



MONTHLY TECH NEWS

CX115 JUN 2016
\$7.50 AU

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"Never doubt your gut instinct"

+ **The Pros of Point Source**
Taming a multipurpose hall

+ **Big screen big sound**
Taming an outdoor system

+ **Show STOP!**
Who pulls the plug at your gig?

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~ Paul Boothroyd

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~ Paul 'Pab' Boothroyd
(Paul McCartney, AC/DC, Paul Simon, Faith Hill, Pink)

"With the PZ-DI, we were able to integrate multiple piezoelectric devices seamlessly and with glorious results. Radial has once again proven they are a cut above the rest."

~ Brad Madix
(Rush, Marilyn Manson, Shakira, Def Leppard)

"Radial direct boxes make everything I put through them warm, punchy and clear. They are great DI's"

~ Chick Corea
(Electric Band, Miles Davis, Return to Forever)

"The JDX gave me all the character and distortion without the worries of bleed and feedback. I was so surprised how close it sounded to the SM57, I had to double check the patch."

~ Jim Warren
(Radiohead, Arcade Fire, Nine Inch Nails)

"We struggled for years on Zombie to get clean audio from the video servers...the JPC solved our battle. I finally get clean CD quality and do not cringe at the noise levels. The JPC is great!"

~ Joel Lonky
(Rob Zombie, Goo Goo Dolls, P. Diddy, Billy Idol)

"Radial DI's provide the flexibility I need to perfectly match any situation I come across. I specify Radial exclusively for every tour I mix."

~ Dave Natale
(Rolling Stones, Joe Cocker, Lionel Richie, Fleetwood Mac)

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~ Jon Garber
(Rascal Flatts, Brad Paisley, The Band Perry, Chely Wright)

"On the Santana tour, we have Radial J48's on guitars and Radial JDI's on keyboards. Since January this year we have traveled all over and the Radial DI's have worked great!"

~ Rob Mailman
(FOH engineer - Santana)



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• Cover photo of Lora Thompson by Jamie Dale. Thanks to Wick Studios, Brunswick for the location.



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Corruption and Oppression

I broke off the SECTECH Roadshow on a Wednesday after we opened and flew from Melbourne to Johannesburg. Arriving 5am for day one of the Live Entertainment & Technical Production Conference (LETPC) I was collected by Simon Oats from TADCO. He distributes great brands like Digico, Quest and Nexo there. Simon drove me in chaotic traffic to Sunnyside Park Hotel in Parktown.

That day saw a variety of views laid out as I drew a mental picture of the country and the issues facing black crew. Most typically crew are flown in for larger shows but there is a growing demand for local skills and a Government mandated program called Transformation.

As we sat in a gloriously themed ballroom, courtesy of Gearhouse SA, people were starving to death nearby. Learning this completely shocked me to my core, and led me to a calling to do a whole lot more to help out, beyond presenting a session at this conference.

I started with an apology. 'I came to your country with ignorance', I said, 'as an indulged whitey. I'm well off, and I was fed a gory and glamorous cameo by Wilbur Smith'. I even waved his latest novel as a prop - it was my airplane reading for those flights. 'I'm here to do whatever I can', I said and never truer words have been uttered.

Eerie Revelations

There were two themes running at this conference, which had a few production firm bosses and a cluster of Government and SARA devotees as an audience. Skills! Skills they kept saying. The thirst for training was palpable, yet the host SARA is a training institution. A black one, located under an overpass, yet a place where kids from the diaspora come home and get something.

There's a lot going on in Africa, and like many I know once touched by those lands and the people you almost fall to your knees. I've heard the testimony of many who go there to 'help', and (notice the italics) I damn well want my time and money to deliver results. I've banned the buzz talk in CX: we no longer will ever say 'outcomes'.

Far out the waffle and distortions I saw and heard in my slender 39 hours on African soil made me want to scream. There is so much WRONG yet so much enthusiasm and potential for RIGHT. The contradictions blow my mind, and the politics are Machiavellian at best.

Whatever you know or consider, my decision is to reach out and help in any way, so that is my calling. To close this off, I got home late Saturday night, spent Sunday on this issue deadline, and hit the road for the final two SECTECH Roadshow dates.

You probably don't know, but SECTECH is our Security Technology Roadshow.

The Robots are Coming

While touring on SECTECH I started to think about what automated trucks will do for our industry. The technology is ready now, all that remains is legislation. Nervous regulators will probably start a trial which will almost certainly prove positive.

Here are the benefits: first there will be no rest breaks, so a Sydney to Melbourne run will come down from 12.5 to 9 hours. That is a big deal, on the Perth run it comes brings the trip time down from 3 days to 2 days. The automated truck drives smoother so the maintenance is reduced. The fuel economy will improve, it may even have a slightly slower acceleration for economy. It is widely considered to be much safer, and it will not fall asleep behind the wheel. Finally the cost of the driver is removed. The prime mover will not need a sleeper cab, so it may allow a longer trailer.

But what happens to all the long haul drivers?

Another random line of thought: if our cities move away from private cars to ride shares with possibly autonomous electric cars, what happens to all the parking garages? The benefits are astounding - safety, far less accidents, lower insurance costs.

Julius Grafton
CX Magazine

CX June
115 **2016**
Volume III (+)

CX is published in print and digital each month, except January. First published 1990 as Channels, then 1992 - 2002 as Connections.

Published by Juliusmedia Group Pty Ltd (ACN 134170460) under license from CX Network Pty Ltd (ACN 153165167).

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Layout: Karla Espinosa, Yelina Pino - TIZAdigital
Legal: DPR Legal, Gilbert + Tobin, Banki Haddock Fiora
Accounting: Watkins Coffey Martin

Airline: Virgin Australia
Coffee: Rob Forsyth
Freight: ATS Logistics
Printed in Australia

MEMBERSHIPS:

ACETA A.R.C.A.
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SPA Series



TSC-7t





Vivid Fades Up Largest Lighting Event Expands

Sydney's Vivid Festival opened late May to large crowds, bringing winter life to a city most visited in summer. Designed as an afterthought by the previous Government,

Vivid hit a chord with Sydneysiders and tourists alike, and today ranks as one of the world's finest lighting festivals.

This year features many exhibits but *LIGHTSHOW - 60s to NOW* is both an installation and an exhibition. It presents a series of light displays by artist Roger Foley-FOGG (aka Ellis D Fogg) and tracks the creative development of lightshow art in Australia from the 1960s to the present day.

Roger Foley-FOGG was there from the beginning. In the 1960s the artist was an early proponent of the counterculture movement and FOGG LIGHTSHOWS became a popular phenomena. They were designed to produce a total multimedia experience that would expand audience awareness and open their senses to 'the oneness of the world'. In the 1970s, Foley-FOGG was also a member of The Yellow House, an influential artist collective led by Martin Sharp and filmmaker Albie Thoms.

Over five decades, his body of work has helped to establish and evolve the medium of lightshow art. His shows redefined the context of staging

and performance through their innovative use of multimedia and have been incorporated in art 'happenings', theatrical and concert performances, dance parties, ceremonies, celebrations and spectacles.

LIGHTSHOW - 60s to NOW showcases his recent collection of light sculptures and also presents an exhibition that takes visitors through different eras: from sixties psychedelia and 'liquid wet shows' to the advent of lasers and the innovation of LEDs.

A highlight of the artist's collection of light displays is a work inspired by his earliest fascination with light: as a schoolboy in the 1950s he was captivated by the way in which the glass of his bathroom

window would filter sunlit leaves in the gently blowing breeze outside. He describes the quality of this light as 'mystical' 'enigmatic' and 'numinous' (that is, suggesting the presence of divinity).

Free, at The Rocks until 18 June.



Royal Botanic Garden Sydney, Cathedral of Light by Mandylights





Dress Circle - artist impression by 32 Hundred Lighting



Roger Foley

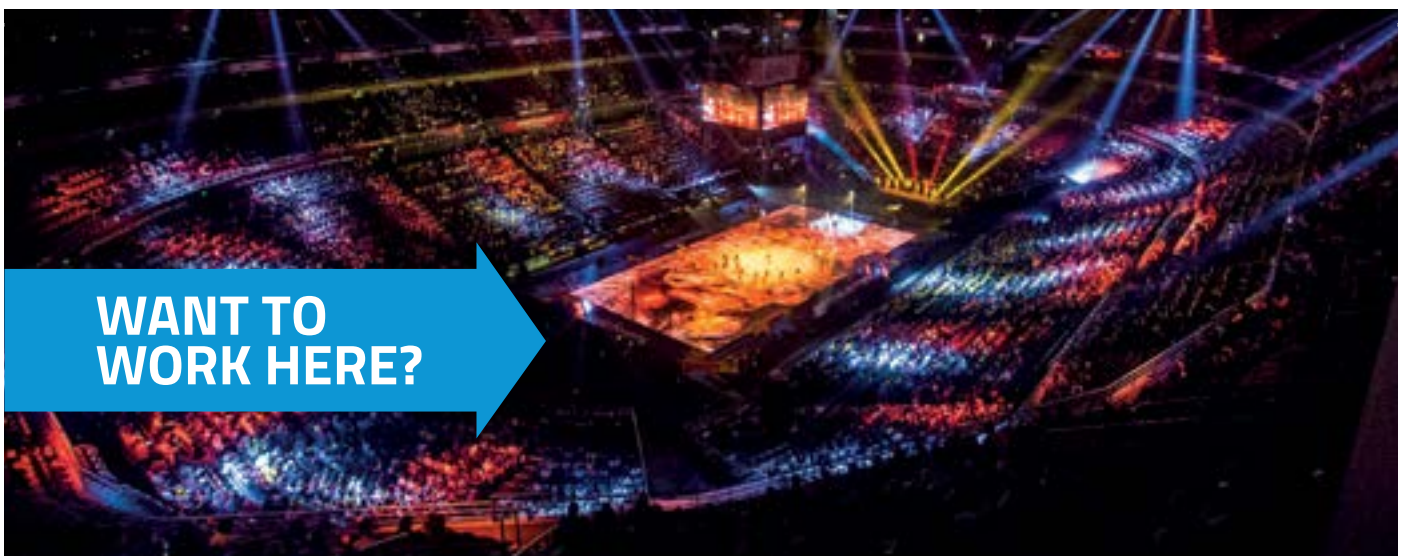
Show Stop! Who pulls the plug at your gig?

After the terrorist attack in Paris, many venues are scrambling to review their show stop policies. Yet CX understands confusion surrounds who should do what, and when.

Show Stop became a big deal with outdoor shows after the Indiana State Fair disaster where a stage blew over, killing seven. The German Love Parade disaster in 2010 killed 23. Show Stop then became essential for outdoor events, yet many indoor events do not have a clear plan.

A cross section of event and production managers contacted by CX said that larger venues generally do have a clear command path and briefs, while smaller venues often do not. Any venue with a stage manager is considered to have clear procedures, but some convention ballrooms do not. "Do you want procedure or panic?", asks safety consultant Roderick Van Gelder. "SOP's - Standard Operating Procedures - show how the job will be done, but how is the venue emergency procedure communicated to clients? When things go wrong, it's too late for a group discussion."

(continued over) ➔



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The Rocks

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 /novatech.australia

novatech
creative event technology

◀ “We had a confusing situation recently”, an audio operator who prefers not to be named told CX. “A security guy came up during the show and said there was smoke in the balcony and we needed to evacuate. I got on the cans to the monitor engineer who said ‘I can’t see or smell anything’. Then the security guy came back and said ‘false alarm’. But no one knew what to do!”

Public buildings must have evacuation plans with exit and assembly points mapped out. Venues are no different, needing the added dimension of a clearly defined sequence of events that includes fast co-ordination between audio, stage, lighting and venue staff.



BACKSTAGE ACADEMY DETAILED UK COLLEGE HAS 90% GRAD EMPLOYMENT



Dr Adrian Brookes detailed his Backstage Academy model at the Live Entertainment Technical Production Conference in Johannesburg last month.

Backstage Academy is based at Wakefield, West Yorkshire, in the largest purpose-built production rehearsal arena complex in Europe, LS-Live. It takes students with a basic

school leaving level and puts them through a two year foundation degree. It is a private company that is associated with a production business, and it has UK accreditation to deliver higher education.

Those that wish to specialize do a further one year honors degree. As the college is affiliated with a variety of production suppliers within its area, internships are easier to facilitate than from a regular college or uni.

It charges UK9000 pounds a year, which is funded by student loans for UK students.

“Training can’t be academia led, it must be industry led”, he told the conference.

“Kenya, Ethiopia, and Rwanda all coming up quickly. You need an academy for African technicians, to become leaders.”

Novatech Careers on Tour East coast Information Sessions Announced

Novatech Creative Event Technology is widening its recruitment search. The South Australian team will head interstate next month to host a series of information sessions in Melbourne, Brisbane and Sydney.

With a focus on quality service, Novatech look to expand the business firmly focused on the company values and behaviours of creativity, technical brilliance and passion. “It’s an exciting

time,” says Leko Novakovic, Managing Director, “we’re heading interstate packed with a series of incentives and look forward to chatting to the right people.”

For more on Novatech opportunities, visit

www.careerone.com.au/company/novatech



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ALLEN & HEATH QU-SB

01



Allen & Heath has expanded its Qu compact digital range with the new Qu-SB ultra-compact intelligent mixer / interface. Qu-SB is

designed as a stage box solution with all the features offered in the Qu series but purely designed for tablet control.

The Qu-SB has 16 XLR mic inputs, 2 line inputs and 14 outputs and can be expanded up to 32 mic input channels and 24 outputs, enabling the mixer to connect over a single Cat5 digital snake to AB168, AR84 and AR2412 remote audio racks.

Australian distributor: Technical Audio Group
www.tag.com.au or (02) 9519 0900

AUDIX PERFORMANCE SERIES

02



Available in single (R41) and dual (R42) rack mountable models, the Audix Performance Series of radio microphones feature a 32 MHz extended spectrum receiver and microprocessor-controlled antenna diversity. Up to eight compatible systems can be operated concurrently with up to 106 pre-coordinated frequencies for quick, easy and reliable set up. The units have a 91 metre operating range, a choice of balanced XLR or 1/4" outputs and have a wide selection of handheld, instrument, headset and lavalier options.

Australian Distributor: Production Audio Video Technology
www.pavt.com.au or (03) 9264 8000

CHAUVET MAVERICK SERIES

Chauvet have announced the Maverick Series, a group of tour ready moving fixture. The first fixtures announced are the MK2 Wash, MK1 Hybrid and MK2 Spot, with more fixtures to be added.

The Maverick MK1 Hybrid features advanced optics, overlapping 8 and 4-facet prisms, a versatile gobo package, a 3°-18° zoom range, and a CMY colour system, powered by a 440 W Osram Sirius Reflector lamp.

The Maverick MK2 Spot is powered by a 440W LED engine, and includes CMY+CTO colour mixing system, two 6 position rotating slot and lock gobo wheels, a 7 position + white color wheel, variable frost and 3

03

facet prism, projected through a 13° to 37° zoom system.

The Maverick MK2 Wash is powered by 12 40 W Osram RGBW LEDs and boasts even output, custom designed optics, full pixel mapping, virtual gobo

wheel with background colours, pre-programmed colours and 7°-49° zoom range.

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

Maverick MK1 Hybrid



Maverick MK2 WASH



Maverick-MK2-SPOT



EPSON G7000 SERIES

Epson has announced its next-generation G7000-Series large venue projectors. With new features including increased brightness,



and motorised lenses, the G-Series delivers high image quality with low total cost of ownership. Consisting of seven models delivering up to 8,000 lumens of colour brightness and 8,000 lumens of white brightness, the series also features the world's first zero-offset ultra short-throw lens with 0.35 throw ratio, ideal for space constrained venues and digital signage applications.

Australian Distributor: Epson Australia
www.epson.com.au or 1300 361 054

04

EXTRON CCI PRO 700



05

Extron Electronics is shipping the CCI Pro 700, a control system user interface optimised for conferencing, collaboration, and AV control. The CCI Pro 700 supports many of the critical functions needed in a conferencing environment, while providing a powerful and intuitive room control user interface. The compact design includes a 3.5" colour information display, a numeric keypad, and backlit buttons. The information display can be used to show contact information, call directories, and call status. Buttons directly below the display can be used to navigate custom lists and menus.

Australian Distributor:
 Extron Australia
www.extron.com.au
 or (08) 8351 2188

HITACHI 5000 SERIES, 8000+ SERIES, AND LPWU9750

Hitachi have announced two new projector series and their first laser projector.

The 5000 Series are part of Hitachi's Installation range, offering high resolution with up to 5800 lumens of output. They are primarily designed for classrooms, lecture halls, and auditoriums. Models include the CPX5550, CPX5555, CPWX5500, CPWX5505, CPWU5500, and CPWU5505

The 8000+ Series are designed to provide maximum impact in mid to large venue applications. Offering a versatile array of performance-enhancing features along with advanced video display technology output ranges from 6000 to 8000 lumens, with resolution up to 1920 x 1200. Models include the CPX8800W, CPWX8650W, CPWX8750W, CPWU8600W, and CPWU8700W.

Hitachi has announced its first laser light source projector, the LPWU9750. The new laser diode light source offers approximately 20,000 hours

06

CP8800_8750_8700_8650_8600



CPWX5505



LPWU9750



of operation time and is maintenance free. It outputs 8,000 ANSI lumens and has a contrast ratio of 20,000:1.

Australian Distributor:
 Hitachi Australia
www.hitachi.com.au
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HK AUDIO PREMIUM PR:O D



07

HK Audio's new Premium PR: OD line consists of five new active Loudspeakers; the Premium Pro 10XD, 10" multi purpose, 12D 12" FOH, , 12XD 12" multi purpose, 15D 15" FOH, and 15XD 15" multi purpose . All models are bi-

amped with a 1200 W class D amplifier, and include an FIR crossover, integrated DSP with control over EQ, crossover, and limiter, and a 90° x 55° wide-beam compression driver horn. All units are made in Germany, are resonance-resistant, with roadworthy wood enclosures and plug and play operation. Improvements in HK Audio's German manufacturing processes have allowed HK Audio to make the new PR: OD series cheaper than their predecessors. The new models have also been designed to be a perfect acoustic match for the existing PR:O 210 SUB A and PR:O 18 SUB A active subwoofers.

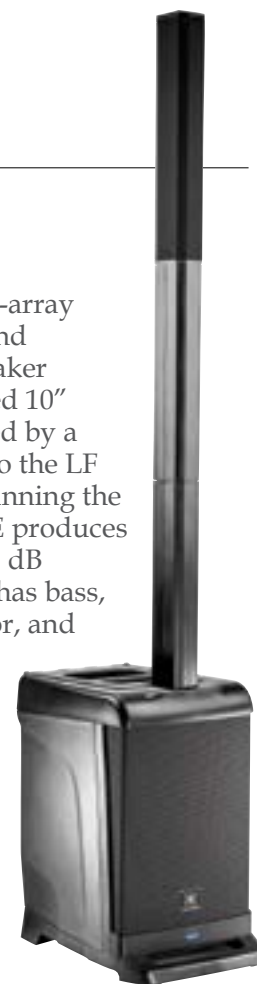
Australian Distributor: CMI Music and Audio
www.cmi.com.au or (03) 9315 2244

JBL EON ONE

08

The portable EON ONE linear-array P.A. system weighs 18.5 kgs and features a patent-pending speaker configuration and unobstructed 10" bass reflex subwoofer. Powered by a Class D amplifier with 250W to the LF and 130W the six 2" drivers running the mid-high array, the EON ONE produces a maximum SPL output of 118 dB (peak). The six channel mixer has bass, treble, reverb, mic/line selector, and combo 1/4" phone and XLR inputs on channels 1 and 2, 1/4" balanced TRS jacks (stereo) or pair of RCA jacks (stereo) on channels 3 and 4, a 3.5mm input jack for on channels 5 and 6, and stereo monitor outputs.

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



LUMINEX GIGACORE 26i

09



The GigaCore 26i is a Gigabit managed AV switch designed to cope with the most demanding lighting and AV installations with high port

density. As the case in the rest of the GigaCore family, the switch is validated for use with common AV protocols like ArtNet, ACN, MANet, Dante, AES67, and QLAN. The Gigacore 26i can also be easily managed through an intuitive web interface without the need of any IT expertise.

Australian Distributor: Production Audio Video Technology
www.pavt.com.au or (03) 9264 8000

MEYER SOUND MJF-208

10

Meyer Sound's self-powered MJF-208 stage monitor incorporates the features of the MJF-212A and the MJF-210 into a smaller, lightweight package. Each MJF-208 measures less than 33 centimetres high and weighs 20kg. The monitor delivers impressive power-to-size ratio and very low distortion in a small-footprint, lightweight option for applications that do not



demand the extreme output levels of the MJF-210 or the MJF-212A. Portability and ease of use for the MJF-208 are enhanced by the MDM-832 distribution module, which can route up to eight channels of AC power, balanced audio, and RMS monitoring data to multiple stage monitors.

Australian Distributor: Meyer Sound Australia
www.meyersound.com.au or 1800 463 937



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→ Outdoor LED Screen PA

KEEPING A BIG SOUND UNDER CONTROL

Monash University's Clayton, Victoria, campus has been going through some changes. With new residential buildings and more students than ever living on campus, there's a growing need for the kind of heart found in civic centres. Part of the solution has been the installation of a whopping 33 square metre Barco outdoor T10 LED screen with an EAW PA system that can run movies with full cinema sound quality.

“There's a new multi-story building that was completed at the beginning of 2016 which houses an additional 1000 students,” explained Peter Maclean, Senior Audiovisual Engineer, eSolutions, at Monash University. “Their accommodation is close to the centre of campus and we wanted to create a community. It was a bit drab before, so a building has been bulldozed and there's a new grassed area, a new eating area, semi-indoor outdoor restaurants under a glass canopy, and a live space. The idea of the screen is to provide life within this space. It's usually playing ABC News 24 or displaying information on University programmes, but it's also used for events and movie nights. We wanted to offer a real outdoor cinema experience.”



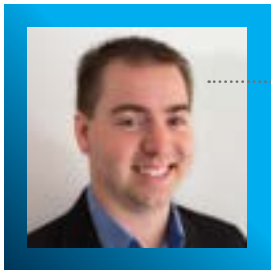
Peter MacLean



Ben Clarke

With EAW loudspeaker products deployed across Monash campuses as part of their standard AV design model, **Peter MacLean** consults closely with Australian EAW distributor Production Audio Video Technology when designing a project that's a little out-of-the-ordinary. **Ben Clarke**, PAVT's Technical Support Manager, was on-hand to answer design questions. “With Monash projects, we're often involved from an EAW perspective to go over new concepts, and find appropriate fit-for-purpose baseline designs,” explained Ben. “We first became involved with Monash five years ago, assisting with their standards development. As the Northern Plaza Redevelopment is a special project, we were involved early on, offering our opinions on weather protection, output capabilities, pattern control, what it was going to take to meet mechanical and acoustic criteria, and how to make it perform as a cinema system with impact.”

POWER AND GLORY



Working together with Parity Technology Consulting's **Andrew Hicks**, Peter MacLean zeroed in on a solution that used two weather-proofed **EAW QX394s** for the mid highs. The two-way trapezoidal enclosure uses a unique high-compression

driver with a 90° x 45° constant directivity horn and runs four 10 inch low frequency transducers arranged as vertical and horizontal pairs, set and spaced to extend pattern control. Providing the low end are four weather-proofed single 18 inch **SB180zP** subwoofers. "The QX394s offered us great pattern control," observed Andrew Hicks. "The four SB180zPs are horizontally arrayed seven metres apart which gives the system substantial low frequency control. Control of audio directivity and level was extremely important on this project because of the buildings around the plaza, and the building two metres behind the screen."



Powering and processing the system is a Powersoft X4. With a hefty 1600 W at 8Ω on each channel, the X4 is also capable of running constant voltage, which became necessary to run the EAW JF80Z delay speakers mounted on poles around the plaza. "There were some substantial cable runs," said **Graeme Overall**, Victorian General Manager at Fredon Technology, the integrator appointed to install the system. "Some were up to 130 metres from the AV rack to the rear speakers. The design for the delays was changed to 100V line. If it hadn't, the cable was going to be 10mm plus, and we'd be pulling half a ton of copper through a conduit that would have been enormous."



Graeme Overall

BUILT FOR EFFICIENCY



"The **X4** was also chosen on a cost-for-performance basis," added Ben Clarke. "With two mid highs, four subs and fills, the X4 represented better value than discrete amplifiers with an EAW processor. The damping factor correction capability of the X4 also meant we could compensate for the long cable runs to the subs. The damping correction overcomes the capacitance, resistance and impedance loss of whatever you tell it to overcome, and it allows high-performance subwoofers to actually perform as high-performance subwoofers. The processor calculates all the negative effects of the cable and counteracts it at its output filter as part of its pulse width modulation process. The end result is that when they play a movie that has sharp transient requirements in the bottom end, it performs. They are performing as well as or better than any cinema subwoofer."



Powersoft X4

Physically, the screen and PA are integrated in a large steel structure set forward from a building, addressing the dining and entertainment areas of the plaza. “We custom-built a standalone steel structure two metres out from the wall to allow rear access to the LED panels and gives us more control,” said Peter MacLean. “The mid highs are hidden either side of the screen and the four subwoofers

are spread out along the bottom. This gives us some control with delay, so signal is focused through the centre of the plaza and there’s less interference to the sides. There’s a custom-built hexagonal mesh that hides the speakers without affecting the sound. While the speakers are weather-proofed, this adds a bit more protection.”

WORKING TOGETHER

With buildings, infrastructure, cabling and control to be coordinated, all parties had to work closely together with open lines of communication. “The biggest challenge wasn’t the technology, it was coordination and integration into the space,” said Parity’s Andrew Hicks. Fredon’s Graeme Overall agrees; “The timing of the works was critical. When Race-Tech (a.k.a. The Big Screen Company) bought the **Barco T10 LED** wall in, they had riggers construct it on a crane. We only had a few days before builders would have started laying the pavement where the crane needed to be.”

Monash’s standard control system has been deployed to operate the plaza system, using the same template and equipment they would use to set-up a lecture theatre. “The back end control, video switching, touch panel control and audio through the ClearOne SR1212 system is our standard,” related Peter MacLean. “It allows us to take our standard control system and deploy it with no custom programming required. We load the code, and configure it with multiple pages to suit the system. We can choose different signal types, how many screens it has, label buttons, label sources and choose what you want on the GUI. It makes support for the system standard.”



IN THE ZONE



The plaza has been set-up with three audio zones. “It’s separated in to the main screen and two other zones,” clarified Peter. “The rear zones, with the EAW JF80Zs mounted on poles, can be turned on and off. All zones can run the same programme, or be separated, with control over programme and volume. We have Shure digital wireless mics can be used in all three zones, one or any combination. It’s a great sounding system. EAW have a fantastic range and their focus is on delivering high-quality sound and very good voice intelligibility.

A lot of speakers sound good with pre-recorded music, but when you put voice through them, they’re lacking. The level we’re getting is the same as in a cinema.”



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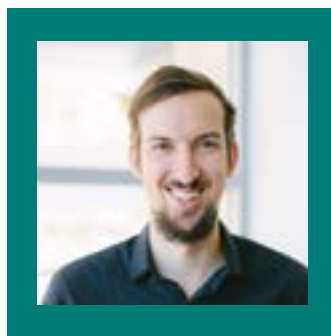
Taming a Multipurpose Hall

The Pros of Point Source

A

line array is not the solution to everything, as point-source innovator and consistently inventive loudspeaker manufacturer Danley Sound Labs knows. With a range of 'new old tech' solutions, impressive phase coherence and a dedicated following in the USA, Danley are now making inroads into their traditional markets in worship and speech reinforcement in Australia.

Pacific Hills Christian School in Dural, New South Wales, is a non-denominational Prep to Year 12 school of over 1300 students. While boasting a 472 seat capacity Performing Arts Centre built in 2011, the school often fills its much larger Multi Purpose Centre with the entire student body. The venue also hosts many events for external clients throughout the year and the school's major musical production every two years. The small announcement PA originally installed in the MPC in 1996 was not up to the task of addressing the entire campus in the reverberant space, let alone amplifying a musical, so **AV Manager Phil McDougall** campaigned for budget to get the MPC what it needed.



Phil McDougall

"I was looking for a system that suited the multiple uses of the MPC and tamed the really horrible acoustic space," explained Phil. "The main floor is a polished timber sports court. Consequently, there's a lengthy reverb time in the space. Once you put any energy into the room, you lose intelligibility. I investigated many options to solve the problems, including line arrays, but from experience, I didn't feel a line source solution was suited to the room. The MPC also has a gallery section with a glass balustrade at its front, so there's a decent area of reflective surface directing energy straight back at the stage. So we decided to look at point source systems."

Focusing Energy



Steve Anderson of Danley Sound Australia came on-site to trial some of their products in the space. "We did a demo with some Danley boxes and they really worked well," reported Steve. "It's because of the pattern control; we concentrated on

putting sound on the people and not on the walls." With design proposals for different point source options, the tender process awarded local integrator Challenge Projects' Danley bid. Phil and the Pacific Hills team were already familiar with Danley, running their PA in the Performing Arts Centre, but the MPC was a very different environment to cover.

"We designed something properly for the room," continued Steve. "I drew a 3D model of the venue in SketchUp then dragged it into 'Direct'. This is a Danley application similar to EASE, but with the capacity to model well below 100Hz. Our design used two Danley SH96s as the main left-right that cover the bulk of the room. The two front corners missed by that are covered by two SM60MHs as outfills - they're an SM60F without the low end drivers. There's an SH95 as centre fill, three SM96s as delays for the balcony, and two flown TH118 subwoofers mounted in a cardioid configuration that cancels to the front of the stage. If you turn off the rear sub, the sub level on stage goes up 15 dB!"



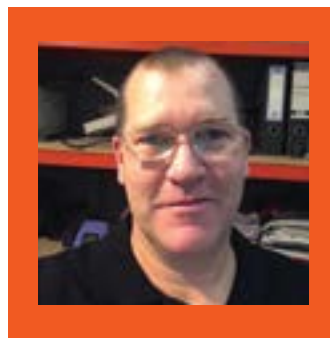
"We designed something properly for the room"

FIR Filtering

With models of different loudspeaker designs overlapping in coverage, getting phase correction right can be a major challenge for consistency and intelligibility. Steve solved this problem by using the processing in the Powersoft X8 amplifier that runs the system, which is capable of importing FIR coefficients. "While Danley's tight pattern control holds down to around 700-800Hz, below this the SH96 mains and SM60MH outfill speakers begin to overlap in coverage" expanded Steve. "If the phase response differs by more than 120 degrees, they're going to start to destructively interfere. These two boxes have different phase responses, and when you walked from one to the other, frequency response anomalies were heard."

"With software called 'FIR Designer' from Eclipse Audio (<http://eclipseaudio.com.au/wp/fir-designer/>), I was able to create a phase correction curve separately and independently from a magnitude correction curve. It then gave me coefficients in a spreadsheet that I could import to the amplifier. When I measured the results, it was flat phase from 200 Hz all the way to 20kHz, and the frequency response anomalies were gone. You can do FIR filters in a bunch of boxes now, from Crown, BSS, Symetrix, Rane, and lots of other manufacturers. You just need a way of creating them."

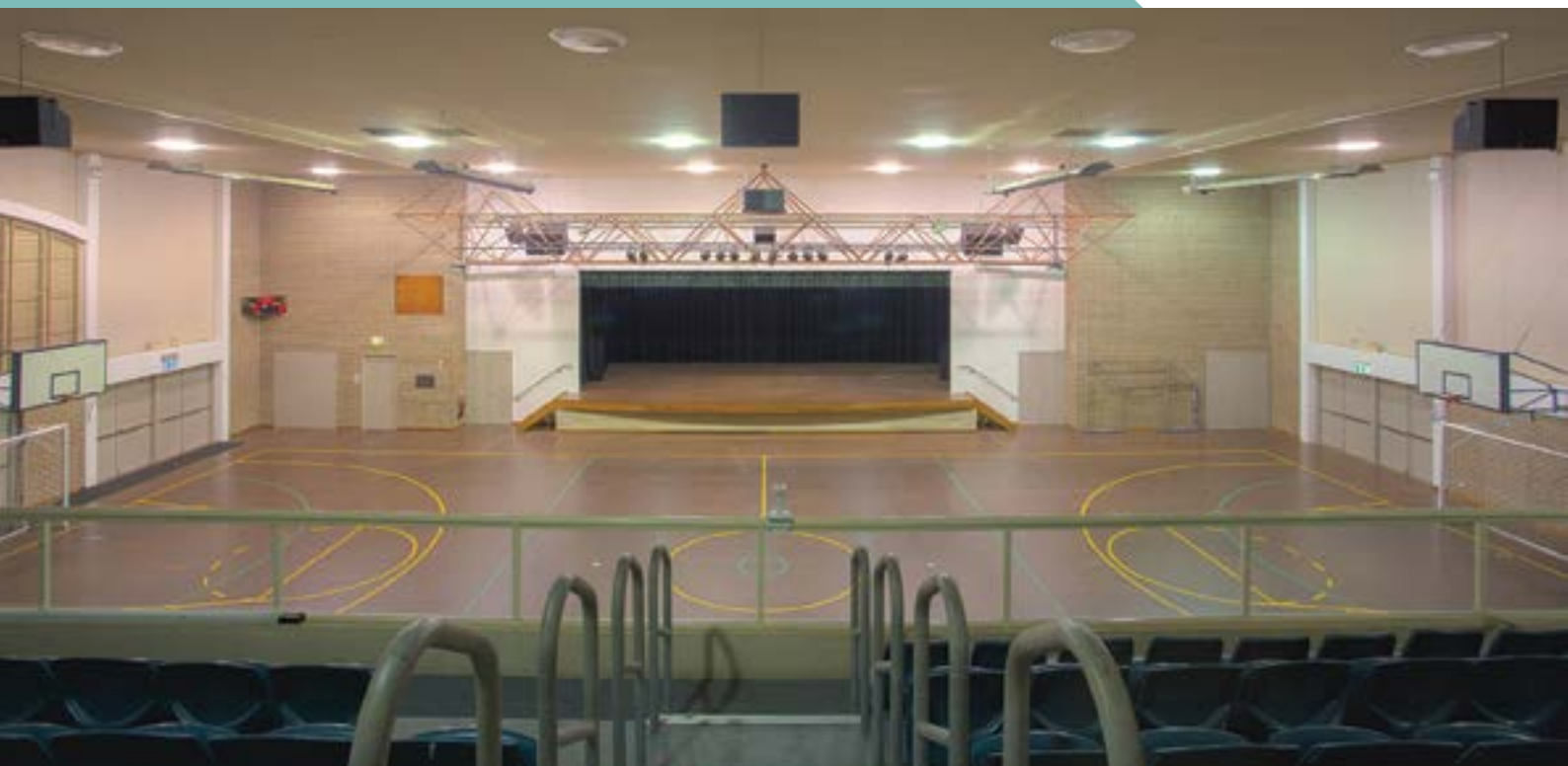
Heavy Metal



Carey Leghorn at Challenge Projects was tasked with making Steve's design a reality. "The Pacific Hills MPC is a standard basketball court with a stage on one side and a tiered gallery area on the opposite side," he said "It's reflective polished timber flooring brings all the nasty

acoustic things that go along with a multipurpose venue. The quantity of Danley boxes and the pattern control has meant we can keep as much energy off of the reflective surfaces as possible."

Working around an architect designed metal pipe grid slated for removal in the near future, Challenge created their own rigging solutions. "We had to do a lot of cantilevered metal work to get the rigging points to where they needed to go," continued Carey. "From a rigging point of view, we had hefty Danley boxes that had to get around the grid but not be attached to it. We do all our own custom bracketry, and we designed the brackets for Pacific Hills to give full X/Y focusability. When they stage their musical every two years, they build a thrust stage, so the PA had to be able to move forward four metres, so we installed alternative mounting bracketry and Speakon connectors."





Under Control

Phil McDougall now has a new acoustic reality before him in the MPC. "The sound is really consistent across the room," he observed. "Whether it's in front of the mains on the floor or up in the gallery on the delay line, there's just consistency across the board. I find the whole system very musical, particularly in the subwoofers. The subs have a lot of grunt, but they give more than just the thud of the kick drum. You get the musical tones as you get to the crossover region. I really like that in a system."

Steve Anderson is very happy with what's been achieved in a difficult environment. "At the end, with only moderate smoothing, I was plus or minus 1 ½ to 2dB in most places except the very extremes," he concluded. "I've not been able to do that before in this kind of environment. It was a combination of Danley's pattern control and FIR filtering. I could have achieved a similar result with normal filters doing boosts and cuts, and some all-pass filters, but the ability to manipulate the phase to get them to line up made it so much easier and quicker." Phil concurs; "The room has always had challenges and the Danleys work with those difficulties. The management certainly appreciated the detail the bidders went into with the modelling. I believe the system sits as well in place as it did on paper. It more than lives up to expectations."

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THE SOUNDMAKERS

Comm's growth for Gearhouse

New division adds **clients, gear** and a **Melbourne office**



Gearhouse Comm's boss Jason Owen

g Gearhouse Broadcast Event Comm's boss Jason Owen loves a challenge, finding a random radio frequency at a V8 Supercars race is especially fun. "I get around the paddock with a spectrum analyser and directional antenna - and I walk around until I find the culprit", he says.

"People see me coming and go 'woo, the authorities are here!'"

The definition of Comm's has changed over the past ten years, what was a few radios and a bunch of partyline is now a mixture of fibre ringed multiplexed audio, video, data, and voice covering the planet; all under the banner of Comm's.

The Comm's business is a tight knit and specialized community where audio, broadcast, networking and spectrum management skills mesh with customer-facing trouble shooting. It may be a large event, a motor race, or a TV show like Survivor that is shot over multiple locations, and in every case there is a comm's requirement.

Jason brought Comm's and broadcast experience to Gearhouse, the outside broadcast giant that already used extensive Comm's for its OB crew. They did a business case to expand into Comm's rental. Nine months later, it has worked well with a raft of gigs like the Australian Open Tennis - a 5 week 24/7 operation which included the setup and tournament, the NSW and Victorian Departments of Education for their annual spectaculars, Hillsong Church Melbourne for their Christmas Carols show and for the TV's Endemol Shine Group for Australia's Next Top Model and Master Chef.

Other recent work includes Great Aussie Bakeoff, The Bachelor, Bachelorette, and Survivor.

Gearhouse's approach to technology has been one of 'best of breed', Jason adds. "Even though we own a large amount of Riedel inventory and have indeed continued to grow it, we also took the opportunity to evaluate other products in the market." End result is a mixture of both Riedel and Clear Com products that offer a diverse set of options for their customers.

"The support we have received from Jands with our Clear Com kit has been outstanding. Making it easy to purchase kit is something most people would think is normal, well I'm here to tell you it isn't! Jands have nailed it in terms of customer service and going the extra mile."

When talking Riedel Jason commented, "I have worked with Riedel kit for many years now, their product is world class and having worked for Riedel I see the business has a very exciting future, I look forward to seeing what new technologies they will offer in the coming year."

In terms of radio technology Gearhouse own the largest Hytera rental fleet in Australia with over 1000 units. "Hytera are for us, more than just a supplier they are a partner, and their willingness to take on customer feedback, and act on it, was a big advantage for them over other radio manufacture's."

Jason continued, "By using Hytera's DMR IP multi-site functionality we can provide a wide area Comm's solution for any type of event including large single site, a series of interconnected sites or remote interstate or international sites. With shows like 'Celebrity' that are shot in remote locations, radio coverage can be a challenge when dealing with difficult terrain, wet weather, and large geographical areas. Reliable radio coverage is a must for production.

Most recently Gearhouse deployed a multi-site Hytera system for Survivor providing wide-area comm's across a huge geographical area. "What this does is challenge the model of needing to have a permanent network, where we can install a temporary solution offering greater flexibility and integration over our competitors."

Hytera's IP multi-site feature will work with almost any type of IP connection. For shows that operate remotely from their HQ, Gearhouse can provide a cost affective alternative to long distance phone calls, by installing an IP repeater at both ends.

Gearhouse also own and operate a large inventory of Wisycom radio mic and IFB systems offering multi-site receive and transmit capability.

For the I'm a Celebrity Get Me Outa Here radio mic and IFB solution, Gearhouse utilised its Wisycom system which enabled multiple receive and transmit locations to be connected via fibre over the diverse terrain IAC operates in.

"We spent 2015 refining the Wisycom solution for all the V8 Supercars races and now we are able include it in our offering which includes wireless, and wired multi-site communications and fibre enabled multi-site radio mic and IFB systems", Jason added.

— V8 SUPERCARS

Working on a motorsport race is different and comes with its own set of challenges. Gearhouse provide the entire outside broadcast facilitation along with the in car radio, and camera systems for Australia's premier motorsport category.

"We deal with the drivers, engineer's and team managers on a daily basis, so you need to be able to change hats regularly. What we have found is that the weakest point on terms of driver comm's is the accessories, often filling up with sweat, sports drink and other lovely body fluids."

In terms of the crew: "I am blessed with a great team onsite in Johnno Harries and Ben Wheadon, these guys are fantastic, and never let me down."

"A music gig or a big company AGM goes a couple of hours, but racing goes all day, so you need to really think about hydration, weather and hearing protection", Jason says.

"The biggest headache is the spectrum management because of the sheer number of services operating onsite over the course of a weekend of racing – there are maybe 150 cars; 600 officials, event staff, security, caterers, and cleaners all operating on well over 100 different channels, and that's just in the 450-520MHz band. Frequency licensing is massive and forms a large part of making the operation not only compliant but operationally secure. From time to time we will get radio users on site operating on one of our site licensed channels, it's up to us to find them and manage them through the changes required, it's a bit political and really makes you think about the staff you run of these type of events."

— TEST EQUIPMENT

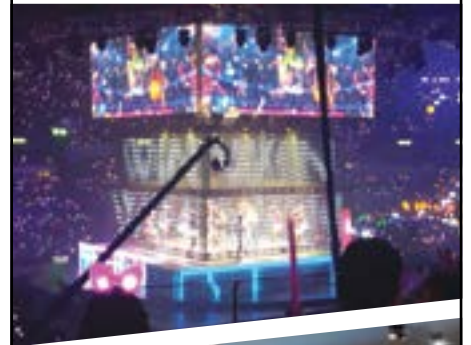
"Test gear is a very important part of the Comm's business", Jason says. "You need the investment in the test gear otherwise you're deaf and blind. ACMA (the regulator) can shut you down on site. You will not win if you're on the wrong side of compliance."

"I have tried to be proactive with the ACMA, to the point now where they will call us asking if we are seeing a certain signal." In addition to spectrum analysers, the team have a range of Rf power meters, attenuators, Rf over Fibre widgets and the usual audio test kit and adaptors.

"I'm pleased to announce that we about to open a Melbourne office for Event Comm's alongside our Outside Broadcast team. I have a great team and this builds on that in the most positive way."

"In terms of business model, it's a triangle for me. People, Technology and Compliance. Get all three of those right and you can open for business. Keeping it open is the next step and that's a process built around engaging and valuing your customers, transparency, and customer service."

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Audio Visual Events



Sydney AV
dry-hire kings

David Campbell's Audio Visual Events is a significant operation, employing 22 people at their Sydney base. Established fifteen years ago, AVE as it is known, provides a complete range of audio visual dry hire and production services.

Their fleet of vans and trucks, ranging up to a dual axle rigid, can be seen all over the city, while the loading dock at St Leonard's in the lower north shore, is host to most other AV firms collecting cross hire.

As the 'go to' place for cross hire, AVE have and do walk a tightrope to keep their competition on side. The main focus and almost half their business is cross hire, with the balance the provision of full production for events – a hotly contested market in Sydney.

David took me on a tour of the premises. "We've learned from previous mistakes here" he said. The layout of the premises speaks of efficiency – prep is done one side of the warehouse with it's own dock, and returns flow down the other side. Every single item is bar coded and scanned in and out using RentalPoint. There is a wood work room with a CNC router, as they build all their own road cases. A sewing room allows for drape repair. And they have a full time 'old fashioned' bench technician, AKA "PJ" who does in-house repairs.

We walk past a lens room – the firm is big on projection, and have almost all categories of projector up to 20k Panasonics along with the largest range of Stumpfl screens for hire in Australia. AVE also stock 3mm LED panels manufactured to specifications supplied by them to the manufacturer that is compliant with Australian Standards.

There is an extensive lighting inventory, including conventionals from Selecon and ETC, and movers from Martin and Robe, Clay Paky Sharpies, LED pars and strips, follow spots, foggers and rigging are all there in force. Control comes from Grand MA and Jands Down in the audio dept. a d&b V-12 system leads, with plenty of Meyer and JBL speakers, Yamaha and Allen and Heath mixing systems, Wireless communication systems including Riedel Acrobat and HME, conference microphone systems from Bosch and approximately 70 Channels of Shure wireless microphone.

In vision, the Barco E2 4k screen management systems join with Analog Way controllers and switchers with a host of high spec Mac and PC laptops and accessories like the Dsan Perfect Cue and limit timers, while the staging dept. has enough risers and lecterns to handle almost any event.



David Campbell with Matthew Kenny



AVE's big truck

What struck me during our walk through was the consistency of equipment, well maintained and the quantities. There is no one apparently dominant department, rather it all seems fairly matched up. The same could be said of the neat, white (clean) fleet outside – vans, small pantechs, a couple of six tonners and one 14 tonner.

Head of Production Matthew Kenny told CX: "The onsite crew delivering the production jobs are one of the keys to the success of AVE as they are excellent technicians with a strong customer service focus. The other main focus we have is investing in current and future presentation technology on an ongoing basis." The warehouse team headed by David Kelleher

handle the dry hire and production preps along with the Technical Directors and crew. "David is amazing he knows where every piece of equipment is at any given point in the day", says Matthew.

A team of four Account Managers headed by John Meillon service the client's needs prior to confirmation and then hand over to the onsite technicians for delivery.

"We have a great mix of people from trainees to experienced specialist technicians in Sound, Vision, Lighting, Rigging, Staging, Technical Directors/ Production Managers and a Special Projects team", Matthew concludes.

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By Julius Grafton



Helicopter Money

I read a lot of mainstream news, trying to draw from multiple sources to reduce bias. One topic close to my heart is The Future of Money, since I need a lot more of it to pay off the new million dollar mortgage that comes with my marriage this month. (To Kate the Great, aka Katherine the Fourth; as she is my fourth wife. Fourth in sequence, none of that kinky Mormon Polygamy here).

Now that you've finished sniggering, turn your attention to all the buzz words this season. Disruption, automation, deflation. All of which are contained in many reports heralding the onset of the machine as robotics prepares to change our world some more.

The new era of batteries that don't die, and can charge in seconds and last for days is here. Just watch over the next 12 months for multiple battery technology rollouts that will amaze you. These will power the machines that will steal jobs off the kids.

To find the next profit from all of this, the economists are looking deep into their (metaphorical) crystal balls and coming up with varying scenarios.

Denver based Bill Gross says conservative think tanks are in favour of a new era of 'helicopter money', where central banks just print more of it. Actually they just top up their reserves with long numbers typed into the credit column and replicated in the debit column, rather than actually 'print' anything. He says it is the new common since the GFC and that The Fed, the bank of Japan, and the BoE (UK) have bought their own bonds for over six years.

Flush with the ability to fund anything, governments can now invest in infrastructure. Australia is toying with big

bond funded projects right now, buoyed by record low interest rates.

Controversially Gross proposes a universal minimum basic income of US\$10,000 per citizen.

"There is a rude end to flying helicopters, but the alternative is an immediate visit to austerity rehab and an extended recession. I suspect politicians and central bankers will choose to fly, instead of die", he told investors in his latest advisory note from his \$1.3 billion Janus Global Unconstrained Bond fund.

CX doesn't think automation will harm the entertainment tech business much, other than making a bunch of line haul drivers redundant as the trucks drive themselves most of the trip. Maybe the driver gets out at city limits and gets a train home while the Kenworth runs non stop to the next state? Think of the time savings, no rest stops, no toilet stops!

We still have follow spot operators, and most musicals still have a version of an orchestra, don't they? Replay just cant adjust for human performer timing variations, can it?

With change comes opportunity – lower costs can mean more content or business activity. We've seen this here at CX last month as we restructured so we can spend more on one-off commissions of material - and afford a real sub editor for the first time!

On another topic, who understands double entry book keeping? Debit the loan column, credit the wedding column. Is that how it works? **Ouch, getting married is expensive!**

See you next month.

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THE MILL REPORT

By Andy Stewart

WHEN BEDROOMS BECAME CONTROL ROOMS ... OR DID THEY?



Once upon a time there were commercial recording studios, with (occasionally) 'flat' control room responses and impressively quiet recording spaces. These were great places to work in, particularly if you had the support of a record company willing to foot the bill.

But there are virtually no record labels left in Australia willing to play the long-odds numbers game in the hope that your band might crack the big-time, and very few artists have the dosh up front any more to hire out such facilities.

Such is life. There are greater tragedies in the world than this.

So where does that leave the audio industry? If this so-called democratisation has led to the virtual extinction of commercial spaces, why haven't new Australia music releases simultaneously gone to the dogs sonically? Everything – well most music anyway – still sounds really good.

Mainly because it's rubbish. There has been no such extinction.

There have been deaths sure – there always are – but the recording world, as a species, is alive and well. Anyone who tells you otherwise is suffering from generational head-gap syndrome.

What's that exactly? It's an illness brought on as you age, the main symptom of which is the perception that studios have died out. It's a form of myopia that creates the misconception that there are no studios left; that they've all gone broke and everyone records at home, when in fact it's only the studios you and your generation recorded in that have snuffed it.

For every studio that has gone to the wall in the last 10 or 20 years there have been at least two to replace them. Studios are an idea – everyone who's ever worked as an engineer in a commercial studio seems to long for the day when he or she can own their own facility and live happily ever after, blissfully surrounded by lights and dials and music in the making. It's a romance of sorts: irrational both

economically and practically, but when has rationality ever stopped anyone building studios or making music?

Youth has an endless capacity to create new recording facilities, and for as long as there's a dream in someone's head to make music in the coolest studio in the world – namely theirs – nothing (not even council by-laws or irate landlords) has a hope in hell of stopping them. I'm convinced that if nuclear war broke out tomorrow and 99 percent of us died in the flames, soon after, a studio would be built and someone would be in there recording an album about it.

One thing is true though, there's far less money kicking around and far fewer gullible bank managers prepared to loan a man (with three beans in his pocket) enough money to make dreams (and eventually nightmares) come true.

But the thing is, the costs involved in setting up a decent commercial studio these days are far smaller than they used to be. People seem to forget how much equipment cost back in the '70s, '80s and '90s. Prices were astronomical when compared to, say, the price of a modest new car. Back then you could potentially spend 100 times more on your console than your car. Nowadays either you don't buy a console at all, or it costs somewhere between one-tenth as much and maybe double the price of the car – still a lot, but in the grand scheme of things, vastly less.

So in many ways, studios are more viable – or at least less economically fanciful – than they have ever been. Despite the fact that most people record in their bedroom with a mic and a stereo interface, there are still heaps of people all over the world dreaming the dream, part of which includes – and I think always will include – the perfectly reasonable expectation that their band (and a few choice hangers on) will somehow find the means to book into their favourite studio (the name of which most people have never heard of because they're too old) and record the coolest album the world has ever wrapped its collective ear around.

And that's one of the reasons why studios are still commonplace, despite the rhetoric to the contrary. Because things don't cost the earth like they used to, generations of musicians-turned-engineers will always build new premises to fulfil their dreams, and bands will always want to enjoy the fantastically liberating and exciting experience of recording in them. To think otherwise is like mowing the lawns, never expecting the grass to grow back.

Personally, that's why I love music, both as a producer/engineer and as a musician. Because it's always fascinating to see people step up to the plate, despite the nay-sayers and economic rationalists (parents, you're the worst for this) forever urging young

musicians to 'grow up' or 'get a job'. Suddenly they're in the studio making something amazing out of nothing, or "with the air" as Tom Waits would say.

Last week was another great example of this for me. On my doorstep was a woman who can really sing and play guitar, ready for day two of an open-ended recording project. She had a new song, but was still barely warming to the idea that a studio could ever be the place to record good music in... Let's just say she'd had a few ordinary experiences.

Anyway, here she was recording a very sad song about her dad. We set to work in the main control room talking about the song, the lyrics and their phrasing here and there.

Things went well. We setup the mics and headphones, and pretty soon were recording the main vocal, which by now had changed a little, not a lot.

We both went through the song; she recorded a few takes and I vetted them here and there, trying to iron out a few slightly clunky issues with the phrasing. Eventually we got through it, but immediately afterwards she broke down sobbing.

The song was far more emotionally raw that I had appreciated, and singing it over and over had sent her over the edge.

We stopped work, had a cup of tea and talked out something else for an hour, and all was well. When things felt better we went back into the recording room, and I encouraged her to do just one take.

She gathered up all the emotion of the previous hour, along with the technical issues we'd had with the lyric's delivery, and absolutely nailed the most incredible vocal take I've heard in months.

She had performed miracles "with the air" and I was there to witness it.

On days like that you realise why you don't work in a bank, though I'm sure people have fun down there too, and probably earn twice as much, but hey...

Music is a foolish artistic pursuit that has no basis in economic rationality, and thank god for that. It puts a mirror up to our soul sometimes that's hard to confront, but someone's gotta do it.

I have undying respect for anyone who can step up to a mic and sing like that.

It proves one thing: that there will always be people for whom the recording studio is a safe haven; a place to express themselves in ways that nowhere else allows. Studios will always exist. They may not be massive multi-million dollar setups, but in the end that's entirely irrelevant.

Andy Stewart owns and operates The Mill in the hills of Bass Coast. He's happy to respond to any pleas for recording or mixing help... contact him at: andy@themillstudio.com.au

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TRACKING IN HEADPHONES (or HOW TO RECORD AN INSTRUMENT WITHOUT TREATING THE MUSICIAN LIKE DIRT)

By Andy
Stewart

Musicians

frequently endure some of the worst monitoring imaginable when they're recording in a studio. Far too often their headphone mixes sound utterly second-rate, and in some cases downright nasty. Why do some engineers think it's okay to dish up such distorted drivel to musicians right when they're trying to capture the performance of a lifetime? Because the headphone mix isn't being recorded and therefore doesn't really matter, or because there are more important things to worry about during a tracking session than what the musicians hear?

Any engineers who answer 'yes' to either of these statements need their head examined. <<Everything>> to do with recording, monitoring and mixing sound during a recording session is crucial, not least of which is the musicians' headphone mix. If you're one of those so-called professionals out there who repeatedly sets up a badly balanced, wildly distorted headphone mix, and delivers this garbage to the hapless musicians via a cobbled together, sometimes dysfunctional, headphone system, take it from me: you're doing everyone a gross disservice. Not only are you damaging your own reputation without even realising it, you're undermining the very performances you're being paid to capture, by robbing

musicians of the chance to intimately interact with their instrument at the precise moment when it matters most.

Why on earth would you do that? Seriously, you're worried about whether to use a Neve preamp over a Telefunken, but not whether the musicians can hear what they're doing? This is the worst type of malpractice I know of in a studio.

HEADPHONE MIXING 101

The other day I was in a tracking session here at The Mill and someone said to me: "Wow Andy, that's the best headphone mix I've heard in years."

Now this wasn't meant as flattery (or sarcasm!) – simply an off-the-cuff remark about the clarity of their headphone mix.

I wasn't doing anything special, or fancy. I was just making sure they could hear themselves clearly while overdubbing their part. And I managed this primarily by being in headphones myself.

It got me thinking: what's happening out there in studio-land? Are there really so many engineers providing clients with sub-standard headphone mixes that musicians now actually <<expect>> their headphone mixes to sound terrible during a tracking session?

Headphone mixes aren't rocket science. They just require some decent equipment and a bit of time and effort. But for whatever reason there are still far too many engineers out there whose primary focus during a tracking session is on anything but the headphone mix.

Sure there are other significant tasks to perform simultaneously whilst tracking, like recording the audio. But what value is there in capturing this information if it's poorly played because the musicians can't hear what they're doing?

THE SOLVE

If you're prepared to acknowledge that your headphone system could do with a shot in the arm, or that you lack some experience of dealing with musicians and their headphone mixes, you're halfway to solving your problems. There are lots of simple things you can do to vastly improve the sound your clients hear.

It all starts with your ability to 'mirror-monitor' what the performer hears.

MIRROR, MIRROR IN THE CANS

When engineers have no real way of knowing what a musician is hearing in their headphones without running into the recording space and putting them on themselves, they're asking for trouble. As an engineer, you need to be able to monitor what the musicians



are hearing at all times. Otherwise you're basically deaf to their needs, and that's bad. Good engineering is not just about capturing great sounds. It's about capturing great performances, only one aspect of which is the sound itself.

One of the most immediate ways to ensure a musician isn't being sent a dodgy mix is to wear headphones yourself whenever someone is tracking, always listening to the mix they're receiving. Wherever possible you should also be wearing the same make and model of headphones as the performer, as

well as being able to match their volume precisely from your vantage point in the control room. This not only ensures you're being sensitive to what they're hearing, in many cases it allows you to hear problems and adjust the mix accordingly long before they request any changes.

Good headphone mixes are ones that you constantly adjust – like a good FOH mix. They are never set-and-forget. It's also crucially important to put yourself in the shoes of the performer and learn

you need to be able to monitor what the musicians are hearing at all times

to anticipate their requests. Don't forget, in most cases, performers are powerless to control their own volume,

tone and balance, as well as that of the overall mix and engineer's talkback mic. This can leave them feeling vulnerable and isolated in ways that can only be appreciated if the engineer is also wearing headphones.

A FEW EXAMPLES

Let's say you hit the talkback switch and your console's mic is offensively loud in the cans. If you're in headphones too you'll notice the problem immediately, long before you're asked to turn it down. (You might even like to apologise for the incident out of common courtesy.)

A studio console's talkback mic also has the capacity to sound harsh or emit nasty clicks when it's opened or closed, which again, you would never notice unless you're on the receiving end of the problem. Or your clothing might sound like cellophane down the talkback send, and only by wearing headphones is this problem apparent, thus giving you the opportunity to do something about it. If you're putting a singer's voice through a reverb unit, it's common courtesy to mute their effects between takes when you're having a conversation, lest you drive them crazy. It's nice to sing into a chamber with echoes occasionally, but it's no fun during conversation.

There are enough examples like this to fill an entire magazine, but suffice it so say, issues that cause headphone grief for musicians are typically minor, and mostly mix related. More often than not the problems are easily addressed by a sensitive engineer who's aware of the importance of getting this task right. For an engineer, the main thing to understand is that clients rarely voice all their concerns. They don't complain about every small issue they may have – despite what you may say about them. In the main they are very accommodating and forgiving of technical problems.

So relying on them to point out any technical issues your studio setup may have – including any problems they may be experiencing with your headphone setup – is folly. Don't use your clients as test mice. Figure out your system's main weaknesses beforehand and resolve them, and be alert to any that crop up during a session.

A FEW FINAL HEADPHONE TIPS

Compression settings and reverb/delay effects are fantastic ways to open up the landscape inside

headphones, especially to counter the common feeling of claustrophobia experienced by many.

Having a reverb and delay permanently patched into to your headphone system makes adding depth to a headphone mix no more complicated than pushing up a fader. This makes things fast and efficient when you're tracking, which is exactly what you want to be. That way, when your clients ask for some reverb – which they so often do <<and you know it>> – they get a beautiful hall sent to them in three seconds flat. Not only is this the way it should always be (because your headphone system should always sound great) they will think you're a miracle worker every time. You might have an old outboard multi-effects unit in your studio somewhere that gets very little use in any other capacity. Give this a second life as part of a high quality headphone system instead of watching it sit around collecting dust.

Headphone system compression (that has no direct affect on the recording chain) is another powerful tool often overlooked by engineers, mainly because its effect is far more keenly appreciated by performers than engineers. Singers, in particular, often pull back from big notes and loud performances if they think their headphones might get too loud as a consequence. But restricting a singer's performance is the last thing you want to do.

When you're tracking, your prized stereo mix bus compressor is often sitting idle. Patch this across the headphone send for some high quality control. In the end, a good headphone system and quality headphone mixes are achieved through an engineer's appreciation of the crucial role they play in great recording sessions. Headphone mixes must never be an afterthought.

Andy Stewart owns and operates The Mill in the hills of Bass Coast in Victoria. He's happy to respond to any pleas for recording or mixing help... contact him at: andy@themillstudio.com.au



TOOLBOX REVIEW

By Andy
Stewart



SOYUZ SU-011 SMALL DIAPHRAGM TUBE CONDENSER

In the audio industry at least, Russia is as renowned for its mics as it is for its slightly dodgy yet operational space program. Now the two industries seem merged thanks to Soyuz and its remarkable capsules... of the sound capturing variety.

I've been intrigued by the hand made Russian Soyuz valve mics since I got wind of them not too long ago, and from all the reports filtering in, these entirely hand-made, well crafted mics were better than anyone had expected them to be. That in itself is remarkable. Usually it's the other way around.

For the last few weeks I've been trying out the company's small-diaphragm valve pencil condenser – the SU-011. (I was going to try out the SU-017 at the same time, but apparently Katie Noonan loved that particular mic so much she fled the country with the Australian demo unit.)

Expensive and subjectively quite gaudy looking with its Peterhof Palace inspired gold and off-white regalia, the SU-011 looks like a tarted up, blinged-out Oktava 012 pencil condenser. And on closer inspection, to some degree or other, it is. Placed side by side in an X/Y setup, the

two mics clearly share some physical similarities. Turns out both these mics hail from Tula, south of Moscow, a city that boasts the oldest microphone manufacturing plant in the country. This factory started hand-making microphones way back in 1927. But I digress. Let's talk specifically about the SU-011. Replete with dedicated power supply (that also houses the mic's transformer), mic clip and associated cables, the SU-011 mic is a complete system, though somewhat disappointingly there's no carry case as such in which to store it all – only the cardboard box it ships in.

A well-balanced sounding microphone, the SU-011's subminiature 6S6B-V glass pentode imparts just the right amount of influence over its sonic footprint.

Sporting a hand-tuned, finely crafted gold-sputtered diaphragm and swappable capsule, the body of the 011 is capable of receiving other small capsules in the Soyuz range (omni and hypercardioid), or even the headstock off its larger brother, the SU-017.

This makes the 011 a very versatile little mic indeed (assuming you have the other capsules).

On acoustic guitar the 011 sounds sweet: smooth and clear without any of the harsh and brittle overtones so disappointingly common amongst modern condenser mics. On vocals the same scenario applies. There's a clarity in the mic's capsule than never quite tips over into the clinically harsh territory. Sibilance is made softer and gentler, and intimate performances shine bright without ever feeling threatening. You know that experience of a mic, where everything is sounding amazing, but then, just as you're starting to settle into a performance, a certain vocal expression turns the mic into a scythe? This mic never seems to do that.

For that reason, a pair of SU-011's I imagine would sound fantastic on cymbals or as general drum overheads. I didn't have two on hand unfortunately for the review, but a matched pair is available for the princely sum of \$Xxx. A matched pair share a common power supply which is handy – it means there are less things to trip over on the studio floor and the cost to consumers is somewhat mitigated. But a matched pair still sports a pretty hefty pricetag.

Nonetheless, the Soyuz SU-011 is a nice mic. It sounds great, embodying many of the qualities you look for when you're trying to record something exceptional.

Price: **\$1750** for the Soyuz SU-011
\$2920 for a matched pair.

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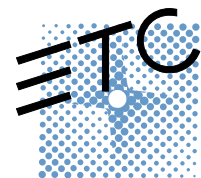
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GLP IMPRESSION X1

Got me all in a spin

By Jimmy **Den-Ouden**

Like many fixtures in the GLP Impression range the Impression X1 uses 15W RGBW LED modules, specifically four of these. While each module is attached to a 7 degree fixed angle lens, there's an option to change these to 25 degrees.

The Impression X1 head contains four LED modules, which not only makes it extremely compact, but also extremely light weight. Lifting the X1 with a single finger is totally achievable, though perhaps not recommended general practice. Best to use your whole hand when rigging the fixture.

Mounting the Impression X1 is achieved by way of three M10 sockets for clamp attachment. Two points are also provided for safety cable attachment. Power input and loop output is provided on PowerCon, and DMX connection is via 5 pin XLR only. I like this very much, since it discourages lighties from thieving mic cables from the audio department to hook up their fixtures.

The layout of the connectors is such that both power and control signals go into one side of the fixture, and loop out the other. This simplifies the cabling process, and also happens to provide a very convenient indication that each fixture is rigged in the same orientation. This is actually pretty important, since there's not much else to give it away.



The menu you'd normally expect to find on the base of the unit is located on one arm of the yoke.

I like the menu buttons, they're silver and shiny and they look nice. Changing DMX addresses is a little tedious - while many fixture menu systems accelerate numerical changes over time, the X1 does not. Still I guess you can't have everything - at least the LCD is backlit. The Impression X1 will occupy a 14 or 18 channel footprint in your DMX universe. In 18 channel mode there are a range of movement macros available, and even in compressed mode you still get 16 bit movement control as well as a range of preset colour options. RGBW control is standard in both modes.

Extreme cuteness aside, pan and tilt limits are perhaps the most distinguishing features of the Impression X1. That's because it has none. The X1 is capable of continuous pan and tilt in either direction. It's fast too - in continuous rotation mode you'll get > 74 rotations in pan or tilt. In a way this fixture reminds me of the fixtures common to the disco era. Difference here is that in addition to continuous rotation, the Impression X1 offers indexing as well.

All up I think the Impression X1 is a lovely little thing. It's not super bright, but it is super cool. Extremely low weight and power consumption (around 100W) make it easy to use the fixture in great numbers, and this in turn makes it easy to use the fixture to great effect. I had a pair of them, and with a little haze in the room I got some pretty cool effects happening. I think this little unit is set to make a great impression.





Brand: German Light Products
Model: Impression X1
RRP: \$1908 each ex GST
Product Info: <http://www.germanlightproducts.com>
Distributor: www.showtech.com.au



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SENNHEISER TEAM

CONNECT WIRELESS SYSTEM

A TRIUMPH OF INDUSTRIAL AND AUDIO DESIGN

By Julius
Grafton



This is quite a step on from traditional teleconferencing devices, most commonly those that look like a starfish. Sennheiser took a blank sheet of paper and made a design that looks and feels very sexy.

It is a portable rechargeable wireless teleconferencing system that you can use virtually anywhere.

From its carry case you extract one or more of these devices, which can also charge up in the case. As soon as they come off their charging connection, they turn on and a pulsing mesmerizing blue glow emanates from the base. The case itself has a battery charge display, and each unit will also display battery status.

There is a master unit, and three 'satellites'. Our iPhone connected right away through Bluetooth; seeing the device as 'TC-W xxxx'. Each system has a unique number.

Quite simply thereafter, answering an incoming call through the device just meant hitting the flashing button on the device. Answering through the phone kept the call private.

Once connected we did some tests and decided the audio quality both directions was about 70% as good as a well connected iPhone pair. Which is quite excellent, considering Team Connect relies on room acoustic a lot more than a phone held against your head.

You can get six people around each device, so four devices would cover 24 people. It works on the Digital Enhanced Cordless Telecommunications (DECT) band at 1.9GHz so it won't mess with office WiFi or digital TV. The documentation is like a cartoon book, very graphic in a good way and few words are required.

Aside from Bluetooth, connection by USB or a 3.5mm audio cable is available to the master unit. Multiple callers can be added.

Muting the mic is as easy as touching the icon on the top of the unit.

We think Sennheiser have kicked a goal with this one.



Manufacturer: Sennheiser
Product: Team Connect Wireless System
Web: <http://en-au.sennheiser.com/>
Distributor au / nz: Sennheiser
Price: A\$6,499

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ES-503 BY DB TECHNOLOGIES

Baby PA's get lighter and louder

By Julius **Grafton**

DB-T's ES-503 is the modern answer for the plastic speaker on a stand, which is so last century these days. DB Technologies is a brand of AEB, which is short for Acoustic Engineering Bureau, from Italy.

The ES-503 is definitely for the solo or duo musician, with an amplified sub and a pair of



mini line array styled top boxes that can work alone or joined into a longer column. It is very portable which means the sub is easily carried by a slightly built person – or a musician, weighing 16.5kg.

Inside is a 12" speaker, a digital amplifier, mixer and processor. You start by telling it what configuration you want. The options are to have one top box each side in stereo, or both top boxes together in a line for a more powerful mono system. The other option is to run a pair of systems, in which case one system in the master with an audio feed out to the other system. This would be the 'matched duo' where one dude owns one system, and the other dude owns the other. Then they 'come together'. Cosmic style.

The top boxes each have four 3" neodymium drivers in a staggered array to provide 95 x 65 degree dispersion. These are under 2kg each, which in the audio speaker world counts as very light weight. Yet they produce the mustard, delivering plenty of audio from 200hz up a theoretical 15kHz. If only I could hear that high.

You can connect two top boxes together using a proprietary latch-lock arrangement, so that only one Speakon cable is needed to get the juice from the subwoofer. A supplied pipe holds them high, you'd need a speaker stand if you wanted to split the top boxes and run stereo. Or a whole other EX-503 on the other side.

As with most new generation audio, the processor has a lot of features including a variable notch filter on the aux input, and a mic input feedback notch filter. DSP has given acoustic designers so much freedom to maximize smaller components for bigger sound. That's where the ES 503 sits. Small but big.



Manufacturer: DB Technologies
Product: ES-503
Web: www.dbtechnologies.com
Distributor: NAS
Price: \$2,999

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HIGH END SYSTEMS SOLASPOT PRO 2000

TOP END OF TOWN

By Jimmy
Den-Ouden

The SolaSpot Pro 2000 is perhaps the biggest fixture High End makes. At 41kg it rivals many large discharge fixtures for weight. It also stacks up pretty well against them for output, which is very interesting since it uses a 600W LED light source. The CRI spec on the standard unit is >75, however if you're willing to sacrifice some output you can opt for the high CRI model which scores >90.

Our test unit was the standard model, which punches out some 26,000 Lumens at a native colour temperature of 6900K. The LED source is white, which means that colour mixing is achieved by a mechanical CMY system. There's also a 6+open position colour wheel, as well as a linear CTO facility. Because the SolaSpot Pro 2000 is rather heavy you might think this entitles you to some huge number of beam features. The good news is that's exactly what you get - short of framing shutters the fixture has two of most things, and one of everything else. Two rotating gobo wheels, each with 6 positions plus open. Two animation wheels, two prisms (linear and 3 facet), 8 to 45 degree zoom, focus, iris, and frost. There's not too much else you could ask for really - it certainly justifies the weight.

Naturally the High End Systems signature Indigo Highlighter function is also included, with four indigo LED modules surrounding the lens. The first time I saw this feature it seemed kind of gimmicky, but the output is actually pretty respectable. Certainly enough to be useful, especially if you have other High End fixtures in your rig with the same feature.

Active thermal control keeps the unit cool, with standard, studio and constant fan modes to choose from. The unit outputs a surprising amount of heat from the rear of the head, but considering what's going on internally it's not unreasonable. Pan and tilt ranges are 540 and 265 degrees, though at almost 3 seconds to do a full rotation the SolaSpot Pro 2000 does not move particularly fast. The reality is that the

fixture is built for pretty long throw applications, and in such situations small head movements translate to quite large beam movements.

At 240V the unit draws 3.4A, which is downright frugal when you compare it to a discharge lamp with similar output. While there's no doubt that's quite impressive, I just like what it does. I spent rather a long time playing with the various gobos and animation functions. I found that combining these with prisms and then drifting the focus between made for some really cool dynamic effects. The gobos are interesting and projection is sharp. Julius was rather taken with the roadcase, which has removable top and side lids allowing the fixture to be slid out. Or you can rig the fixture to a truss, then slide the case out from under it.

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Brand: High End Systems
Model: SolaSpot Pro 2000
Trade Price: \$14,900 ex GST including road case
Product Info: www.highend.com
Distributor: www.lexair.com.au



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BLOOM WORLD TOUR

BY CAT STROM

PHOTOS BY TROY CONSTABLE & JACK LAWRENCE

After an international tour taking in some of the world's biggest stages including Coachella and Red Rocks amphitheatre, RÜFÜS recently returned home to tour their critically acclaimed album Bloom for the first time.

For lighting designer Matt Smith of Colourblind – who has directed lighting for three RÜFÜS tours in the past two years – this was undoubtedly their biggest production to date. After three days of pre-visualisation in Melbourne, there were two days of rehearsals at Adelaide's Titanium Arena prior to the tour commencing at the Thebarton Theatre.

Novatech supplied the lighting, truss and audio equipment while the PA was supplied by Eighth Day Sound.

"Novatech has been fantastic and bent over backwards to accommodate us," said Matt. "They even purchased some of the gear for the tour upon my request. Their techs on the road with us, Aaron and Fish, have been great."

The band had a clear vision that centred round an outstanding lighting show without incorporating video components or fabricated set design.

"As there's a bit of a gospel theme to some of the songs on their Bloom album, RÜFÜS very much wanted that conveyed in the lighting design," remarked Matt. "Halo effects was one idea and that's what leads to the design of the truss which protrudes out into the audience. They also like a lot of back lighting and silhouettes. There are definitely some songs where we concentrate on lighting the three band members onstage, but they also want the room to be lit. There is a club vibe to the show."

The halo truss allows for some interesting lighting design and Matt heard someone remark that it was the first show they had seen at the Hordern Pavilion that wasn't 'letter-boxed' in. Although Matt was initially concerned about the trim height offered by the venue but ultimately was happy with the results.

Fixture choice needed to be versatile so that it was easy to transfer to a festival rig, which is why Matt chose eighteen Martin MAC Viper Profile and twelve Clay Paky Sharpys. Eight of the Sharpys are very much for a room look as are some Molefay duets.

"I've also got twelve of the new GLP impression X4 Bar 20's for a point of difference," he said. "Then there are twenty-four GLP Atoms running around the rim of the truss halo and on the risers for footlights for the guys. They've been a really good little fixture."

Twelve GLP X4 fixtures deliver a back wall along with the X4 Bar 20's that make three frames. Six of the Vipers are used solely as keylight on the band



The **d&b** is especially good for a dance act like this

members, with another three for backlight upstage shooting through frames, reminiscent of light shining through stained-glass windows in a church. Above each band member was a box of eight Sunstrips delivering a sunburst effect used in four songs.

Although Matt has a sizable rig to play with he was careful in his choices and he was really pleased with the outcome of a more layered show.

Whilst Matt designed and operates the show, the programming was done by Tom Wright on two MA

grandMA2 lights. Matt is new to the MA platform having come from a predominantly Chamsys based set up, and he was amazed at the job Tom did getting what was in Matt's head translated into the MA!

"He was awesome!" Matt added. "I would say 70 - 80% of the show is time coded so basically I've kept the strobes (seventeen SGM X-5 LED), blinders and a few other little bits and pieces in the show manual. The MA consoles are incredibly well built, very reliable and you can get them to do almost





Cam Trewin and James Guinness

d&b
really translates
giving me
a lot of that mid-
range clarity
that I like

anything you want. And of course, they're the best for time coding."

FOH engineer Cam Trewin was controlling a Venue S6L digital console running via fibre with Cat 6 back up, the first time the Novatech console has toured Australia. He has worked with RÜFÜS for over two years and has enjoyed the journey and the band's rise in popularity.

At the Hordern Cam bought in a d&b J system with eight J8 and two J12 aside for the main hang plus four flown J-Subs aside and another four J12 aside for out hang. Sixteen of the new B22-Subs were situated on the floor, plus Q7 clusters for in fill.

"I always try to specify d&b where I can and I feel for this act d&b really translates giving me a lot of that mid-range clarity that I like," said Cam. "The d&b is especially good for a dance act like this that is fairly program heavy and has a lot of top end information – the d&b tends to soften and curve that out. I struggle with brighter PA's so I really enjoy that with the d&b.

"As the venue houses an L-Acoustics V-DOSC system, they don't usually allow us to space the subs across the floor, they have to be stacked either side. We managed to get around that by evenly spacing two stacks of eight B22-Subs along the front floor. This gave us a better prediction on the software. I had a good walk around the venue and the coverage was consistent throughout."

Like Matt, Cam was also using a new console in the form of the Venue S6L and was enjoying the challenge of learning a new piece of gear. Usually he uses a DiGiCo consoles but as the tour included a few festivals he had been using a Venue Profile for the past two months.

"I knew I'd have the new console coming into Australia and fortunately the show files between the Profile and Venue S6L are compatible," he remarked. "I was a little bit scared and apprehensive at first, especially as this was the biggest tour these guys had ever done. However after a couple of days of

production rehearsals I found there was a lot of fluidity and work flow with the console. There are similarities between the consoles but a lot of new features and enhancements that are great. Obviously with the new high-performance preamps, 64-bit AAX DSP plug-ins and 96 kHz engine it sounds really, really good. In fact, I'm sold on that alone."

The only negative Cam had with the console was the fact that Waves plug-ins are not yet supported and he was very heavily based on the Waves with the Profile. With nothing to load on that, he started afresh.

"The Sonnox Oxford plug-ins plus the Cranesong are supported in the 64-bit AAX format so I purchased them loaded them in and now I have a bit more gain on the front end," he added. "The Profiles are very functional but they are quite old now and the sound of the S6L far surpasses them."

Cam reports that there is a lot of sub information with RÜFÜS and a good mix between live and electronic. For him, the rise and fall of the set is critical and to have the sub information for special moments is important.

"I really enjoy that," he said. "I've spent a lot of time with the band and their studio engineer refining all of their playback and all of their tracks. We have a really symbiotic process with that. Since we've evolved the show I have been given more free reign with mix decisions, choices, delays etc."

Tyrone, the lead singer, is a very low output singer and Cam has struggled with spill from microphones. After working their way through a heap of different microphones they settled on an Audix OM7.

"It is a hyper cardioid so I think the tight pattern really works well with spill," Cam explained.

"However it does require a lot of gain. For this tour we purchased the Audix OM7 capsule for the Shure UR wireless and I'm hearing a real sonic difference. This show is all about the vocal and the



Novatech has been fantastic and bent over backwards to accommodate us.

Matt Smith



vocal clarity and it's sounding really good. The rest of the microphones are standard Shure models with Sennheiser's on the drums."

Cam noted the importance of the playback rack using Radial SW8 switches and JD8 DI's for keyboards, SPDSX pads and guitars, saying that's really key as obviously so much is coming off the computers and the DI rack.

Monitor Engineer James Guinness was using a DiGiCo SD8, which he said sounded good, was easy to use and was a very powerful console.

"I have a Waves package using the C6 multiband compressor quite a bit as well as the SSL bundle," he said. "On top of that I use the NLS Summing, IR-Live reverb - really pretty basic."

The band used Sennheiser G3 in-ear monitors with JH Audio custom mold JH16s and as there were no wedges

onstage, some extra subs were added for the drummer and one of the keyboard players for a little thump.

"I don't have to do anything particularly fancy as everything that comes off the stage is pretty well levelled and mixed," added James. "There's a lot of vocal riding and vocal processing is the main thing. I just mix it like I would mix FOH for the boys and it keeps me busy, I'm not a static mixer who just let's things sit. I don't use snapshots as I like to mix, it's a vibe thing too. The boys are very big on vibe and feel and that changes from night to night. Using snapshots can be a bit clinical."

In Perth lighting was supplied by Frontier Lighting and audio by Audio Technik whilst VJam supplied both in Tasmania.

THE RESTRUNG TOUR

BY CAT STROM

PHOTOS BY ASHLEY MAR, PHIL OWEN, CARLIE LAMBERT

The Hilltop Hoods, Australia's most successful hip hop act, played some of our largest venues with their The Restrung Tour complete with a full 48-piece orchestra and a ten person choir.

Lighting designer Pauly Owen has worked with the band for nine years but has never had to light sixty-three people onstage! Design-wise, Pauly is generally left to his own devices although he

points out that he is usually on the same page as the band when it comes to ideas.

"My first thoughts with the design for this tour were how to cover the stage properly with so many people onstage and knowing there was going to be Perspex too," he said. "I had to make sure the orchestra were lit properly as well as the band who tend to run around a lot."

Inspired by organic lines in nature, Pauly decided to create an interesting truss design to help him cover everyone resulting in a rib-cage (or truss spider) shaped truss that is a

feature in itself when lit up with LED truss toners.

"It took me about seven drafts to get it out of my head though!" he laughed. "Creative Productions were the lighting supplier so we used whatever they had including the LightSky S500 Hybrid spots which were great, LightSky F1000 profiles, the LightSky X-Beams similar to a Sharpy which were awesome, LightSky 1810 LED washes which were also great and twelve bars of Mini Bars of four. I also had Martin MAC600's for orchestra wash and some MAC101."

The orchestra were situated on a Perspex paneling which was backlit by LED. Both Martin Atomic Strobes and Clay Paky Stormys were used for effect.

"It was basically good coverage by what we would call standard lights but spread out properly into different layers," added Pauly. "Coming from the Australian market, I have learnt to use what you end up with and know how to use it in the right manner. Although I have my favourite brands, you can't be brand-specific."





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The band are very **dynamic** onstage and that is reflected in the **light show**

For control **Pauly** used an **Avolites Sapphire**





**Martin
Atomic Strobes
&
Clay Paky Stormys**
were used
for effect



“My lighting can be quite in your face when the songs are involved, I do a lot of molefays following chorus lines and main bits to encourage the audience to feel a part of the show.”

For control Pauly used an Avolites Sapphire console stating that how it is programmed and laid out is affiliated to how he approaches a light show in his head. He was also lured back by the new Titan II software which he describes as awesome.

“For the past few years I have been using the Chamsys Magic Q system which I was really happy with but really, deep down I’m an Avo guy,” explained Pauly. “I used Avo years ago however as Avo wasn’t very big in Australia, I wasn’t able to get a backup console on tour in the middle of nowhere. I needed a console that, in worst case scenario, I’d be able to get at least a PC version in an emergency.

“I find the thinking behind the Avolites, to be more aligned with how I think and approach a light show. It’s something I still feel strongly about. The console is a translation tablet between the LD’s imagination and a real light show. For me it’s about a fluent translation, through the desk, that needs to be powerful but easy and still fun! I’ve always found Avolites best suits my approach.”

IRON MAIDEN

BY CAT STROM
PHOTOS BY JOHN MCMURTIE



Iron Maiden's The Book Of Souls Tour was their first Australian tour since 2011, playing five arena shows. They arrived in style on their enormous Boeing 747-400 jumbo jet Ed Force One, piloted by vocalist Bruce Dickinson and carrying band, crew and stage production and equipment.

For most of the worldwide tour FOH engineer Martin Walker specifies a Meyer Sound Leo PA system but in Australia he used an L-Acoustics K1 system.

"In some places such as South America you just can't get a Meyer Leo system and in other places the promoter has a long standing association with a PA company who has different boxes," said Martin. "Financially and sometimes

politically, it doesn't work out to use the Leo system. If the choice is there though, that's what we go for every time."

Also known for his work with Judas Priest, Martin has been on the road for many years so substitute PA systems don't faze him and he comments that any main PA manufacturer these days has a decent line array system.

"They've all put so much money into research and design, there really isn't a terrible PA out there anymore," he added. "They each have their idiosyncrasies and some throw further than others so are better for big outdoor gigs. I like to think I can make something out of whatever I am given."

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MARTIN

Martin certainly had no complaints about the L-Acoustics K1 system of which he had sixteen boxes of K1, six Kara under-hangs, eight SB28 subwoofers in the air and ten on the ground in three separate stacks. Added to that are a small stack of three SB28 on the ground per side and a block of four in the centre. Side-

hangs comprise of twelve V-DOSC and three DV-DOSC under-hangs. As Iron Maiden tend to sell past the 180 degree line there a rear hang of four ARCs to fill in where the side hang doesn't reach.

"I'm more than happy with the K1 as it suits the band well," said Martin. "It's a good powerful system

that's got a lot of body in the range that I deal mostly with. I've got three guitars, a snare drum, a bass guitar that has a lot of presence, keyboards and vocals all vying for the same bit of bandwidth. It's a difficult mix, not as straightforward as a lot of people might think because there's so much going on. Essentially there are three guitars really playing two guitar parts and they swap and change solos



Martin Walker

and rhythm all the time so trying to get some definition between the three guitars is very tough."

Traditionally Iron Maiden do not use much low end whether it's a live concert or a recording. So there's no massive kick drum like most rock bands have to nail you to the back wall.

"It makes for a tough job to get a full rich sound while trying to stick as close as possible to how the band want to sound," remarked Martin.

At FOH Martin runs a DiGiCo SD7 with no plug-ins, describing himself as an old school guy who does a 'meat and potatoes' mix. A long time Yamaha analogue guy, Martin admits that it took him a long time to be convinced by the digital domain but DiGiCo sold it to him. He has some old school outboard effects such as a couple of delays, Yamaha SPX990 multi effect processors, and an Eventide Eclipse special effects processor.

"It's all pretty much bog-standard outboard gear from fifteen years ago," he added. "I do use a couple of onboard reverbs that come with the console but no Waves or anything like that. I have scene changes for each song but they're really there for snapshot notes for the set list to remind me who is doing what and when, and midi triggers to change my outboard effects. In all, I have about 48 inputs coming from the stage."

"Striking a balance between the three guitarists is the hardest thing," said Martin on the challenges of mixing for Iron Maiden. "They go from playing rhythms to playing three and two part harmonies to playing solo so you really have to keep an eye on things. I've been with the band for four years now and familiarity really helps but it's always a work in progress."

Bruce Dickinson provides quite a challenge to Martin as he runs around the stage a lot with a microphone that is wide open to pick up as much of his voice as possible. Martin has to be very

careful if Bruce walks in front of backline cabinets and isn't actually singing at that point.

"I have to keep my finger on the fader so that I'm not putting too much bass guitar or drums down that microphone," he said. "As Bruce runs around so much, sometimes his accuracy with the mic against his mouth is a secondary thought. The camera that is on Bruce all night feeds into the screen on my SD7 so I can watch him closely all night long. In fact I tend not to watch the show, I just watch my screen."

Microphones are fairly standard and definitely a Shure-fest with Bruce choosing a hand-held Shure wireless with a Shure Beta 58 head on it, most of the guitars are on Shure Beta 57's, Shure KSM44 on bass and on the drums there's a Shure Beta 91 on the kick, Shure SM57 on the snare and Shure 58's on the toms. The odd one out is Beyer 201's on the overheads.

"Iron Maiden are very much creatures of habit," explained Martin. "They've been doing this for so long and they have a certain way of doing things. Their theory is if it isn't broke, don't fix it. Introducing changes has been a bit of a challenge for me but I have done so very slowly. When I first started working with them they had been using an EAW 760 PA for a long time and that wasn't a favourite choice of mine. At the time I changed it to L-Acoustics V-Dosc and now I've changed it to Meyer Leo. With microphones they had all Beyer models but I've managed to change them to my preferred brand of Shure."

Not surprisingly, not all of the band have embraced in-ear monitoring. The three guitarists recently converted, which greatly helps the volume onstage, but the remaining three remain staunch fans of wedges and sidefills.

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With
Toni Venditti

Lora Thompson

BMA Honours in Music Production,
at Waikato Institute of Technology

mew Zealand born Lora Thompson has seen the naked bodies of famous people and looked on as a tree was mic'd up. True story. Her career is as varied as it is colourful. She has enjoyed a lot of success and recognition for her work as a musician in the bands Cheshire Grimm and Winter Moon, and has had some amazing opportunities as an audio tech working with incredible performers not only in the studio but on great live shows.

Lora grew up in a small surf town called Raglan on the west coast of the North Island. Her parents were folk musicians and from a young age her life was all about music, live shows and a festival environment. It felt quite natural to learn guitar, piano and vocals and as she grew older, she began to drift towards a love of electric guitars and bass. This interest went hand-in-hand with a growing awareness in the electronics of sound reinforcement. As a child, Lora developed an interest in fixing things and finding out how they worked. It started off small doing simple things like pulling apart the telephone and gradually escalated into a love of electronics, in particular electric guitars, speakers and microphones. She had a fascination for anything electrical and had to know how it worked and how to use it. If things had been different, Lora may have become a great electrician, but it simply wasn't an opportunity that was presented to her as an accessible career choice.

At the age of 17 Lora dropped out of school, left home and headed toward the big smoke of Hamilton where she managed to get work in the office of a local Sound Hire company. It was here that her interest in sound grew and an

awareness that the people around her had the opinion that being a sound engineer wasn't considered an appropriate career choice for her. Being naturally stubborn, Lora decided to go ahead and do it anyway and enrolled in the first of what became 5 years of study of a BMA Honours in Music Production, at Waikato Institute of Technology. During this period Lora also gained a considerable amount of work experience in theatre, live sound and studio recording which helped to generate her extra-curricular income. Being a year or 2 older and wiser than her classmates, Lora realised that Uni wasn't the time to muck around saying this was her chance to pursue absolutely every opportunity she could and by the time she graduated, she had 4 - 5 album recording credits to her name and was playing in a couple of bands that were successful on a local scale. She had regular gigs doing live sound and lighting at some of the local theatres and festival experience. Lora also gained camera operating experience and an internship at a reputable studio in Christchurch, NZ. All this while still at Uni! Pretty impressive considering she was told this career was not for her.

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After Uni Lora went on to pursue a career in live sound, traveling with a few local bands and sound companies, then later gaining a part time position in broadcast television. Being in one place for an extended period of time made her heart ache for her childhood dreams of travel and to be part of a successful professional touring band of her own.

After a brief hiatus in Europe Lora came back to New Zealand and set about making these dreams a reality. Almost 5 years later the result has seen her move permanently to Melbourne as an accomplished musician playing in 2 successful touring bands and working as a technician for live work and corporate events – she's even learnt how to make coffee to make a dollar! Turning 30 in 2017, Lora says she can't wait to see where the next few years will take her saying that while life is hectic, she doesn't want it to slow down any time soon.

When talking about mentors or people Lora has met and admired during her career she says there are many, male and female alike, that she's had the opportunity to work with but does want to make mention of Sylvia Massey, a studio engineer Lora has always admired and her former boss and lighting technician Bea Mossop, who she says is one of the strongest, most down to earth and inspiring women she knows in the industry.

There have been times where Lora's role has been misjudged by Artists & Performers because she is a female, with their first thoughts being that she is the caterer or makeup artist. Surprisingly, with other crew or some corporate clients Lora says "not a week goes by in my life as a tech where I don't experience the feeling of discrimination on some level". She has experienced the "wanker" factor in some crews and refuses to become a part of that culture saying she doesn't need to prove herself to anyone – the proof is in her work and the repeat clients. Her refusal to 'compete' or enter into a dialogue of self-promotion has led some people to think of her as incompetent but Lora does get the repeat gigs with people who just want someone that can be down to earth and do a good job without making them feel uncomfortable about their lack of knowledge, or being condescending

towards them. She got to this point by developing great relationships with all clients, working hard and being good at the job which always ensures they seek her out next time around. For Lora, sound engineering has been a great flexible career choice saying that it can be whatever she wants it to be; full time, part time, or even a hobby.

Since moving to Australia 3 years ago Lora has worked on a wide variety of systems and found each have their pros and cons. Lora has converted from Yamaha to Digico consoles, and is now a huge fan of the SD8, SD11 and SD10. She finds them really intuitive and the layout just seems to make sense although she does sometimes feel nostalgic for analogue. She can never leave home without a good old Shure Beta 57a.

Lora currently works casually for Melbourne Convention and Exhibition Centre, which spans over 2 buildings and has 40+ different types of function spaces for events. MCEC has some exciting Audio upgrades in the works going from a Cobranet/Audiaflex integrated room system to a Dante-based system with Midas M32-R's.

This year, Lora is focussing on touring and making 2 albums with her band. In May Lora heads off to New Zealand to support Cherie Currie of the Runaways. She is continually up-skilling with audio and is including videography, photography and more camera work in her resume, as well as continuing to do audio for corporate events and bands of her choosing.

Her experiences to date have motivated her to utilise the modest social media platform she built in order to open up a dialogue about important issues for girls and women in the industry. She invites anyone to join in on the conversation and get using the hashtag on Facebook, twitter and Instagram. #Goodforagirl, which stems back to the age-old compliment/insult 'You're really good at _____ for a girl'.

For anyone starting out, Lora's advice is to never doubt your gut instinct and never waste your time working for someone who doubts you.



#Goodforagirl

She invites anyone to join in on the conversation and get using the hashtag on Facebook, twitter and Instagram.

THE TOD SCAM

By Simon Byrne




Nowadays, it is common for a major venue or hotel to outsource audiovisual services for events within their building.

This is sensible. It reduces the logistics for the venue as less equipment is moving in and out of the hotel, and the hotel has control over the AV operation within their complex. It also creates another revenue stream for the venue whilst avoiding the headache and costs associated with running a substantial AV operation.

However, I've heard rumours that some AV companies are paying as much as 36% commission to hotels on both equipment and labour. Venues have become addicted to this easy cash and lost sight of looking after

their client's goals. Consequently, buried in page 12 of the contract (that no venue client reads), the venue along with the in-house av provider put in place increasingly substantial barriers for clients to bring in their favoured outside contractor.

These requirements are purportedly to protect the venue's walls, chandeliers, carpet, infrastructure etc, as well as ensure occupational health and safety. There could be some truth to this, if the venues and in house providers applied themselves to ensuring that these conditions are met.



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The reality is that in most cases, they fall well short.

When I've got an outside crew working in a hotel, we are typically assigned a **"Technician on Duty"** for about \$96 per hour cost to my client. They are always young, entry level guys and girls with limited experience. This is not a criticism of them, we all had to start somewhere.

But the reality is, they usually don't have the experience or training to take a senior role in facilitating the event. Quite often, they aren't even in the room when loading in as they have duties elsewhere in the hotel. That is, despite the fact that my client is paying for their time. It is not uncommon for the TOD to not know how to operate the house lights, they are unable to confirm the safe working limits for the house rigging, don't know where the circuit breakers are and have no authority or understanding of the venue's fire exit policies. So what is the point of these people if they aren't there, and when they are there, are of little use?

Then they like to charge for the entire time that you are in the hotel. So if you have a multi day event, suddenly the client is up for a Technician on Duty bill of many thousands for a person who adds no value to the event and usually isn't even in the room. **The highest I have seen is \$7,600.** That is, on top of the \$100k my client paid for room rental.

Another frustration is the tendency to leave the in house AV equipment permanently installed in the ceiling. Other than looking ugly in a 5 star ballroom that clients have spent tens of thousands in hiring, it is often in the way of our production gear. So it has to be removed so as to allow our client's event to go ahead.

The in-house provider then wants to charge for it's removal and it's replacement because "it is a cost to them". Really? Sure there is some labour involved but it really should not be there in the first place. If the client does not want it in a room that they rented, it should not be there. It makes sense for the in-house provider to leave equipment in the ceiling for their events. It would be a good earner for them. But to then expect others to pay if it is in the way is clearly another mechanism designed to drive up costs for the venue's client. I once had a venue try to tell me that 4 people were needed to remove just 4 Meyer UPA's (weighing 32kgs each) on a minimum 4 hours call and that my guys couldn't do it. This is completely unjustifiable.

So what is the point of these people if they aren't there, and when they are there, are of little use?

Another emerging trend is that the in-house provider dictates **"minimum AV requirements"**. The reason once given to me was "to ensure that all hotel guests experience the best possible event".

So for example you'll be told the quantity, minimum size and brightness of the projection screens "that they'll accept in their ballroom". I have a problem with this. Isn't it up to the hirer of the room to decide what they do, or do not want at their event?

Then there is Occupational Health and Safety. Clearly everyone wants a safe workplace and a safe event. Now I need to make a distinction here. The major venues have a responsibility to manage appropriately, the OHS issues that arise out of having outside contractors coming into their buildings.

As part of managing these issues, venues will often ask for copies of plans, production schedule, public liability insurance cover and safe work method statements. All good stuff that if used properly, contributes to ensuring that all involved have a solid understanding of how the event is to be delivered.

However, in requiring this material, the venue has assumed an obligation to inspect these documents carefully and make an assessment as to how they are to be applied within their space and operations. More often than not,

this does not happen so it becomes a bit of a joke.

In addition to this, many venues require that your crew undergo site specific **"Occupational Health and Safety Course"**. These "courses" are usually very poor and would be of little use in an emergency situation. Basic stuff is missed like emergency numbers, meeting locations, accident reporting etc. So it is clear that the venues don't take these seriously either. Once again, cost is driven up with little value derived.

Despite these extra challenges, clients often still like to bring in their own contractors. This is because the in-house provider cannot deliver the event that they are after, or the outside contractor provides better value, often both.

Don't get me wrong, some venues get these issues resolved really well and welcome outside contractors with a view of putting on a great event in a cost efficient, safe manner.

Unfortunately, most do not.

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New Administration – New Management Structure – New Benefits & Expanded Opportunities

The ACETA Annual General Meeting marks the dawn of a new year, and this year is set for the 30th May at the Terminus Hotel in North Fitzroy, symbolic as it was the venue for the first industry meeting in 10th September 2009 that ultimately realised the birth of ACETA a year later. Therefore as usual in May we present for your review some of the plans for the year ahead.

The establishment period has laid the foundation for progression and implementation of specific programs and initiatives that have been developed, tested and prioritised relative to industry sentiment, consensus and achievability.

In activating the next phase ACETA will bring about a new landscape centred on 'industry development'.

By virtue of its very nature, entertainment technology often functions as a single device but more often as a critical interfaced component in a complex wireless microphone, lighting, PA, broadcast, recording, studio, staging, automation, or visual system. Currently a disturbing amount of grey imported, forged and knock off entertainment technology is finding its way into our industry. Some acquirers are aware of this, many are not and they can end up owning sub-standard, non-compliant, unsafe product and technology subject to IP adulterating or theft. The magnitude of the issue is unknown; however reporting of disturbing instances by acquirers and suppliers is common and growing. The risks can vary from moderate to severe, with outcomes including unreliable performance, compromised or no warranty, questionable or no support, along with poor unsafe design and build quality that can cause injury even death.

When acquiring goods and services from an ACETA member or associate member you are engaging with an organisation that has committed to compliant and ethical trading and behaviour.

ACETA members are either the manufacturer or the designated manufacturer's representative by virtue of a formal agency agreement that imposes various legal, service and ethical responsibilities. Associate members are bona-fide resellers or providers of entertainment technology services. During the coming year programs will be implemented to validate the security of dealing with an ACETA member and associate member and will be broadcast to the industry at its broadest, which leads us into the ten ACETA priority programs for the coming year:

ACCREDITATION

By virtue of application acceptance, ACETA members and associate members will be accredited as an organisation committed to compliance with ACETAs Industry Guidelines, which deals with compliant, ethical trading and behaviour. This program will be advertised for the benefit of goods and services suppliers and acquirers during the course of this year.

ACETA FORUM EDUCATION

will continue to develop and deliver knowledge and information to the membership.

ADVERTISING MEMBER

associate member exposure will expand on a re-developed ACETA web site, the only focussed industry-wide presentation. The development of

a member / associate member directory will commence and as previously mentioned it is planned to launch an advertising campaign presenting goods and service providers committed to compliant and ethical behaviour to the broad industry.

INSURANCE ACETA

will continue its insuring role when/where able and required. This year it will address the next round of the digital dividend in representing the well-being of its constituents.

MANUFACTURERS MANIFESTO

This year will see ACETA represent the needs of the creative sector to various parties including the federal government departments of trade, industry and small business.

PRODUCTION OF RESOURCE MATERIAL

Currently under development is a short-form easy to understand 'Guide to Product Compliance' for members and associate members. It will contain a product listing, their risk category and what has to be tested and how it has to be tested. This publication will remove a lot of misunderstanding and confusion. A member/associate member guide is also planned

PRODUCT COMPLIANCE ACETA

is now working collaboratively with the ACMA on self-regulation for the ACETA membership. The shared ACETA/ACMA goal is to assist all those with compliant intent to achieve it.

SAFETY AND WELL BEING

will continue to be addressed as and when required

SKILLS SHORTAGE

This year will see the launch of the ACETA Aptitude Test as a response to connecting employers with suitable employees

TRADE EVENT REFORM ACETA

is now working collaboratively with Integrate in the quest to realise the all-encompassing industry trade event it aspires to.

Also under consideration for the coming year is the idea of an 'ACETA Annual Industry Convention' and a focus on the needs of Associate Members

As you can see there is a lot on our plate and of course achieving the entire plan is tied to available resources, however be assured we will do our best, and you may wish to become involved in this rewarding experience.

All the best

Frank Hinton

President - ACETA

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Are you concerned about your mate's mental health?

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

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¹Passion, Pride, Pitfalls Dec 2014

www.entertainmentassist.org.au

Supporting the mental health of Australian entertainment industry workers

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Fun times at the Man-Bun Bar



subscribe to a few music production newsletters.

The articles make interesting reading, but not always relevant to the real-world mixing that I usually end up doing. The writers assume that you have an infinite choice of system to use, a selection of microphones to choose from, and plenty of room to set up. The exact opposite of my reality, in fact.

My regular gig with the Harris Tweed Trouser Band appears to be on permanent hiatus, their cult audience either having dropped off the twig or busy watching MacGyver in God's waiting room at the Shady Daze retirement home.

So now I'm the mixing 'gun for hire' for drumming daughter Fifi Trixie Belle's new 'indie surf punk' band. Gone is last year's introspective shoegaze lineup; now it's a full-on thrash power trio. So much for the benefits of a good education. Sigh.

Take last week, for example.

My phone rang, and Fifi was on the phone with an offer I couldn't refuse.

"Hey, we've got a residency every Wednesday for a month upstairs at the Bearded Man-Bun bar."

*"Wear the fox hat?****" I asked, dreading the answer.*

"North Fitzroy," she replied.

Uh oh - hipster central. Busy streets, tiny pubs with stairs, absolutely zero parking.

"Sounds great," I lied

"Yeah well, do you think you can mix for us?"

"The usual fee?"

She laughed like a drain, "Yes, that's right. Ha ha. We're on at 10.30. See you there."

Well, it didn't sound like too bad a gig. I could have a relaxed dinner, then a leisurely drive over there, mix their set and be home by midnight.

An hour later my phone rang again. Guess who.

"Hey, we need a guitar amp for the gig. Can you bring one with you? Ours has stopped working. One of your Marshalls maybe? How about that nice one I saw the other day?"

"What? You mean my original Bluesbreaker, lovingly rebuilt to 1965 specs with original pinstripe grille cloth and KT88 valves? Not a hope, even for my favourite daughter."

"I'm your only daughter."

"You are now - I sold the other one to the gypsies!"

After a bit more of this banter we settled on a Marshall VS80 combo, one of their nicest transistor models, robust and reliable with a single 12 and only 28 kilos! Then she dropped the bombshell.

"You'll have to get there early with it so the other bands can use it!" Aah - my nice relaxing gig suddenly disappeared, morphing into an evening of hard work.

"I thought it was just for you to use? And who's mixing the other bands?"

"No, it needs to be for everyone - we're sharing equipment to save space onstage. And you'll be mixing for everybody - won't you?"

"I suppose... Are they planning on paying me?" I whined.

"Don't be silly; you know you love it. See you when I get there"

Doors opened at 8, so I arrived there at 7, and amazingly found a spot to park the car in a side street near the pub. Just as well, since I had to carry the amp in my arms, having left my little trolley at home.

Checking in with the guy behind the bar I discovered that a total of nine bands were playing there that night! Four in the small room upstairs, four in the bigger room downstairs, and a solo act playing electronic music.

This consisted of dweep dweep bloop bloop twiddley widdley robot sounds from a girl hunched over a collection of pedals and mini synths laid out on a table in the front bar. Just the thing you want to hear when you've popped in for a relaxing couple of beers!

I staggered up the stairs with the amp, and surveyed the scene. Small room, with a stage the size of a drum riser, and a little Allen & Heath mixer bolted to the wall next to the stage. One stage monitor and two double 15" and horn boxes out front, and amps locked away from meddling fingers. OK I've used much worse.

The guy at the bar had given me a box of cables and mics, with the usual handful of beta 58's and 57's, plus a Kick drum special, and there were even three or four usable mic stands!

The gear sharing concept meant the other bands' drum kit and bass amp had already been dropped off and set up, so with my amp the backline was all ready to go.

From the position of the mixer being almost onstage, I could see that I wouldn't be leaning back out front casually adjusting a knob here and there. No, it was going to be a set-and-forget system with just the basics miked up.

Two vocals, kick, snare, bass DI and maybe a mic on the guitar amp, which I could bring up if necessary.

I EQ'd it all fairly conservatively, and rang out the system as much as possible despite not having access to an equalizer! Any major changes would mean braving the volume on stage, which, remembering the volume that these bands played at previous gigs, was not for the faint hearted.

Even so when the first of the four bands came on I was totally unprepared for the sheer volume these guys played at, in a room smaller than my lounge at Fry Towers. It was ear bleeding. Any hope of actually mixing was blown out the window by the volume. Jeez it was loud. And the second band was even louder! It was a losing battle to keep the vocals above the on-stage instrument level. No wonder none of them had a working guitar amp!



As I suspected, heavy limiting inside the locked up amp rack meant that the vocals and anything else running through the system sounded strangled and distorted as soon as you tried to bring up their level. So I eventually stopped trying!

Fifi's band came on to whistling and clapping from their group of fans, and although just as loud, at least had some melody in the songs. Their surf punk sound went down very well with the crowd – some people even sang along with the words, although how they knew what the words were was beyond me.

The last band had a girl bass player, and a singer who looked just like Bob 'The Bear' Hite from Canned Heat. Nice guy to chat to, happy with his vocal soundcheck, even asking for the foldback monitor to be turned down a bit. And that's something you don't hear very often!

But once on stage he roared around the place screaming his lungs out. The songs consisted of him yelling out a repeated phrase, over the chainsaw sound of the band, My favourite was their final song, which consisted solely of the band grinding away while he yelled out – "My friends are GREAT – your friends are SHIT!" over and over again!

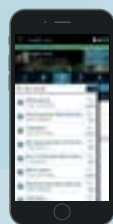
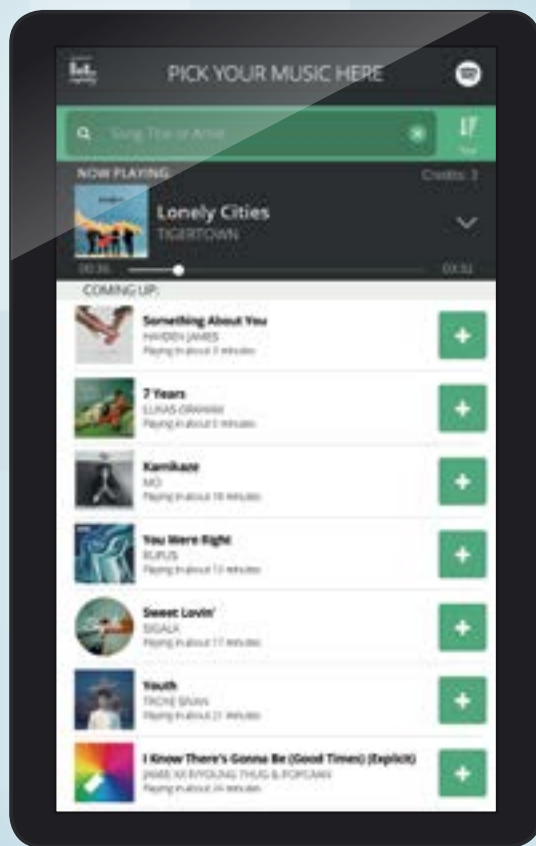
Who said that good music is dead?

***On a visit to Australia, Prince Charles allegedly rolled up to the races in Manangatang wearing a beautifully styled fox fur hat. "That's a beautiful hat, your Majesty," said his host. "Oh thank you," he replied. "Mummy asked where I was going today, so I told her Manangatang, and she said 'Wear the fox hat', so I did!"

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