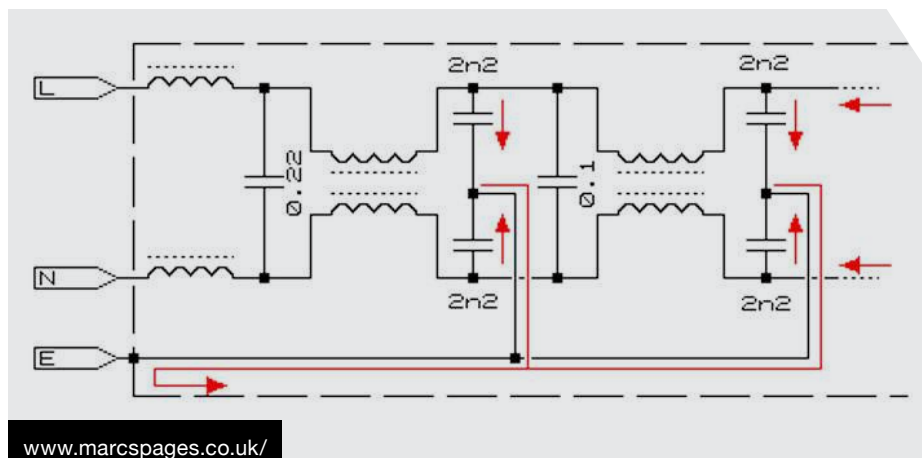
With the arrival of the new millennium things changed again. Now we must have RCDs for protection against earth leakage faults, as well as MCBs for over current protection. Transformers have joined the dinosaurs and been replaced by the compact and lightweight switch-mode power supply, which is a highly capacitive load. The problem with a capacitive load is that it creates mains disturbances which need to be filtered out. This filter results in earth leakage currents.

Can you spot the problem?

**We now use power supplies that generate earth leakage at the same time as we have added protection devices that trip in the presence of earth leakage currents.**

With the legal and OH&S requirement to include RCD protection into our systems, manufacturers started adding a single RCD to the input of a power distro unit. This was quickly replaced by an RCD per phase, to reduce the number of channels lost when a fault occurred. Then when compact RCBOs (combined MCB + RCD) appeared everyone started to use these units so that a fault only took out one output.

The problem with an RCBO is that when it trips you have no idea if the fault was a minor overcurrent, a dead short, or a small/large



earth leakage fault. Can you see that blindfold starting to block your view?

To make matters worse no one knows how much ELC any device generates. Every product specification sheet shows the conventional current draw (eg. 8A @ 230v) but I have yet to see any specification sheet that includes the ELC load (eg. 3.5mA @ 230v). Every competent tech can instantly work out that they can connect 20 x 0.5A devices to a 10A circuit breaker without an issue. However, they have no idea if each device leaks 0.1mA or 3mA to earth, making it impossible to know if they will trip the RCD or not.

They could measure the ELC of each individual device with a specialised test rig, document it and then use that information to make an informed decision, but they still don't know if the RCD will trip at 15, 20 or 30mA. As stated earlier, the ELC will increase by an unknown amount if the device is connected at the end of a 50-100m multi-core cable. The relative humidity can also have an effect on the amount of ELC, days of high humidity will result in an increased amount of ELC flowing.

By now you are truly 'flying blind'. You can't see the problem and you don't know whether you are safely back from the edge of the cliff or about to step over the edge.

What you really need is a safety fence to stop you getting too close to the edge. One common solution is to connect an increasing number of devices until you finally trip the RCD/RCBO, then reduce the count by 20%. This is how most production companies I have talked to do it. However, none of them did it on the end of a multi-core cable or noted the relative humidity when doing the test.

I work for LSC Control Systems, who manufacture power distribution systems for audio, video and lighting, hence the current research project. The RnD team has been investigating the wonderfully wicked ways of RCDs and RCBOs and it has been extremely educational. On numerous occasions, just as we thought we finally understood everything someone would make another discovery which changed our understanding.

One of these 'lightbulb' moments was when we realised that an MCB and an RCD work

in exactly opposite ways when it comes to the rating. A 10A MCB will not trip unless the load is greater than 10A. A typical C-curve MCB doesn't trip unless the load exceeds 1.13 times the rating, meaning you can probably run 11A through it all day. With a load of 1.5 times the rating (15A) it should trip within 40-400 seconds. Only if the fault is greater than 6-12 times the rating then it will trip within 1/10th of a second.

(See image on page 38)

An RCD is the exact opposite. It must trip with a load of less than 30mA and it must trip very quickly (within 300ms for a 30mA device, far less for a 10mA unit). Due to the manufacturing tolerances this means that the engineers design a 30mA RCD to trip at a much lower current, to be sure that it will always trip before 30mA. If the manufacturing tolerances are +/- 20% then this would require an RCD to be designed to trip at 24mA. This would mean a +20% unit would still trip out at 28.8mA, but a -20% device would trip at 19.2mA. The fact that the AS3000 standard allows them to go as low as 15mA tends to suggest that manufacturing tolerances are worse than +/-20%. This is confirmed in this excerpt from an Eaton Application Guide for Residual Current Devices.

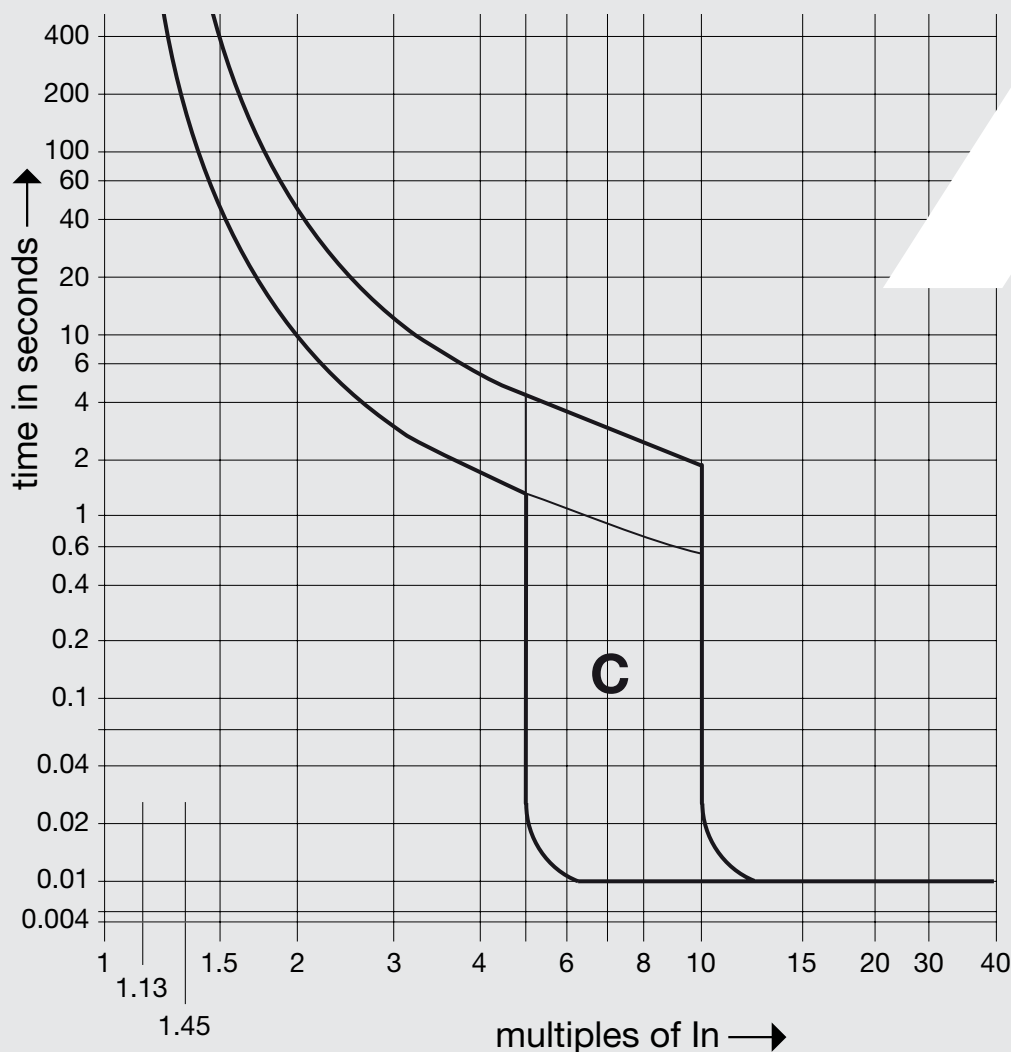
The main parameter of a residual current device is rated residual operating current  $I_{\Delta n}$ . Normalized values are 10, 30, 100, 300, 500 mA and 1 A. If the residual current achieves the value of 100 %  $I_{\Delta n}$  or more, the RCD must trip. If the residual current does not reach 50 %  $I_{\Delta n}$ , it must not trip. Thus, the RCD can trip from 50 to 100 %  $I_{\Delta n}$ .

**This practically means that, given a sensitivity of RCD of 30 mA, tripping may occur as early as once the earth-leakage current of 15 mA is achieved,** which causes problems in installations with higher leaking currents. This increases their applicability in circuits with higher leaking currents.

[www.eaton.com/content/dam/eaton/products/electrical-circuit-protection/circuit-breakers/xeffect-rccb/eaton-rcd-application-guide-br019003en-en-us.pdf](http://www.eaton.com/content/dam/eaton/products/electrical-circuit-protection/circuit-breakers/xeffect-rccb/eaton-rcd-application-guide-br019003en-en-us.pdf)

## C curve

The graph below is suitable for the following protection devices: ADC3xxT, AD1xxT, AD1xxB, AxA9xxT and AxA5xxT



[www.hagerelectro.com.au/files/download/0/41744\\_1/0/TECHINFO\\_RCBOS\\_RCCBS.PDF](http://www.hagerelectro.com.au/files/download/0/41744_1/0/TECHINFO_RCBOS_RCCBS.PDF)

Don't get caught out thinking that you can connect 15 x 2mA devices to a 30mA RCD and expect it to work. You may not even be able to connect eight devices; it all depends on the tripping point of each individual RCD. In theory plugging a 16mA load into outlet #1 or #5 of a cheap power distro may cause it to always trip, but plugging it into outlets #2, #3, #4 or #6 could work perfectly. Not ideal when under pressure to get things going during setup. Add to this the fact that you probably don't know that exact ELC load (has the humidity changed?) and you have the makings of many sleepless nights hoping that nothing trips on the opening night.

That's all for this month. Next issue we will dive into inrush currents, earth leakage frequency and look at ways of mitigating the risks to your show created by the issues raised in this article.

## Glossary

### MCB - Miniature Circuit Breaker.

Any small circuit breaker with a low breaking capacity (e.g. 8kA) and a current rating less than 100A. Can be DINrail mounted, push button or other physical arrangement.

### MCCB Moulded Case Circuit Breaker.

These are the large 'master' breakers you see in switchboards. They are usually 3-phase devices and rated for more than 100A. The major difference between an MCCB and an MCB is the fault current rating. An MCCB can disconnect a much higher current than an MCB.

### RCD - Residual Current Device

A protection device that disconnects the power

when the earth leakage current exceeds the specified rating.

### RCBO - Residual Current Breaker with Overload protection

A combined MCB + RCD. These can be single phase or 3-phase. Single phase devices are usually in a single DIN width module (~18mm wide).

### ELC - Earth Leakage Current

Any current that flows from the active to earth instead of through the neutral conductor.

### GFI - Ground Fault Interrupter

Another name, commonly used in America and Canada, for an RCD.

### ELCB - Earth Leakage Circuit Breaker.

Yet another name for an RCD. Originally this referred

to a voltage triggered device, but now occasionally used as a generic term for either a voltage or current triggered device.

## More reading

Here are two articles that are a great read if you want to learn more:

### The basics of RCDs

<https://www.ecdonline.com.au/content/business-and-management/article/primer-on-rcd-basics-820611695#axzz6pQRblxlV>

### Why do Switch-mode power supplies generate earth leakage?

<https://www.meanwelldirect.co.uk/glossary/what-is-leakage-current/>

# PEAK PORTABLE POINT SOURCE POWER

A Man, A Van, And A Cover Band

by Jason Allen

Perth-based musician and sound tech Trevor Jalla has had an impressive 20-year career as a soulful and funky guitarist and vocalist, drawing praise from blues purists and rock critics alike. As well as slinging his axe and singing the blues, he's also always done his own sound, and extended into providing sound services for other bands five years ago.

Trevor has concentrated on a niche in the small to mid-sized production space, sticking strictly to the 'man with a van' size of operation. "My mantra for the business is 'more than what a band would bring, but less than a production company'," he explains. "For my front of house PA system, I want to take the concept of point source as far as it can go while still staying one man, one van. I mainly cover bands and corporate up to around 300 pax indoors, but I wanted something that could go a bit bigger than that"

## Are you concerned about your mate's mental health?

**FACT: Most Australian tech crew and roadies have attempted or considered suicide<sup>1</sup>!**

**Support those around you and register for free mental health training**



[www.entertainmentassist.org.au](http://www.entertainmentassist.org.au)

Supporting the mental health of Australian entertainment industry workers

<sup>1</sup>Passion, Pride, Pitfalls Dec 2014

With a competent but aging PA of two powered tops and subs from two different brands, Trevor was looking to upgrade. Happily, an old acquaintance blew back into town with some advice. "My old friend Christian Peterson was overseas working for Cirque Du Soleil, who shut down due to the pandemic," relates Trevor. "He took a job working for CMI Music & Audio, who distribute Adamson loudspeakers. Christian had been recommending Adamson to me for ages, but now he had the ability to get some examples in front of me."

Christian wheeled in some models from Adamson's new powered CS Series, including the dual 7" CS7p, dual 10" CS10p, and single 19" CS119 subwoofers. "The first thing that hit me was the unbelievable amount of output," reports Trevor. "Through both the demo and shootout, even the CS7ps were amazing. However, the CS10ps had a low-mid forwardness I really liked. When we listened to nice fat snares with presence at 100Hz, you could really feel it. I tend to stick by the motto 'Buy once, cry once', so I couldn't buy the CS7ps knowing I really preferred the CS10ps. Having compared the Adamsons with other products, I think the CS Series represents the limit of how far you can go with point source."

Trevor is now the proud owner of a pair of CS10ps augmented by a pair of CS119s. Staying true to his mantra, the whole rig gets in and out of the van comfortably. "I have the CS10ps clamshelled in a custom roadcase," outlines Trevor. "It's all very manageable. The van is low enough that I can roll all the cases off the lip, including the subs on dollies."

One of the first tests of the new PA was with a Sting and The Police tribute act. "It's an act I mix regularly," continues Trevor. "The room capacity was 400, with around 250 there. They're a four piece band, and it was not an acoustically great room. The Adamson rig is so powerful, it was overkill for the room! I describe its performance as punchy and fast. Transients are clear. In some systems, you feel there are phase and delay problems with transients across the frequency range, but not with this system; it's the same from top to bottom. It's very responsive; EQ changes make a difference. It's easy to make vocals stand clear of the mix, and I never struggled with or massaged the vocal EQ."

Next up for the new system, Trevor took to his natural habitat, the stage, while a colleague handled the mix. "This was two private shows with my band doing Grunge covers, with me as front man on vocals and guitar," recounts

Trevor. "I did the set-up and system tune and handed over. From the stage, I could feel my vocal in the room, way more so than on other systems. It gave me the same feeling as playing a big stage with a line array. It makes it easier to sing. You feel like the sound is emanating from the room, not the speakers. You can feel the speed and reaction of the PA to the vocal. The tech mixing the gig told me that the system felt big and clear, faithfully translating music they were very familiar with from the records."

Trevor's stated aim of gearing up to handle bigger rooms has been more than achieved. "Honestly, I feel the rig has been total overkill for all of the 300 pax rooms it's covered so far," he states. "It's almost been like a soft launch. I still haven't pushed the system to the levels I demoed it, and I think I have at least half of the power left to go!"

Trevor feels his new PA is "orders of magnitude better than my old rig. I'm glad I've invested in something that really has taken my concept as far as I think it can go. But now I've upgraded the quality of my FOH, I need to upgrade everything else to match it! Just got to get a few more gigs under my belt to afford it."

[adamsonsystems.com](http://adamsonsystems.com)

[cmi.com.au](http://cmi.com.au)



**"From the stage, I could feel my vocal in the room, way more so than on other systems. It gave me the same feeling as playing a big stage with a line array."**



Photo Credit: Sean Ebsworth Barnes

# THE POWER OF LOVE

## d&b goes Back To The Future with KSL

**Back To The Future (BTTF), the cult film that shaped a generation has been adapted for the stage and arrived in the West End, running at the Adelphi Theatre in London until July 2022. The production entertains fans with a dynamic show delivering a visual and sonic spectacle on an unseen before scale, featuring some of the famous movie moments and of course the iconic DeLorean.**

Multiple Olivier Award winning sound designer Gareth Owen relied on his knowledge of, and trust in the d&b product portfolio to select the right audio solution to do justice to this much-loved story.

A musical as ferocious as this needed powerful audio that would do justice to the original songs of the 1985 film score such as 'The Power of Love' and 'Johnny B. Goode', as well as new music written by famous composers Alan Silvestri and Glen Ballard, while remaining clear and unobtrusive to

deliver some of the more emotional moments.

"Back to the Future is one of the most dynamic shows I have done in a long time," Owen states. "The music jumps from 50s Jazz to Rock 'n' Roll to sweeping orchestral episodes to really quiet and emotional moments, so I needed a system that would deliver enough power as well as clarity."

For musical supervisor Nick Finlow, the challenge for the sound design lies in tying together the visual and the audio, without letting one outshine the other. "BTTF is a

huge show in so many ways. It is visually and technically stunning, has a big cast, a large pit orchestra supplemented by programming on track, and is playing to audiences in a large theatre so the sound design of the show not only has to match the rather epic nature of what the audience are seeing, but it also must support the score, which ranges from big orchestral moments to full company production numbers and also includes much more intimate moments."

A tall order, trying to fulfil the above, but one d&b's SL-Series was created to fulfil. The KSL system was launched in 2018 and Gareth Owen was the first sound designer to ever specify it in the West End for hit musical & Juliet. For Owen it was clear immediately that the full broadband directivity control would be highly effective in a theatre environment, where line arrays are often flown extremely close to the proscenium walls due to sightlines and spatial restrictions. "d&b's SL-Series loudspeakers guarantee optimal audience coverage while keeping energy off the main stage thanks to the active speaker design, making for a quieter stage, keeping the audio clear, all without a drop in level for the audience," he elaborates.

## POWER

For BTTF Owen decided to go a step further and utilise KSL arrays for the balcony tier as well as for the main proscenium system. An unconventional choice perhaps, but one that paid off. "This was the first time I put KSL speakers in the gallery and it proved really effective. It's the most reverberant space in the theatre as its closest to the often heavily adorned ceiling. Using a highly directional box up there meant exciting the room much less, making for better intelligibility and creating a better audience experience in these often lower-priced seats."

No BTTF adaptation would be plausible without the famous DeLorean. The creative team behind the musical have managed to create a technical masterpiece that is on par with the 'real-deal'. The car is loaded to the hilt with stage tech, including d&b amplifiers and loudspeakers, making it move, speak, flash and huff and puff, all with room for the actors to spare.

The successful theatrical delivery of the DeLorean is a personal highlight for Owen and one sure to be inscribed into the books of musical theatre history. For the audio part of the car, d&b's longer established speaker series were the best fit for the job, surprising even the sound designer with their power-to-size-ratio. "The DeLorean in the show is an absolute marvel of theatre technology and stage design. It's packed full of lights, smoke machines, moving mechanisms and sound. All of which had to fit into a really tight space. We managed to achieve incredible sound effects with two Y7Ps and two E6s. I didn't think they'd do it, but they delivered the necessary output. It's incredible."

Thanks to the broad d&b product range, Owen's expertise, with support from d&b partner Orbital Sound who supplied the kit, all the different needs of this show were catered to, which made for a smooth collaboration between the audio department and the rest of the production team, despite having to 'wrestle' for room in the famous car.

Finlow is equally delighted with the results. "What's so important for BTTF is that the sound design is malleable, helping us portray the most dramatic moments but also the most intimate. The sound design certainly delivers on that front and collaborating with Gareth in bringing the musical vision to life was very effective."

For Chris Headlam, MD at Orbital, working on this show was a great way to "shake off the Covid blues", commenting that "BTTF was always going to be an interesting journey. With the reputation of one off the biggest and strongest film titles of all time at stake, audience expectations were extremely high for this one. It's not easy to transcribe film to the live stage, but in this case, it's been a great success. Everyone who has been lucky enough to see the show and hear the show agrees that this is an almighty production."



**"The DeLorean in the show is an absolute marvel of theatre technology and stage design."**

Photo Credit: Sean Ebsworth Barnes



Photo Credit: Sean Ebsworth Barnes



Photo Credit: Sean Ebsworth Barnes

# Sometimes it all gets too much...



The *Support Act Wellbeing Helpline* is a free, confidential counselling service that is available to anyone working in Australian music who needs to talk to someone about any aspect of their wellbeing.



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# POWER TO THE PEOPLE

by Jason Allen

**“Unify, Connect, Empower” is the motto of Melbourne manufacturing start-up ONESstage, a company dedicated to keeping the show going at the source – power and signal. With a product line of locally made ruggedised and road-ready power and signal distro, ONESstage is on a mission to banish consumer power equipment from our stages forever.**

Starting his career in the electrical trades industry, founder of ONESstage Lachlan Elmore moved into the audio world, working as a stage and systems tech. He personally experienced (and was blamed for) failures on

stage caused by ‘showstoppers’; the humble domestic powerboard. He knew there had to be a better way.

One of the first products off the ONESstage

assembly line was the ONESstage SPD-T1au, a five-outlet unit designed to replace the average powerboard. It has IP rated locking input and throughput connectors capable of 16A at 240VAC, with one outlet rotated 90 degrees to accommodate plug-packs. It comes in a ruggedised aluminium enclosure, is truss mountable, and has a recessed rocker switch to prevent nuisance tripping. This is not a product you can buy at Kmart.

ONESstage have recently partnered with Event Communications Australia to distribute their products. “ONESstage products excite me because they remind me of the good old days when people built stuff properly,” says Rod McKinnon, director of Event Communications Australia. “Their gear is rock solid, super reliable, and designed and built by people from our industry. Most importantly, it solves a problem. The powerboard is the biggest showstopper in the world. If you’re



the new normal of COVID safe protocols is likely to be with us for years. So, how do we keep our stages virus free?

Enter the Li.LAC UVC microphone disinfector. The Li.LAC resembles a futuristic sandwich grill in a robust, road-ready 19" 3U rackmount unit. You simply place the microphones on the stainless steel grille, close the drawer, and press start. The Li.LAC can accommodate up to three handheld mics at a time and can also disinfect headsets and lapel mics. The Li.LAC is laboratory certified to kill 99.99% of viruses and bacteria.

The Li.LAC was created by Tobi Hoff, German-based sound technician and electrical engineer, who was also responsible for the TEQSAS line array and loudspeaker measurement system. In Germany's long lockdown, Tobi dedicated his time to figuring out how to get the industry working safely again and took on all the design and certification necessary to get the Li.LAC to market.

"The level of trouble Tobi went to for the Li.LAC is amazing," relates Rod McKinnon. "He took microphones from multiple manufacturers, loaded them up with a viral load in a biomedical lab, ran them through the Li.LAC, and then completely destroyed the mics in a centrifuge in order to measure the viral load. It was 99.99% gone, which is amazing, and is as good as any form of disinfection gets."

The Li.LAC's arrival in Australia and New Zealand is timely as we start returning to stages for summer. Rod hopes its adoption will not only keep performers and crew safe but save on time and equipment too. "Wiping down a mic's head capsule doesn't get into the foam underneath," observes Rod. "And let's assume properly cleaning a mic takes three minutes. The Li.LAC's UVC lamps are rated to run 4,000 cycles. That's 12,000 mics cleaned, and a saving of 600 hours of labour. There's also the damage to the mics from isopropyl alcohol wipes to consider. I spoke to a customer recently who's wiping down lapel mics twice a day and the plastic is falling away from the cables. If you're wiping mics, you're degrading plastic and grilles. Tobi and the team at LAC Labs have put mics through 4,000 cycles of UVC and taken photos of any material breakdown. Their results show that the effects of UV-C are negligible compared to the normal wear and tear on a mic over its life."

Event Communications Australia are distributing both ONEstage and Li.LAC in Australia and New Zealand. If you're interested in a demo, look them up at [evcomaus.com.au](http://evcomaus.com.au)



**"ONEstage products excite me because they remind me of the good old days when people built stuff properly."**

a professional, you shouldn't be using \$11 powerboards from Bunnings on a stage. Lachlan has done the gigs, and knows that stage techs will get something thrown at them by some rockstar when something fails. ONEstage are making the tools that the events industry needs to just get on with it."

ONEstage are also responsive to customer requests. If you don't find what you need

in their extensive line of power and signal solutions for audio, lighting, and video, get in touch and start the conversation about solving your problems.

Event Communications Australia are on a mission to solve problems in the event industry, with the biggest and most obvious problem of the day being COVID. While restrictions are receding in the Eastern states,



Austin is the owner of Superior Tech Services LLC, producer of Tent Show Radio and Production Manager at Big Top Chautauqua in Bayfield, WI. Over the last 17 years, he has worked as a system technician and engineer in a variety of settings, in addition to designing and installing commercial audio systems. You can learn more at: [www.superiortechservicesllc.com](http://www.superiortechservicesllc.com) and contact Austin directly at: [austin@superiortechservicesllc.com](mailto:austin@superiortechservicesllc.com)

# Capturing The Perfect Live Mix Using A Soundcraft Ui16 Console

by Austin Hamilton

**Audio engineers encounter many gigs throughout their careers. Whether we're mixing local bands in small clubs or running front-of-house for touring artists, we need to be prepared to approach every show with the same level of poise and professionalism to ensure high-quality musical experiences for performers and audiences alike. But what about when you come across THAT band – you know the one – the inexperienced band that doesn't quite know how to ask for what they need or give you what you need to make sure they sound their best.**

When we're hired for a gig, whether as a resident engineer at a venue or a one-off corporate gig, the experience level of the bands we're asked to work with can vary substantially. This article will cover tips and techniques to achieve a solid mix in any situation, including how to communicate with the band, what to focus on during soundcheck and how to refine your mix once the concert has started. Though this guide is based around using a Soundcraft Ui16 digital mixer, most of these techniques can be applied to work on any console.

## **Soundcraft Ui16 Overview**

The Soundcraft Ui16 is a remote-controlled digital mixer that can be simultaneously linked to up to ten iOS, Android, Windows, MacOS and Linux devices using Wi-Fi or Ethernet connections. With built-in HARMAN signal processing from dbx, DigiTech and Lexicon, the Ui16 gives users the ability to mix 16 input

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channels using a 4-band parametric EQ, high-pass filters, compressors, de-essers and noise gates on every channel. Mixes benefit from three dedicated Lexicon effects busses for reverb, delay and chorus. Additional controls include subgroups, mute groups and full recall ability.

**Front Panel**

The front panel features a robust I/O for connecting inputs like microphones, instruments and playback devices, as well as outputs like PA speakers, monitors and headphones. The full layout includes:

- **12 XLR inputs** including eight combination XLR/TRS jacks, two of which are high-impedance inputs with DigiTech amplifier modeling
- **1 unbalanced RCA stereo line-in** for house music or pre-recorded track playback

- **Main outputs** two XLR and two 1/4" TRS output jacks, with master level control knob
- **4 XLR aux outputs** for monitors
- **2 headphone outputs** can be used by the FOH engineer to listen in solo, or switched to Aux 5 & 6 if you need additional monitor outputs
- **2 USB ports** one for playback and one for recording
- **Wi-Fi antenna** for instant connectivity to a built-in network router

**User Interface**

The Ui16 features two user interface layouts for different types of devices. Phone layout is great for band members that mix their own monitors using their phones for convenience.

We're going to focus on the Tablet layout, which is perfect for use with larger screens such as iPads or laptops.

On the main page, we'll find our channel faders, subgroup faders, FX faders, aux faders and stereo master fader. Selecting 'Mix Gain View' gives us control over the preamp gain using the main fader. Selecting 'Edit' on any of the mixer channels will open the channel strip, letting us tweak the EQ, compressor and gate for each channel.

The 'Aux Sends' page lets us dial in the amount of each channel we want to send to each aux output for monitor mixes, while the 'FX Sends' page gives us control over how much of each input gets sent to the reverb, delay and chorus effects. We can also use this page to edit the parameters for each FX engine. The 'Settings' menu is where we find options for connecting to the Wi-Fi or Ethernet router, changing the password protection, and saving and recalling show files.

**First Contact**

For all upcoming gigs, there are four types of questions you should ask before starting anything:



A variety of stage plots can be used from a basic sketch to an advanced drawing – whatever works to help you to know where the band is and who is playing what.



On the main page of the tablet UI, we'll find our channel faders, subgroup faders, FX faders, aux faders and stereo master fader.

1. Where is the power going to come from? How much power will you have? What kind of connections do you need for the power system?
2. How many people will be in the audience, and where will the audience be? Don't forget to consider where the staff will be; their opinion of your work will often influence whether you get repeat gigs.
3. Where are you going to place the main PA speakers, the monitor speakers and the microphones? A proper system layout will help you maximize system gain before feedback.
4. Who are the band members? How many members are there? What instruments do they play?

A variety of stage plots can be used from a basic sketch to an advanced drawing – whatever works to help you to know where the band is and who is playing what.

Ideally, we've answered all four of these types of questions before soundcheck. However, when working with THAT band, we sometimes don't know the answers to the latter questions until the musicians arrive. This is where clear communication comes in handy. When the band members start arriving, find a good time to introduce yourself to them and get the ball rolling. Try to get an input list as well as a stage plot as soon as possible. You may need to create one yourself after you've asked them about their band setup.

### Console Layout

Creating a basic generic show file is helpful in situations when you have a limited amount of time to get your mix together. In your file, clearly label the channels and allow a little flexibility for different types of bands. A minimal setup may include channels for drums, bass, direct inputs for keyboards and acoustic guitars, and mic inputs for electric guitars and vocals. Your generic input list might end up looking like this:

1. Kick Drum
2. Snare Top
3. Snare Bottom
4. Hi-Hat
5. Rack Tom
6. Floor Tom
7. Bass
8. Keys 1
9. Keys 2 or Acoustic Guitar 1
10. Acoustic Guitar 2
11. Electric Guitar 1
12. Electric Guitar 2
13. Vocal 1
14. Vocal 2
15. Vocal 3
16. Vocal 4

This basic setup will cover most bands, and it's okay to leave some channels empty if the band doesn't use all of these instruments. Stick to a consistent numbering system (from house left to house right, then front to back) that gives you a clue to each input's stage position. For example, Vocal 1 should be the far left microphone (or stage right), and Vocal 4 will either be the far right microphone or in some cases the drummer's microphone. If you number your monitors the same way, it will make it easier to keep the mix together in your head.

You may also want to pre-assign your channels to subgroup faders to make quick adjustments to the overall mix. With only four subgroups available, it's a good idea to group inputs into families, such as:

1. Drums and bass
2. Keyboards and acoustic guitars
3. Electric guitars
4. Vocals

While you're at it, you can make use of the mute groups to quickly mute multiple channels at once. For instance, having all of your FX Returns on a mute group allows you to switch FX off in between songs, while having all of the instruments on a mute group lets you mute the band but keep the vocal microphones open when an emcee is making announcements between sets.

When using a rental console, you have the ability to import your settings from a USB drive in the "Shows" tab.

### Soundcheck

Once you've checked to make sure you're getting good signals from all of the input channels, it's time to perform a soundcheck with the whole band on stage. Tell the band your game plan, and don't be afraid to give them instructions to get through soundcheck smoothly.

Focus on making the band happy with the monitor mix before you dial in your front-of-house mix. Let them know ahead of time that you want to run through the input list one

channel at a time, and while that channel is being checked, each member should raise their hands if they want to hear more of that instrument in their wedge. Don't be afraid to nicely ask members to turn their stage volume down if bleed from amplifiers becomes a problem, and make sure you're giving them enough through the monitors so they're not tempted to turn themselves back up.

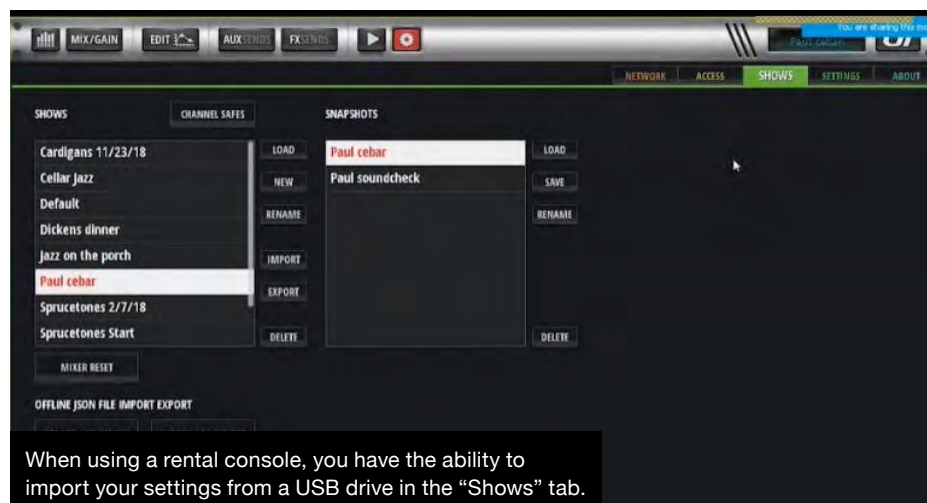
Once members are satisfied with what they're hearing on stage, it's time to go out front and get the house mix started. Ask the band to play through one or two songs, so you can get a mix roughly dialed in using only the main faders first. You may need to tame a few channels with EQ or compression or enhance the vocals with reverb and delay, but don't spend too much time on this. You can always make these adjustments during the first few songs of the actual performance.

### Showtime

When the performance starts, stick close to the band for a few songs and let them know where to look for you if they need any adjustments to their monitors. It's also a good idea to walk around the space to get an idea of how your mix is translating in different parts of the room. One of the advantages of using a tablet-based mixer like the Ui16 is that you can directly tweak your mix from anywhere in the room, but even if you're on a traditional console, this walk-around can help you figure out your next move.

When you're confident that the band members won't need any more monitor adjustments and that your mix sounds good throughout the venue, it's time to have fun and do what you do best. Spend the rest of the show making minor adjustments, and if you're using timed delay effects, make sure to sync them with the band by tapping in the tempo of each song.

I hope you enjoyed this article, but I also invite you to view the video replay of my full Soundcraft Learning Session webinar: How to Mix THAT Band on a Soundcraft Ui16. <https://harman.remote-learner.net/course/view.php?id=1485>



When using a rental console, you have the ability to import your settings from a USB drive in the "Shows" tab.



# GlasGLOWs in the Dark

## Robe i-Series Fixtures Beat the Weather

text and photos by Louise Stickland

**The fourth GlasGLOW event opened hearts and minds as people engaged with the fun and imaginative light art presented by the stunning Itison illuminated trail concept in Glasgow Botanical Gardens in the city's West End. Two kilometres of lighting, set pieces, and narrative magic energised the dark winter evenings, and lighting designer Grant Anderson chose Robe iPointes and iSpiiders to help ramp up the drama for the central installation and finale.**

Grant had used iPointes for 2020's GlasGLOW3 event, and was delighted with the results, so he spec'd the fixtures again this year to create impressive searchlight beam effects blasting through the air around

the finale lighting composition, a large area involving the main lawns transformed into an ocean of pixel dots which was traversed by guests via a central walkway.

The iSpiiders were used in this same area, horizontally beaming across the lawns as they came alive with animated, colour changing, chasing pixels.

It was the third year that Grant has lit the two-and-a-half-week event for which he worked closely with set designer Kenneth Macleod and composer Kevin Murray, who both created unique scenic and audio pieces for the various zones making up the trail.

This year's GlasGLOW messaging was aligned with COP26, the 2021 United Nations Climate Change Conference, taking place the week after it opened, drawing attention to the need to save and preserve our precious planet now!

GlasGLOW's narrative thread was based around defeating the powerful and dangerous pollutant 'Gloop' which was threatening to take over the city, however guests didn't have to follow this literally to enjoy the adventure of this multi-layered, large scale and at times truly immersive visual and sonic installation.

Also different from the 2020 installation were the Covid restrictions. A year ago, capacity was very limited, and people had to keep moving. This year, with the recent easing of rules, the numbers were increased, social distancing wasn't necessary, and bars and food outlets could operate with people allowed to stop, linger and socialise for periods as they wished.

Four iPointes were deployed at the entrance to create a big film premiere vibe. These had been so successful last year that GlasGLOW creator Oli Norman wanted the effect again, and the iPointes were back, rigged on truss towers either side of the entrance to the Gardens.

Another 12 iPointes were positioned around the lawns for the finale. Four were on risers in front of Kibble Palace, the famous 2000

square metre iron-framed 19th-century plant house that dominates that end of the Gardens. These fixtures shot beams lengthways down the lawns and looked spectacular.

They were intersected horizontally by two more banks of four iPointes, one sitting on risers under a clump of trees, matched on the other side by four on the roof of one of the other plant houses, with the actual sources hidden but the beams clearly visible.

They were primarily used in white with some colour bumps cutting into the night skies. "They were the brightest lightsource available that didn't need to be covered in domes," commented Grant, adding that he also knew from last years' experience that iPointes were reliable, a major consideration with the Scottish winter!

The iSpiiders he was trying for the first time! "It's always exciting to use new technology, and this was a perfect application," stated Grant, adding that he was "delighted" with the results. Eighteen iSpiider units were spread out equidistantly along the lawns, left and right of the central runway decking, with the other two rigged on trussing in the prologue area and running in wide mode to display patterns on their LED rings.

Grant utilised over 2000 different lighting fixtures (more if you count the pixel dots) on the entire project, which was spread out across the Botanical Gardens, all controlled via two grandMA2 consoles programmed by Lawrence Stromski in a very well organised FOH cabin. Two areas of the trail were running a timecoded show and the rest of the lighting effects and scenes were MIDI triggered via the soundtrack.





All the lighting equipment was supplied by Encore, project managed for them by Adrian Searle and Stephen Reid. Grant comments that their service and attention to detail was “excellent as always”. They co-ordinated closely with the event’s technical manager Dan Quale, and production manager Paul Claydon.

Another great hit with the public, there was also a big emphasis on making GlasGLOW4 as carbon conscious as possible. Much of the lighting was LED or low powered, the generators ran on biofuel and where possible, the sets, scenic pieces, and the site were created using recycled or recyclable materials.

The initial bump-in at the Botanical Gardens began two weeks prior to the event opening and involved establishing all the infrastructure including power, cabling, services, office and work cabins, and the technical production kit arrived a week later. This was installed over three days, followed by some frenetic programming sessions ahead of the first client walk-throughs, then notes and tweaks, with everything ready to roll for the opening night the middle of the following week!

The schedule, especially allowing for idiosyncrasies of the weather, was tight, but with such a great team onboard; “the camaraderie was great, and we have all enjoyed working together again, bouncing ideas around and getting imaginative ... it’s been a very creative and rewarding process,” concluded Grant.

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# MINISTRY OF SOUND CLASSICAL

## London Concert Orchestra uses KLANG to deliver world's favourite dance classics

Images courtesy of Leigh Davies

**Ministry of Sound Classical (MoS Classical) is a celebration of 30 years of Ministry of Sound's favourite dance classics performed by the London Concert Orchestra. As this spectacular show prepared to take to the stage for a highly anticipated return to the live arena, its audio team turned their attention to giving the 50-piece orchestra a new and different kind of in-ear monitoring by choosing KLANG's innovative 3D personal monitor mixing system.**

KLANG was not unfamiliar to the Head of Sound and Sound Designer for the show since 2018, Phil Wright, and he has become increasingly familiar with it in recent months.

"I'm involved with the 5G Festival, an R&D project that's working on finding ways to allow musicians to play together with insignificant latency over the 5G network," explains Wright. "We've been using KLANG on that to great effect, finding that working in a 3D environment brought significant advantages to the project."

This positive experience meant that when the series of MoS Classical dates landed in his diary, Wright suggested to RG Jones, who were supplying the show's audio equipment, that KLANG was the ideal monitor system to use and would be a great investment for them.

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“They immediately saw the benefit and purchased two KLANG:vokal processors and 12 KLANG:kontrollers from HD Pro Audio,” says Wright, the latter allowing members of the orchestra to control their own mixes, sent by Wright from his DiGiCo SD12 96 at Front of House, with Associate Head of Sound, Leigh Davies, in charge of the stage, spatialising the individual mixes using the KLANG:app.

A key factor in Wright’s choice was KLANG:vokal’s ability to handle 64 channels of Dante or MADI, which could be routed from the console’s direct outs and/or submixes, create relative mixing groups, and for every KLANG:kontroller panel to be customised to the person using it. “As we went through production rehearsals, the benefits became clear to everyone,” Wright continues. With a busy mix featuring numerous percussive elements and a click track, a standard mixer system would have been a compromise, necessitating knocking something into mono or taking it away; KLANG meant he could just keep adding.

“It also allows us to position the click directly in front of people, rather than having it panned to the centre in stereo, which means they can latch on to and follow it much more easily,” he continues. “It’s very neat and elegant that the backing singers, for example, who have a KLANG:kontroller but are on radio in-ears, can move about the stage. Previously we’ve had to come out of the mixer panel with a mini jack to two XLRs, then run long XLRs back to the RF pack to get the output of the mixer back into their ears. With KLANG, we can output that mix anywhere. I sent the mixes over Dante XLR breakout boxes, housed in the same rack as the in-ear transmitters, thus removing the need for additional cable on stage. It’s a much cleaner solution, and more reliable because you’re not depending on jack to XLR connectors.”



KLANG:kontroller

Davies describes his role as making sure the stage is solid, ensuring that both Wright and the artists are completely comfortable. The KLANG set up gave him the ability to listen to each monitor mix on the artists’ individual KLANG:kontroller, with his own panel able to look like the artist panels, from side of stage. This allowed him to work like a monitor engineer and jump on any issues but without

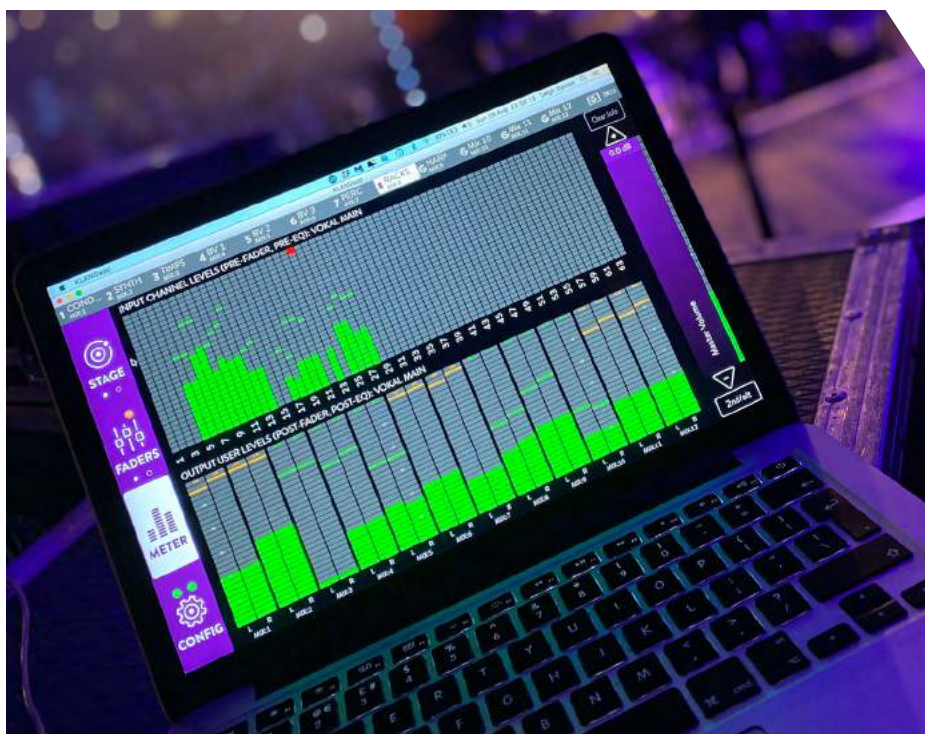
the need for a console, an advantage with such a busy stage.

“With a KLANG:kontroller in front of them, if we turn up at festivals and don’t get a sound check, they need to know their mix is bang on from the first beat of the first bar. KLANG gives that to them,” he says. “On a very busy and loud stage there can be too much information. KLANG’s 3D environment gives space to each element and the placement of the objects gives a feeling of support. The artists don’t realise what’s going on, which is part of the beauty of it, it just makes everyone’s life easier. It’s brilliant.”

Although there was no time to rehearse, Wright and Davies spent time with DiGiCo’s Tim Shaxson and the RG Jones team setting the system up and were confident it would work from the get-go.

“Thanks to KLANG’s association with DiGiCo, the system has a reassuringly DiGiCo infrastructure,” says Davies. “It has the same language and some of the same behaviour patterns and recall parameters. The more we understand how to use the app and the benefits of it, the better it gets and my involvement in the spatial aspect gets bigger.”

“Using KLANG gives an acoustic feel on stage. Even though this is EDM and there’s a very noisy crowd of upwards of 5,000 people, the orchestra can perform just as they normally would and with a beautiful dynamic. Everyone really enjoyed it and the crowd went wild.”



# BOSE VB1

by Tristan Herrod

**The Bose VB1 sits in a relatively young but fast-growing product category which we've been referring to as UC Bars or Video Bars. I first saw a pre-production example of the VB1 in Cape Town at a Bose Global Presence Alliance summit. Christian Liebenberg from Bose APAC presented it along with a lead developer to our group. It was definitely ahead of the curve. After gaining Microsoft Teams certification, the VB1 now sits high on our list of equipment recommendations. Bose have ticked all the boxes; rarely do we see a new product where they've thought of everything.**

I think Bose did what Bose do when developing this product; they took a step back and listened. They saw traditional loudspeaker sales on a rapid decline. UC soundbars are quick, easy, accessible and affordable. They have enabled IT departments to take over what are traditionally AV spaces and roll them out in large numbers. Every room that IT take is a room that we in AV integration lose. Bose saw AV's numbers going down and went back to the drawing board to stay relevant.

## Application

We recently installed a number of VB1s in a government building as part of a Microsoft Teams room upgrade. It was a large project across a major department with around 80 old UC appliances that needed to be replaced. Part of this rollout involved addressing audio issues in six particular rooms. These rooms were hexagonal glass fishbowls, which is awful for AV. The old UC system was almost unusable. Not through any shortcoming of the system itself, just because of the harsh environment.

We installed a Bose VB1 in each of these rooms, which cost much less than the original system. Because of the superior control of the VB1's mics and speakers, it has created a much better UC environment. The customer effectively got six rooms back to full functionality that people are now happy to use. That's a solid endorsement.

We've rolled out around 30 VB1s in the last few months, with zero bad feedback. Customers comment positively about the audio quality, particularly of the microphones. The rooms we've delivered work exactly as expected, which is an endorsement considering how low user expectations of UC and VC are in the market.

## Microphones

The VB1's six beam-forming microphones are perfect for steering in small to medium spaces. It's become common to have a screen mounted perpendicular to where people sit in smaller meeting rooms, so people are looking at their virtual colleague on a screen to their side. It's no good sticking in a mic directly mounted on or under the screen

if it's unsteerable and picking up noise from the corridor if people are sitting to its left and right; the VB1 has the tools on board to easily adapt to the modern workspace.

## Camera/Video

While Bose are an audio specialist, they actually went to the drawing board and designed and built their own camera. The VB1 has more video processing power on-board than it currently needs, and Bose have flagged continued firmware updates coming that will enable the VB1 to do more. We're looking forward to people counting, object detection, and being able to pull all data on that out over the network.

## Connectivity

There's HDMI pass through which the VB1 manages up to its display. The USB spec is 3.x with a USB-C connector, so once you get that to the meeting room table, away you go. The VB1 then manages everything beyond that USB-C connection; video to screen, camera, and audio. Via HDMI-CEC, you can control automation, monitoring, and trigger on and off via connection to the display.

## Networking and Data

If you sit down with facility, technology, and IT managers, they'll tell you they want more data on how their facilities are used. Being able to tell them typical number of people in the room and what they walked in with is invaluable. The IoT ecosystem is like a runaway train and it keeps picking up. What the big end of IT are doing is what AV should be adopting, and that's providing real-time monitoring and support capabilities. Sometimes really expensive AV devices have that, but all the other bits in the middle that are just as necessary haven't had the same consideration. To see the VB1 launch with a network port for remote management was exactly what we wanted.

In terms of configuration and programming, the new Bose Work Control Software that we use for the VB1 is straightforward, easy and accessible. We consider it quite the improvement over some of Bose's older DSP programming software.



## Bose VB1 - The Specs

### Loudspeaker Array

Configuration: Stereo loudspeakers, ported enclosure

Amplifier Power: 20 W per channel

Frequency Response (-10 dB): 85 – 20,000 Hz

Maximum SPL @ 1m: 89 dB

### Microphone Array

Configuration: 6 microphones

Frequency Response ( $\pm 3$  dB): 20 – 15,000 Hz

Pickup Range: 6m

Technology: Static and adaptive dynamic beam-forming, three exclusion zones, stereo acoustic echo cancellation (AEC), digital noise suppression

### Camera And Video

Field of View (FOV): 123° diagonal  $\times$  115° horizontal  $\times$  81° vertical

Image Sensor: 8 MP

Focus Distance: 0.5 m to  $\infty$

Lens: Up to 5x digital zoom, detachable camera privacy cover (included)

Positioning: Autoframing capability or manual PTZ with three configurable presets

Processing: Automatic white balance, automatic brightness, digital noise reduction

Supported Video Resolutions: UHD 2160p (4K), 1080p, 720p, 960 $\times$ 480, 848 $\times$ 480, 640 $\times$ 480, 640 $\times$ 360, 432 $\times$ 240 (30 fps)

Video Encoding: H.264, M-JPEG

### Connections

USB: USB Type-C to host computer (with DisplayLink) (USB 3.0 UAC, UVC, HID)

Network: Wired - RJ-45, 1 Gbps Ethernet (IEEE 802.3). Wireless - Wi-Fi 802.11ac

Bluetooth: Bluetooth 4.2 HSP, A2DP, AVRCP, BLE

Display: HDMI 1.4b and 2.1 output (to display, from host computer)

Analog Audio: Stereo 3.5 mm input

General Purpose: 2-pin Euroblock general-purpose input

Power: Via external power supply with localized power cord (included) Input: 110 – 240 VAC, 50/60 Hz, 1.5 A max. Output: 24 VDC, 1.875 A

### Improvements

We'd like to see the VB2 next – a larger version of the VB1. Or alternatively, extension microphones for the VB1. In larger rooms, we find the VB1's mics limit you before the camera or speakers do.

### Conclusion

We've been delivering much richer collaboration environments over the last two years. There's a lot of talk of hybrid work, and more collaborative meeting hubs instead of isolated drudgery at desks. However, work is changing, companies will have to build facilities that attract top talent. Part of this is going to be smart appliances with well thought-out features and capabilities, and Bose are leading that charge.

We love being able to deliver something that our customers consider synonymous with design, quality, and research, and the Bose badge means that. The VB1 is also good value for money. Not cheap, not expensive, just fair. Bose have also always provided great service and support and have demonstrated excellent corporate responsibility.

**Product Info:** [www.bose.com.au](http://www.bose.com.au)

**Distributor Australia and New Zealand:** [pro.bose.com](http://pro.bose.com)



**“I think Bose did what Bose do when developing this product; they took a step back and listened.”**

Tristan Herrod is Head of Sales & Business Development at Pro AV Solutions QLD. Over 13 years with the business (formerly known as Advanced Video Integration) Tristan has been a public sector account manager and senior account manager, before progressing to head of sales and BD. He holds responsibility for key and strategic accounts across all verticals, looking after Pro AV Solutions' most trusted, top-end accounts.

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# Earthworks FMR500 FM FlexMic

by Mark Patterson



Mark was roped into the audio-visual world over two decades ago when a local musical co-opted him as sound tech, his usual pipe organist role surplus to requirements. The company that provided the audio gear offered Mark a job and he hasn't looked back. Mark has been a self-employed audio engineer since 2004. He started up installation company Lifestyle AV in 2015, based in Dunedin and operating nationally supporting churches, community venues, hospitality and contractors.

**I have worked with Pacific AV from time to time over the years and it was Marcel Reinen, Managing Director, who introduced me to Earthworks a few years ago. My purchases are always guided by the quality of the product rather than my relationship with the supplier, so I put Marcel's suggestion to the test. I compared the FMR Series mics against a whole host of others and concluded that Marcel was indeed right, and the range was truly worthy of my clients' consideration.**

To see and hear them in action, I also asked Nelson hire company Events Audio to try them out for me. They were struggling with

their existing lectern mics and feedback. The majority of people using the mics were not trained in mic techniques and their current



stock just wasn't forgiving enough. The first time we used the FMR500 we were amazed how the Earthworks mic accepted the range of different speaking styles and volumes, picking them all up beautifully. The hire company and I walked away thinking these are awesome and put them straight into stock.

Since then, I have used the FMR FlexMics consistently for installations including Nelson Cathedral, St Paul's Cathedral in Dunedin, the event space in Dunedin Art Gallery, the Basilica in Oamaru and many others. They are my go-to choice and, obsessed as I am with comparing things, I still think these are the best of the bunch.

Optimised for speech, the main things for me are pick up, feedback (or lack of), and clarity. They provide incredible coverage and allow great freedom of movement. The Minister at a church in Nelson was astonished how the lectern mic could pick up speech from people who were on the altar but quite a bit further away from the mic than himself. He said it



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## ROAD TEST

was akin to having more than one mic. Plus, the built-in isolation means it handles the unwanted sounds and inevitable bumps that go on in a church situation.

Speech intelligibility and articulation is impressive too. In my recent fit out at St Paul's Cathedral in Dunedin, I paired the mic with a d&b sound system, so really good sound and really good mic, and the congregation haven't stopped commenting on the difference. In Nelson Cathedral where I just replaced the lectern mic, we've also received heaps of positive comments even without upgrading the speakers.

Lastly, and maybe not as crucially, it looks good. It is an elegant mic with a quality finish that isn't so big and intrusive as to intimidate a speaker.

There are no negatives that I have found. Frankly it isn't cheap, but the reality is you get what you pay for and it is absolutely worth spending the extra money on this mic. Support hasn't been a factor. The mic has turned up, worked and been great but I know Marcel at Pacific AV would be there for me if I needed anything.

With New Zealand being so isolated we sometimes miss out on really high-quality products. It is thanks to Marcel at Pacific AV and his commitment to keeping me up to date and understanding my market that I have been able to pass on this quality product to my clients. I am pleased to see Earthworks slowly becoming a well-known and respected brand over here.

**Product Info:**  
[earthworksaudio.com](http://earthworksaudio.com)

**Distributor New Zealand:**  
[www.pacificav.co.nz](http://www.pacificav.co.nz)

**Distributor Australia:**  
[www.audiobrands.com.au](http://www.audiobrands.com.au)

### Earthworks FMR500 – The Specs

Frequency Response: 20Hz-20kHz

Polar Pattern: Cardioid

Sensitivity: 20mv/Pa (-34dbv/Pa)

Power Requirements: 24-48V Phantom, 10ma

Max Acoustic Input: 139db SPL

Output: XLR (Pin 2+)

Output Impedance: 65Ω Balanced (between Pins 2 & 3)

Min Output Load: 600Ω between Pins 2 & 3

Noise: 16db SPL Equivalent (A-Weighted)

Weight: 225g



**“They are my go-to choice and, obsessed as I am with comparing things, I still think these are the best of the bunch.”**



# WHAT'S YOUR SUPERPOWER?

by John O'Brien



**Me, I'm a believer. Not in any deity or theism. I believe in humanity. My superpower is to believe in myself. Not as a god or island, not as being better than others. More, investing in the one thing that I have true control over - me. Believing in myself also unlocks the upgrade power of believing in others. Helping them affirm their own potential is then a top tier power.**

Self-belief is a potent thing. Too much and the ego clouds judgement. There is a fine line between confidence and cockiness after all. The former powerful, the latter foolhardy. But too little conviction and it's easy to wallow in mediocrity, never accepting the challenge to move forward or upward.

Like assuredness, power is a fickle thing. Over-endowed and it can go to your head - there is a litany of autocratic dictators, both state and commercial, throughout history.

Under-endowed and you are perpetually left on the bottom of the heap - another nameless serf providing grist for the mill.

I used to follow the maxim that 'all power corrupts, and absolute power corrupts absolutely' but I'm not sure it holds entirely true. A lot of that rests on the motivation for seeking authority in the first place. Some seek power for its own sake or to feed their ego and will inevitably end up (more) corrupted. Some abhor power and only reluctantly

accept, knowing (or hoping) that they can make a positive difference in their time 'holding the stick'. If they stay altruistic, all the better. If not, my argument fails...

**The power of positive thinking**

As a believer, I'm also an optimist and try to find the silver lining. Without delving into the 1950s Norman Peale simplistic, quasi-religious self-help schtick of the same name, positive thinking is a way to find the upside when it all seems down.

Here is a fitting example: as I was writing this, a dear friend and neighbour called.

Me: "How's it goin' old fella?"

Him: "Chugging along. Got a different brand of nappies now and I'm much more comfortable!"

This illustrates the real power of positive thoughts. 62-year-old man above is facing down T4 bowel cancer. It's all a matter of perspective. He won't wallow in self-pity but uses the extreme humility of laughing at himself as a strength. And more power to him for it.

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**“Finding your personal superpower might take a lifetime, but is a worthy pursuit nonetheless.”**



Turning your gaze up helps when all you can see are downward facing chasms. The last year or so has taught us much about that concept.

**The power of responsibility**

Another adage I've wrestled with is: 'with great power comes great responsibility.' As a CFA office-bearer, I am privileged to certain powers under statute. If I am the senior officer on scene, I can legally close roads, divert traffic and force entry into private property. These are not decisions taken lightly as their outcomes affect others. Further, the role also confers the responsibility for keeping a township of 300+ people safe. During the hellscape of Black Summer NYE, I had just that burden on my shoulders. It didn't rest easy...

Yesterday, I spent six hours running drills, training new recruits, then filing all the admin updates that went with them. As brigade training officer, I have the power to reject their applications or deem them (non-)competent in various tasks. I also have the power to certify them, even if they are not ready. I do not do this, as my responsibility is to the safety of the greater brigade (and community), and incompetent team members make our job more difficult and dangerous than it already is. Which is very relative.

**Raw power**

As I travelled through SE Asia several decades ago, I was confronted by the power of military might. Two instances stand out. First, in Thailand's far northern hamlet Tha Ton (in the then still active Golden Triangle), I was having a quiet drink in a bar when a Thai army major sat next to me and insisted on practicing his English. No big deal, except

when I politely tried to extricate myself, he signalled to the grunts blocking the door and they stared menacingly at me as they fondled their AK-47s. I took the hint and stayed another three hours until set free. I left town first thing next morning, fully aware of the power of guns and the establishment behind them. Two tourists had disappeared without trace in the area a month prior.

Later, I ventured further into the unknown and entered (the only recently opened to foreigners) Laos. It felt like Thailand might have generations prior. But the guns were no different. Travelling inland to the heart of the country, our public bus went through a zone of insurgency. As there had been recent attacks along that route, armed guards joined us for a portion of the journey. If the precipitous slopes and poorly maintained roadways weren't scary enough, having a bunch of teenagers brandishing AKs sitting atop and inside the bus was not confidence inspiring. These kids had the responsibility of keeping us safe and their sole power was an automatic weapon. I'm not sure who was more nervous.

With all deference to the awesome legend that is Iggy Pop, this was real raw power in action.

**Virtual power chargers**

Safely back in the first world, I discovered PC games, particularly of the 4X variety. Over the time since, I've logged thousands of hours immersed in digital warfare and intrigue. To what end? Mainly escapism, but also brain training and occasional life theory sandbox.

This month's virtual warfare alone has delayed a few items on the to-do list. However, I justify it this way: while conquering virtual worlds, it has helped me mull concepts in the back

of my head and released some stress at the same time. I feel energised afterwards and better able to tackle the day.

In gaming land, I have both the power to do what I want (within the constraints of the game mechanics) and the power to restart any time things aren't going as planned. Unfortunately, in the game of life, we don't have the option to reload. Instead, we must take time out to reset.

Everyone has their unique way of energising their own batteries. Take a holiday, play sport, gaze at your navel, potter in the garden, veg in front of the teev, surge endorphins at the gym, or bash monsters like me - just regularly do whatever it takes to replenish the tank. Even superpowers need topping up. Maybe that's why Batman and Superman chill in civilian life between capers.

**Authorise your own dominion**

Everyone has latent power in them. Working out what it is and then unlocking that capacity is far from easy. Finding your personal superpower might take a lifetime, but is a worthy pursuit nonetheless.

You don't have to wear your undies on the outside to be a super person. When you believe in yourself, your confidence radiates. It is the good type of infectious and others will feed off it, raising their own bars in the process. Like all things good, finding your inner bastion will take patience and persistence. Refining it, even more so.

Next time you press the button to make the little LED on your device glow, you know it has power. Then flip your own personal switch and unleash your individual power.

# PUTTIN' ON THE GLITZ

## Life is a cabaret

The Delltones

Snippets from the archives of a bygone era. **By Brian Coleman**

**A battle-hardened music technician singing the praises of a cabaret gig might suggest a few too many open-air gigs in the midday sun. However, the twilight of my career in live entertainment technology was spent gleefully in that genre.**

To some, it might have been as much fun as a funnel web spider, but for me it was a fitting finale to go out amidst the glitz, glamour and complexity of cabaret in the Starlight Room at Wenty Leagues (Wentworthville Leagues Club, Sydney). From the guy on the door decked out in his tuxedo to the off-stage orchestra, Wenty Leagues was a twenty-four carat cabaret venue.

Cabaret, in the modern sense roughly translates to 'floor show'. It's basically vaudeville performed in a nightclub or restaurant atmosphere. I'd been smitten since my parents took me to the Tivoli Theatre in Sydney when I was a young lad. The genre typically can be musical entertainment, dancers, jugglers, magicians, stand-up comedians, ventriloquists or all of the above

on the same night. And that's similar to what I was confronted with in the early 90s on my first night as the Starlight Room's newly appointed sound engineer.

As I waited impatiently on stage for the entertainment manager to sort things out I was informed, "Oh, he doesn't do that." So, I thought, why not add Stage Manager to my résumé? I revelled in my newly self-appointed stage management position where I'd meet top-line artists backstage, pass their music charts onto the orchestra and liaise with the various acts as to their needs and the running order of the show.

Dance troupes, some of whom sprinkled Coca Cola to dull the slippery stage floor, would go on first because you couldn't have them tripping over leads and bumping

into stage equipment; and it was too hard to strike the set for them later in the show. When artists brought their own microphones, wireless hand-held, lavalier or head-worn, I'd take them up to the 24-channel Soundcraft desk in the upstairs bio box, assign a channel and adjust the gain structure according to the sensitivity of the particular microphone. And sometimes, to the artist's displeasure, I'd have to substitute their personalised wireless microphone systems because they were sitting on some taxi's two-way radio frequency.

I was a bit of a stickler for crisp foldback devoid of any feedback, and the FOH graphics had to be adjusted to allow a feedback threshold for artists who would sometimes leave the stage and perform amongst the audience. In the case of Simon Gallaher, his whole grand piano/vocal performance was done on the floor in front of the speakers.

The upstairs bio box sported a Jands lighting desk (not sure of the model) and we had a nice array of par cans, Fresnels, and profiles to play with. We also had a regular follow spot operator, and on special occasions a casual was employed to operate the second follow spot.

## THE GAFFA TAPES

When the venue featured theatrical acts, the lighting guy would be warming the curtains with a nice wash of red while he went over the lighting plot. The room would fill with the ambient sounds of the orchestra warming up while I'd be running final checks or liaising with an MD who would be offering tips on how I should mix the show (one can't be too precious about one's ability in these situations). This was also the beginning of the digital age when the drummer would sometimes be cued by a click track and you would have to run a playback track and blend it into the mix.

A wide array of talent graced the Starlight Room in those heady days. They included The Deltones, John Paul Young, Chelsea Brown, controversial British comedian Bernard Manning, Jane Scali, Simon Gallaher, Paul Martell, and Peter Byrne's Forever Diamond Show, which was an award-winning tribute to Neil Diamond. The Starlight Room was also a popular venue for theatre companies putting on touring shows such as Phantom of the Opera.

After a couple of weeks, the contractor offered to sell me the business, and then in a very nice gesture he said, "Oh, I'll just give it to you." So, I suddenly became the Technical Operations Manager (another self-title) and the employer of the lighting and follow spot guys. I had a registered business name, so the guys were paid award wages with PAYG tax deducted for the ATO.

I immediately regimented collar and tie apparel, which was a strange edict coming from a rock 'n' roll rebel. Some might argue it was an obsession with power, but you get a lot more respect from artists by being neatly attired, introducing yourself and asking, "How can we help you?" rather than telling them what they can and cannot do.

Some of the bigger acts like The Deltones would bring in their own sound and lighting crews and equipment, which they would integrate with the club's equipment. It was a kind of night off for us, but we would help in any way we could, and you could always pick up a trick or two.

As traditional theatre masks imply, there is sadness and joy in theatre. There was childish joy in ducking down behind the mixing desk unable to stifle laughter at the not so politically correct Bernard Manning. Conversely, it was a sombre evening for The Cockroaches who turned up in their declining years devoid of crew to play to an empty house. However, it did give us the opportunity to do the sound and lighting for a band that had once been a headliner act.

There were some amusing occasions that I tend to dwell on, like the time a particular artist of the 50s/60s Bandstand era asked what were the large boxes in front of him, and could they be removed. "They are your foldback wedges, sir," I remarked.



Peter Byrne. Picture courtesy of Peter Byrne

"Well, can you put them over there on the sides of the stage?"

"Yes, but you won't be able to hear yourself." Nevertheless, at his insistence the wedges were placed at the extreme edges of the stage. Half way through his act the artist paused and addressed the bio box. "Excuse me, Mister Soundman, I can't hear myself."

Then there was the entertainer from a children's show who sent us into panic mode when he began undressing in front of the children. Much to the children's amusement he stripped right down to his baggy knee-length, brightly-striped boxers. I'm guessing this wouldn't be appropriate in today's world.

A magician performing at a senior's function had intended to surprise his audience with a finale where a dove was to fly out of a bouquet of torn strips of paper. Before releasing the dove he announced, "Well, that's the end of my show, ladies and gentlemen." Immediately, the seniors leapt from their seats

and scrambled for the free coffee, tea and biscuits, totally oblivious to the spectacle of the dove emerging from the bouquet and flying around the room.

I won't dwell on the fact that the venue's entertainment manager zealously guarded his position, and was not too pleased from day-one to see 'entertainment management' included on my résumé. Thus our professional relationship during my tenure was less than convivial. And despite being the technical contractor I was consistently refused any written agreement for my services.

Intertwined with the memories of my cabaret experience is the unpleasant memory of returning from my annual vacation to find I had been surreptitiously replaced by another contractor, who had also poached my employees. Alas, my final act was exiting the club carrying the late Chelsea Brown's suitcases down to her car whilst chatting with the lovely lady.

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festive season.

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