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- / SHURE - ODE TO THE SM58
- / JASON ALLEN - BACK ON THE TOOLS
- / KLANG - STEREO IS SO RETRO
- / IMMERSIVE AUDIO - IN 1937!

News

- / Bjork's Cornucopia Plays Perth Festival
- / Robe in the Spot-Light
- / Qvest acquires tm stagetec systems
- / The P.A. People deliver for Sutherland Shire Council
- / Bose Professional sold to Transom Capital

Regulars

- / Andy Stewart's Listen Here
- / Jenny Barrett in NZ
- / Tech Talk
- / John O'Brien's Backstage
- / Brian Coleman: The Gaffa Tapes

Road Test

- / Barnfind BarnColor
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CONTENTS

News

Bjork's Cornucopia Plays Perth Festival <i>by Louise Stickland</i>	4
Robe in the Spot-Light <i>by Louise Stickland</i>	8
Qvest acquires Australia's tm stagetec systems	10
The P.A. People deliver three projects for Sutherland Shire Council	12
Bose Announces Sale of Bose Professional to Transom Capital	14

New Gear

16

Features

Live: Awakening at Wynn Las Vegas <i>by Artemis Horton</i>	26
Installation: Tunnel Vision	32
Environment: Meyer Sound PANTHER Now Paying "Green Dividends" on Global Concert Tours	34
The History of Crystal Microphones and Artifacts from the Shure Archives <i>by Michael Pettersen</i>	39

Retro

Shure: Ode to the SM58 <i>by Julius Grafton</i>	41
Back on the Tools <i>by Jason Allen</i>	43
KLANG – Stereo is So Retro <i>by Jason Allen</i>	46
Immersive Audio – in 1937! <i>by Jason Allen</i>	50

Regulars

Listen Here: Retro Gear, Don't Shed A Tear <i>by Andy Stewart</i>	20
New Zealand: WOMAD. No queues, all cruise. <i>by Jenny Barrett</i>	22
Tech Talk: Keeping the air clear at WOMADelaide <i>by Jason Allen</i>	52
Tech Talk: Adapting A/V Professionals to TikTok <i>by Benjamin Powell, CEO of BetterCast</i>	55
Tech Talk: Signify. A profitable investment in the industry <i>by Kurtis Hammer</i>	58
Backstage: What goes around...eventually comes back around. <i>by John O'Brien</i>	64
The Gaffa Tapes: Bright Lights, Big City <i>by Brian Coleman</i>	66

Road Test

Barnfind BarnColor <i>by Alex Hasker, Lex Audio Visual</i>	60
Magewell Ultra Encode AIO <i>by Aaron Rebbeck, PlatformAV</i>	62



Cover and contents photos – Awakening at Wynn Las Vegas. Photo credit: Wynn Las Vegas

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PO Box 1045, Ascot Vale, VIC, 3032
Phone +61 (0)407 735 920 | Email jason@vcscreative.com

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BJORK'S CORNUCOPIA



PLAYS PERTH FESTIVAL

Iconic Icelandic composer and performer Bjork's acclaimed visually and sonically immersive 'Cornucopia' theatre masterwork played a four-night residency at the recent Perth Festival in Western Australia. It delighted fans and was staged in a purpose-built 5000 capacity pavilion in Langley Park, ensconced amid a 'cyber-sonic Garden of Eden' uniting nature and technology.

The tour's lighting is co-designed by UK-based creatives Richard White and Bruno Poet, and for the Perth shows, equipment was supplied by local rental company Showscreens, including several Robe moving light fixtures from their extensive inventory.

Gracing the rig were 18 Robe BMFL Blades, 20 BMFL Spots, 15 BMFL Wash Beams, 30 Spiiders and 12 LEDWash 600s plus two more BMFL WashBeams on RoboSpot systems that are specified for the whole tour.

"Showscreens were an excellent choice of rental partner and came up with a great package for us," stated Richard, who utilised the BMFL Blades for all the key lighting and sidelight. Their accurate framing shutter system is "essential" for this show, he noted,

and that is due in a large part to the video projection's multi-layered tracking curtain system.

The BMFL Spots and WashBeams also made up the remainder of the flown and floor fixtures, and these were primarily used for effects and imaginative beam work.

Working as an over-stage wash light, the Spiiders were highly efficient for covering all the necessary areas. Spiiders were also rigged on the audience trusses and augmented with the LEDWash 600s.

Cornucopia's sound design features a full 360-degree d&b audiotechnik Soundscape audio system with approximately 100 loudspeakers all around the auditorium, with



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numerous audio tracking and spot effects mapped to the lights, which requires plenty of fixtures above the audience to gain the full effect.

A two base station RoboSpot system running with two BMFL WashBeams has been specified for Cornucopia right from the start, when this thought-provoking collage of image, lighting, sound, music and movement was first staged at The Shed in New York in 2019.

Richard describes the RoboSpots as “vital” for the show. All the tracking, following, and sizing of the beams is undertaken by the RoboSpot operators, while he retains control of all the other parameters via the lighting console, a set up that allows for lightning quick reactions to the sudden changes in the stage space that come with the repeated curtain moves happening live throughout the performance.

Richard also reveals that in terms of quality of light, he prefers the slightly softer feel of the BMFL WashBeam for this task.

In Perth, Richard worked alongside festival production managers John Carter and Rio Hall-Jones and the Showscreens team comprising production manager Kale Tatam and lighting techs Cameron Munro and Josh Tilson.

“Showscreens definitely listened to and fulfilled the brief,” he commented, adding, “it’s not an easy show to walk into as a local supplier, but Kale and Rio were super supportive throughout, while Cameron and Josh ensured that everything ran smoothly and we were always well looked after!”





Showscreens' owner Ryan Varley stated, "We were delighted to embrace the challenge of fulfilling Richard's and the Bjork teams' requirements to deliver a spectacular show in the largest free-span tent in the southern hemisphere!"

Cornucopia focuses on nature and the environment and touches on many frontline

issues and hot button topics. The visual starting point for Bruno and Richard's lighting design was the stunning video content created by artist and designer Tobias Gremmler together with Chiara Stephenson's striking and intricate scenic concepts.

Bruno and Richard both also enjoyed working with show director, award-winning Argentinian

filmmaker Lucretia Martel, whose influence brought an epic cinematic perspective and its own distinctive spirit and rhythm to the show.

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Robe in the SPOT-LIGHT

L-R: Lighting technician Asbjorn Hemmingsen, project manager Ben Cooper, workshop manager Mike Skinner and head of lighting production, Matthew Tong

Auckland based Spot-Light Systems, now part of the NEP Live Group, is among New Zealand's leading lighting live show and event rental companies, and one that has continued to invest in Robe moving lights as the country emerged from the pandemic, adding 24 MegaPointes, 12 Tarrantulas, and, for the first time, 20 x ESPRITES to their existing fleet.

While New Zealand managed via strict quarantine and travel restrictions to keep Covid cases to a minimum, full-scale and capacity shows and live events did not properly restart until several months into 2022, when things became crazy busy, related Spot-Light Systems' head of lighting, Matt Tong, driving these latest Robe purchases.

Business and enthusiasm for the arts, performance and events is now surpassing 2019 levels as promoters, organisations and event organisers jostle to squeeze in shows that didn't run for two years and accommodate the many new ones that the creative world imagined during that time. Touring has now restarted with a slew of national and international bands hitting the road, further fuelling the demand for production technology.

With nearly 400 Robe moving lights already onboard, Spot-Light Systems returned to a brand they know and trust for a multipurpose LED profile type fixture, settling on the ESPRITES to join the mix of Robe BMFL Spots, BMFL Blades, MegaPointes, Tarrantulas, LEDWash 600s and LEDBeam 100s and 150s. It is currently the largest concentration of Robe moving lights in the country.

"Robe is ubiquitous in New Zealand and elsewhere, so that offers great value for money, firstly for servicing our own shows, then as a cross rental item when available," stated Matt, adding that their Robe luminaires have been constantly busy.

"All the Robe products are worked hard and offer great performance, and everyone is

happy to use them," he said.

The ESPRITES were ordered quite soon after the acquisition of Spot-Light Systems by NEP Live. The mother company also owns broadcast lighting and video rental specialist, Big Picture, which, conveniently for continuity, also has Robe moving lights in stock.

The brand has a strong presence in New Zealand thanks to the proactivity of distributor Jands New Zealand.

"We needed a general purpose 'workhorse' LED moving light that was bright, quiet, had great colour mixing and was lightweight," Matt notes, expecting the ESPRITES to become a signature fixture type, just as 700 series moving lights did during their era.

They did however conduct a shootout with selected competitor products before fully committing.

Beam uniformity and the overall quality of light were also factors in the choice, "ESPRITE basically ticked all our 'essential' boxes and more, like Ethernet connectivity, framing shutters and a good menu system that's straightforward for technicians to set up plus many other refinements."

The quest to produce more sustainable events was also a consideration in choosing an LED source which needs less cooling and heat management, reducing electricity consumption in addition to that saved by light engines themselves.

The benefits of Robe's TE (TRANSFERABLE ENGINE) technology, allowing different or

new LED engines to be swapped in and out of the fixtures in less than five minutes to cover different applications, were also of interest.

Furthermore, ESPRITES also tied into the prolific broadcast, TV and awards show work covered by Big Picture, and now in the house, they can move between the two companies to maximise use.

"All 20 ESPRITES are out most of the time," Matt elucidates.

Spot-Light Systems' ESPRITES were recently on a George Thorogood tour and have featured on many others, while their BMFLs, MegaPointes and LEDWash 600s were on the rig for a recent show at Spark Arena by George Ezra (lighting design by Cate Carter, operated on the road by Chris Taylor).

Matt describes the BMFL as the "light that keeps on giving". Although now nearly eight years old, the luminaires are still a popular industry standard.

Spot-Light Systems is the first dedicated lighting division of NEP Live in Australasia, and during the pandemic, they saw the potential for growth and invested heavily, as the opportunity arose, predicting that the industry would get exceptionally busy once everyone returned to work and it re-booted.

Big Picture owns a massive amount of LED screens and video control systems, and as the media of lighting and video continue to converge in visual design, the two companies will work together increasingly to offer clients a superlative service.



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Qvest acquires Australia's tm stagetec systems

Qvest has strengthened its position in Australia and New Zealand through the acquisition of tm stagetec systems. With the new Qvest Australia hub, the company can now offer all global Qvest Group practices in this region as well. Customers of Qvest thus have access to an even broader range of offerings to meet the challenges of their digital transformation and remain competitive in the information, communications, and technology industry.

With the acquisition of the Australian specialist in the ICT sector, Qvest expands its portfolio on a global scale and underlines the expertise in consulting and system integration in the media and entertainment sector. The integration of tm stagetec is a consequential step for Qvest after several successful customer projects in Australia. With the establishment of the new regional hub, customers will benefit from a more comprehensive local support network offering fast and effective solutions for their technological needs.

tm stagetec will be fully integrated into the global Qvest Group and will operate in future as Qvest Australia. The specialised practices from tm stagetec including professional audio, systems integration, and their expertise in network and management tools like DataMiner, will enrich Qvest's existing offerings and practices and allow the company to stay at the forefront of innovation in the industry.

Treva Head, Managing Director at tm stagetec systems said; "We very much look forward to our future as Qvest Australia and as part of the Qvest Group. The remarkable synergies between our two companies means we can offer increased business opportunities to our customers in the areas of professional audio, broadcast and infrastructure projects across



QV-TMS Building Sydney

"...it is a clear signal of commitment to customers in the Australia and New Zealand region, which is of great relevance to us."



Mark Lownds, Treva Head, and Peter Nöthen

Australia and New Zealand. With our talented team of employees, we aim to continue to offer the high standard of products and services that we have built our reputation upon. The potential for new opportunities is endless."

Peter Nöthen, CEO of the Qvest Group said; "With the acquisition of tm stagetec, we are consistently strengthening our global presence. At the same time, it is a clear signal of commitment to customers in the Australia and New Zealand region, which is of great relevance to us. Our new regional hub at Qvest Australia with Mark, Treva, and their team, will

enable us to implement a substantial Qvest knowledge transfer to this region."

Mark Lownds, General Manager at tm stagetec systems added; "This is a time of growth for our company in which to gain the knowledge, resources and opportunities of a global entity that has a unique local perspective in each of the markets that it serves. As we move to become known as Qvest Australia, we look forward to better meeting the technology integration needs of our current clients and to expanding in our key industries to take on more complex and larger scale projects."



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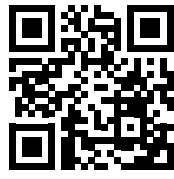
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The P.A. People deliver three projects

for Sutherland Shire Council



The Pavilion Performing Arts Centre

This significant project is a re-development and re-scoping of the previous facility, Sutherland Entertainment Centre, now designed to attract touring theatre companies and other live performances.

The P.A. People were proud to work with builder, ADCO and theatre consultant Richard Stuart, in delivering a comprehensive new performing arts facility in the Shire.

The brief required solutions for audio, lighting, video replay, CCTV, stage management, venue engineering, and AV system, across three spaces and building-wide paging across 16 zones.

The main performance space installation includes a 33-line counterweight rigging system, a stage management system complete with a stage manager's desk with functionality including BOH and FOH paging, talkback, vision of wide view and conductor's (positional) cameras, clock and timers, and foyer bells. The stage management and paging systems, as well as control of the AV systems throughout the building are based around QSC Q-SYS systems. The theatre audio solution includes an L-Acoustics A Series speaker system with arrays Left-Centre-Right plus front and under balcony fills, and P1 DSP amplifiers. The lighting solution includes a grandMA3 Compact desk, LSC GenVI dimming, Nexus NXS and NX1, and MDR DMX distribution.

In the two smaller venues, Blackbox and The Encore Room, The P.A. People installed

local AV systems for smaller functions that can receive calls for the site-wide paging system. CCTV distribution around the building includes a Black Magic Design 40x40 SDI matrix feeding sixty-four Philips Q series LCD displays. A 16K Panasonic Projector and 375" Screen Technics screen in the theatre and 8K projectors and 150" Screen Technics screens in the smaller spaces provide video replay for the Centre. Univox hearing augmentation systems are implemented in each of the three venue spaces as well as the box office, cry room, and small meeting room.

End users potentially include a mix of community-based theatre, dance, and touring shows. Significantly, the venue recently hosted the first performance of Bangarra Dance Theatre as part of the Sydney Festival, and the first Sydney Festival event in Sutherland Shire.

"The P.A. People were *exceptional* in their ability to deliver a quality AV outcome in our Council Chambers in an extremely challenging timeframe over the Christmas break."



Sutherland Shire Council Chambers

The last audio-only update to this facility was in 2015. Since then, Teams audio calls, then cameras and video equipment for web-streaming of Council meetings, have been added to the Chambers.

In Sept 2022, Council called for a refit of their Chambers, which required TV screens and physical changes to complement a bigger room. Due to works and scheduling constraints, this upgrade was completed over the Christmas break and had to be operational by Feb 6 for the first Council meeting. The P.A. People started installing all the new equipment

from Jan 30 and had everything running in just three days, leaving one day for testing and tuning.

Video equipment selected for the task included LG screens, Panasonic PTZ cameras, a Cypress Multiview HDMI switcher, Kramer HDBT, BMD Web Presenter, and Brightsign. The audio system incorporated QSC, Australian Monitor, Audio Technica, Roland, Mipro, a Denon USB Audio Recorder, Bosch Dicensis conference system, and a QSC Core 110f processor. The audio control system featured equipment from Crestron and Ruckus. The first Council meeting in new Chambers occurred on Monday Feb 6.

Ross Ford, Project Manager for The P.A. People said; "Our company was very pleased to be involved in the project delivery, and the outcome was well received by Council." Stuart Lord, Project Coordinator, Information Management and Technology at Sutherland Shire Council said; "The P.A. People were exceptional in their ability to deliver a quality AV outcome in our Council Chambers in an extremely challenging timeframe over the Christmas break. Ross and the team were diligent, methodical and thoughtful in their planning, technical delivery, customer service and adaptability to changing conditions. We at SSC really appreciate their work, in what was a key part of the delivery of the new Council Chambers to the organisation and the general public."

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Sutherland Memorial School of Arts

As the oldest Council building in the Shire, officially opened in 1922, this has been a long-term home for performances by Sutherland's

local theatre and music companies. With its recent refurbishment complete, the Sutherland Arts Theatre is now open. The facility also houses early 1900s memorabilia for the Shire, adding to the building's important heritage value for the District. Council states; "the former Memorial School of Arts has a capacity of 160, and is the perfect home for comedy, music, film screenings and theatre productions requiring an intimate space."

The P.A. People was selected to work with Sullivans Builders for the project, with Jeff Bellingham from Sutherland Entertainment Centre supplying the specification. Renovations over the years have retained features of the period, and with this latest upgrade, various works required care in relation to preservation aspects. The upgrade now provides a level of AV spec to accommodate a greater range of end-users, with a stage, small orchestra pit, and a wheelchair access lift, among other inclusions.

For the main performance space, lighting fixtures, LED multipars, DMX distribution, and a front-of-house lighting bar is located further into the room to allow improved throw and

disbursement onto the stage area. There are new DMX feeds to all lights and LED fixtures, plus DMX stage inputs back to the LSC MDR DMX distribution. The sound upgrade features new Bose F1 speakers suspended from the ceiling, with subs placed under the stage. There are new stage inputs to Prompt and Off Prompt which can be patched into the Yamaha digital stage box or via analogue tie lines to a mixing position at the rear of the Hall. A Yamaha TF3 mixing desk handles the audio task for larger performances.

Two new radio mics have been installed in the side of stage rack, wired directly to the simple Yamaha MTX mixer to provide an easy-to-use system for basic audio requirements, with the addition of an auxiliary input. The radio mics are also patchable into the main TF3 mixer.

There is a new bar area and an outdoor space, and together with the foyer area the spaces have overflow speakers installed; controls for these areas and a paging facility are available in the foyer control panel. This upgraded facility is now open for business.

papeople.com.au

Bose Corporation Announces Sale of Bose Professional to Transom Capital

As a newly independent business, Bose Professional intensifies its efforts and focus on the Pro AV market.



For more than 50 years, the Bose Professional business has developed audio systems that are easy to design, install and operate for performance, commercial and conferencing applications. Through their partnership with AV integrators, system designers, installers and consultants, Bose Professional engineers and develops solutions that create unforgettable audio experiences — in the workplace, houses of worship, universities, restaurants, retail stores, hotels, performing arts centres, stadiums and more.

As a newly independent business, made possible by its new investor Transom Capital Group, Bose Professional will deepen its efforts and focus on technologies and solutions that enable their customers to create incredible audio solutions faster and more efficiently.

As a sign of this new focus and attention, Bose Professional announced today the appointment of Mark Ureda to the company's Board of Directors. Ureda's nearly four decades of experience across a variety of

strategic leadership roles include Senior Vice President of Harman International, Vice President of JBL, and Vice President of Corporate Strategy and Technology at Northrup Grumman. As business advisor, Ureda will enrich the already extensive professional audio experience currently seen in Bose Professional's leadership team.

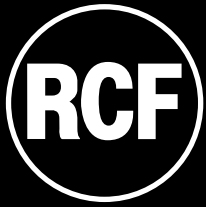
"For the last five decades Bose Professional has developed innovative solutions and partnered with system integrators to create incredible pro audio experiences," shared Michael Bennett, Chief Executive Officer of Bose Professional. "The AV industry continues to be poised for growth and opportunity, and we're excited to expand our role as we respond to changing customer needs and industry trends faster."

"Given Bose Professional's pedigree and expertise in professional audio, coupled with its talent across the disciplines of the business, we're excited to provide the additional support needed for the next level of growth,"

said Transom Capital Group's Founder and Managing Partner, Russ Roenick. "We look forward to continued success for the business as an independent company."

"Bose Professional's tenure in the professional audio business, its standout product portfolio and customers, as well as its team dedicated to researching, engineering and delivering new and innovative products, made it a compelling business for us to bring into our portfolio," said Russ Roenick. "We are working closely with Bose to ensure business continuity for Bose Professional going forward, and we look forward to continued success for the business as an independent company."

Bose will retain its portable PA systems as part of its core consumer product business. Progress Partners acted as Bose's exclusive financial advisor in connection with the sale. Additional information, including financial and other terms of the transaction, will remain confidential.



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DPA Microphones' new compact 2012 Cardioid and 2015 Wide Cardioid microphones feature durable, reinforced construction to withstand the rigors of touring. Ideal for a variety of instruments, from loud and booming audio to gentle and elusive tones, both mics are pre-polarized condensers, each with a specifically designed 17mm (0.67-inch) capsule that is perfectly tailored for its intended application. Like most DPA mics, the 2012 and 2015 come in a practical zip pouch, along with a microphone holder and windscreen. Additional accessories such as a stereo boom, gooseneck mount and corresponding shock mounts are also available.

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LumenRadio Galileo

With the increasing demand for dynamic light control in fixed installations, LumenRadio have announced the availability of Galileo TX & RX, two products designed specifically for fixed installation projects where Wireless DMX can make the project both easier and more cost efficient. Powered by LumenRadio's trusted and reliable CRMX™ technology, and developed with the close collaboration of industry professionals, Galileo is developed to make every installation project easier than ever by providing reliable Wireless DMX in an install friendly form factor.

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



Yealink MeetingBar A10

The Yealink MeetingBar A10 is a comprehensive video conferencing solution that is designed for home offices and small to medium-sized meeting rooms. Integrating the computing unit, camera, microphones, speaker, Bluetooth, Wi-Fi and its TV mount, the MeetingBar A10 measures just 380 mm x 55 mm x 55 mm. It comes with all the necessary hardware and cables, and can be mounted on a wall or placed on a table. The Yealink MeetingBar A10 is fully certified and compatible with leading video platforms such as Microsoft Teams and Zoom.

Australia: Madison AV www.madisonav.com.au or 1800 00 77 80
New Zealand: Ingram Micro nz.ingrammicro.com or 0800 INGRAM (464726)

NEW GEAR

L-Acoustics L Series and LA7.16

L-Acoustics has announced the new L Series with its patented Progressive Ultra-Dense Line Source (PULS) technology. L Series comprises two elements that are designed to work together or on their own: L2 above and L2D below. One L2 or L2D element provides the same contour as four K2 elements in a format that is 46% smaller and 40% lighter. The audio benefits of L Series encompass industry-leading SPL per size, unparalleled consistency over the audience area, and improved rejection everywhere else. Accompanying the audio benefits, L Series revolutionizes deployment with a smaller, lighter footprint that reduces truck space and requires fewer elements, cutting the number of actions needed to load in and out. The operating efficiencies of L Series originate from its shape. With no inter-element angles, a pin-less auto-lock rigging system, and a single cable connector, repetitive load-in/load-out actions are drastically diminished. This creates a set-up environment that reduces errors and leads to a stunning three-fold decrease in loading time versus a similar K2 configuration or up to five times faster than Kara II. Adding to system efficiency, L Series is driven by the new LA7.16 high-resolution touring amplified controller, which supports L2 and L2D with 16 channels of high-power amplification and processing. LA7.16 comes in a new LA-RAK III touring rack offering 48 channels of amplification in a Milan AVB-ready package with more than 60,000 watts of power in 9U. Leveraging the high-resolution amplification of LA7.16 and the advanced Autosolver tools, L Series output can be perfectly modulated to achieve results that are impossible with traditional line array technology.

Australia: Jands www.jands.com.au or 02 9582 0909
New Zealand: Jands NZ jands.nz or 021 674 601



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Neumann KH 120 II

The KH 120 II is designed to the same philosophy as its predecessor and takes it to the next level: highest linearity, lowest distortion, no coloration, and perfect adaptability to any acoustic environment. It includes a novel woofer design that reduces distortion audibly and allows for much higher SPLs. In addition to flat frequency response from 44 Hz to 21 kHz (± 3 dB), the KH 120 II also offers a linearised phase response, which translates to clear mids with astonishing transparency as well as extreme accuracy in the time domain, i.e. precise impulse reproduction and finely resolved reverbs. This is made possible by DSP-controlled electronics whose sophisticated crossovers avoid the phase distortion caused by analog filters.



Neumann MT 48

The MT 48 audio interface is the first product with Merging Technologies inside. Based on the acclaimed Merging Anubis audio interface, the MT 48 features additional USB and ADAT connectivity, as well as a new user interface, optimised for maximum ease of use in studio and home studio applications. With a dynamic range of 136 dB (A) and mic preamps with up to 78 dB gain, the MT 48 captures the full sound potential of even the best microphones without any bottlenecks. The MT 48 has 4 analog inputs and 8 analog output channels (4 stereo outputs) and is expandable via ADAT (switchable to S/PDIF) and AES67. MIDI I/O is included as well.

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



NEW GEAR



QSC L Class

QSC is pleased to introduce L Class; the next generation of advanced, intelligent, active loudspeakers for applications ranging from simple, portable, plug-and-play setups, to demanding, networked, high-tech AV productions and fixed installations. The new LA108 (two-way, 8 inch) and LA112 (two-way, 12 inch) active line array loudspeakers are complemented by the LS118 (single 18 inch) active subwoofer, each offering a brilliant combination of leading-edge innovation and ease of use. Technical innovations include the proprietary QSC LEAF™ (Length-Equalized Acoustic Flare) waveguide, the ergonomically designed, single operator QSC RapidDeploy™ rigging system, and QSC AWARE™ (Automatic Wireless Array Recognition) system intelligence, which also provides one-button single box or full array intelligence and optimisation.



QSC Q-SYS NV-21-HU

The NV Series NV-21-HU is a two-input, one-output endpoint with support for HDMI and USB-C. The NV-21-HU simplifies installation with a single-cable solution for video distribution, AV bridging and device charging via USB-C. Its compact design and reduced I/O make the NV-21-HU ideal for supporting meeting rooms, learning spaces, hospitality and entertainment installations. As a software-configurable solution, the NV-21-HU can be defined as an encoder or decoder (in Q-SYS Designer Software) offering the ability to operate with either HDMI or USB-C connectivity. This enables integrators to provide a more flexible system that supports a broader range of devices while eliminating the need for adapters and, in some cases, multiple cables.

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ALLEN & HEATH

RETRO GEAR

Don't Shed A Tear

Almost everyone in the audio industry grows up with stars in their eyes, dreaming of becoming a rock star, hob-knobbing with rock stars or working in the industry with 'heavy hitters'. But a far kookier group of individuals have no such dreams or expectations. They simply like owning retro gear, and here in this dusty back room of the audio industry, the measure of success is not fame, fortune, fast cars or clean clothes (certainly not clean clothes!), but rather esoteric audio equipment of all types and from every era. The key criteria? Paying nothing for it!

It's a kind of backwards logic, the world of retro gear ownership. While most normal human beings, for good or ill, tend to show off their latest purchases, new houses, cars, clothes, or private jets, boasting along the way about how expensive they were, retro gear aficionados are all about finding a Holy Grail in someone's cupboard and paying almost nothing for it.

The motivation is simple: find said Grail (or lesser relic of significance), pay a pittance to the poor bastard who was unaware of its current value, take it home, stash it somewhere, don't bother checking whether it works or not, and then rush online to tell everyone in your crusty club what you just scored. The two important facts are that A: the item is safely stored somewhere in your shambolic collection, and B: you paid very little for it (even though the embedded cost of the purchase probably involved searching everywhere for it for the last 10 years, cynically befriending old ABC employees and scouring every garage sale from here to Timbuctoo).

And after it's safely locked away in your crusty collection, who cares what you do with it, right? You own it and that's what matters. The only caveat here (that no-one in the club talks about... shhh!) is that you just outed yourself as a conman, a tight arse, penniless

and unscrupulous. But if you're okay with that, and everyone in the club lives by these same high moral standards, then I s'pose that's cool, right?

Sorry, I must apologise. Someone reading this general appraisal of the retro gear collective might have their nose out of joint by now. If you do, I'd assert that you're not, in fact, in this club at all, but rather a slightly different variant.

You're into your retro audio gear, no question, maybe even a 'lifer' as we call them. But your primary objective (correction: secondary objective; the primary objective is always boasting about your acquisitions) is to use the gear you acquire, and often in the workplace.

For you, storing old retro gear in a warehouse isn't cool at all, or nearly good enough. Indeed, some in your group might argue that hoarding old gear in a cupboard somewhere is downright sacrilegious. You and your fellow club members are not hoarders, not even close, or so you say! You are enthusiasts with a penchant for old gear, great sound and a cool vibe that no modern audio equipment could ever hope to replicate.

You are all about what you produce with the retro gear you own. Oh, and that your latest production was made using equipment that

originally cost \$1.5 million but was purchased more recently for \$19.45.

Ok, stop the press! If I'm to be cast as a member of any retro audio gear club, I suspect it's this second one.

Use It or Lose It

My own personal take on retro gear membership after all this time is quite simple: if you don't use the gear you acquire, please don't bang on about it either. Or better still, don't buy it in the first place!

I can't stop anyone acquiring old retro gear of course. Hey, I can't even stop myself! But to me there's nothing more tiresome or galling than a retro gear hoarder with a big mouth. Whether it's a story about a newly acquired AWA compressor that Uncle Fred took from an ABC service locker 40 years ago, or the 70s preamp that was removed from a Neve console that died in 1983, hearing someone blather on about this stuff when they never use it is like taking a Pacific Cruise in rough seas; it makes me want to hurl.

I guess I just can't stand try-hards in general; people who pretend to be something they're not. And when it comes to the world of pro audio the deception seems particularly

pathetic. Why people would want to go around boasting about owning old audio equipment without any interest in actually using any of it is quite beyond me. Could there be a worse thing to collect to then only boast about owning? Old golf clubs perhaps?

But don't get me wrong, some retro audio gear can be incredibly rewarding to own, although I must stress the significance of the word 'some' here. Not all old gear was, or is, good gear. Indeed, most old pro audio equipment made decades ago was unreliable, ordinary sounding, devoid of much in the way of controls, and noisy, stuff only desperate retro junkies or hopeless audio romantics could place value in.

The counter argument to this, however, is that if it works and you use it in earnest at the coalface of audio production, then why not? If you like that a certain piece of gear sounds magnificently crap filtering your Juno 60 via a Princeton amp, mic'd with your favourite Reslo ribbon and Rola preamp, then awesome... that is a win. Even if you just like plugging all this stuff in and enjoying the fact that signal still flows through it, then that's cool too.

But when you buy a piece of retro gear and do nothing other than boast about it on an international snoozefest forum, then I'm sorry but that's when you just look like the main controls on an old Fairchild 670 – a big knob.

Cool & The Gang

To me retro gear has a fantastic role to play in any studio or musical setting. And believe me I should know. I can't think of a single session in the last 35+ years where, as a producer, engineer, mixer or musician, I haven't been surrounded by a large collection of glowing meters, Bakelite knobs and stepped potentiometers all heating up the room in a glorious celebration of magnificent sound and passive heat exchange.

Most of the gear I own here at The Mill has a story to tell, whether it's the old Studer

half-inch tape machine from 1961 (that paradoxically doesn't sound anywhere near as crusty as it looks), Billy Thorpe's old Neumann vocal mic, the Dimension D from Richmond Recorders, the 480L from the Olympics, or the Quad Eight preamp/EQ modules from Burbank Studios where Star Wars was mixed... it all has a vibe as well as a sound. It's this audio aesthetic that I enjoy being surrounded by. It's familiar to me, it's great sounding and mostly still functional.

But not always, and this is where reality trumps romanticism.

The main pitfall of owning any old retro gear is reliability. The day your Neve preamp loses all its tone and suddenly sounds like a transistor radio, your Neumann valve condenser develops a euphonic overtone befitting a Northern Territory hurricane, or your Farfisa organ's G and F# notes all sound like the 'beep, beep, beep' of a 50-in-1 Electronics set... that's the day when you'll curse all this 'cool' gear as a delusional hoax that you've unwittingly played on yourself!

If you're producing music, live broadcasts, ads, or music for films or games... whatever it is you do, the gear you use needs to work for you every day with a certain level of guaranteed reliability. When things fail, it's never a good day in the studio, let alone live-to-air. Having a significant percentage of retro gear in your facility, whether it be 'classic' or 'retro,' can add a huge unreliability quotient to your system, and if this is where you derive your main income, that can be a dangerous game to play.

Be mindful also that collecting retro gear can become more addictive and deplete your bank account faster than a heroin habit, as well as distract you utterly from your main aim; producing great audio tracks. And if you're not very careful, you may wake up one morning on the dusty warehouse floor realising at that moment that you've switched over to the Retro Hoarder cohort: a group of crusties with whom you really never want to be associated.

Owning a bunch of old gear isn't cool in and of itself. Not even in the slightest.

Maintaining the old gear well, either yourself or with a tech, and using this 'cool' equipment in combination with other decent gear made last century as well as last week is the best way to go. It's all about mixing things up and having lots of colours in the palette. Whatever you do, don't disappear down a retro rabbit hole and pop out in the land of topsy-turvy where everyone reckons only retro gear is worth using. That is garbage.

Perhaps a good way to test your motivation for owning a piece of 'classic' retro gear might be to contemplate this last fact.

Telefunken Elektroakustik recently bought the rights to manufacture the iconic Fairchild 670... the Holy Grail of tube compressors. I haven't heard one yet myself, but Telefunken claims it's a faithful recreation of the original. Given this, and assuming you were flushed with cash and in the market for said beast, would you buy a brand new one off Telefunken that will presumably offer superior reliability and longevity, or search around for another 10 years for an original?

You have a choice: pay US\$75k for the original, US\$35k for a new one, or keep searching in deceased estate auctions for a lost one... who knows, you might get lucky.

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



Neve & Q8 2



After a two year hiatus, WOMAD eases back onto the festival scene



WOMAD

No queues, all cruise

Suzanne Porter, CEO of the Taranaki Arts Festival Trust (TAFT), returned to the role of Events Director for WOMAD 2023, delivering an operationally slick festival that received rave reviews. With seventeen years' experience in the events industry and seventeen as TAFT CEO, she knows how to put on a festival, and with the support of Technical Director and industry veteran Neil Penno, succeeded where many others struggled this season.

Operations: tick ✓

WOMAD 2020 was quite literally the last festival to go ahead in the world, the weekend before New Zealand went into lockdown. TAFT made no attempt to hold the festival in

2021 but with the Government's underwriting scheme for events in place by 2022 they went for it, only pulling the plug in January as uncertainty spread following Omicron's arrival in New Zealand. Inevitably the two-year hiatus meant that valuable WOMAD know-how was lost, "I stepped in as Events Director as I felt we needed someone with a solid skill set who could make decisions quickly. With so much going on in 2020 no one had collated our post-event reports, so I went back to the 2019 feedback and spent hours talking to the campsite team, marketing and communications, and all major contractors looking for any potential fires."

Suzanne's nightmare scenario was grid locking New Plymouth and site access became a priority. With 15,000 visitors converging on a narrow road just off the state highway, the team needed to avoid any queues. Emails to all attendees highlighting the option to pre-sticker vehicles and collect wrist bands at locations away from the city centre, in Stratford and tiny Urenui (population about five hundred), resulted in a seamless stream of arrivals heading straight into the racecourse that hosts the festival, "This was one of the big success

stories of the festival, not just for avoiding traffic chaos and hour long queues but for the impact it had on the two towns. Visitors spent money buying a coffee and a cake. Urenui even put on a fete and held a fundraiser for local charity groups and schools." In conjunction with time invested on tweaking the campsite layout and extra resourcing on the gate, WOMAD completely avoided the transportation and queuing issues that dogged many other festivals and events this season.

This Summer's extreme weather saw Laneway cancelled after Western Springs flooded, Splore turned into a mud bath, and Shapeshifter, Elton John and many others called off, some at the very last minute. WOMAD was luckier in comparison, "Pack in was tough but the rain cleared Friday and apart from the mud, we had a beautiful weekend. I had emergency call out staff like our plumbers sitting bored at the Park House. The site looked absolutely beautiful and there were few issues. After three years off, it was a huge achievement by the whole team and the satisfaction level of the punters was through the roof. We had flushing toilets, and soap and no rubbish. I don't do grunge!"

Line-up: tick ✓

Suzanne's aim was to keep it simple whilst still delivering on everything that a pre-Covid 2019 festival goer would have experienced, "We delivered the full festival experience and it was no mean feat to get artists to travel from all over the world. We had all our usual stages and a full programme."

UK WOMAD is the mothership and the New Zealand and Adelaide events share the costs of international artists meaning that three Artistic Directors work together to curate the programme, "The real people pleaser this year was Meute, an eleven strong German techno marching band, whilst my personal favourite was Fantastic Negrito."

Other big name international stars included Sampa the Great and her all-Zambian band and Romany supergroup Taraf de Caliu. Kiwi acts Avantdale Bowling Club with frontman Tom Scott, Deva Mahal and Wellington three-piece alt-psych pop act Kita all made an impact.

Suzanne leaves the musical production side of things to old hand Neil Penno, "It is a high trust model that reaps rewards. He has a strong background in large events and excellent relationships with our key stakeholders."

Production: tick ✓

Neil Penno has been involved with TAFT for fifteen years as technical or production manager, or supplier in his capacity as Director of local AV company Taranaki Sound Hire (TSH), "I applied for the role of WOMAD's Technical Director when it came up last year as I really wanted to keep it local." Once in the post, Neil rewarded the loyalty of previous suppliers as much as possible, "After the hardship of the last few years I made a real effort to use our mainstays on the major stages and support local businesses on the smaller stages."

As a result, TSH continued to supply the video and lighting, with Wellington's MJF Lighting as subcontractors; Oceania the audio with TLL Events on the smaller stages; and Metro Productions provided the Gables stage, Norwest/Oceania provided the Brooklands stage and TLL provided the smaller stages, with TSH staging and risers based on artists' requirements, "My business partner Paul van't Hoff (Goff) and I also run The Production Company located only a stone's throw from the Auckland suppliers which makes everything really easy." The big difference from previous years was a shift to predominantly moving lights on the main stages, "We wanted more versatility for the different styles of music, and to give the lighting operators travelling with the acts more flexibility."

The main challenges for Neil aside from the weather's impact on the site, were the logistics of working across eight stages, managing any potential sound bleed, and the unique nature of the backline requests of some of the artists, "WOMAD is a bit different from your regular festival wish list of amps, drums, keyboards and everyone bringing their own guitar. The artists are an unknown quantity. Ever heard of a cimbalom?" According to Google it is a piano-esque stringed instrument native to Hungary, and it was a requirement of Taraf de Caliu, "NZ Backline who sourced everything for us did a wonderful job. Luckily Auckland Philharmonic Orchestra had bought a cimbalom in 2022!"

Another issue that doesn't generally come up at your average festival is an instrument at risk of melting, "One of the Indian acts were using a wood instrument with ridges made of hard wax in lieu of what I'd call a fretboard. On Saturday the artist was really concerned as the temperatures soared. Luckily there was no direct sunlight on that stage at the time of their performance."

Melting instruments aside, the festival went off without any technical issues, "Bar the mud making pack in and pack out a slow process, it was an awesome event to be involved in. There was a lovely sense of community. Everyone on site was just so happy to be there – the audience, the acts and the suppliers." Dashing from one stage to

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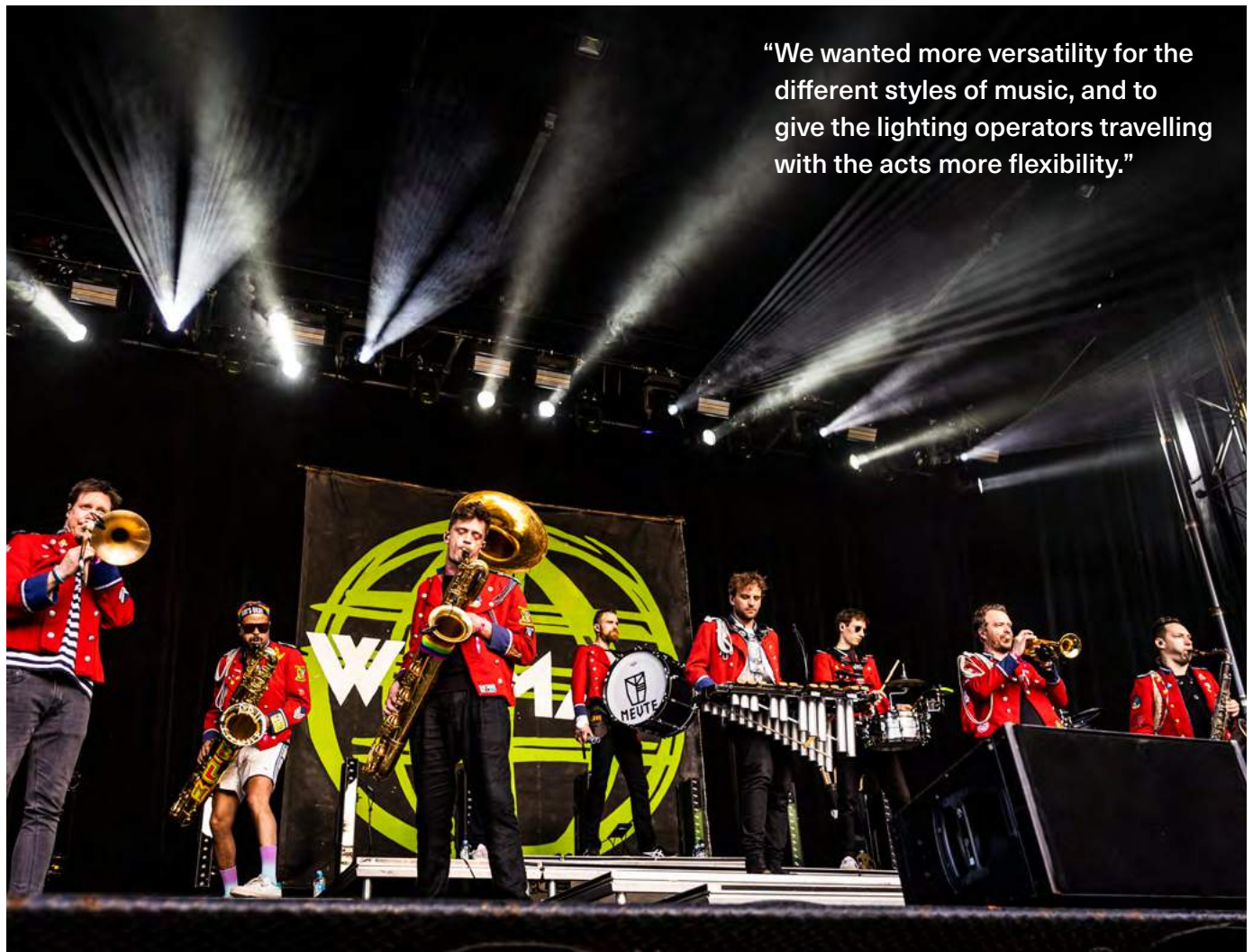
another Neil only caught glimpses of the artists, "Every act offered something unique and they were incredibly proficient musicians. WOMAD doesn't just curate artists because they are quirky but because they are actually phenomenal in their own right, even if they are not well known over here."

WOMAD 2024

What can we expect next year? Suzanne will be returning to her CEO "day job" and focusing on sponsorship and taking care of the festival's private sector partners whilst supporting two new members of the team, "We are recruiting a new Events Director and we've Sally-Anne Coates stepping in as the new Operations and Logistics Manager, as our wonderful Tetsu Garnett is leaving us after nine years. At this point I'm thinking about a new, more efficient site layout." Suzanne's inner events organiser obviously just can't resist.

For Neil, the priority for 2024 is to maintain the quality of the music, "We are here to serve the artists. Being part of the international WOMAD brand, we can't enact any major changes singlehandedly, but I am looking at things and we'll work within their guidelines and with their artists to deliver the best show we can here in New Zealand."

WOMAD 2024 will be held 15-17 March.



"We wanted more versatility for the different styles of music, and to give the lighting operators travelling with the acts more flexibility."

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AWAKENING

AT WYNN LAS VEGAS



“It surely must be the most technically advanced show being done on the planet.” A bold, yet undeniably accurate statement from Paul Kieve, Illusion Designer for Wynn Las Vegas’ feature show, *Awakening*. Before we even begin to discuss the multimillion-dollar inventory of drool-worthy, state-of-the-art production gear the crew has the pleasure of working with, it doesn’t take long to conclude that Kieve is probably right.

Restoring love and beauty to the world is a gargantuan task for *Awakening*’s heroine IO and her two fellow travellers, Bandit and Boo. Bringing this monumental tale to life from behind the scenes could quite possibly be double that. Whatever double gargantuan is. Regardless, *Awakening*, at least from the production perspective, spins a tale of how the unimaginable becomes imagined.

It’s been years in the making: the script alone was written over five years ago. By November 2020, once *Awakening*’s designers and creators knew what they needed and who they

wanted to pull it together, Australian lighting designer, Mitchell Fenton, was called to duty in Las Vegas, Nevada, where the challenges as Associate Lighting Designer of *Awakening* in all its magical and mystical glory, would start to unravel. As if a show on such a spectacular scale wasn’t going to be challenging enough, the production team, like the rest of the planet at the time, was also facing those brought courtesy of a global pandemic. Figuring out what equipment and supplies were needed to get the job done was one thing, being able to order supplies and afford them was quite another.

The existing theatre at Wynn Las Vegas was gutted and conceptually re-designed with a custom fit out for *Awakening*. The Meyer Sound PA system designed specifically to capture and immerse the audience in the powerful original musical score, composed by Brian Tyler and Sound Design by Peter Hylenski. Lighting Programmer Eric Marchwinski and Mark Humphrey, enlisting the game-changing grandMA3 lighting console, came on board by recommendation of Director Baz Halpin.

“The Selection Grid feature on the grandMA3 is excellent and integral to Awakening’s lighting programming, as there are over 500 moving lights in the room”



Jules Fisher + Peggy Eisenhauer, the Lighting Design dream team for Awakening, may have encountered early scepticism towards working with both a programmer and control platform neither designer had any prior experience with, but the remarkable capabilities of the grandMA3 combined with the support from MA Lighting, ACT (supplier) and Marchwinski was second to none, giving the Lighting Design team the confidence and the safety net, they needed to pull off such an epic design. Staying on top of developmental and software updates for the grandMA3 was paramount for the enormous process of programming the lighting and video. The console has proven itself as an extremely powerful workhorse.

Boasting a massive multi-touch fully configurable screen, providing instant access to programming tools, is just one aspect of the new and improved user experience for this console. “The Selection Grid feature on



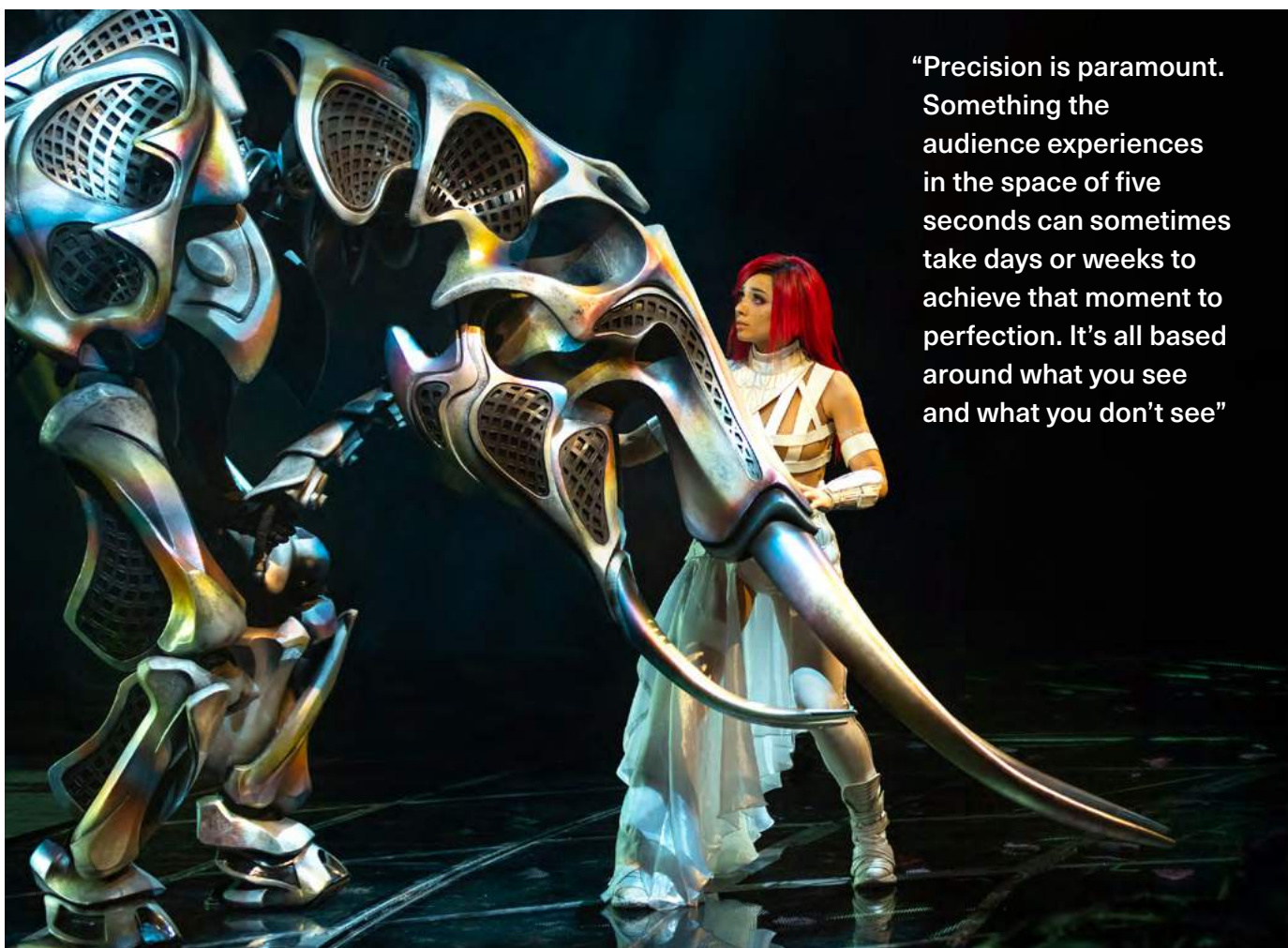
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“Precision is paramount. Something the audience experiences in the space of five seconds can sometimes take days or weeks to achieve that moment to perfection. It’s all based around what you see and what you don’t see”

the grandMA3 is excellent and integral to Awakening’s lighting programming, as there are over 500 moving lights in the room,” adds Fenton, when discussing the upgrade from tried and tested grandMA2 to the latest grandMA3 full-size console.

Ayrton reigns as the predominant fixture manufacturer for the show, with 139 Ayrton Huracan LT (long throw) and 33 Ayrton Euruss-S on the floor. There is no exaggeration to Mitchell Fenton’s 500+ count. In addition to the Ayrton fixtures, excluding set electrics, the show also includes:

- 45 TMB Mozart One UV LED
- 54 TMB Solaris Flare Q Plus
- 60 MAC Aura XB
- 24 Clay Paky Sharpy Plus
- 43 Martin Viper Profile
- 6 Martin Viper Performance
- 36 Vari Lite 3000
- 66 Vari Lite 3500
- 600m of LED Pixel Tape

Simply put, a ‘workhorse’ of a console is a definite necessity, but perhaps a key feature for this team would be grandMA3’s promise of being the “most flexible playback platform MA Lighting has ever produced”. Both the lighting and the video systems for Awakening (in addition to the video’s control coming from a



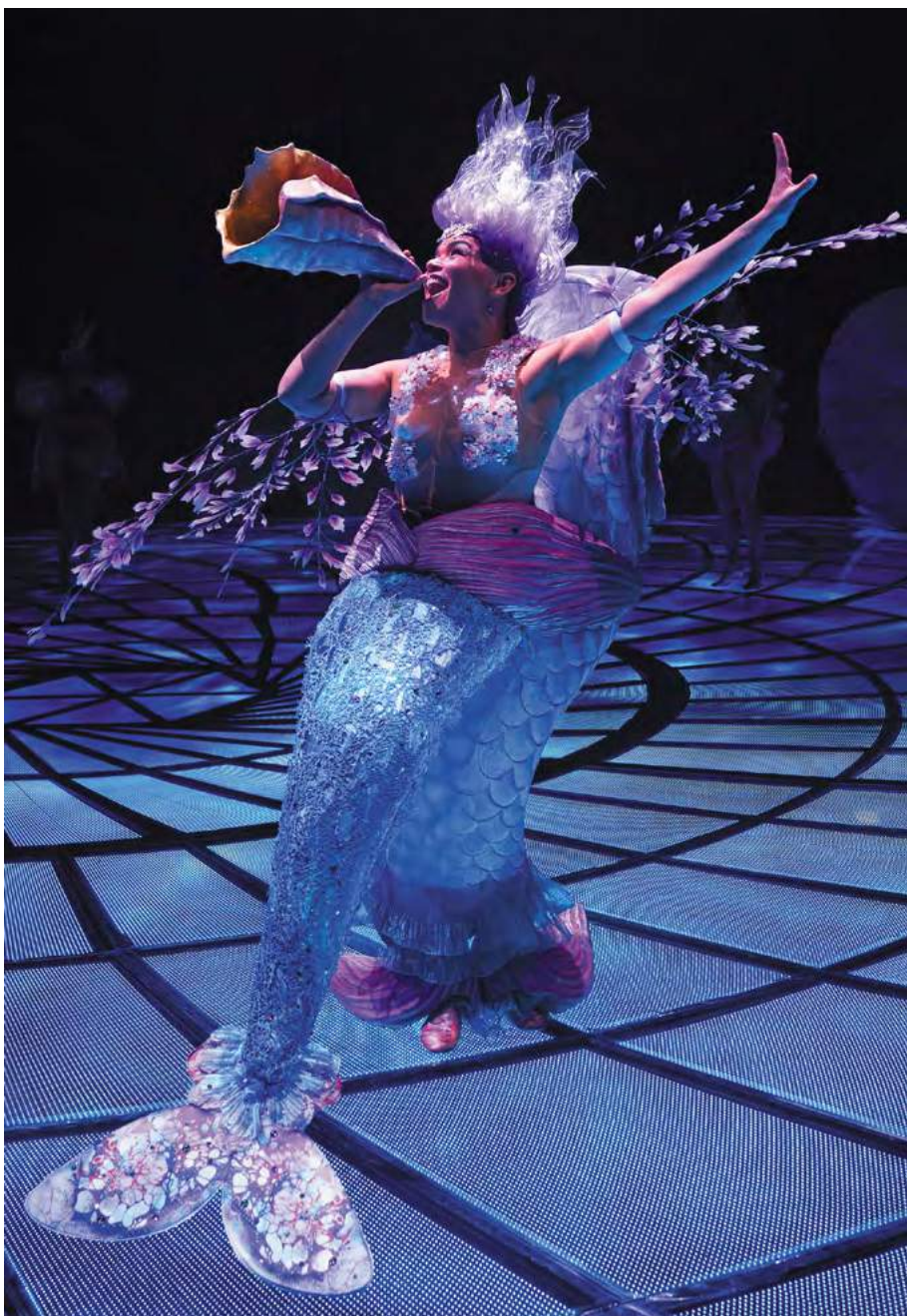
disguise D3 Media Server) would all be on the grandMA3 system, in terms of playback.

With so many fixtures in play, and the elaborate effects and scenery constantly shifting, Fenton pays respect to the invaluable zacktrack automated tracking system: “We couldn’t have done the show without it. The three main characters, IO, Boo and Bandit, have zacktrack trackers on them for the entire show,” he explains. The zacktrack tracks and represents performers in a 3D computer model. Based on this input, various devices are then controlled to point, follow and focus automatically.

“Its main function, however, is for lighting and following the actors around. Like a follow spot, it’s used as a storytelling tool, lighting who we want it to light, following who we want it to follow”, explains Fenton.

The grandMA3 receives the telemetry from the zacktrack and triggers the Huracans to follow the principal actors. For scenery and background, the VLs and Vipers are utilized within the zacktrack system.

As if the spectacular lighting design for this production isn’t already pushing boundaries,



a laser show is incorporated, beautifully complimenting the narrative without detracting from the other elements. Lawrence Wright demonstrates laser design wizardry, which simply put, "looks amazing."

For safety, the lasers operate on their own system, and despite running on timecode from the playback, this system is overseen throughout the entire performance by a fully trained operator, ensuring they fire safely, correctly and on time, every time.

The lighting, video and laser technical and design team collaboration was huge, resulting in a well-integrated and impressive visual experience for both the production team behind the scenes and the audience watching it unfold.

"For the Awakening cast and crew, staging the show in the round, where audience seating is arranged in a circular configuration around the stage, comes with its fair set of challenges. But the concept of 'challenge' in show business, is another way to say 'fantastic creative opportunity'. Creative liberties are taken throughout costume design, sound design, and choreography, as well as the creation and execution of illusion. The constant change in the backdrop (audience) and the fact that each audience member would have a different perspective allowed the designers to play across all facets. Collaboratively, the creative team ultimately must achieve one thing when approaching the stage format; to be able to see and understand the whole story when it's unravelling at different angles and sides of the stage in the round, and achieve an equal experience for every audience member. From narration to design perspectives, everyone sees and experiences a different angle. Different perspectives can be a big challenge," Fenton explains.

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panel LED screen wrapping around the whole venue (situated just above audience seating) would require extensive technical and design research, production and examination of photometric drawings and angle analysis from the lighting design team, as well as heavy technical and design integration work across both lighting and video teams. The key for the lighting design team is to maximise creative potential working with a glass floor, whilst

eliminating the opportunity for fundamental error, such as the potential blinding of audience members with any undesirable reflection of the lights.

From Mitchell Fenton's account, *Awakening's* production scope from the top down essentially involves the following: a circular theatre, so the hanging space for lights is very exposed and quite limited; a 360-degree LED

screen, which seeks to enhance but cannot detract, from the action on stage; actors performing acrobatics and dynamic movement across the stage in spectacular costume, set amongst large-scale puppetry (noting here, the puppets are a work of art in their own right. As Fenton's craft is to illuminate the subject matter, he describes the finish of the puppets as exquisitely detailed, creating an amazing surface for the lights to hit, courtesy of Puppet Designer and Producer, Michael Curry).

All these layers are manipulated above a round, glass (essentially mirrored) floor. Care must be taken not to reflect light beams off the glass floor and into the eyes of actors or the audience, and it also cannot reflect anything which would disseminate the crucial element of illusion, meticulously designed courtesy of Illusion Designer, Paul Kieve.

Lighting philosophy for illusion is based heavily on the concept of the visible and the not, therefore, working hand-in-hand to achieve Kieve's creative vision was crucial. "Precision is paramount. Something the audience experiences in the space of five seconds can sometimes take days or weeks to achieve that moment to perfection. It's all based around what you see and what you don't see", explains Fenton, who along with the rest of the lighting design team, spent countless hours in illusion workshops working closely with Kieve to perfect each moment of magic throughout the entire production.



"Like a follow spot, it's used as a storytelling tool, lighting who we want it to light, following who we want it to follow"



Does working behind the scenes on a production of such epic proportions and fantastical themes dispel the sense of magic and wonder? For the production team of *Awakening*, a large part of this magic takes place in the design phase; learning about cutting-edge technology and how to integrate it into time-tested stagecraft techniques to achieve mind-blowing outcomes, collaborating with designers on so many levels from

technical to artistic, experimenting with visuals, hearing world-premiere composition through brand new state-of-the-art sound systems, and once the months (or years) of design, research, installation, trouble-shooting, and rehearsal are over, you do tend to feel like you have just witnessed the production you have just poured your heart and soul into for the very first time. And indeed, it is magical.

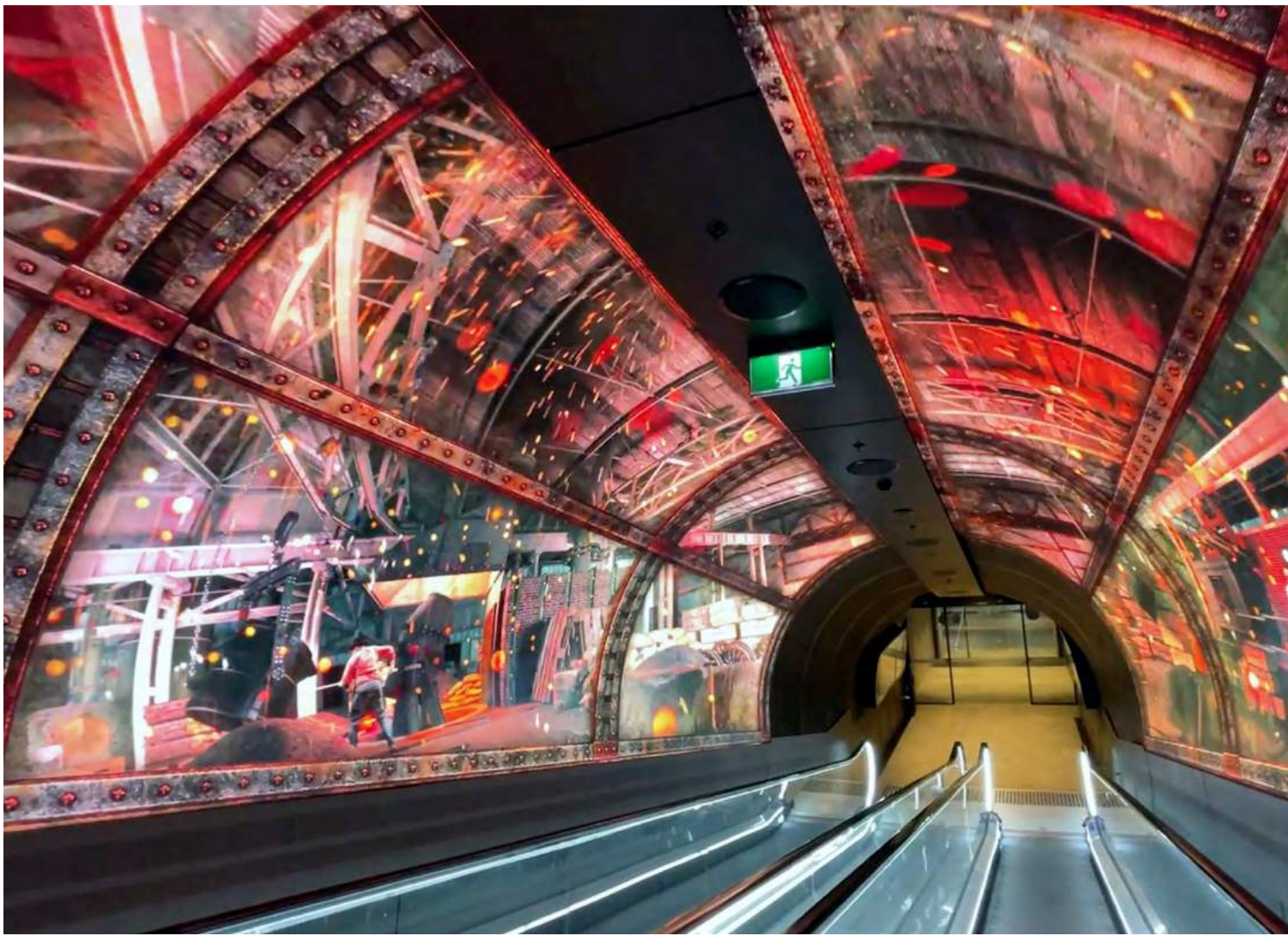
As *Awakening*'s lead characters IO, Bandit, and Boo set out on this spectacular journey to restore beauty and love to the world, it appears as though Mitchell Fenton and his team - through shared creative vision, collaborative work ethic, level of skill and knowledge and openness to proving the capabilities of groundbreaking visual equipment, have achieved a similar outcome from within the confines of the Wynn Las Vegas' theatre walls.



THE LOOK

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Tunnel Vision

South Eveleigh, Sydney's new vibrant retail and dining destination, offers a unique immersive experience for all patrons travelling from the carpark, passing through a 20-metre-long digital tunnel.

The independent supermarket Romeo's Food Hall IGA opened in a space that was previously a historic railway shed in a revitalised area near the central business district. Parking is available for customers in The Foundry Building, which is connected to the Locomotive Workshops via a unique subterranean travelator. With an immersive Vivid-style experience delivered via specialised LED screens, the Foundry Tunnel celebrates more than 100 years of innovation and manufacturing history in greater Eveleigh through creative digital content. It tells the story of the area from its early stages through to its time as a thriving hub in Australia's railway network.

The Foundry Tunnel project was a close collaboration between Buchan Group, Pro AV Solutions, Mirvac, and Curio Projects. The

concept originally started off with multiple LCD panels on each side and an LED mesh roof.

"Pro AV Solutions were involved in this project from the early design stages," says Marc Silver, Solution Architect and Pre-sales Engineer at Pro AV Solutions. Their team worked closely together with Buchan Group, who had the vision of turning this project into a unique digital art installation, which would raise this retail experience to a whole new level. "We conducted proof of concept, showing the pixel blending within the tunnel environment, designed and outlined the final specification for the LED wall radius and the digital platform dimensions, to make sure it all fit perfectly within the environment," comments Marc.

"From the early design concepts, we knew that this project would require a fully customised LED solution," comments Russell Muddle,

National Project Manager at ULA Group. "We have delivered several bespoke digital projects with Pro AV Solutions over the years, so I was confident we had the right technology and a very experienced team to work on this custom project."

"We faced a multitude of challenges throughout this project from the very beginning," comments Marc. "Being a fully bespoke delivery, all fittings and fixtures were custom designed. Although we are experienced with this type of installation, the bespoke nature always introduces an extra challenge for our engineering and installation team to get the best result."

The main installation challenges included the structure and environment of the heritage listed building. LED modules were attached in the overhead space to perfectly

contour the curvature of the tunnel, allowing appropriate spaces for building requirements such as emergency lights and fire alarms. All these elements needed to be taken into consideration and incorporated in an unobtrusive way, so patrons could focus on the 'show'.

"The blended pixel pitch curved LED tunnel was a huge undertaking, both structurally and technically. With a 12-degree slope of the tunnel factored in with the curve, the precision was key here, as the smallest imperfection would translate through the entire installation", explains Marc.

The custom designed solution features VuePix Infiled Semi-flex panels, a combination of 1.9mm and 4mm pixel pitch. The highly flexible, ultra-thin lightweight LED modules were fitted to custom-built frames.

"There was also the challenge of creating captivating content for the digital platform, that is where the expertise of the Buchan team really shone through!", says Marc Silver.

The end result is a captivating customer experience that really pushes the boundaries of the retail environment as we know it. Direct view LED screens in retail spaces are mainstream these days, but passing through a digital tunnel on a travelator, being drawn into the story of a heritage listed building, surrounded by a full AV production, is something quite unique.

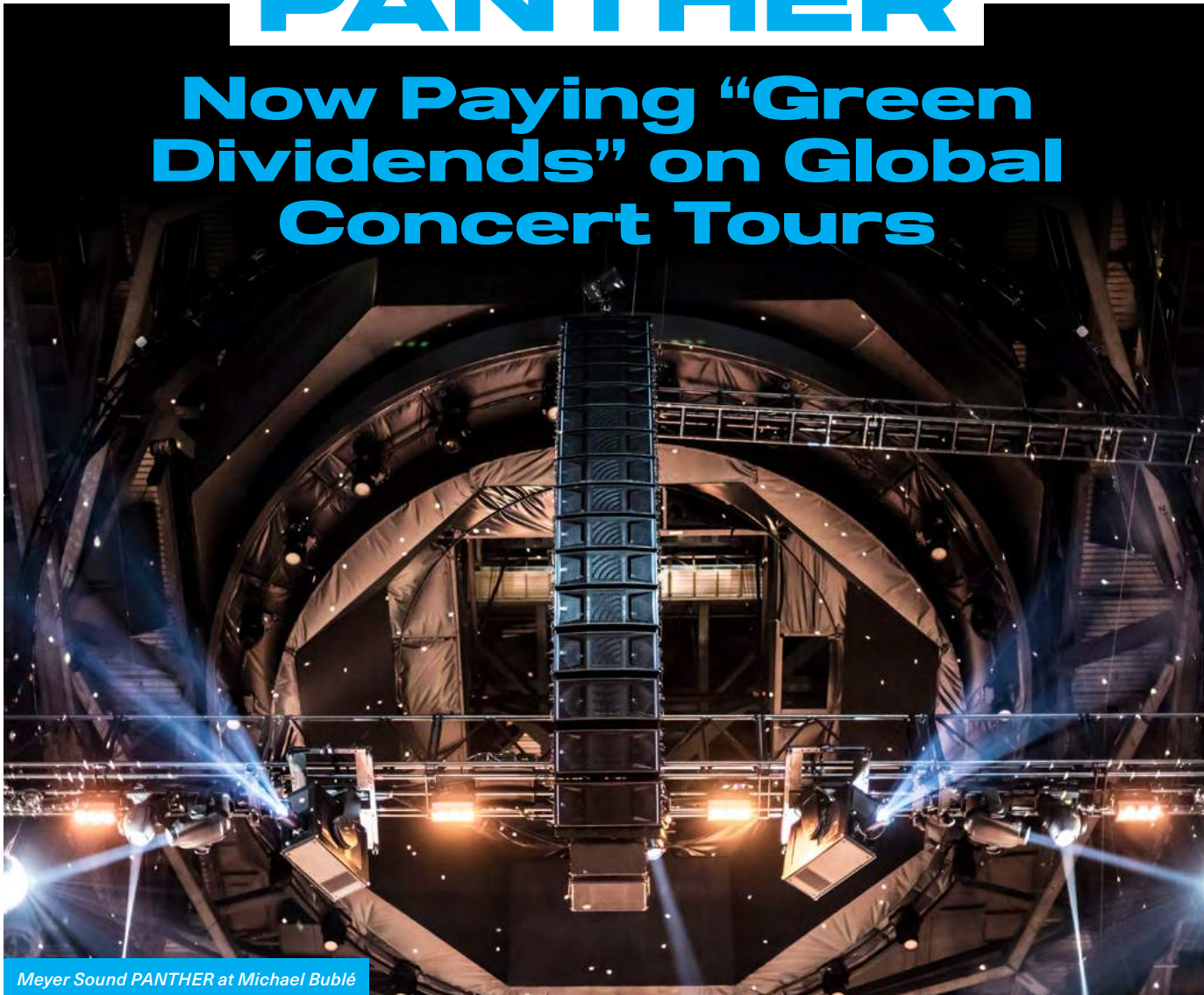
"This project was a great collaboration amongst the leading experts in our industry," comments Lenka Šatánková, Marketing Manager at ULA Group. "The creative vision of Buchan Group, combined with the technical guidance of Pro AV Solutions, resulted in producing a unique world-class visual project, telling the story of this historic precinct through an interactive digital platform and creating a unique captivating experience for everyone visiting the place."

"It was very exciting and rewarding to watch how visitors travelling up the escalators of the precinct reacted to this new experience," comments Lenka. "Everyone was drawn into the presentation; people were putting their headphones down and listening to the story. Some of them went a full round and travelled up again, just to take it all in. This project really is a great example of art and innovation coupled with the latest tech to create a captivating presentation and experience for the community."



Meyer Sound PANTHER

Now Paying “Green Dividends” on Global Concert Tours



Meyer Sound PANTHER at Michael Bublé

Systems for Michael Bublé and Ed Sheeran, among others, help cut touring GHG emissions

With its compact size, high power-to-weight ratio, and exceptional energy efficiency, Meyer Sound’s PANTHER™ large-format linear line array loudspeaker is reaping savings in both operating expenses and greenhouse gas (GHG) emissions in its first year of global touring. Two notable examples are Ed Sheeran’s “+ – = ÷ x” (“Mathematics”) Tour and Michael Bublé’s “Higher Tour.”

The massive in-the-round system for Ed Sheeran’s tour, supplied by Major Tom, Ltd. and configured for large stadiums and festival grounds, is anchored by 212 PANTHER line array loudspeakers. “Compared to our prior tour’s loudspeakers, we have reduced what would have been five trucks down to three,” says Chris Marsh, production director, and FOH engineer for the tour. “That’s significant

as I estimate we covered 7,000 miles around Europe, another 2,800 in Australia, and we have yet to start in North America.”

In their 2021 publication “Super-Low Carbon Live Music” the UK based Tyndall Centre highlighted how important surface transport is as a contributor to a tour’s carbon footprint. A typical diesel semi-truck consumes a gallon of fuel every 6.5 miles and each gallon emits 22.44 pounds of carbon content according to the US EPA. That means a single truck covering 10,000 miles would generate a carbon footprint of 17.3 US tons or 15.7 metric tons.

Ocean shipping, though more efficient than air, also has a carbon cost. Ocean containers also were cut from five to three on the Sheeran tour, and the reduced weight of PANTHER had an

added bonus. “Because PANTHER is so light we were able to fit the steel staging ballast plates in the same containers to take weight up to the maximum permissible,” notes Marsh.

Configured primarily for “A” level arenas, the system for Michael Bublé’s “Higher Tour,” provided by Solotech, relies on a complement of 76 PANTHER loudspeakers for the lion’s share of output power on both the main system and the unique mid-arena cluster that functions as both a massive delay system and as an in-the-round system when Bublé takes the B stage.

“All the speakers for the current PA fit into one truck,” says FOH engineer Craig Doubet. “We’re easily down a half truck from where we were before. And we had the same reduction

in containers when we shipped from North America to Europe. It's clear that Meyer Sound is taking the monetary costs and carbon emissions seriously."

A PANTHER loudspeaker produces a maximum acoustic output of 150 dB SPL yet weighs only 68 kg. The compact dimensions (969mm W x 377mm H x 565mm D) allow an efficient truck pack in both North American and European semi-trailers, while self-powered technology eliminates the need for amplifier racks. Since the amplifiers are contained in the loudspeakers, this further reduces the footprint for trucking. Power draw is also reduced by 20% compared to prior comparable loudspeakers.

The same "green dividends" inherent in the PANTHER line array loudspeaker will soon be augmented with the addition of the 2100-LFC low-frequency control element, slated for shipping in mid-2023.

Attaining the ambitious goals for size, weight, and power draw reductions without sacrificing performance required hard work and innovation by the Meyer Sound engineering team, led by Engineering Director, Acoustical and Mechanical Katharine "Katie" Murphy Khulusi. The team followed a holistic approach, with transducers, cabinet design, materials, electronics, and rigging meticulously coordinated to meet the objectives.

"When gathering input on the next generation of products, many of our customers mentioned that green issues were becoming more relevant," says Meyer Sound Senior Product Manager Andy Davies. "These requests aligned with new research on the environmental impact of live productions. Also, going green is also good for business. Reducing power use, trucking costs, and raw materials all align with moving towards a greener economy, more efficient manufacturing, and better business solutions for our customers."

Global acceptance of PANTHER has exceeded company forecasts. During its inaugural year, Meyer Sound PANTHER line arrays also powered UltraSound LLC tours including Dead & Company, Dave Matthews Band, and Ghost, along with the POOLgroup-supplied Volbeat tour, as well as main stages at festivals across the USA and in Europe. "Sustainability is finally becoming a concern for most of the organisations we work with," concludes Chris Marsh. "It is the task of the production teams, the suppliers, and the manufacturers to develop solutions that will result in more efficient shows. Whilst we have a long way to go, we already are making great progress with the addition of PANTHER to our inventory."

Meyer Sound's commitment to the environment extends beyond product design to encompass all phases of the business, with careful attention to energy efficiency, water conservation, and materials recycling throughout the manufacturing process. The

Berkeley-based company has been recognised as a Green Business by the California Green Business Network since 2016.

"Meyer Sound has worked hard for more than four decades to become one of the most successful companies in professional audio," says Senior Vice President John McMahon.

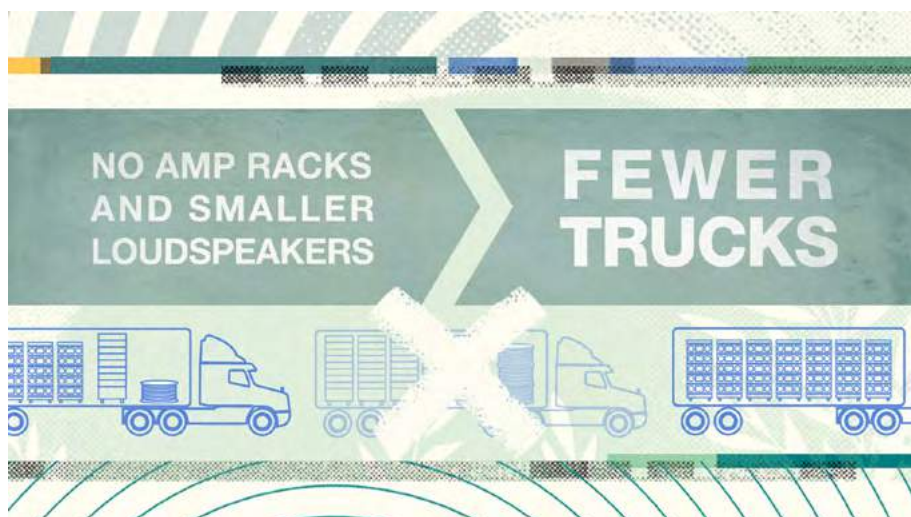
"But we believe that this success carries with it an obligation to be a good global citizen. There is still more work to be done, but we will continue to make environmental responsibility a significant focus of all our activities going forward."



Michael Bublé



Ed Sheeran





SUBSCRIBE AND WIN WITH JANDS!

Celebrating 53 years of Jands 'Setting the Stage', every subscriber to the print edition of CX Magazine from October 2022 to September 2023 goes into a monthly prize draw* to win a prize from Jands, culminating in the huge Grand Prize draw to win a \$17,500 L-Acoustics Home Stereo System in October 2023!

Every edition of CX through October 2023 will feature a centrefold drawing from Jands' past, present, and future. The Grand Prize winner will also get a custom printed copy of all 11 centrefolds, and a lifetime subscription to CX!

Prizes still up for grabs...

May 2023 Furman AC-210AE Power Conditioner (RRP \$445)

June 2023 KRK GoAux 4 (RRP \$779)

July 2023 Pioneer DJ PLX500 Black (RRP \$819)

August 2023 Shure AONIC 5s Clear (RRP \$879)

September 2023 Electro-Voice EVERSE 8 (RRP \$1907.40)

October 2023 - GRAND PRIZE!



GRAND PRIZE!

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2 x LAC-X4i loudspeakers and 2 x LAC-XU4i brackets, 1 x LAC-SYVA-SUB subwoofer, and 1 x LAC-LA2Xi amplifier and processor **RRP \$17,540**

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YEARS

The History of Crystal Microphones and Artifacts

The genesis of crystal microphones began with the investigation of the piezoelectric effect by Jacques and Paul Curie in 1880. During the early 20th century, piezoelectric transducers were being created. By 1930, the Brush Development Company had improved the technology and held many patents for the Rochelle salt crystal, central to the manufacture of piezoelectric transducers. In 1933, the Astatic Corporation began marketing a crystal microphone for public address, home recording, and two-way radio applications.

The Operating Principle

All microphone cartridges, regardless of type, are transducers that convert sound waves into electrical energy. To understand how crystal microphones work, here is an excerpt from "Microphones Explained for Beginners", an article that appeared in the August 1938 issue of Radio-Craft:

"The principle of operation depends upon the piezoelectric effect, i.e., voltage produced in certain crystals when subjected to mechanical stress, bending, stretching, etc. [Editor's note: the original article also described the low-output sound-cell type.] The diaphragm type will give much greater output, eliminating in most cases the need for a preamplifier, but it has the disadvantage of limited frequency response. This type of crystal microphone is most used for voice work."

Crystal Microphones in the Shure Archives...

Since Shure manufactured carbon microphones for over 35 years, there are dozens of artifacts, microphones and microphone parts, in the Shure Archive. Here are a few favourites:



71AS

Crystal
HAND
MICROPHONES

SHURE
MODEL
71AS

71 Series Handheld

Making their debut in 1935, the Shure Models 71AS, 71A and 71H, were promoted as "Close-Talking" crystal hand

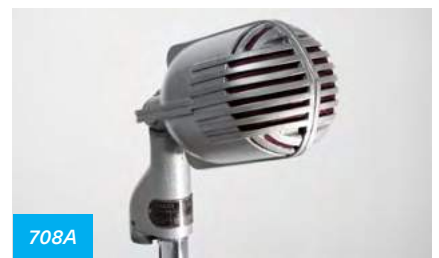
microphones, designed to minimise crowd noise in Public Address applications. Models 71AS (with a push-to-talk switch) and 71A (no switch), featured a screw-on "rubber-black-japan" (lacquered) handle, making these models among the first commercially-available handheld microphones.



700A

700A, 701A, 702A

These crystal microphones boasted the identical Shure-engineered "outstanding features" "Ultra" wide-range reproduction, screen-protected cartridge, "Moisture-Sealed" high capacity Grafoil crystal, high output, curvilinear diaphragm, in Spherical, Swivel and "Grille-Type" designs. Used in military applications, a Model 700A could have changed the course of history when, on December 7, 1941, a radar operator radioed commanders at Fort Shafer in Honolulu, Hawaii of the presence of Japanese planes 132 miles north of Oahu. The lieutenant taking the message instructed area radar operators to "forget it".



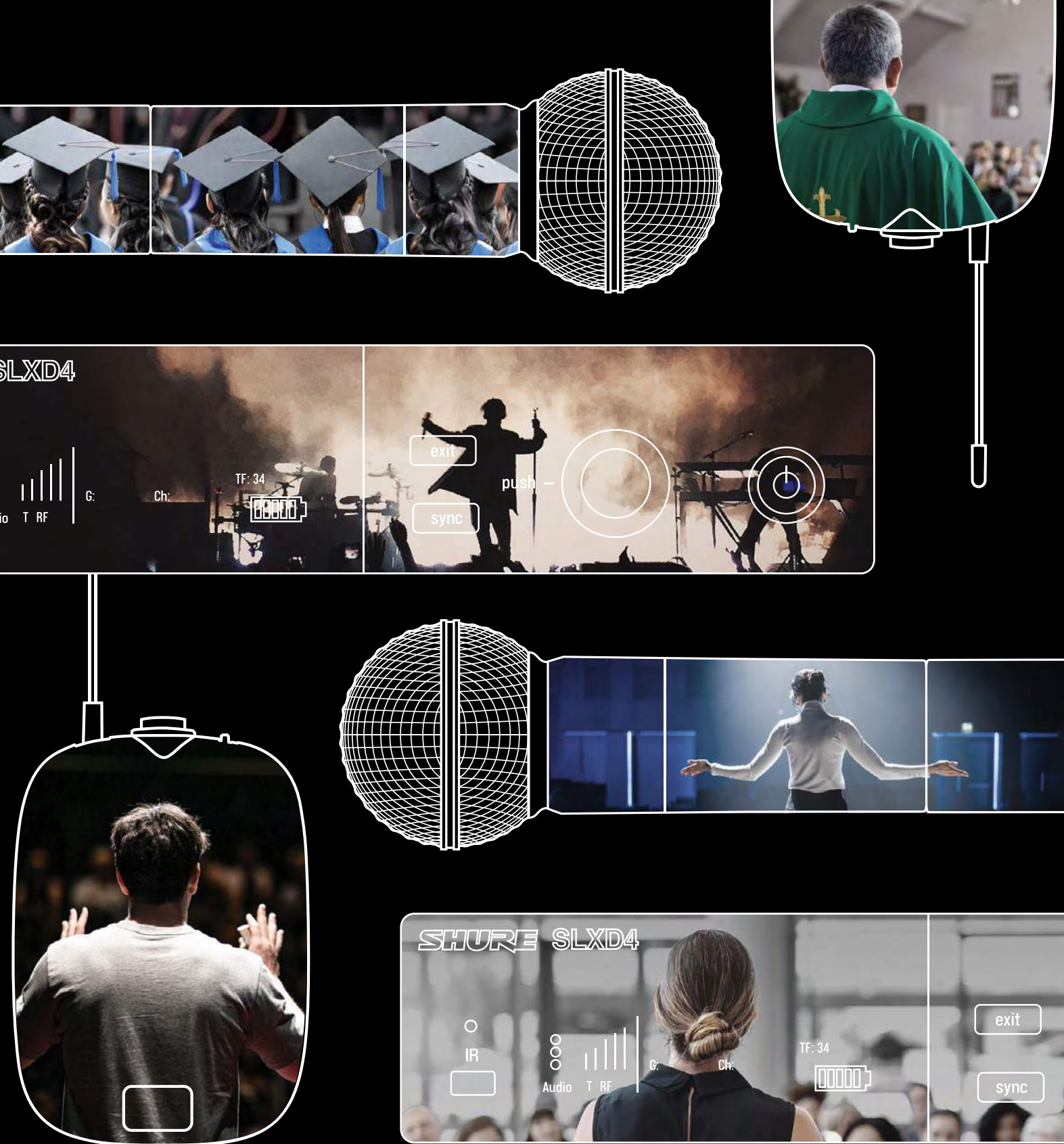
708A

Model 708A

In 1940, the Model 708A "Stratoliner" joined a family of Shure microphones with fanciful names that eventually included the Spher-o-Dyne, Rocket, and Monoplex. The airship (or zeppelin, blimp, dirigible) – inspired design of the Model 708A crystal microphone was shared with the ribbon Model 508 that also debuted that year. In addition to its sonic qualities, the Shure 1940 catalog touted the 708A's good looks, stating that it also improved "the appearance of sound set-ups." Production of these mics was suspended from 1942-1946 to conserve materials for World War II. The 708A was revived after the end of the war.

Want Something a Little More Up To Date?

Since 1992, Shure products have been distributed in Australia by Jands, who are celebrating "Setting The Stage for 53 Years". Recognised as the industry's leading microphone manufacturer, no other microphone company has Shure's depth of engineering horsepower and industry knowledge. For over 80 years, Shure has been helping the world's finest communicators, entertainers, singers and musicians to communicate their sound to their audience. From the ruggedest dynamic microphone, to the latest networked wireless product, to unified communications at every scale, Jands are the go-to for Shure's huge range of solutions.



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How a humble microphone dominates live sound

/ ODE TO THE SM58



At Shure HQ in Chicago, they don't really know how many SM58 vocal microphones they have shipped since their introduction in 1966, but it must be well over a million. The SM58 is the top selling hand-held vocal dynamic microphone in the world. This makes it the single most successful product in the history of professional audio, if you don't include the XLR connector.

Intrigued at why the SM58 continues without impediment, I had a look at the history and also at the way they build and design things at Shure.

Radio Parts

In the 1930s, Mr. S. N. Shure diversified his radio parts business to design and build a microphone. In the Great Depression, his radio business had declined, and he took on distribution of a microphone, which gave him the idea to design and build a better one.

Thus in 1932 they launched the Model 33N Two-Button Carbon Microphone. A short while later, in 1939 they launched the Model 55 Unidyne Microphone; the first single-element unidirectional dynamic microphone. That single-element design made for a smaller microphone which was less expensive, and, therefore, more accessible to all. Then the Second World War got in the way, and the company built airplane headsets, pilot throat microphones, and navy ship microphones around the clock.

Then in 1959, the Unidyne III Microphone was the first high-quality unidirectional microphone to be used by speaking into the end ("end-firing") rather than the side of the microphone. It was the predecessor to the SM57. By 1966, the SM57 (adapted from the Unidyne III a year earlier) was joined by the SM58. The round



Shure Incorporated

windshield minimised popping and provided a safety screen for the cartridge.

Design Hurdles

Chad Wiggins is the Category Director of Wired Products. He told CX that the microphone housing is same then as is sold today. "In 1964 we made significant technological advancement with a sophisticated shock mount. This allowed the capsule to be housed in a handle. It's called the Pneumatic Shockmount; we haven't seen any dynamic microphone that has been able to duplicate its performance attributes. Now the mic could be handheld, a self-windscreen mic with a ball grille. It was the world's first ice cream shaped mic and thus the blueprint for everything we see today."

Chad explained that back in the 30s, Shure created a unidirectional pickup pattern by introducing a port in the rear. They studied and resolved pattern control, because feedback was a recognised problem the minute anyone amplified anything and introduced a microphone.

Then there is the chamber behind the magnet assembly, known as the rear cavity. "The cavity volume behind the capsule influences low frequency response. It damps the diaphragm. The resonance frequency of an SM58 is 125 Hz. A second chamber is included behind the

first, and only in our pneumatic shockmount. There is another resistance between the two chambers. The whole assembly then is mounted on a specifically tuned rubber part. Then all you need to do is to stimulate the diaphragm with sound!"

Every production run is audited carefully. "Every small change makes a big difference to performance", concluded Chad.

Surprising Testing

Shure HQ is at West Touhy Avenue in Niles, a satellite of Chicago in what they call Chicagoland. The building is very impressive; seven floors, massive glass façade, all fashioned by a German architect for a merchandising company that diversified into dot coms in the 1990s.

They went bust with the dot com crash, and Shure came along in 2006 and paid 30% of the construction cost. Then they added on a technology annexe, in effect a tall space that extends out the back for a couple of football fields or so. The glass and concrete finish was matched up to the main tower.

In the massive foyer are rows of exotic plants; when I was there bromeliads featured. I asked about this. It transpires the owner of Shure is Mrs Shure, widow of the founder. She purchases the foyer flowers and shrubs on

her own account, and every six weeks or so they are changed out. The retired flowers and shrubs are carefully packed in cardboard carry cartons for the staff (called associates) to take home.

There is a massive atrium in the foyer, with three glass elevators. It is easily the most impressive manufacturer building I've been into, within our industry.

Out in the Technology Wing, I get the tour and meet Lane Dulaney, the director of corporate quality. He is both revered and detested across the marketing, design and sales floors since he alone must sign off EVERY new product.

While the procedures will surprise you, it transpires that the original SM58 went through something similar since Mr. Shure transitioned the whole firm to conform with military standards numbers 810 and 202 in order to build during the war.

After the war, some questioned the need to maintain manufacturing to these standards. He stood firm, and today the firm still adheres to these standards. It is eye opening.

We Make Sweat

Shure have built their own test tools, like the sweat machine. In all seriousness they analysed sweat scientifically and had a formulation created that comes in big gallon bins.

A machine sprays sweat into and onto products, which makes a unique test for synthetic perspiration. The machine has a Shure part number, and there is one at each of the three factories around the world.

How would you test microphones and electronics? Heat and cold are easy, Shure go from minus 29 degrees to plus 74 degrees Celsius, which is extreme by any measure.

All products are tested in research and development, and all products have to pass all the tests before Lane Dulaney will sign them as good for production. Then various products are random tested from production batches to ensure there is no quality fade.

Minute measurements are taken, panel printing is examined under microscopes, for position and precision. There is a salt fog testing chamber, a switch cyler for electronic devices, and a cable flex test machine that will find the weak point on any cable. Once the product fails under load, an x-ray is taken to find the point of failure.

How about solar radiation? A ten day cycle emulates 20 hours of sunlight a day, for a highly accelerated test. Indeed the acronym HALT or Highly Accelerated Life Test is used a lot. They blast nitrogen on the product while it is being vibrated. The philosophy is to find a fail point, fix it, then find another, fix it, and repeat. "We invest in critical reliability", said Lane.

Boris Libo shows us the drop test, which is

quite simple. All products including KSM ribbon microphones undergo a two metre drop onto a hardwood floor, and on to a concrete floor, a total of ten times. Frequency response is checked each time.

Listen Up....

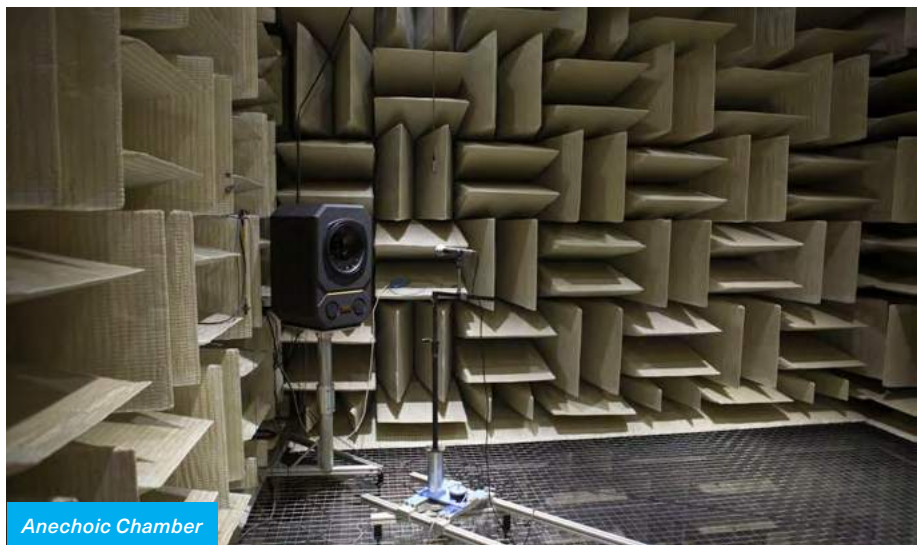
John Born is the Product Manager for Wired Products. He showed CX through the audio measurement facilities at Shure, starting with the anechoic chamber. Another Shure test machine pivots a microphone in a semi circle, a few degrees at a time for quicker measurements.

There is a studio, where microphones, instruments and live sound systems can be brought together. Shure conduct blind listening tests of their own product against competitor

products. They benchmark each product in the comparison, using good ears sourced from within the company.

Shure have a process to find a critical listener, involving sequencing a track and lopped playback. They say that critical listening is an active process, and being Shure they have measured what makes a good listener. "We obtain data from a broad set of listeners," says John. "But the final decision maker is the product manager," and that would be John in the case of wired microphones.

Chad Wiggins characterises the job at Shure is – "to produce a design with high levels of reliability. We are a success due to the complexity of our process. And we have to be humble". Which is as good a credo as we've heard anywhere.



Anechoic Chamber



John Born



Chad Wiggins



Professional Recording Studio



Drop Test - Lane & Boris



The author remembering what all those buttons do

My son attends primary school in Melbourne's inner north, and like a lot of other government schools, the yearly school fete is a major fundraiser. Pre-COVID, the evening's musical entertainment, and the PA it came through, was organised by a parent's band of enthusiastic amateurs, and god bless them for it.

The PA was...interesting. It was an off-brand powered brick mixer running a Frankensteined mix of a couple of very old Wharfedale 12 and horns, and some homemade cabs made with car stereo drivers. There was no foldback. The band obviously were obviously having a ball playing wobbly covers.

As my son settled into the school and I met a lot of other parents, it unsurprisingly turned out that, as the school is in Brunswick, there was a significant proportion of professional musicians and the odd professional technician such as myself on hand. Now, we all quietly agreed we could do better, but the parent band

looked so happy, and who were we to stomp in with our professional boots on and spoil their fun?

Then COVID hit. No school fete for three years. When we finally came back, my friend Gideon, who is a professional jazz musician, was appointed musical director. He grabbed me for coffee one morning after school drop-off. "Can you organise the PA?" he quite reasonably asked. Of course, I said. It was time to pay the piper.

You see, I was suffering the guilts about keeping my technical identity secret from the school. Literally the first thing I did when I set foot on school grounds the first time, for the prep information evening the year before my son started school, was fix a radio mic on one of those Mipro portable PAs (it was just the battery). I didn't want to be in there everytime someone turned on a mixer. Yes, I'm a terrible person. COVID made this position moot, however.

I called up the wonderful Mark Barry of BS Sound, staunch supporter, advertiser, and occasional contributor to this very magazine. He organised a very reasonable quote for a perfectly decent system covering all mics, cables, FoH, foldback, mixer and even lights, and the deal was done. He would deliver and

help set-up, I would operate, and he'd be back to help me pack down. I picked up the tab for the hire.

I had to organise a couple of other bits and pieces, like a three phase distro, and corral all the info coming in from the acts to a line list. All really straightforward; a couple of local high school big-band type ensembles, a singer-songwriter with a guitar, a scratch band of professional musos playing covers, and Gideon's jazz/blues/New Orleans good old time ensemble, Hoodoo Mayhem. Just like riding a bike.

On the day, Mark arrived with his van promptly, and we started throwing gear around on the school oval. Mark was an absolute joy to work with. His gear was well-maintained and wonderfully organised. You can tell he does gigs like this all the time; he had a system and a technique for dealing with everything, from quick release mic clips, to pre made looms, and literally everything labelled. He'd really done most of the work for me.

This extended to a 'basic' scene on the Behringer X32 Compact mixer I was to operate. I'd never touched one before, but a quick plow through the online/offline editor software, the iPad app, and the manual in the days proceeding, assured me that it was

so close to working like a Yamaha (which I know backwards) that I'd be fine. What I didn't expect was all of the channel EQ and dynamics settings Mark had already set-up, paired with all of the mics he had selected for me, and the graphic EQ tunings he'd already dropped onto the four sends of QSC K10 foldback wedges.

To be honest, and I said this to Mark's face, I took one look at the alarming looking graphic EQ settings on the wedges and said; "I'll be flattening that and starting again." He smiled patiently and knowingly at my arrogance, and politely suggested that I just have a listen first before I hit reset. Fair enough. I started talking into a Beta58, and very quickly realised that if I flattened these graphics and started again, I'd end up back in this position in 15 minutes if I was lucky. He had done a really great job tuning. Lesson – never mix with your eyes.

Out at FoH, we were rocking two RCF HD32A on the mid highs and two RCF 905AS subs. What a great system! Beautifully defined, easy to work with, and all the guts I needed. An absolute pleasure to mix on.

By this point, I'd made a few tweaks to the desk, including a few EQ things that are my habit, personal preferences for how my VCAs are signed, and how I run FX. All of this was very, very easy courtesy the Behringer's iPad app.

Mark had thought of everything, including providing me with some shotguns for the school bands. The first act that kicked off had about 25 kids from the high school down the road, including a string section of 10. When my back was turned organising their backline DIs and the drummer, the entire string section set up in front of the PA. Damn, too late.

I did what I could, and very quickly found out how fast I could make 100Hz take off in the PA. Musical Director Gideon came over to me, and we shrugged the mutual shrug of the professional who understands that there's nothing you can do sometimes. The parents and the music teacher were happy though, which is the main thing.



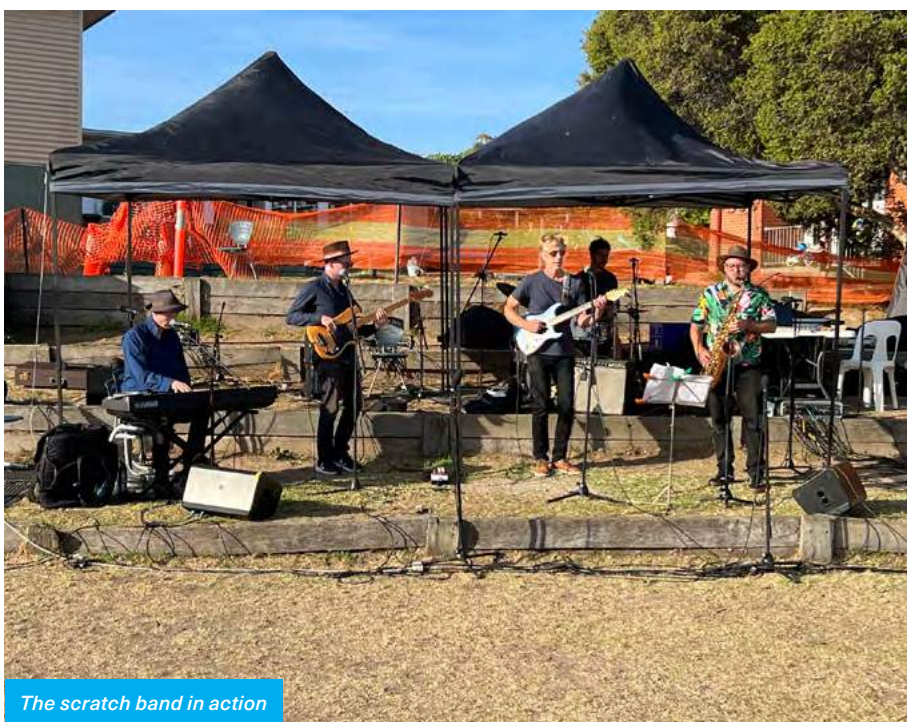
Not a bad day for it



The well packed BS Sound van



The sousaphone with radio mic



The scratch band in action



Mark Barry at bump in

The next big ensemble were much the same, but all brass, playing whimsical arrangements of things like 'Africa' by Toto. It was their professional muso teacher on Baritone sax, and about 15 kids of faltering confidence on trumpets and saxes. The ones with mics directly in front of them appeared to have stopped breathing. Still, at least I could get some gain before feedback as they were all mercifully on stage behind the PA.

The singer songwriter turned out to be our principal's daughter. Despite not even finishing high school yet, she was assured, professional, direct, and had a great voice. Her set of covers was short and sweet, and after that she expressed her interest in live production. Later in the evening, she helped us bump out. It became apparent she'd already had some live experience under her belt; she could under/over cables perfectly, knew what every piece of equipment was, and was totally keen to know more, asking myself and Mark questions about everything. If anyone's looking to hire a young up and comer, I would recommend her to any of you. She has 'it'.

The rest of the gig was a pure delight. The scratch band had keys, bass, drums, two electric guitars, bass, and Gideon on Alto sax. Most of them sang. They were an absolute

delight to work with. Having an iPad to set levels for foldback is a godsend – I wish we had them in the first two decades of my career! I went out the front with the iPad and had a ball. My wife had arrived by this time and was chatting to our friends. She noted the big dumb grin on my face and reminded me that I promised when we got married that I wouldn't work at nights and on the weekend all the time...

Last up was Hoodoo Mayhem, with keys, trumpet, trombone, sax, two vocals and...a sousaphone! I've somehow never amplified a sousaphone, most likely because they're almost purely a marching band instrument. The sousaphone player had a Shure radio mic with lapel. He asked me if I had any gaffa tape. Of course I did! We taped the mic into the bell and popped the transmitter in his back pocket. "EQ it like a bass," he said, so I did. Apart from a resonance that built up at 80-ish when he wasn't playing, it worked a treat!

With the gig done and our enthusiastic assistant helping us pack down, we were out of there in record time due to Mark's splendid gear organisation system. I realised I hadn't actually mixed a gig for about five years, and realised how much I missed it sometimes. Please don't tell my wife...



Hoodoo Mayhem

KLANG

STEREO IS SO RETRO

by Jason Allen



I've been keen to hear KLANG's immersive in-ear mixing platform in action for months, after having spoken to a range of Australian and international sound techs who absolutely swear by it. The thing I kept hearing about the spatialisation processing is that once you used it with an artist, there was no going back. I'd heard this about everyone from local hero Jessica Mauboy right up to Ed Sheeran.

Lucky for me, Phil Kamp, Head of Sales at KLANG:technologies, recently completed a two-week tour of Australia as guest of KLANG distributor Group Technologies, running workshops and presentations around the country. I dropped into Group Technologies

HQ in Melbourne to finally hear KLANG in action and get the lowdown from Phil on how it all works, and where it's going.

The KLANG environment is pretty straightforward. First, you pick which of the three sizes of processor you need; the KLANG:konductor which can handle 16 immersive mixes and processes 128 input signals at 96kHz, or the KLANG:vokal, giving you 12 mixes of 24 mono or stereo inputs at 48kHz or 96kHz. There's also a card-based option in the DMI-KLANG featuring 16 mixes with 64 inputs if you're using a compatible DiGiCo console or Orange Box. KLANG:konductor's I/O is actually three DiGiCo DMI slots, meaning you can input and output Dante, MADI, Optocore and analog out via DiGiCo's DMI-Cards. The KLANG:vokal ships with MADI and Dante built-in.

While you can use Klang with any digital mixer, you get integrated workflow if you're mixing on a DiGiCo SD or Quantum. This brings the interface directly into the console, effectively giving you a 3D panner and capturing all the settings in the console's Snapshots. If you're

using another brand, you can access the mixing engine via KLANG:app, software that can run on Mac, Windows, iOS, and Android. There's also a hardware control option for musicians in the form of KLANG:kontroller, with eight push rotary encoders and digital labels for control of mixes, DCAs, or channels.

To get started on an in-ear mix using KLANG, you're going to need to get your head around, and literally into, the concepts of positioning sounds in three-dimensional space for the best monitoring outcomes. There are rich resources on KLANG's website for you to teach yourself, and presets within KLANG:app called 'Quick Positions' that place sounds in the space by order of psychological priority. Without going too deeply into it, your brain pays the most attention to things it perceives as in front of your face, and less attention to sounds lower down and/or behind you. Ergo, you'd mix a vocalist's own voice to be in front of their forehead, the most important instruments they're pitching off in front of them, lower down and to their left and right, and keep going through the list of monitoring priorities to allocate the available space until you're putting

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things like pad sounds from keys on the ‘floor’ behind them. It’s a completely different way to approach mixing.

Phil and Group Technologies’ Technical Products Manager Scott Jamieson had a DiGiCo Quantum set up in their spacious demo room hooked up to a KLANG:konductor, and the KLANG:app running on a Mac outputting to a big screen. I brought my own in-ears, and plugged into a backpack they were feeding from the rig. Phil ran a multitrack which was a live recording of a contemporary rock band. He got me to listen to a stereo mix in my ears first. It was a good mix, and if I was putting myself in the shoes of the lead vocalist, a good monitoring mix of what I wanted to hear. Phil then switched the mix to a KLANG immersive mix. It was immediately a much better

mix, with vastly more separation between instruments, and greater breath and space. It was much easier to hear and concentrate on different instruments. Though interestingly, if I hadn’t known it was immersive, I would have assumed it was a really good stereo mix.

And then Phil switched it back to stereo. Now, I don’t know much about how the human brain actually processes sound, but it’s clear that the boffins at KLANG do. Stereo suddenly sounded like absolute garbage in comparison. My brain immediately rejected it. I was stunned by how quickly this happened, considering I’ve been listening to stereo perfectly happily my entire life. This is obviously why I kept hearing that engineers that have deployed KLANG have a revolution on their hands if they take it away from their musos. I demanded that Phil

explain this brain-changing wizardry to me immediately.

“Our goal at KLANG is to bring the natural way of hearing into monitoring, thus solving the issues of monitoring in stereo,” Phil explained. “Listening to a stereo headphone mix is unnatural for the brain. Our brains aren’t good at differentiating between different signals, which results in musicians turning up their backpacks, or taking one driver out of an ear, which is unhealthy and dangerous. Over the years, mixing technology has evolved with better mixers and plugins, but that was addressing the symptoms, not the root cause of the issue.”

What KLANG is doing under the hood is encoding the audio signals with what the brain understands as directional information. This means all of the techniques that the brain naturally has to understand audio then work properly. The benefits of this approach include lower monitoring volumes, which addresses hearing fatigue. Prioritising the importance of signals based not just on their level, but also by their perceived physical position makes it easier for the brain to concentrate on what is important. This leads to more stable mixes with less changes day-to-day.

KLANG doesn’t rely on room emulation for its spatialisation, meaning it can work in any acoustic. “In this sense, it’s less like virtual reality and more like augmented reality,” expands Phil. “Emulating a room would potentially conflict with reality. You don’t have to emulate the exact physical structure of the gig in the mixes either. You just create as transparent a mix as possible, using the entire space; around, above, and below. That’s



Phil Kamp, Scott Jamieson, the KLANG app GUI and a DiGiCo Quantum 338





how you separate instruments. In traditional monitor mixing, you're fighting signals masking each other. With KLANG, you can distinguish between instruments like kick and bass that have overlapping frequencies as long as you place them apart in the sound field."

So, how should a monitor engineer go about introducing KLANG to their work? "I like to say that the first thing you should do is don't tell the musos!" recommends Phil. "If they're given all the details, they can freak out. It's completely reasonable for them to be wary of change in something as important to their performance as monitoring. In some cases, based on personality, it could make sense to talk about it, but I say just use it. Similarly, you don't discuss which compressor model or plug-in you're using with your musicians, because it doesn't matter to them; only the result counts. What you can do is give them their beltbacks in engineer mode and let them switch between a stereo mix and a KLANG mix, then they can keep the one they want. Don't overthink it."

As a technician entering this new world of position-based mixing, what does Phil suggest for the best results? "I'd say find good positions for the instruments as a starting point. Play around with multitracks. Come to one of our training sessions if you can, as we go deep into the psychological aspects of using positioning. There are also the Quick Positions positional presets you can recall, which sort by priority. You can see on the GUI that the red area is the 'focus area', the highest priority. After you start positioning by priority, everything becomes easy; you can almost keep everything the same level. If you look at the faders on a KLANG mix, it looks like a FoH mix, without the drastic level differences you see in monitors sometimes. You don't have to use tricks like ducking between kick and bass, or carving out the kick drum root frequency from the bass. You don't have to overprocess and compress 'big' signals like distorted guitars. Usually, if you import a stereo mix into KLANG, it might sound thin because of all the drastic high cuts and low cuts we usually use to control a stereo in-ear mix. With KLANG, your mix can be a lot 'messier' and just keep the signals natural."



KLANG panning on the DiGiCo Quantum 225



KLANG:kontroller



KLANG:konductor and a KLANG:quelle Dante headphone amp



Immersive Audio in 1937!

It's not often we get anything in our PO Box apart from CX Magazines that have gone astray, so we were delighted to open it up a couple of months ago and receive delicately packaged pages of an edition of Popular Mechanics from May 1937.

CX reader James McMillan had lovingly extracted a story on a production of Kurt Weill's opera 'The Eternal Road' running at the Manhattan Opera House. It was apparently a spectacular production involving 300 actors and ran for 153 performances. What Popular Mechanics was particularly interested in though, was the use of distributed 'cellular loudspeakers' around the stage and the live sound effects and music running through them. We reproduce the article here for your enjoyment!

Popular Mechanics Magazine

H. H. WINDS

May, 1937

Special

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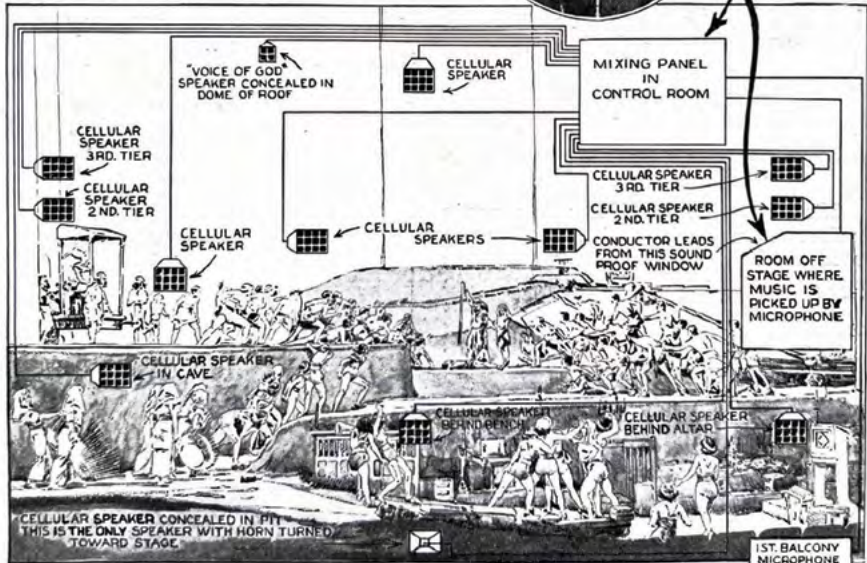
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SOUND ENGINEERS help the stage

AWE-INSPIRING effects for a Biblical spectacle in which 300 actors appear in a New York theater are achieved by sound engineers. From the "heavens" come angel choruses and the "voice of God," from some parts of the great stage are heard huge volumes of orchestral music and from other parts come choral numbers—all blended with scientific precision into the action and spoken parts of the big cast.

Two men, working calmly in a sound-proof room in the dress circle, control all

(Continued to page 144A)



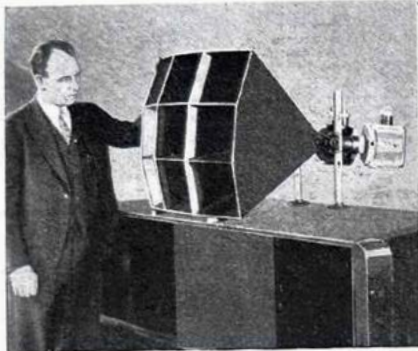
Here is a diagram of the slaves' revolt scene. Note the twelve loudspeakers, which are concealed from the audience. One, designated as "voice of God" speaker, carries answer of the Lord to praying people. Photo, top, shows mixing panel in main control room. Circle, Conductor Isaac Van Grove, Dr. Leo Kopp, his associate, and Kurt Weill, composer, during sound-film recording. Bottom, signaling from recording room



Sound Engineers Help the Stage

(Continued from page 703)

of these sounds for the play, "The Eternal Road." Their means of producing the various effects are the work of experts in the recording and reproduction of sound film. To achieve the fidelity necessary, a process employing ultraviolet light in sound-film recordings and a new type of loudspeaker



Special cellular-type loudspeaker which sends out sound in many directions

which directs sound in many directions were used by the engineers. Sound films made in ultraviolet light instead of ordinary white light possess clearer detail, which is especially important in reproducing the higher-frequency tones.

Picked orchestras and choral singers were used in making recordings on three separate film sound tracks. In voice recordings it was necessary that singers hear the orchestra while they sang, but if the orchestra recording had been played while they sang, it would have been picked up again by the microphone. So each singer wore a tiny oscillator on his temple, enabling him to hear through bone oscillations. There was no audible sound. The singer heard the orchestra but the microphone "heard" and picked up nothing but the singer's voice.

With the sound recordings it is comparatively simple for control men to dispatch each channel to the loudspeaker where it is wanted. Thus a voice from heaven comes from a loudspeaker high above the stage, or orchestral music from several speakers located at other points.

In one scene a host of angels appears. A

loudspeaker concealed in their midst produces music sung by the best voices obtainable, creating the illusion that the angels are singing. Thus is solved the problem of finding angelic-looking actors who can sing. Since the recordings and loudspeaker do the singing the actors are picked for appearance only. The hum of praying worshipers is produced in another scene by concealing a loudspeaker in their midst. Thus the actors speak their lines to the accompaniment of low-voiced prayers.

A real orchestra, which is invisible to the audience, also is used in the play. It plays in a room of the theater and its music is picked up by microphone and sent out over loudspeakers, with control-room men regulating volume to blend with the recorded sound effects. This orchestra and some of the actors are really in a broadcasting studio. The conductor, looking out of a window onto the stage, is on constant telephonic communication with the control room. One control man is at the mixing panel where he modulates the sound from a score which has each part marked off in electrical units as well as music. The other control man dispatches the sound to the proper concealed loudspeaker.

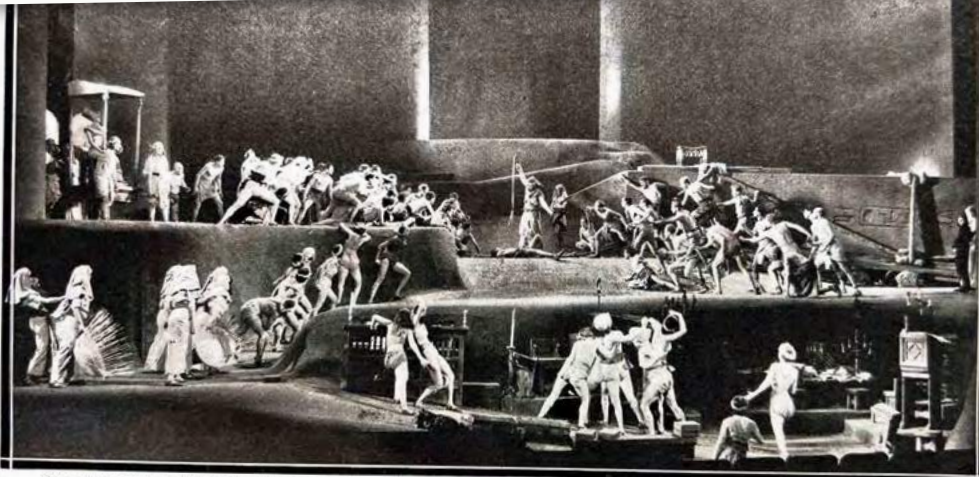
Up in the first balcony is a microphone, connected with the control room. Through this the control men hear what the audience hears and regulate volume accordingly. A sentry, seated beside this microphone, has a telephone by which he communicates criticism of the sound to the control room.

All these special sound effects are carried to the audience by cellular-type loudspeakers which consist of two parts, an upper one to send out higher frequencies and the lower to carry low-pitched sounds. Instead of directing sound in one direction, as most loudspeakers do, this cellular speaker sends it in many directions.

So much electrical power is required for the play that a special vault constructed beneath the stage houses two transformer stations.

Our Bureau of Information will answer questions regarding articles in this magazine, if accompanied by return postage.

"Spectacular scene from Max Reinhardt's stage production, 'The Eternal Road,' Showing the revolt of the slaves in Egypt in Egypt."



Spectacular scene from Max Reinhardt's stage production, "The Eternal Road," showing the revolt of the slaves in Egypt. On opposite page is a sketch of the same scene showing the location of each loudspeaker, which has been carefully concealed from the audience



"On opposite page is a sketch of the same scene showing the loudspeaker, which has been carefully concealed from the audience."

Keeping the air clear at

WOMADelaide



South Korea's ADG7 on the Foundation Stage during our interview

WOMADelaide 2023 was back at full international strength, with 700 artists from 30 countries, and with an increased capacity of 30,000 punters per day at Adelaide's Botanic Park/Tainmuntilla, helping make Mad March slightly madder than usual. High above WOMAD each night, French aerialists Gratte Ciel were dumping a tonne of white bird feathers, filling the air. The air was also full of RF, and it was the job of Profiles Resource Management's Peter Twartz to make sure that RF was clean, even if he couldn't keep the feathers out of the racks...

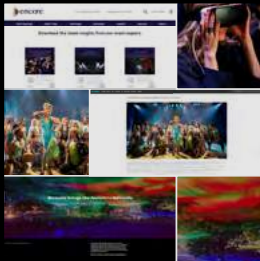
Over four massive days, including a public holiday Monday, WOMADelaide pulled 110,000 people through the doors. Headliners at WOMADelaide included Florence and the Machine, Bon Iver, Soul II Soul, and Youssou N'Dour. Not far away, Adelaide Fringe had taken over the parklands with The Garden of Earthly Delights and Gluttony. The Adelaide Festival itself was also on. No wonder hotels were expensive. But it wasn't just thronged with people, there was also a lot of radio frequencies in play.

I met backstage with Peter Twartz as the main Foundation Stage thundered on behind us. This is PRM's first time working WOMAD, and one of the reasons he was there was a rider. "Bon Iver's rider calls for site-wide RF management," reported Peter. As professionals, I think we all understand that specific clauses on riders usually mean something had gone less than well in the past. "Probably," smiles Peter. "They had a paragraph in the rider asking for a list of all active frequencies, and to provide a proposed list for them. They had 14 channels of in-ear monitoring that they brought in."

It's a quite the task to manage RF across all seven stages, Kids Stage, and the Taste the World Pavilion, even with the site so large. "We're blessed with the layout here, because not all of the stages affect each other," observes Peter. "But Stage 3 will interfere with Stage 1, as will Stage 2. Every stage is within RF earshot of at least two other stages. The layout of the site and density of the trees are working for us, providing attenuation between stages. The stages are far enough apart that directional antennas aren't pointing at each other, and the Fringe is far enough way not to be an issue."

That's all well and good for radio microphones and in-ear-monitors, but that's not the only RF PRM are employed to deal with; there's also comms. "Two-way radios are a different ball game," explains Peter. "They push out 5W, and your 50mW radio mic will lose. And they're press to talk; they don't turn up on an RF scan unless someone's actually talking into them. Of the 370 channels of RF we have under management here, 30 are two-ways. All of Production and Stage Management are on two-ways."

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Other comms are also in the RF soup. Two acts, including the aerialists, are using Clear-Com's FreeSpeak II, which runs in the 1.9GHz DECT band. There's also random media ENG crews. "The Press Manager tells me when there's a media call or press conference," Peter continues. "We had channels 7 and 9 and the ABC here this morning. They typically bring in Sony or Lectrosonic radio mics which are sitting right in our 520-694MHz range and need to be managed. The media crews here in Adelaide have worked together and divided up 40MHz of the radio spectrum between them, assigning around 100 frequencies between the five networks, that's great for them, but I can't afford to block out 40MHz. It's up to me to find out from them which of these units will actually come to the press call, and what specific frequencies they're using."

There's also the matter of steering clear of local television stations, which is not always as straightforward as it sounds. "Adelaide's RF environment includes five TV channels you need to avoid," states Peter. "The legislation says we're allowed to operate in unused spectrum, but the exact wording is 'not in the coverage area of a broadcasting station.' There's a coverage area called 'Adelaide' and

all the big transmitters on top of Mount Lofty in the Adelaide Hills all transmit in the VHF band. But there's also another coverage area called 'Adelaide Foothills' and they are lower power UHF transmitters. You'd think that wouldn't be a problem, but you can see them on the scans. That's because the transmitters are on top of a building in the CBD pointing at the foothills, because the people who live on the front face of the hills miss the TV from Mount Lofty, as it goes straight over them."

Integral to PRM's work on large-scale events like WOMAD is FreqCoord, an online portal and total RF management tool developed by Swiss broadcaster SRF. "FreqCoord allows you to plot as many geographic locations and timeslots as you need," Peter outlines. "The frequencies you have in use at 2 pm are available again after that act is gone, so they become available for the 7 pm show. That's how we juggle 370 frequencies, as they're not all active at once. FreqCoord accepts latitude and longitude data, so it knows how far each stage is apart. You can enter which bands you know you'll be using, and import an RF scan from Shure, Sennheiser, or Wisycom."

One of FreqCoord's big strengths is how it networks all of the RF users on site, as

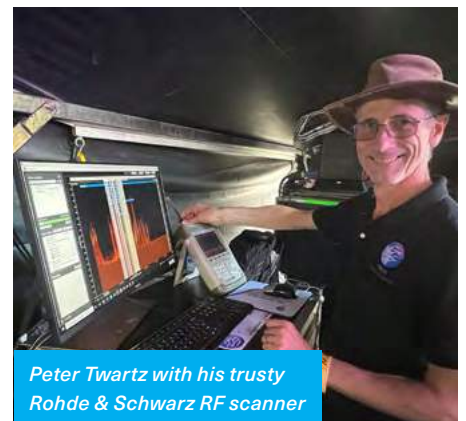
opposed to just being a tool for the RF Manager. "I am networked to all the users," Peter confirms. "If you want to use radio mics, I can send you a link, or you can log into the FreqCoord platform. You can then see when and where you're proposing to use them. You confirm and hit 'submit'. That request comes into the frequency calculation engine, which I can see as the administrator. I then approve, disapprove, or change. The software allocates frequencies that work, and the user gets the details. The software manages all the communications to all the different parties, and the acts get all the information they need. Importantly, this means there's an email trail, log file of correspondence, times, date, replies, comments, and requests."

PRM were off next to manage the RF at the Slipknot-curated Knotfest, and then to multiple sporting events and stadiums, including Suncorp Brisbane, Queensland Country Bank Stadium in Townsville, and the 'Gabba. They're also managing the RF at Optus Stadium in Perth, the Gather Round in April for the AFL, the NRL's Magic Round in Brisbane in May, and the State of Origin series, which this year includes another trip back to Adelaide.

www.prm.com.au



Crowd favourite German 'techno marching band' Muete brought 16 channels of wireless mics



Peter Twartz with his trusty Rohde & Schwarz RF scanner



Radio rack on the Foundation Stage

Adapting AV Professionals to

TikTok

CREATING ENGAGING CONTENT

At this point, TikTok needs absolutely no introduction. Regardless of the controversy around it, there is no denying its effectiveness as a social medium, with over 1.53 billion users around the world. Nearly a third of all internet users use TikTok, watching over a billion videos every day.

TikTok led the trend towards short-form videos becoming the most prominent form of content on social media, with its competitors rushing to integrate and optimise such content on their own platforms. Naturally, this presents a wonderful opportunity for A/V professionals, but it also creates a lot of challenges. TikTok is such a radically different way of presenting video than any previous platform, using vertical format instead of horizontal and with tight limits on duration. Making use of its remarkable potential inevitably means breaking away from well-established practices.

Short-Form Video

"Attention spans are short, which is why short-form video works really well on the TikTok platform. Videos cannot be longer than 15 to 60 seconds, therefore the commitment to watch is not overly exerting," wrote Rachel Calkins for Tripleseat - a sales and event management software solution.

This is an important point, especially for A/V professionals used to livestreaming days-long live events. While you can use TikTok Live

for streaming a longer event, the platform's strength is in shorter content, with the focus on brief moments instead of protracted periods. Those moments can be strung together across multiple moments to tell a longer story.

"There are many things that can be done in the span of 15 to 60 seconds - from demonstrating a quick cocktail recipe to designing a complex balloon structure, which are entertaining concepts as is. Then, with the help of added music, voiceovers, and editing effects on TikTok, you will have an engaging video that hooks any viewer."

"Show what is unique and interesting in order to capture the attention of your ideal audience member. The benefit of the short-form video is that the viewer can easily get roped into watching a string of your videos in a row without even realising how much time has passed," Rachel added.

A Look At The Life

A lot of industries can find picturesque and interesting moments to record and post to TikTok. The examples given above - mixing a

cocktail or designing a balloon structure - are obvious ones, with both having very visible and attractive conclusions. However, not all industries involve such visually stimulating work. Surprisingly enough, that does not stop them from attracting a following on TikTok.

Luke Kostka is the co-founder and creative director at New Norml Media. In an interview for FreightWaves on how TikTok and other social media can help with sales and marketing in the freight industry, he said: "I think that social media is really just an extension of how we live as humans, so there's no reason why we should leave any of ourselves out. See what people in your industry are doing. In freight there's a lot of material that you can cover."

A/V also has a lot to cover, as global events organiser Encore have proved. Their EMEA account gives glimpses into the lives and jobs of audio technicians, lighting designers, project managers and more, earning them a modest following of over 1,100 and over 4,000 likes (at time of writing). Agency EA takes a similar but more lighthearted approach, netting them a similar number of followers but over 76,000 likes.

Teach and Learn

The day-in-the-life approach certainly plays to social media's inherent casualness, but may not work so well if you want to portray your business as highly serious and professional. Indeed, being too lighthearted could backfire on you. "As an event professional, your goal is to showcase your work and book clients," said Emily Rochotte, a freelance social media manager and writer in an interview with BizBash. "If you start gaining followers based on different content, you're losing your original audience."

"I find that a lot of event planners and vendors are really succeeding on TikTok when they break the fourth wall, and just sit down and talk to the camera about their experience or give advice and tips." Accounts by Endless Events, Statuesque Events, and others have found success with this approach. It is one that has great potential for growing a brand, especially if other creators share your videos in duets.

As Rachel Calkins added in her article, TikTok is not just a great place to share your wisdom, but also a place you can learn from others. She said: "TikTok prides itself on the community that the platform provides for users with similar interests. As you find accounts that are relevant to the hospitality and event industry, you may find yourself seeking out certain users for their expertise and unique perspective on the latest trends. Engage with other accounts by liking, commenting, and private messaging.



The power of connection over social media has been a monumental way that people have stayed connected throughout the pandemic, in the hospitality industry and beyond."

It's also worth noting that social media is inherently social. The best way to increase awareness of your brand in your industry is to be an active part of the community.

"Whatever you do, don't be that person on TikTok that just sprays and prays," said Luke Kostka. "They just start recording and they don't know exactly what they're recording. Before you start your TikTok or before you start your social media platform, make sure that you have a goal in mind and then make sure you figure out something that people feel like they need to see."

"Attention spans are short, which is why short-form video works really well on the TikTok platform. Videos cannot be longer than 15 to 60 seconds, therefore the commitment to watch is not overly exerting."



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Hindsight is such a powerful thing. I'm sure you have heard how much you could have made if you invested in Bitcoin 10 years ago or Amazon 20 years ago. Sounds great on paper, though arguably quite difficult to see if you were not a user of the product or service. But what if you could have made a 400% return investing in something you knew quite well?

When you stop and think about it, there are a lot of different specialty brands and products we use every day at work. You may be surprised to know how many of these brands trade as publicly listed companies, meaning you can buy shares and invest in them. There is a good chance that you can be a part owner of your favourite brands. There are also a lot of brands that are owned by larger companies that you can buy and sell shares in. One of these companies is called Signify.

Signify, formerly known as Phillips Lighting, is a Dutch multinational lighting corporation. It holds a number of somewhat similar brands and businesses in its portfolio. You may not have heard of Signify before, but those knowledgeable on lighting brands may have heard of some of their companies. Included under the Signify umbrella are brands such as Philips and their spin-off companies including Philips Hue and Phillips Dynalite, Varilite and ColorKinetics, to name a few. They also used to own Strand lighting.

To paraphrase famous American investor Peter Lynch; "Only buy what you understand. Investors should invest in companies that they are familiar with and understand, instead of trying to predict the future direction of the stock market." With a net worth of about \$450 million, it would read as sound advice. For example, most individual investors (ie: non institutional investors) who own shares in Woolworths, are also regular customers who believe in the strength of the business and its ability to continue to thrive long term. If you are a Varilite fan and would spec their lights for a show, would you invest money into the company that owns them based on how well you know the gear?

Did you know: Australia has a population of approximately 25 million people. Woolworths averages about 30 million transactions per week. Coles averages about 20 million transactions per week.

Signify trades on the Euronext Amsterdam Stock Exchange, formerly known as the Amsterdam Stock Exchange. At the time of writing shares sold for about \$49.82 AUD (30.37 EUR). They paid a dividend yield of about 5%. A \$10,000 investment today would yield you about \$500 per year in income. Based off that, it would take you about 20 years to double your investment, provided you don't reinvest and let compounding do its thing.

But what if you invested \$10,000 20 years ago, in early 2003, when the company was called Philips and had not yet been spun off

into Signify. And what if you reinvested every dividend for 20 years?

In 2003, \$1 AUD got you 0.54 Euro. At that time the company we now know as Signify was trading as Philips. Signify was spun off from Philips in 2016. In 2003, your \$10,000 AUD would have bought you 529 shares in Philips. Philips at that time was trading at 10.20 Euro. Today, Signify is trading at 30.37 Euro, which at the time of writing, is a little under \$50 AUD.

If you did not buy any more shares and did not reinvest any dividends:

- Your 529 shares today would be worth \$26,118 AUD
- You also would have collected a total of \$12,728.28 AUD in dividends
- In total you would have \$38,846.28 AUD giving you a return of 288% on your original \$10,000 AUD investment, without lifting a finger
- Your first annual dividend would have been around \$175 AUD, your most recent payment just shy of \$1,300 AUD

The numbers become even more impressive if you were to reinvest your dividends

- You would have started with 529 shares in 2003
- By 2023 you would own 1,004 shares worth \$49,570 AUD
- In May you would be about to receive an annual dividend of \$2,448 AUD which would be buying you another 49 or 50 shares on reinvestment. You would be looking at a 400%+ return. Your first annual dividend would have been around \$175 AUD, your

most recent payment just shy of \$2,448 AUD

If you were to stop reinvesting your dividends today and take them as cash, you can expect to see about a 25% annual return on your original investment, plus you still have your original investment (which has grown 496%) to cash out at any time. How does this compare to any industry-based investment you have made over the years?

Most major brokerage firms in Australia will give you access to overseas markets. At the time of writing, there is no company listed on the Australian Stock Exchange (ASX) that manufactures or distributes brand name entertainment lighting fixtures or accessories. Making a direct comparison is hard but it can be loosely argued that one of the closest matches for a side by side comparison is Wesfarmers. Wesfarmers is Australia's largest conglomerate, owning such companies as Bunnings, K Mart, Officeworks, and Target,

amongst others.

Let's run the same analysis on a \$10,000 investment in Wesfarmers. In 2003, \$10,000 would have gotten you 372 shares.

If you did not reinvest another dollar:

- Those 374 shares would be worth \$18,793.50 today, almost an 88% return
- In that time you also would have collected \$14,092.32 in dividends
- This gives you a total of \$32,885.82 or a 229% return

If you reinvested every dividend:

- You would now have 859 shares worth \$43,164.75
- The total dividends for the last 12 months totalled \$1,586.72
- You would be looking at a 332% return on

your \$10,000 investment

Based on the numbers, you would have gotten a better return investing in Signify/Philips than you would have if you invested in Wesfarmers 20 years ago.

A few other quick examples of listed companies that produce gear you might use on gigs:

- Canon (cameras)
- Yamaha (audio equipment)
- Osram (Claypaky lights)
- Nemetschek (Vectorworks)

Buying shares in a company is not the only way people make an investment in the industry. A few more examples include; self education, buying equipment to rent out on the side, buying equipment to use yourself, investing money in a business venture of someone you know, and starting a business yourself, as a few examples. As for what is best, there is no one size fits all, it all depends on the individual, their skill set, their timeframe and their circumstances.

Those looking to make an investment in the industry with an eye to making a respectable and measurable return have a number of options. One of those options is to buy shares and invest in a publicly listed company that produces gig related equipment. The scope for choice and potential here could be much larger and more varied than most people anticipate. What would an investment in one of your favourite brands today yield you 20 years from now?

Quick Comparison	Signify	Wesfarmers
Share Price	\$49.82 AUD	\$50.25 AUD
Market Capitalisation	\$6.035 Billion AUD	\$59.08 Billion AUD
Revenue	\$3.247 Billion AUD	\$33.94 Billion AUD
Payout Ratio	64%	80.83%
Dividend Yield	4.99%	3.74%



ColourKinetics - Infinity Bridge, Dubai



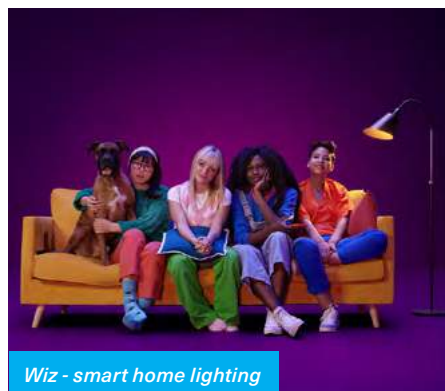
Varilite - VL5LED Wash, Niels Broos



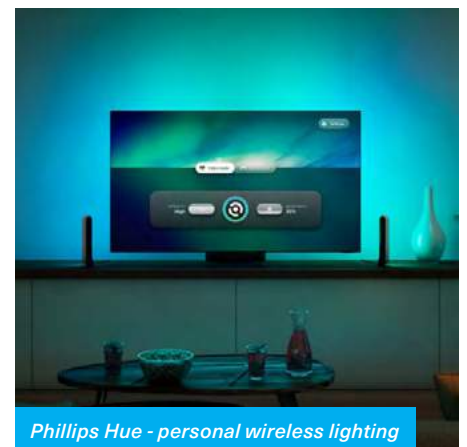
Interact Lighting - self-search technology



Phillips Lighting - Notre-Dame, Paris



Wiz - smart home lighting



Phillips Hue - personal wireless lighting



BARNFIND

BarnColor

I discovered the Norwegian brand Barnfind through an associate in the same industry. The BarnColor range were the first robust, self-contained, field-deployable multi-channel HD-SDI video over fibre units that I had seen that require zero config. The equipment we were previously using for this kind of application was very expensive, and required a lot of configuration and specialised knowledge, particularly when dealing with video signals of differing resolutions. In AV applications, people mix and match resolutions all the time, and you usually don't find out what you're dealing with until the gig. This isn't a great situation, and it took a lot of work to deal with. When I saw that BarnColor pretty much eliminated this issue, I picked them up the moment they landed.

Use Case

An average gig for us involves using the BarnColor as a remote stage box for remote cameras running HD-SDI and bringing their signals to the vision mixing position, which could be FoH, BoH or in an OB truck. We could be running PTZs, POV cameras, return feeds, and screen feeds, and we're typically working on multi camera concert shoots or broadcasts. We use a mixture of Sony broadcast cameras, Panasonic PTZs, and Marshall POV cameras. Our main vision mixing platform is Ross Carbonite. At the moment, we're using the SDI models of BarnColor, up to 3G, but we do have 4K on the horizon.

You can daisy chain up to four different coloured BarnColors at each end of an

interconnecting fibre. You connect different coloured BarnColors with an opticalCON DUO (or regular LC fibres) cascading from one box to another. There are two opticalCON ports on the front of each BarnColor, one labelled 'Cascade' and the other labelled 'Peers'. Cascade is the port you use to daisy chain the boxes with different colours, and Peers goes to the remote BarnColor(s). This gives us four channels of video each direction. BarnColor is SDI format agnostic, so doesn't care about video resolution as long as it's within the limits of the unit, and there are no timing issues or delays. It's an easy way to deploy a gig.

Colour-Coding

The colour-coded send-receive system that BarnColor uses works using Course Wave Division Multiplexing (CWDM). This

means every signal sent down a fibre by a BarnColor is on a different optical wavelength (frequency). By using optical multiplexing, the different wavelengths are combined into one fibre and then separated again at the other end. Typically CWDM supports 16 wavelengths, so each BarnColor utilises four of these wavelengths. By daisy chaining different coloured BarnColors (each different coloured BarnColor uses a different set of four wavelengths) you can get up to 16 channels of video down a single fibre pair in each directions with no latency.

Layout

Physically speaking, the four BNCs in the top row are inputs, and the lower row are outputs; I've labelled them on our units to make the inputs and outputs a bit more

obvious. Our camera ops are generally pretty hands-on, and help rig and patch cameras, but don't necessarily know their way around IP infrastructure. They can see where to plug in, and there's corresponding status lights for each in and out so that they can see if there is a valid signal present. There's also a little 'traffic light' style indicator for fibre connection status: green light is good, red light is bad! It gives us extra confidence, and anyone can read and rely on it.

Rackmounting

Each BarnColor is a half rack unit and comes with all necessary mounting and linking ears. You can bolt two units together on a single rack tray. Connectivity is by ruggedised powerCON, and fibre connectivity is opticalCON DUO which runs two single mode fibres. That is pretty gig-proof. Single mode fibre has practically no tolerance for contamination, and opticalCON DUO has an

integrated flap system that caps over both ends of the fibre to keep them clean.

Service, Support, Suggestions

The service and support from distributor Adimex is very good. Our first BarnColors were very early units, and we had a slight problem with vibration causing modules inside the BarnColor to become partially disconnected. Barnfind were thankfully already aware of this issue, supplied a user quick fix to get us through a busy period, and then serviced them and had them returned in a relatively short time. About the only changes I'd like to see to the product is moving the powerCON and either the Cascade or Peer port to the rear of the unit.

Conclusion

I would absolutely recommend BarnColor for applications like ours. They're the go-to for robust, simple, and flexible multichannel video

over two fibres that can be easily deployed by less-skilled hands. I think it's the best solution on the market.

Product Info: <https://barnfind.no/>

Distributor Australia and New Zealand: adimex.com.au

About the author: Melbourne's Alex Hasker is the Managing Director of Lex Audio Visual.

With Alex coming from a background in electronics and live sound, Lex was a PA company prior to 2000. Alex then pivoted the company to be an AV specialist that's heavily involved in broadcast, and now provides audio visual equipment and crew for hybrid events, broadcast and webcast production, conferences, and more, while also providing pre-production planning and technical consultation.

Concept & Specs

The BarnColor range is designed to be a cost-effective solution for sending multiple video signals in both directions on opticalCON DUO fibre cable. All the setup and configurations are integrated and done by the manufacturer, meaning they can be used by anybody, with no special skills. This also means no compression and no latency.

There are three models; 4x3G-SDI, 4x12G-SDI, and 4xEth, which come in four colours each. Four units can be cascaded at each end of the fibre line, in any order, as long as the colour is different. On the other end of the fibre line, units send or receive the signal from their same-coloured counterpart at the other end.



4x3G-SDI



4x12G-SDI



4xEth

4x3G-SDI

BNC Ports

- SMPTE 259M, 292M, 372M, 424M, DVB-ASI
- Multirate reclocking of outputs 270Mbps – 3Gbps

Fibre port

- Neutrik opticalCON DUO, also compatible with duplex Single Mode fibre LC-LC
- SMPTE 297M

Power plug

- Neutrik powerCON
- 100-240VAC, 15Watt

Dimensions

- 223mm x 277mm x 44mm
- 1.4 kg

4x12G-SDI

BNC Ports

- SMPTE 258M, 292M, 372M, 424M, DVB-ASI, SMPTE ST-2081, ST-2082
- Multirate reclocking of outputs 270Mbps – 12Gbps

Fibre port

- Neutrik opticalCON DUO, also compatible with duplex Single Mode fibre LC-LC
- SMPTE 297M

Power plug

- Neutrik powerCON
- 100-240VAC, 15Watt

Dimensions

- 223mm x 277mm x 44mm
- 1.4 kg

4xEth

RJ45 Ports

- 10Mbit/s – 100Mbit/s – 1000Mbit/s
- PoE 15Watt per port

Fibre port

- Neutrik opticalCON DUO, also compatible with duplex Single Mode fibre LC-LC

Power plug

- Neutrik powerCON
- 100-240VAC, 90Watt

Dimensions

- 223mm x 277mm x 44mm
- 1.4 kg

MAGEWELL

Ultra Encode AIO



PlatformAV have owned Magewell products for the last four years, predominantly the predecessor models to the Magewell Ultra Encode AIO.

This new product represents the latest version of their firmware, with hardware and functionality upgrades. We've already run some very large jobs with a lot of Ultra Encode AIOs, as well as subhiring out dozens of them at a time to other companies.

Use Case

Our typical use case for the Ultra Encode AIO is inputting SDI or HDMI, depending on resolution, from our cameras, with a second input as a back-up. We then send signal out via RTMP to YouTube or Vimeo, or via SRT if we're sending between two boxes. We have a studio back at our office with hardware receivers that receive SRT and then output SDI to a hardware vision mixer, or sometimes we send SRT to VMix running in the cloud.

A new feature in this generation that we're intrigued by is the Ultra Encode AIO's ability to send multiple sessions out via multiple protocols. We haven't done that in the past, as previous hardware would only send the second stream out at lower quality than the main stream. But on this unit, both the main stream and sub stream can run at the same rate, up to the bandwidth limit of 32Mbps.

Multichannel Audio

This is the first encoder/decoder we've had that can handle 8 channels of audio via HDMI and 16 via SDI. This is incredibly useful, as the vast majority of encoder/decoders don't support multichannel audio. This means that over SRT links we can, for example, send separate microphone audio channels for a two-person shoot, with separate ambience and playback channels, plus a mix. This requirement has come up a lot of times.

Web GUI and Monitoring

Everything you need to do with the Ultra Encode AIO is accessible via its web interface. Magewell's web interfaces are excellent and are the number one reason we chose Magewell over their competitors. The GUI updates instantly, and whatever you see in the

interface is what's going on with the signals and the box. This sounds like a normal feature that any encoder/decoder should have, but sadly, it isn't.

There is a lot of information in the Ultra Encode AIO's web interface, which is essential because on larger events with lots of links, you're relying on data about the network, as opposed to an image you're seeing on a monitor. The data doesn't lie; when you're looking at the GUI, you're seeing Ethernet data rates, and seeing what is being sent out. If you're using variable bit rate, you can see the bandwidth output going up and down. If you're sending constant bit rate, the output is a constant, solid number. You can see CPU rates, resolution, and frame rate; everything you need to be confident about which signals are coming in and which are going out.

Front Panel

The small confidence monitor on the front of the unit is amazing. It displays the device's IP address, which seems like a small thing, but if you don't know the IP address of a piece of equipment, you usually have to go through some sort of process to find it. There are also audio VU meters on the front; unreferenced, but VU meters nonetheless. When you're





THE SPECS

Input Features

HDMI max input signal: 4096x2160 60fps 4:2:0; 4096x2160 30fps 4:4:4/4:2:2

SDI max input signal: 2048x1080 60fps 4:2:2

Input 16 Channel SDI embedded audio

Input 8 Channel 24-bit HDMI embedded audio

Input Audio from 3.5mm Line In

Encoding Features

Dual stream encoding profiles: main stream and sub stream (Max bitrate: 32Mbps)

Support for H.264/HEVC video encoding

Encoding 8 channel AAC

Streaming Features

Natively supports streaming to Facebook, Twitch, and YouTube

Supported streaming protocols: RTSP/RTMP/RTMPS/SRT Caller/SRT Listener/NDI®|HX2/NDI®|HX3/HLS/TS over UDP/TS over RTP/TVU ISSP

Allow simultaneous 6 sessions over multiple streaming protocols

Support for streaming schedule for each destination

Recording Features

Record to an SD card or external USB storage, MP4 or MOV format supported

Support for loop recording when recording to SD card

Share recorded files with NFS/CIFS/SMB

Support for recording schedule

Other

LCD monitor for system status and input signal

Internet connectivity via wired Ethernet and wireless network

Remote control via Web GUI and Magewell Cloud

Provide HTTP APIs

working on a gig with multiple Ultra Encode AIOs, you can't monitor everything at once, so it's great to be able to look at them all in a rack and see green flashing lights and images on all of the monitors.

I like the fact that the front touch panel gives you the information that you need while avoiding giving you any type of control that could muck up the settings in the middle of a gig. In some discussions with Magewell, their engineers have mentioned that they might add more control features to the touch panel, but I like the simplicity as it is. We specifically asked them to enable a feature where you can turn all physical controls off. When you're streaming a gig, you don't want anyone to turn the unit off by hitting a power button accidentally. I don't think any devices like these should be easy to turn off – make it problematic!

Rack Mounting

The rack mount solution provided with each Ultra Encode AIO is excellent. We've been waiting for a rack mountable box with a high channel count and unit density. They ship with

everything you need to rack mount; each Ultra Encode AIO is a half RU wide, and you get all the hardware you need to mount them singly or side-by-side. A rack mounted unit with a screen on the front is what we've needed for a long time.

Service and Support

The service and support from Australian and New Zealand distributor Corsair Solutions has been fantastic, and it's great to connect with the engineers at Magewell through them. Magewell have even created custom firmware for us really quickly when we were trying to do something a bit left-of-field. Magewell are great at upgrading firmware to support third party technologies, which is really important when connecting different devices over the internet. Explaining that to some developers and manufacturers can be difficult, but Magewell's tech support is excellent.

Product Info:

www.magewell.com/ultra-encode-aio

Distributor Australia and New Zealand:

www.corsairsolutions.com.au

Aaron Rebbeck started in the AV industry in 1999 pushing roadcases, and was soon a full time Technical Director at Encore Event Technologies (then Staging Connections). After seven years, Aaron went freelance and then founded PlatformAV, a Melbourne-based boutique AV company that specialises in broadcast AV. PlatformAV's work typically covers conferences, high end streaming, and satellite and conferencing links, providing all technical design, staffing, and operation, as well as set design.

WHAT GOES AROUND...



...eventually comes back around.

Local identity Trev quite literally wears rose coloured glasses. It is not that he is living in the past, he has been rocking this look since it was invented. Now in his late 70s, he was there for 'The 60s', dug the tinted view and it stuck. Is it considered retro when you never changed in the first place?

Retro is recycling by any other name. Given that it's usually a term associated with fashion or design, each iteration being hailed as the new black, trends will cycle in and out of grace, until one becomes either an iconic style or ironic oddity.

Collage of cool

When friend Dave and I renovated a Victorian weatherboard in 1990, we decorated with the pastels of 20s art deco, then accessorised with 50s kitchenware and 60s furnishings, blending multiple design eras into one pastiche. Very chic, we thought. In a ramshackle, falling down farmhouse without a right angle amongst it, we styled the kitchen part Cabinet of Dr Caligari, part Mondrian on acid. It used to throw visitors right off kilter with its odd angles and colours. Chequered lino added confusion to the optical illusion. Even more so after a few sobriety rectifiers.

In that kitchen, we chose the coolest looking fridge we could find; a 60s HMV unit from the op shop, a timeless piece of industrial design. As a machine to keep food cold, it was

adequate without being great. But that didn't matter when it just looked right.

I was freelance gigging heavily and arriving home with all manner of treasures. Show merch, Access All Areas lanyards, set lists and random floor finds all got stashed or lost. Local crew stickers went onto the fridge, eventually covering the entire front. I had most of side two plastered by the time the old dear stopped slowing molecules down enough to keep our tucker safe. I couldn't bear to part company with this slice of my history, a visual story of a chaotic work life, so used it as a filing cabinet for a while. It stayed with me over four more house moves and got planted under a couple of tarps (along with other valuable treasures that didn't fit in the shed) when we eventually moved bush 10 years ago.

There were grand plans to make this beauty into a tool cupboard. Memories flooding back every time I grabbed a spanner. Unfortunately, the random number generator of life rolled low, and I wrecked my back. Projects like clearing up the shed to fit our excess trinkets under cover took lower precedence than



trying to stand up and be useful again. When I did eventually come good two years later, I managed to organise the shed and went to check on all the stuff under the tarps. I'd copped bad RNG again. Storms and UV had left holes all through the protective covering and everything underneath was moisture damaged, mouldy, or eaten by termites.

Including my trusty old HMV. It was still structurally sound, but the unsavoury environs had destroyed most of the stickers and the rest crumbled off in the first slight breeze. I was quite gutted. I'd taken such good care of this personal icon over the decades, and it was now as good as ruined. Faded tags representing fading memories.

Circular trends

I have this theory that fashion is entirely cyclical. Iconic items, looks or vibes suggestive of a previous era, when things were always better than now (hint: they weren't), every so often get recycled and repurposed with a fresh spin or new interpretation for the 'hot new look'.

My approach is to do my own thing, regardless of wider trends, and wait for the next coming of my personal aesthetic to get popular again.

It works for me with facial fur. I wasn't even good for bumfluff when it was big in the 70s, but from the mid-80s, I've rarely had a clean scraped face. Goatees, ticklers and variations of punk chins got hot in the 90s (I had a few), before baby-bum faces, androgyny and metrosexuals followed. Back out of fashion, I waited until the inevitable resurgence of natural neck warmers, this time around (2010s) led by hipsters emulating urban lumberjacks. Then, I be cool once again. Woot, I think? As of now, we are well past peak beard, and it is so mainstream that it won't be long before the razors come back out, and some other furless look dominates the zeitgeist.

I've quite enjoyed the ironic approach of recent trope rehashing, like; 'yeh, I'm wearing a Nirvana shirt, but I wasn't even born when Nevermind upturned the music world!' Good for you, kids.

Speaking of which, I still have an original Nirvana t-shirt in good nick that is worth a pretty penny. I never wore it much in the day because the writing on the back is a little too fruity for general public consumption. Do I wear it today to be retro-cool for a while or sit on it like an antique investor, never sharing its inherent glory / shock with the world? Still getting splinters from that fence.

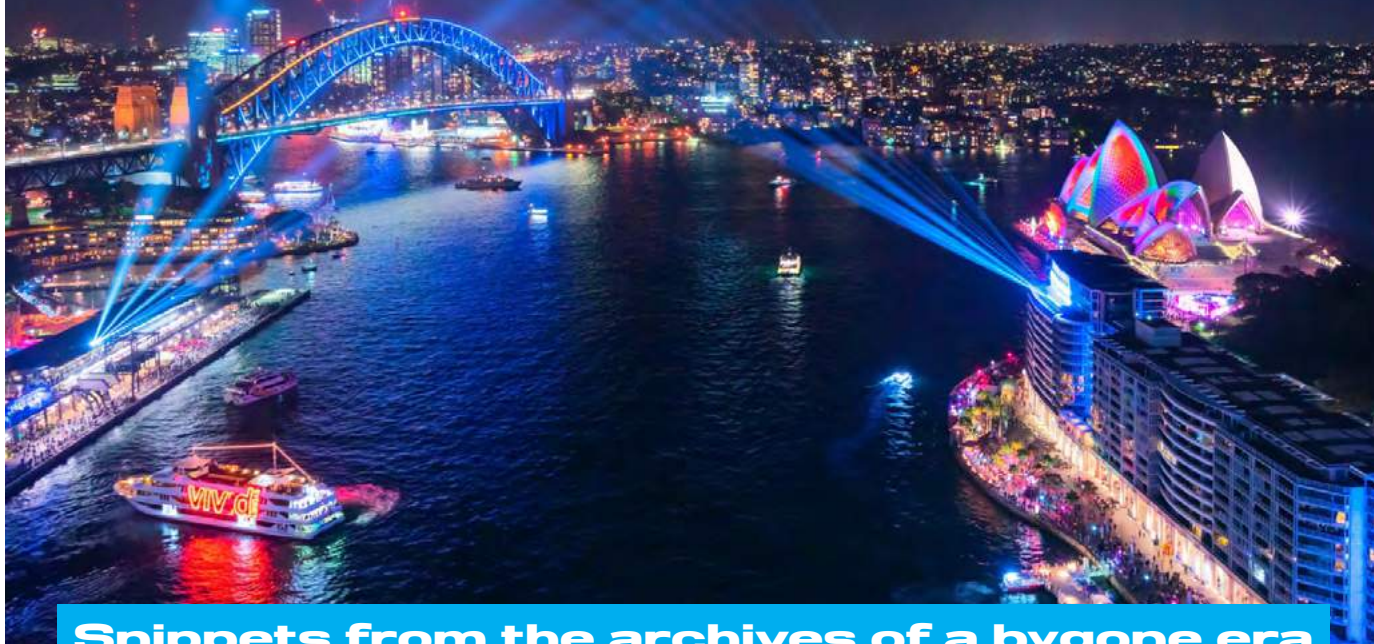
Real retro history

Way back in the early 80s, I was offered a whole paddock load of Valiants for \$50 total. Sensibly, my dear mum said no to storing 60+ rusting wrecks in the back yard and there were way too many to fit anyway. Unbeknownst to us at the time, each of those R-series, S-series, Safaris, AP5s and AP6s would now be worth exponentially more. Yep, millions in toto. Foresight did not trump hindsight in this instance.

Even when driving forward, I keep a keen eye on the rear-view mirror. Stretching the metaphor thinner: without studying history, we are doomed to make the same mistakes. Like kaftans and Kardashians, we are recycling our fashion and design ideas in an ever-tighter loop. Perhaps we could just be like Trev and stick on a good thing when we find it.



Bright Lights BIG CITY



Snippets from the archives of a bygone era

Sometimes the most trivial deed can be life-changing. My introduction to the music industry began with a few song lyrics scribbled on a piece of paper during office hours when I was an 18-year-old NRMA Insurance clerk in Sydney.

Tony Bellette, who some years later crafted a successful career as a voice-over artist was my buddy and fellow mischief maker in the mundane world of the office. Tony wandered over to my desk with my misplaced lyrics in hand wondering who had left them on his desk and exclaiming that they would make a good song.

"I was looking for those lyrics," I said. At first he thought I was joking, but this began a writing partnership that ultimately ushered my induction into the music domain. I should point out that the song writing venture didn't result in any industry success, but what followed left me with a passion to slot somewhere into the bright lights and big city world of the music business.

The year was 1968 and the music industry still retained some semblance of innocence. A remarkable example of this was the journey that followed: Tony took the lyrics home and created a melody structured over guitar chords. Returning to the office the next morning he was sure we had a hit.

"I'm going to call Tony Geary, the A&R manager of the Parlophone label in Australia at EMI," he said.

Tony Bellette's former band The Lost Cause had worked at the Taylor Square venue Beatle Village with The Easybeats in the mid 60s when they were promoting their debut single For My Woman. The Easybeats even borrowed a couple of The Lost Cause's F-sonic amplifiers (made in Marrickville, Sydney) to do their set. It was here that Tony briefly met and chatted with Ted Albert, the Easybeats record producer at EMI. He also touched base with Tony Geary who had co-produced The Easybeats Volume 3 album with Ted Albert at the EMI studios in Sydney.

Tony Geary took the phone call and asked if we had a tape.

"No, but I can play it for you on guitar," said Tony. And as bizarre as this sounds today Tony Geary said, "We've got a guitar down here at EMI, why don't you come down and play it for me."

The old EMI studios were at 301 Castlereagh Street, Sydney (that's why their current location in Alexandria, Sydney is called 301). EMI was only few train stations from our NRMA office near Wynyard Station, so Tony and I took the train to visit the EMI studios in our lunch hour.

Gobsmacked, I sat in Tony Geary's office at EMI, the Australian home of Parlophone, the iconic recording label of The Beatles. I panned around the office, mesmerised by the gold record discs that adorned the walls, while Tony strummed out our fledgling creation, a schmaltzy love song.

Tony Geary must have been such a nice guy because whilst he said it wasn't exactly what Parlophone was looking for, he told us to make a tape and he would send it to a colleague who dived in 'that sort of music'. He did indeed pass on our tape but alas, his colleague rejected it.

Tony and I wrote together for about one year before Tony moved to Queensland, and the tyranny of distance led us down different paths.

I didn't play guitar at the time, so after Tony's departure to Queensland I set out to find a new songwriting partner. I ran an ad in the classifieds, and one of the strangest calls came from Frank Lewis who had a 1969 record called 'Year of War'. I didn't have a telephone in those days so I took the call at my girlfriend's place. I can't remember why I never followed up, but I was still kicking myself years later.



Current 301 Castlereagh St building



Former EMI studios at 301

The next enquiry was from a guy who rented a small room on Sydney's North Shore where he called me from the pay telephone in the lobby. We only wrote one song, which was called Mister Jones. During the writing session the guy (I can't remember his name) slipped out to the lobby and without paying used a kicking and shaking motion to wrestle a pack of cigarettes out of the vending machine.

I sent our demo of Mister Jones to a record producer. The song was a kind of raw Eleanor Rigby type lament about a guy who did nothing

with his life, and it analogised similar people's minds to the 'skin and bones' lying in Mister Jones' grave. The record producer rejected our offering telling me over the phone that he thought it was 'sick'.

I called my new North Shore songwriting partner to tell him the bad news, but with every intention of continuing our partnership. His landlady answered the pay telephone in the lobby.

"He doesn't live here anymore. I evicted him.

He's a thief, you know; I caught him red-handed stealing from the cigarette machine," she said. I never heard from him again.

In desperation I bought a nylon string guitar in an attempt to write my own melodies. It was my second guitar teacher, a Jimi Hendrix aficionado who urged me to go electric; and it had to be Fender. I didn't know one model from another but in an amazing coincidence I bought the exact year model guitar that Jimi Hendrix used when he toured with the Isley Brothers and Little Richard, a 1962 Fender

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Fi-Sonic Amplifier



Tony Bellette - Voice-Over Artist

Tony and I met up again years later when coincidentally, I was writing and producing a touring children's pantomime, and Tony was doing 8 different character voices for an animated television show called *The Shapies*, which aired on the Nine Network for 26 episodes. Tony came to Sydney and voiced one of the lead characters for the CD of our children's show.

It is worthy to note that my first guitar lessons on the nylon string guitar were taught by an obnoxious character who insisted on teaching me the classical guitar method. His tuition included a slap on the hand every time my thumb crept around the neck of the guitar to what he called the coat hanger grip, which was used by just about every rock 'n' roll guitarist in the business. This was not good therapy for someone in a hurry to enter the bright lights and big city vibe of the music world.

Jazzmaster. Jimi's Jazzmaster is today valued at \$1.1 million AUD. I bought mine for \$175. My son is now the proud owner.

I complimented the Jazzmaster with a 35-Watt Fender Tremolux valve amplifier. Now, having

learned the three chords and the lead break from *The Animals* version of *Bright Lights Big City*, I was ready to rock 'n' roll. I meandered through various rock 'n' roll bands in the 70s and early 80s before switching to the production side.



The Shapies

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we're keeping
our industry
connected,
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