

CX

MONTHLY TECH NEWS
For Entertainment and Broadcast

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CX 64, OCTOBER 2011 . \$5.50

BRISBANE CITY OF LIGHTS
Festival adds big horsepower
STAGE SAFETY
The debate we have to have

REVIEWED:

Blackmagic SmartView Duo
ETC Selador Desire D40
Roland R1000 48 track recorder
Neumann KH120 studio monitors

NEWS AND VIEWS:

Inside the Loudness Wars
Topgear endanger audience
Integrate show report
Icehouse to play industry gig
'Augmented Reality' live on stage

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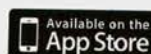
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THE BIG HUGE LOUDNESS WAR: HEADS UP FOR ALL AUDIO OP'S



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CATASTROPHE AWAITS

The problem of no peak industry representation for live production is in the spotlight because of the massive accidents overseas and the awareness that we are all screwed if a stage falls over and kills kids here.

Without a voice, the industry will be in a world of pain when something bad happens and the feds legislate event rules that can't be met. Now there's a solid push to form a new association covering entertainment safety.

SAFE AND LOUD

Our TV studio has been busy, we shot two panel discussions last month that are the basis of features in this issue. The Stage Safety debate was solid gold – with a staggering number of views at CX-TV.com.

Then John Maizels and Jimmy Den Ouden put together a Loudness technical discussion which although running a numbing 43 minutes, has produced some great material invaluable for live, recorded and televised audio professionals. Read the feature inside, or log on and watch the discussion.

SWANSONG ON THE RIVER

It was nice to see the well staged Santos laser and lighting spectacular on Brisbane River at the Festival last month. And farewell to Paul Rigby of PRG. This was his last gig before departing for the theatre.

Brisbane Festival production manager Jono Perry has delivered a great result this year, and wow – hasn't Brisbane moved up over the past decade? Driving in Southbank we chanced on an outdoor gig run as a prac for students at Ian Taylor's industry accredited tech college class. Happy kids, nice equipment, invaluable learning experience.

Compared to our home city of Sydney, Brisbane has new infrastructure, great vibes and a confidence that can't be bought. (CX Summer Roadshow will start in Brisbane on February 20).

CX EDITORIAL**ADELAIDE RISES**

Also on our 'city rising' list is lovely Adelaide which we first unkindly compared with an American Beef Town in the early days of CX. Old memories of bygone gigs and fighting our way out of pubs have faded.

Now it has a scaled down hip factor which is very attractive – with clean air. Plus a very solid tech production academy at Adelaide College of the Arts, whose grads actually work in the industry.

CX liked visiting the Convention centre and meeting Andy Harris, the Technical Designer. He showed us around, explained their inventory (Meyer, Turbo, Yamaha, Christie projectors) and revealed they will spend a lot of money over the next couple of years expanding. We like that. (CX Summer Roadshow; Adelaide February 29).

NOW CX NETWORK

We've embraced the fragmenting of media and the 'C' word (convergence) with gusto here in the bunker. Jimmy has installed new mood lighting, expanded our Nightlife system and the espresso machine has been overhauled. What next?

OK, the Juliusmedia branding is so last decade that it has to go – although we're keeping the carbon life form known as Julius for a while longer. Jimmymedia, Stevemedia or even Maizelsmedia just doesn't do it, so welcome to our new catch-all entity, CX NETWORK! Which kind of neatly says what we are these days – one magazine (for one industry) with a sexy new APP version called CX2 onsale through iTunes. Plus CX-E, CX-TV and CX-N email news.

- Julius

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News

α INDUSTRY NEWS



Topgear Endanger Audience

Studio set, truss and cables smashed in stunt gone wrong

'Move out of the way – we have way more people in this studio than we expected', says Topgear Australia host Shane Jacobsen. Then the hosts mount their vehicles – a V8 Chevy powered lawnmower; and a Holden V8 powered Esky. The segment was shown early September in Series 4, shot in Sydney.

"Our floor manager Kyle is freaking out. Why can't we race these things? Start them up I can't hear ycu", Jacobsen yells as the studio fills with the sound of the revving engines.

"Get outta the way", he bellows, and the two machines start off, racing around the central hosting position and set, surrounded by the studio audience. Three laps on, the Esky hits a vertical 24' truss, which rocks from side to side, then continues to rev, caught on the side of the set. It ploughs on, snaring and dragging presumably live cables, and shifting the set through at least 15 degrees and several metres.

"What you just saw, although it may have been a bit dangerous, attracted a crowd here. Am I right?" Crowd roars. "While



V8 Esky hits the stage, rocks the truss



Snags cables, keeps going

>>>> Continued page 10

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Crew hustle to restore set. Host chortles.

they're freaking out in the background (crew running around trying to untangle the vehicle from the production cabling), this is a perfect segue into a story....."

The set comprised a custom cog shaped riser with a polished steel finish, surrounded by two vertical 24" truss elements approx 6 metres in height, each loaded with a flat screen TV and peripheral equipment.

Clearly this wasn't a rouge segment – one of the vehicles was fitted with a miniature camera.

A CX reader complained to Workcover NSW about the incident. "Very scary stuff and surprised they let it go to air. I'm a great supporter of Australian production of all kinds but this was outrageous especially in the current climate where the spotlight has been focused on audience and performer safety".

REPORT UNSAFE INCIDENTS IN CONFIDENCE:

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Trade show season ends in Sydney

Numbers –v– numbers for Integrate –v– ENTECH

CX spent 2 days at each tradeshow – ENTECH (held alongside SMPTE) at Darling Harbour; and Integrate at Moore Park. In 2012 Integrate moves up to Darling Harbour, hosted by new owners Diversified Exhibitions.

ENTECH attracted more venue and production folk, while Integrate owns the Integrator and AV market. Market forces have allowed two shows to develop where once there was one – despite the P.R., the AV and Integrator market was served by ENTECH earlier this decade, with several collaborations with ICIA, the entity behind InfoComm

– which now endorses Integrate.

ENTECH had 5,105 visitors and made 455 exhibitor badges. Their numbers are audited by CAB a process that CX can validate since when we owned ENTECH we balked at paying \$1,200 to prove our attendance.

Over at Integrate they say they had 4,371 attendees, comprising 1,018 exhibiting staff/VIPs and 3,353 registered visitor attendees. Their attendance is not audited. Both shows count repeat visits on a second day, but filter out re-walks when someone goes out for a cigarette or break.

But what matters is exhibitor sentiment – the return on investment, where the cost of exhibiting is around 3 times the floor cost. Most exhibitors at both shows seemed happy, and most talked about doing both shows but spending less.

ENTECH have announced a small boutique event for Melbourne in July 2012, running over 2 days with around 20 booth style exhibits and a strong education offering. CX Roadshow also enters the mix in 2012, with a five city tour in February and again later in the year.

Networking at Integrate

At CX your business is our business

With naught to do other than walk and talk, the CX team met to compare party invitations. The only gig we were invited to was the big Bose launch, but we managed to obtain drink passes for happy hour on the ULA stand. Later that night we tested the Belgian Beer place and decided to drink all the beer brands they had. Den Ouden almost started a bar fight when he knocked over some guy's expensive carbon fiber pushbike outside.

Next day Jonathan Ciddor (LSC) related his adventures in the outback sans 4WD, which he managed to roll. Fortunately he and chick friend emerged almost unscathed, and set up camp. The drinksy was rescued.

Adrian Wackwitz, a foundation friend of CX from the beginning, mentioned he will retire later in the year after 40 years – first at AWA, then at Audio Product Group.

Fry and his cohort from ARX were there, so we had a CX meeting of sorts, although

its hard to have a meeting with Fry, because we all laugh too much. Michael White (SOS) and Barry Gilmour (ARN) strolled past looking uncharacteristically happy.

Young Nick Weir, a Rockhampton based grad from our former college, emerged from an exhibit wearing his Decibel Watts company shirt – and made us proud for a mad minute. But Col West, mayor of Darwin and owner of Event Quip made us laugh when we tried to shoot a serious news segment on CX-TV. "Third wife!" he barked. "Get over here!" It sounds bad, but it was funny – and Tammy West could not have been more laid back.

Caught up with a serious number of people who hadn't been at ENTECH and some who had, so it feels like trade show

season brought a lot of out-of-towner's into Sydney in 2011.

We made several stops at TAG for coffee, and managed to unboot the Bosch van outside before escaping undetected. Memo Bosch: lock the controls next time. Oh, and the catering concessionaire was better at Integrate than at the SECC. Except the tables kept collapsing, so let's call it a draw.

Maizels and Den Ouden had some confusing technical raves with some serious looking exhibitors, while Steve J, Steve D and myself preferred to schmooze. We shot some CX-TV, took some photos, and heard some salacious gossip which was all filed for future use.

If Wiki leaks hack our terrestrial system we will all be doomed.

>>>> Continued page 12

SEGMENTED
One trade show becomes two. Bit like some mags, where more keep coming



Michael Chapman and Ian Ross (Audio Source), Duncan Fry, Robert Yeo, Col Park and Tony Hoskings at the ARX/TRC stand



1

1) Adriana Cawt and Graham Stevenson from PAS



2

2) Col West with third wife Tammy show off EventQuip



3

3) Jess Dunbar and Jenny McCullagh



4

4) Are you the Police? No Maam, we're from CX. (With apologies to the Blues Brothers)



5

5) Outside Integrate



6

6) Adrian Wackwitz to retire after 40 years with APG and AWA



7

7) Young blood. Nick Weir from Decibel Watts Rockhampton



8

8) Julius with LSCs Jonathon Ciddor



9

9) Michael Bosworth from VR Solutions



10

10) Michael White (SOS) with Barry Gilmour (ARN)



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TCP Rises From the Grave

Tony Musico revives his brand

"We still had Total Concept Projects in Malaysia", explained Tony Musico as he revealed the new version of his long established installation firm which failed in 2009. "I bought the name and the rights back from the liquidator", he says.

With other corporate resurrections fresh in recent memory (VideoPlus as an example), the ins and outs of company law do allow a second chance. Musico and his

former partner Richard Skarzynski ran into trouble with a digital signage scheme sold to registered clubs. The clubs alleged they were promised advertising revenue once screens were installed, and took legal action claiming \$11 million in damages.

Now working with his brother, a Skarzynski free Musico was working the floor at Integrate. The TCP website is updated with 'new ownership' noted.



Tony Musico and TCP are back

Icehouse for Gotta Have Heart

Industry dinner to raise funds

Melbourne's Sofitel will rock on Friday 28 October when the entertainment industry digs deep to raise funds for Entertainment Assist.

Entertainment Assist aims to offer a range of services designed to address the needs of entertainment industry personnel who have fallen on hard times and aims to reduce the effects of poverty, destitution, helplessness and sickness on their lives by providing preventative assistance and education programs regarding the availability of counselling, health, support programs and financial aid to entertainers, their families, program workers and the community.

With stellar support from all corners of showbiz and backstage, the organization will host a 'who's who' for the Gotta Have Heart dinner on Friday 28 October at Sofitel Melbourne on Collins.

Gotta Have Heart is an opportunity for the entertainment industry to get together to support its own. It has a star studded line up including ICEHOUSE, Tracy Bartram, Paris Wells, Michael Paynter, Chelsea Gibb, circus performers, magic and others.

It costs \$195 for dinner and drinks, or you can do what CX has done and buy a table for \$1,950. For more information visit: www.entertainmentassist.org.au

Dave Watson for PAS

Well respected Sydney church production guru and audio engineer David Watson has joined Production Audio Services, based from Sydney. David was instrumental in the specifying and commissioning of systems at Hillsong's main campus in Baulkham Hills until 2007.

David has most recently worked for a secretive production company whose name we dare not print, lest it encourages a repeat of Comic Monday – so named as the day the guys staged a daring raid on CX HQ to remonstrate at our last article which also didn't name the firm.



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Behringer Installed Audio for NAS

New line hints at DSP offering

With the expansion of musical audio manufacturer Behringer into installed audio, the probable addition of a DSP based challenge to Media Matrix and Biamp appears imminent.

At the recent Integrate expo, National Audio Systems Commercial Audio Division Manager James Ritter told CX the firm is excited to represent the range. Behringer recently threw open their import distribution by closing an Australian office and inviting large customers to buy container quantities. This quickly saw Perth based importer Galactic (owned by giant retailer Kosmic Sound and Lighting) become the main source of Behringer.

But the Installed Audio line, named Eurocom, is handled by NAS – who have a solid contractor clientele.

NAS expect the Eurocom line to build past 'several million dollars a year'. CX were impressed at the initial offerings on show at Integrate.

www.nas.com.au



Shane Bailey (NAS Sales Director) with James Ritter (Commercial Manager) at Integrate with some Eurocom devices.

Bitey BYTES

▶ Clay Paky say they have expanded their Sharpy manufacturing line to cope with 'unprecedented demand'. The little moving light broke new ground when launched one year ago, and has wowed LDs with its laser-like ability.

▶ Several Euro states away in the Czech republic, Robe has celebrated the 5000th ROBIN 600 LEDWash moving light fixture sale at PLASA.

▶ Speaking of LED, major brands like Martin, Robe, VL, Clay Paky, ETC and Coemar are not guilty of this BUT some manufacturers have short-cut the dimming and are freaking out broadcasters with evil flicker on some cam-

era's. More on this soon.

▶ Sydney kings of mega-large live screen video TDC have trademarked a new product. The OneLED range is their own proprietary LED panel. We saw the i6 (6mm LED) line at work and can report good outcomes.

▶ TASCAM introduced the DR-40 4-Track Portable Recorder, and new Australian distributor CMI report solid interest since they took on the line recently after years of neglect by others.

▶ Sydney's newest theatre venue launched last month, CX saw rock legend Richard Clapton rock 1,000 punters in the excellent

Corcourse Concert Hall at Chatswood. Jands did the staging fittout, TAG saw to a Martin PA and iLive desk in the Concert Hall. The venue is managed by Century Venues.

▶ Strange email angst from Marshall Day regarding our report on the new Albany Entertainment Centre earlier this year. CX stands by the report, and is confused by the posuring.

▶ Even stranger is the agro from tour manager of one Josh Pyke, a muso who had a warm and cuddly image, until CX tried to do a story that was approved by his people. And killed by his TM. Defective image?

▶ And CX is now on iPad! The CX2 version of this mag has all the interactive features you'd expect to see in a professional mag – with all pages reset for landscape or portrait view. Search the APP store for CX2 – US\$2.99

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What If?

What If I need stage lighting circuits with a shared neutral?

By Andrew Mathieson

This question came up late last year when one of our lighting geeks was trying to commission a dimmer fitted with channel RCD protection and the RCDs kept on tripping.

Investigations on site soon uncovered some ingenious wiring - 6 x 10A circuits wired back to a tail patch with an 8 x 1.5mm² multicore cable arranged as 6 actives, 1 neutral & 1 earth.

I have to confess that after asking "could you please repeat that?" a couple of times, my reaction, while not exactly "What If?", did start with the word "What" (I'm informed by my teenage son that there is an abbreviation for this, and it stands for "Why The Face?")

The part of the story that was most disturbing was the fact that there was a licensed, qualified electrician on site stating quite emphatically that this arrangement was not only legal but quite safe.

Let's first examine the question of whether or not this arrangement is "legal", meaning, does it comply with the requirements of the

Wiring Rules (AS/NZS3000:2007 Amendment 1). Clause 2.2.1.2 "Common neutral", the relevant portions of which state:

"...A common neutral conductor may be used for two or more circuits subject to the following conditions:

The continuity of the common neutral conductor shall not depend on connections at the terminals of electrical equipment, including control switches.

Final subcircuits shall be controlled and protected by linked circuit breakers or linked switches.

"...The current carrying capacity of a common neutral shall be determined from the current carrying capacity of the associated active conductors in accordance with Clause 3.5.2"

The 6 circuits are wired to a tail patch and the neutral conductor is looped from socket to socket at the socket terminal - this fails to comply with a)

Each dimmer channel is protected by a circuit breaker per channel, not linked so that all breakers trip in the event of an

overload in any one - this fails to comply with b).

Neutral current carrying capacity - with the circuits wired to a tail patch, all 6 circuits could be patched to different 10A dimmer channels on the same phase, so the maximum neutral current possible is 60A - with a 1.5mm² conductor rated at about 10A.

Just on the basis of neutral current carrying capacity, this arrangement is unsafe, but you might get lucky and the neutral could melt through (fuse) before the wiring catches fire...

So when would it be appropriate to use a common neutral for two or more circuits?

A common example is office lighting using fluorescent fittings that would add up to a 60A single phase load. It would be perfectly acceptable to wire these to a 20A 3 phase circuit, with 1/3 of the total load connected to each phase and the (common) neutral, with the circuit being protected by a linked 3 phase circuit breaker.

Other legitimate uses of a common neutral arrangement are in water heaters, air conditioners, space heaters etc, but we were talking about dimmed lighting circuits in a theatre...

This article forms general opinion only and must not be relied on without a detailed, professional risk assessment undertaken specific to your situation. Consult a professional staging company every time you consider anything that may involve risk with flown objects or people.

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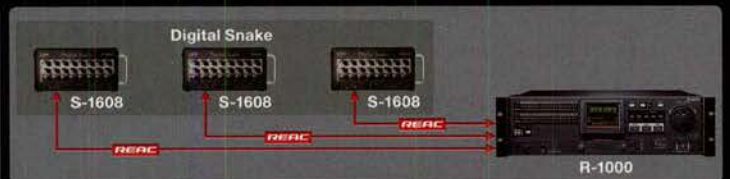
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Ali Badieli, Tahlia Rogers



Leko Novakovic, Renae Novakovic - Owners of Novatech Creative Event Technology



Paul Kitching, Amanda Wheeler

Novatech turns 10

CX WERE HONORED to attend the birthday bash for Novatech Creative Event Technology at Rymill House in Adelaide last month. For a firm that copped a lot of uphill in the early days, they have risen to the top in Adelaide and punch well above their weight. A great night - surprise gig by Lowrider and VERY nice food and beverages.



Megan Kerr, Andrew Russo, Jennie Bell, Kate Owen



Renae Novakovic, Gemma Olive



Tristelle Dry, John Bartlett, Paul Bartlett, Seccit Duncan, Brian Ruiz



James Walker, Melanie Smith, Rohan Watts



Steven Kennedy, Rachael Kennedy, Dior Yarwood, Sarah Gun

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ACETA NEWS

aceta



Australian Commercial & Entertainment Technologies Association

Regular CX readers will have read of the formation of ACETA, The Australian Commercial and Entertainment Technologies Association back in June this year. Some may still be wondering what is it all about, who's involved and what is it that ACETA intends to do? In this first regular column with CX, ACETA will spell out its agenda over the coming couple of years and update the industry on what activities are being undertaken.

Here's what's on the ACETA agenda:

▶ **Addressing the skill shortage:** The industry is challenged by a skills shortage so ACETA is working on a plan to address this including setting up a job matching service or recruitment centre, and developing practical qualifications that address real world needs.

▶ **Developing a reliable set of industry statistics.** Work is already underway to identify what data needs to be captured, and how to do that accurately and confidentially.

▶ **Completing the wireless audio transition plan (AWAG).** The management of this campaign now lies with ACETA and it's now at a critical point. More information in next month's ACETA update in CX.

▶ **Providing support** for Australian manufacturers by building a relationship with the key areas of government that can assist such as AusTrade and the Minister for Trade and Innovation, and developing a resource centre in the ACETA members-section of the website

which will be a one-stop portal for all the information and contacts that relate to grants and support for manufacturing and export.

▶ **Addressing the trade show calendar** - the general view is that there are too many shows in Australia, so ACETA has begun to talk with the main show organisers about how to make the shows more cost effective and deliver stronger results for the industry.

▶ **Addressing the changes to Electrical Emission Safety Standards (EESS)** - The ACMA intends to combine A Tick and C Tick, and ACETA is acting to ensure our industry's voice is heard as the plans are developed. More information below.



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- ▶ **Developing industry guidelines** and a trust mark -creating standards that buyers can rely on and a trust mark to clearly identify which companies have signed up to those standards.

Given the immediacy of the changes to the EESS and the impact they will have within the next 12 months or so this seems to be a good place to start the first of these special updates for CX.

The proposal, by Government through the ACMA, is that several of the electrical safety labels including C-Tick and A-Tick be consolidated into a single mark to be known as the Regulatory Compliance Mark (RCM). Overall, ACETA supports this move but that support is conditional.

Much of the impetus for the move to the RCM has come from the consumer electronics industry. As we know this is an industry where products often have a life cycle of months rather than years. The issue for ACETA members and the commercial industry more broadly is that the proposed timelines for transition, while suiting consumer electronics products, do not suit the often much longer life cycles of our products. The Australian Communications and Media Authority (ACMA), the Government authority with responsibilities in this area, is suggesting the transition be completed between 2012 and 2015. There are no fundamental issues with commencing the process in 2012 but to think that all commercial products will be transitioned by 2015 to carry the new label is unrealistic and will be prohibitively expensive, especially given the lower volume of commercial and professional standard products sold in this country.

WHAT IS ACETA?
a peak industry body that represents manufacturers and distributors

The solution offered by ACETA on behalf of the industry is this:

As products are introduced into the Australian market from July 2012 they carry the new consolidated mark. (This is consistent with the ACMA view)

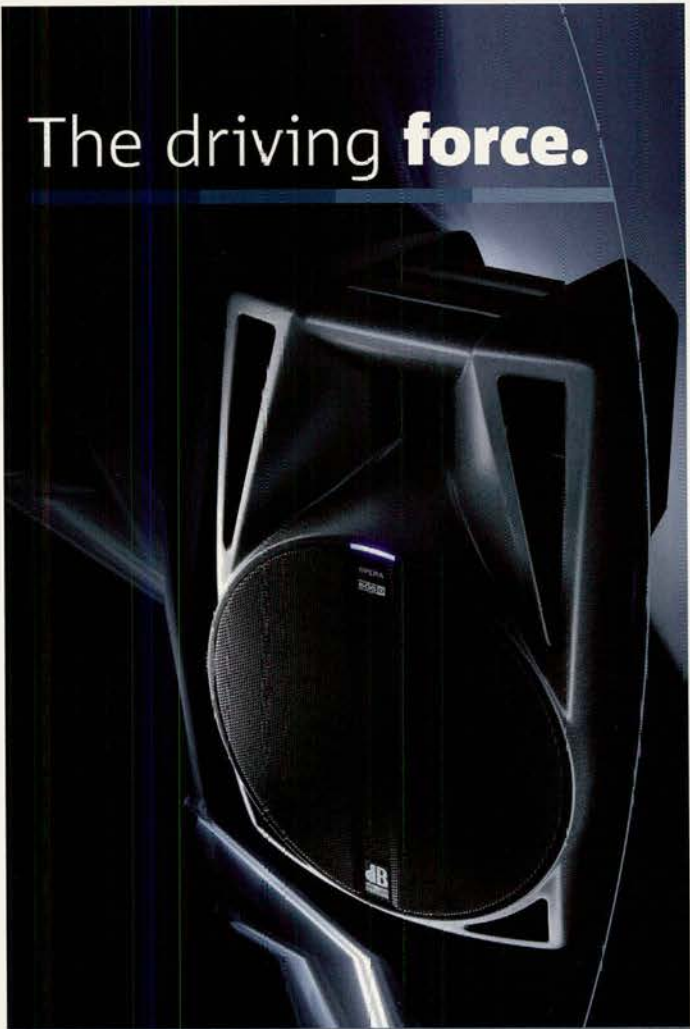
Where a product is appropriately labelled (such as with the existing with C-Tick) and registered on the new EESS database from July 2012, then that product should be allowed to be sold until such time as it is no longer shown in the importers/manufacturers catalogue as a current product.

This approach would be consistent with the ACMA's objectives of reducing costs and would eliminate the need for re-labelling products that are well into their projected sales cycle at the time of the RCM implementation.

As you can see, ACETA has a wide range of projects underway, across a numbers of areas of relevance to manufacturers and importers.

Now that the industry has its own representative body the smart thing to do is to join, be represented, influence the agenda and help strengthen both the industry and your investment in that industry. To join or to find out more about ACETA phone 03 9527 8133.

Next time in CX - an update on the wireless audio transition plan and AWAG.



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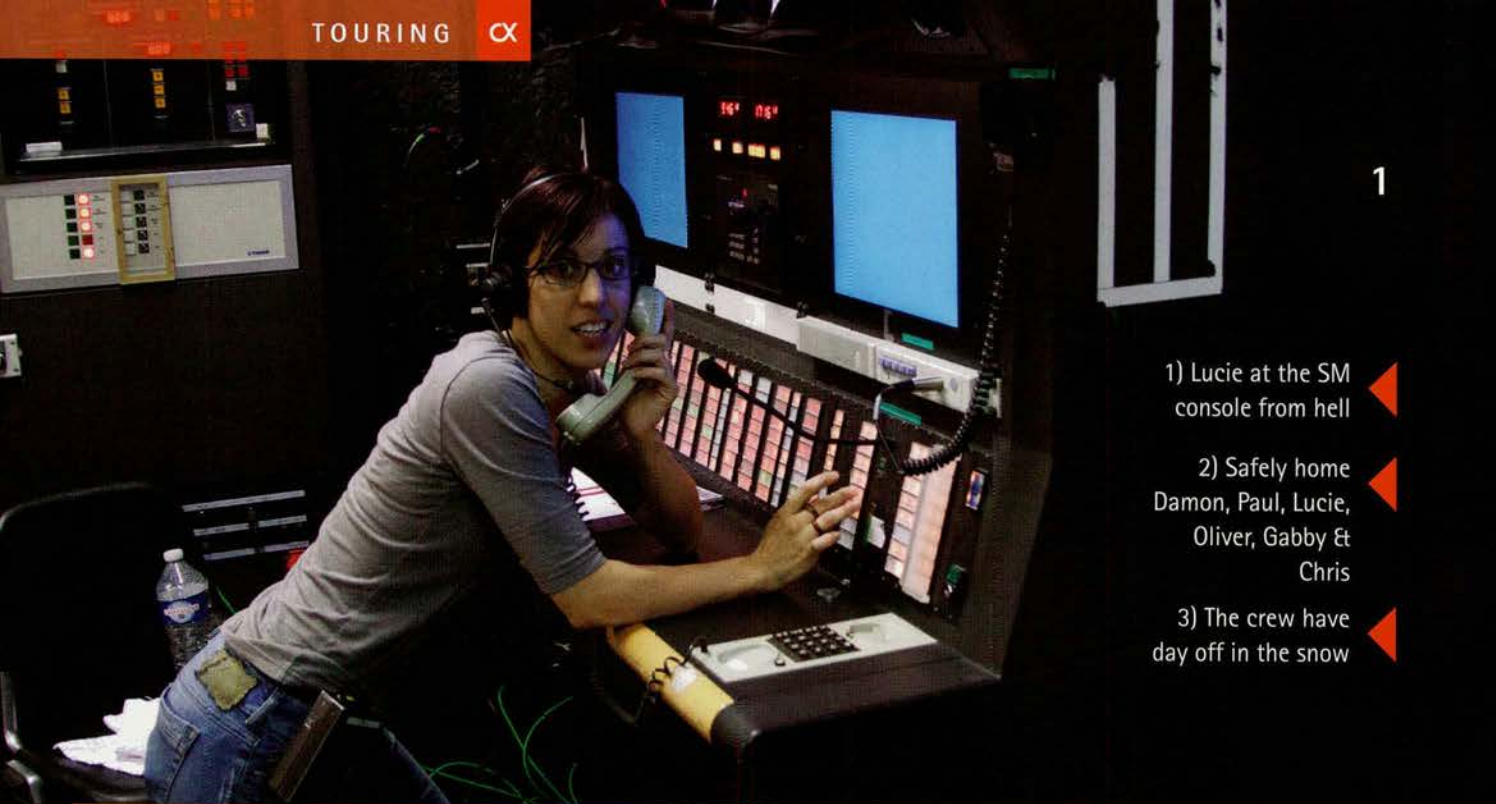
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1) Lucie at the SM console from hell

2) Safely home Damon, Paul, Lucie, Oliver, Gabby & Chris

3) The crew have day off in the snow



An Australian in Paris and Beyond

by Jeanne Hurrell

Does a three month tour to Europe with a contemporary dance company sound exciting? My word, it does. But, as six local techs and stage managers discovered, it also means long hours

and hard work. Earlier this year, a small team from Adelaide provided technical and logistics support for the Australian Dance Theatre (ADT) on their tour through Western Europe.

ADT spends a lot of time touring outside Australia and, as a result, its technical crew is a talented and savvy lot. Based in Adelaide the company of eleven performers, associates and crew, with artistic director Garry Stewart, showcased their production of *Be Your Self* to European audiences in seventeen venues across nine countries during the first part of 2011.

ADT are popular in Europe and this tour saw them playing to large venues in cities like Paris, Amsterdam, Seville and Bregenz. However, the production was very high-

tech and demanded precision work from all involved. The touring schedule was also challenging, with many performances being one or two-night stands. It was usual for the show to present in two venues in each week, and the demands of the itinerary meant that the crew enjoyed only eight full rest days in twelve weeks.

Planning

Months of planning were crucial. Paul Cowley, ADT's Production Manager, has toured with the company for many years, and his experience gave him the know-how to plan the technical production down to the finest detail. When an Australian company takes any element overseas, they must

register a carnet or itemised list of all their cargo, right down to the specific number of costumes, gobos, laptops, etc. On returning to Australia, Customs will examine every road case and check it off against the original carnet. Any discrepancies will incur a duty, so accurate planning is essential.

Paul used the Belgium-based company, AED rentals, to supply most of the basic production elements including trussing, chain motors, luminaires, racks, speakers, etc. The set, costumes, props and specialised control equipment came from home.

The show was prepped and teched in Adelaide at Her Majesty's Theatre in the latter part of 2010 when this author had a technical tour of the installation. The lighting, vision and sound were all under show control, using 2 x MacBook Pros running Abelton Live 7 (playback of soundtrack), Qlab 2 (midi translation) and Ipmidi (for inter-network transmission of midi messages, enabling exact sync between the MacBooks, Q2R and the Hog 3 running LX and vision on a Catalyst Media Server).

Paul with Stage Manager, Lucie Balsamo, arranged the pack of the entire show to fit

exactly into a standard 20 foot shipping container. It took a few attempts and they described the process as a jigsaw puzzle. Finally, however, they solved the riddle and repeated the process successfully at every bump out, despite the well-meaning attempts by some of the European bump out crews who wanted to pack the semi-trailer their own way.

Likewise, the precision of the pack was missed by Customs on return to Australia. They couldn't repack the container and many road cases were left on the Adelaide dock because the Customs Officers simply weren't able to solve the conundrum!

Bump in and focus for most venues were achieved in a few hours, with the stage being ready for the dancers' rehearsal by mid-afternoon.

Post-tour, I met with the ADT touring crew. Along with Paul and Lucie, Gabby Hornhardt, Company Manager, Damon Jones, Head of Staging, Oliver Taylor, Head of Sound, and Chris Petridis, Head of Lighting, gave a presentation to students at the Adelaide College of the Arts (AC Arts). The ADT crew were Technical Production gradu-

ates of AC Arts, except Paul, who graduated from the predecessor of AC Arts, the Centre for Performing Arts (CPA). They wanted to explain to current students what touring to foreign countries was like.

The aspect that stood out from their show-and-tell was the importance of team-work. Although each had their own specific responsibilities on the show, they built in their own redundancy plans. For example, Gabby could call the show if Lucie became sick, etc. They all ensured that they knew as much as possible about the operations of each other's jobs. They also stressed the importance of technical backups and thorough documentation. For example, the show control computer always had a complete backup computer running so that, if the first had a glitch, the backup would switch in seamlessly.

Although the schedule was demanding, all agreed that they would jump at the chance to do another tour with the company. It was clear that they enjoyed the challenge of the work and each other's company, and that these are key ingredients in successful touring.



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NEUTRIK

Augmented Reality on stage

Fourth Wall Events and TDC break new ground with technology for Optus

Optus' Consumer division chief Michael Smith walked on stage in front of a video screen that almost stretched the entire width of the venue. A thousand staff cheered, as he introduced his key staff one by one. Clever cartoon video mugshots and loud walk on music preceded each of them.

Corporate events like this are a costly but important tool, used to engage the troops for the battles ahead, and to roll out new products. Nothing beats a live event, followed by some drinks, to pump up a team and focus them on what needs to be achieved within the business.

But Optus lifted the game this day in

SO HOW DO
high end corporates
engage their staff?
Julius went back-
stage to a big OPTUS
event.....

Sydney, with a remarkable augmented reality concept that saw Smith talking live, in real time, with customers around Australia. Remarkably there was no latency (delay) and no uplink. So how did they do it?

Backstage was a green screen, and the locations were keyed in behind the customers who were actors. The 'remote' location appeared as a picture in picture on the huge screen, with the boss (Smith) in the frame.

To the audience, this was surreal, but effective. There was Smith, on stage, facing a camera to one side, and over the other side of the screen, the image of him with the 'customer', in an Optus store somewhere.



3D is Yesterday

Just a year earlier, Fourth Wall Events and Technical Direction Company used a huge 3D Cinema screen for the same client. The Augmented Reality concept needed to match the wow factor – and it did. So now the challenge for Fourth Wall Events, is what to do next?

Jeremy Garling says he has the next one figured out. One of three directors, Jeremy merged his firm, Great Scuthern Events, with Aztech Events to form Fourth Wall in 2010. Grant Pisani and Darren Waide (Aztech) both did the NIDA technical production course, where they first met Jeremy. Now as Fourth Wall Events, the three partners deliver a diverse range of events and concepts.

Just minutes before the doors opened in the Big Top at Luna Park, a 1,000 Optus staff are buzzing in the foyer. Inside, a cherry picker is stuck, blocking the entrance. The lighting tech is reversing and maneuvering to try to drive it around the corner of the stage.

But the Fourth Wall team are relaxed! CX were invited inside before the event, expecting to sit out of the way as the pressure mounted but instead walked into a calm and organized production – ready to go, and no hint that an audience were massing outside. They offered us food. That doesn't happen often.

Talented, young Production Manager, Daniel Jongen showed CX around, behind the massive screen (which comes in a 7m long case when it is rolled up) were the six Barco FLM R22 DPL projectors, and a city of tech gear.



Tech manager Daniel Jongen at the green screen backstage.



Here's Samantha – backstage, not really in an Optus store

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How it came together

We spoke to Olivia Farry, the producer for Fourth Wall Events.

"The FWE team and our Optus client brainstormed the event identity for 2011. It's about using technical innovation to actively demonstrate the digital transformation of the organization to their employees through clever and innovative business messaging."

"This years concept is about putting the Optus customer at the centre of the story using digital technology, this enabled the Optus Consumer Senior Leadership team to simulate the future world of their customers."

"Our job was to assist Optus with creating a high energy and engaging live show with exciting content and key messaging. The objective was to educate Optus employees on where the future of the business is heading and because our client always likes to push the boundaries of technology for these roadshows we had a challenging brief on our hands from the beginning."

"The event identity was established as Optus - It's a New World. Once the event identity was approved we drafted some key visuals for the big screen with our design team for our client to approve."

"Once approved we had the go ahead to create all of the content on screen and could really bring the show to life with graphics, audio and the live Augmented Reality component. We chose to constantly alternate the graphic windows from left to right, change their size and alternate between iMag to screen of the presenters, keynote content and the use of video to keep it dynamic."

"We also ensured that all presenters used the entire stage when presenting moving from left to right as they presented their content and entered Augmented Reality with the actors. This ensured it kept the stage and screen engaging and interesting for the audience."

"Our designers have a fantastic understanding of Watch Out, the software system we used to run the show and alpha layers and this was evident by the execution of the show content."

"Keynote presentation content and the key messaging was very much lead by our Optus client with FWE creating the style, design, graphics and audio through out the presentation to ensure all content was consistent and seamless."

Augmented Reality

"The Augmented Reality section of the show was very much a collaboration between TDC (Technical Direction Company) and FWE which included hours of programming of Watchout

and automating switching to achieve the results on screen. FWE and TDC also did several screen tests of the AR section prior to the event to ensure green screen, lighting, actors and camera angles were perfect."

"Darren (Waide) our Executive Producer and Daniel (Jongen) our Production Manager

designed the overall look of the show from the lighting perspective. Different operators are briefed according to which state we are in and they add their own touch to the show on the day."

"Once the visuals were taking shape and we had a clear vision of how the screen content was going to look Darren, Daniel and I sat down and listened to loads of music tracks, fitting the right tracks to the style of the presenters and the tone of the content. We ensured the music was very varied through out and the styles of tracks we chose appealed to the wide tastes of the audience."

CX left the event impressed how smoothly it ran - considering the on-stage performers were company people, it was slick and very engaging. The look, visuals and of course the audio were all flawless."

THE AUGMENTED REALITY was a collaboration between TDC and FWE, including Watchout programming

Event team

Producers

(Fourth Wall Events)

Producer: Olivia Farry
 Production Manager / TD:
 Daniel Jongen
 Show Caller / Executive
 Producer: Darren Waide
 Event Manager:
 Lisa Rissman

Vision (TDC)

Camera Director:
 Olin Winton
 Screen Director / Watchout
 Operator: Tim Jones
 Cam 1: Ben Fry
 Cam 2: Pete Gibbs
 Cam 3: Anthony Pellizzari
 Cam 4 (green screen) / CCU:
 Jack Stewart

Audio (Norwest)

FOH operator: Ian Cooper
 AX system tech: Dane Cook

Lighting (Chameleon):

LX op: Oli Wichmann
 LX system tech: John Sharp

Costume:

Kate Roberts

Stage:

Staging Rentals



▼ Fourth Wall Events partners Grant Pisani, Darren Waide and Jeremy Garling.

▶ Producer, Olivia Farry



The sound that started a revolution is now back in Australia

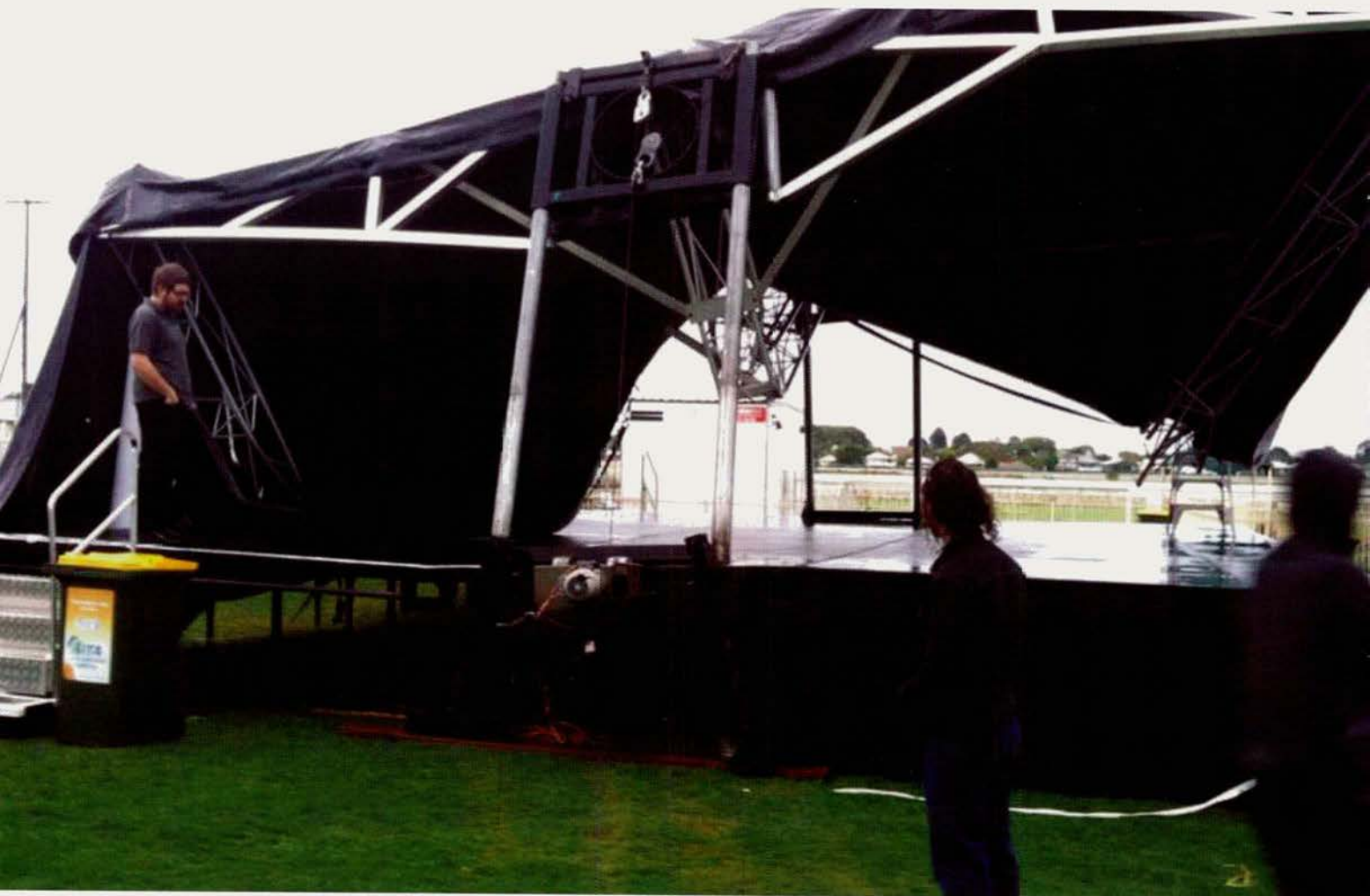
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Outdoor Stage & Event Safety

The Industry Debate we have to have

The graphic and shocking stage collapse at Indiana State Fair where at least 6 people died led the TV news and CX last issue. Days later the Pukkel-pop disaster in Belgium accounted for more deaths. This just a few months after the Ottawa Bluesfest stage collapse where Cheap Trick would have been wiped out had the stage fallen frontward not backwards. And last year the German Love Parade deaths (21) were subject of a lot of shock and reaction. So in the face of this a Sydney based expert panel assembled at CX HQ to talk about the Australian outdoor staging industry. We had a staggering 50,000 views in one week.

The Panel



Michael 'Shackles' Kent, General Manager Avert Risk Management and Assure Event Safety.

Travis Semmens, General Manager, Australian Concert and Entertainment Security.

Foderick van Gelder, Risk Manager, Stage Safety Pty Ltd.

Richard Matheson, Manager, Structural Engineering, VDM Consulting

Iain 'Spud' Barclay, Managing Director, ESS Australia Pty Ltd.



The discussion:

CX: Let's look at the Indiana State Fair. How do we avoid this? Iain,

IAIN: The first thing is to understand the wind coming our way. (Have) a design brief for those wind loads and preventative measures in place.

RICHARD: I'd focus on a set of emergency procedures in place to deal with those situations. When you get a weather warning, that is not the time to start working out who needs to do what and where. You need a plan in place, before you open the gates to the public. You may not always rescue the structures, but you can save the people.

CX: Travers if you were chief of security, what?

TRAVERS: Early notification is the best thing. Systems in place, documents written that people receive. We all need to know what our position is, notify people. It's all about the pre planning.

CX: Shackles, how hard is it to sell a plan to promoters where under certain wind you are going to evacuate a venue?

SHACKLES: It's difficult (to sell a plan to promoters) but an event needs a proper risk management framework and an emergency plan. Discuss (this) with security, risk consultants and insurers. I think it's important that your plans conform with ISO 3100C:2009 – that sets the benchmark.

CX: So what scale of event requires this level of planning? A community event, is it where the ticket price is over \$100, what?

RICHARD: If there's a structure, it should be engineered to Australian standards. We have a responsibility to set the de-rig speeds which limits the loads on the structure. The final bare bones structure with a roof on it, must be in accordance with Australian standards.

IAIN: Shouldn't we all be working to the same (wind) de-rig speed?

RICHARD: Some authorities out there set the de-rig speed for us.

CX: Now about the Pukkelpop festival.

RICHARD: Everyone's gone into the tent (viewing footage) and under those wind speeds (the video is apocalyptic, a summer day becomes an arctic tornado on top of tens of thousands of punters who are all partly the worse for wear, so to speak) the tent should have been closed up.

CX: There's a structural reason for that, isn't there?

RICHARD: That's right, it reduces the pressure.

CX: That's a Hoeker, isn't it (looking at footage of a massive structure full of people, taken inside and it is swinging from left to right in the footage). They are calling for an evacuation – and the whole thing is shaking.

RODERICK: Which is strange – the Hoeker has all its sidewalls down, and is probably the most secure structure at that time. The other tents at the time had all their side walls open.

SHACKLES: It's frightening. You can see everyone is trying to get cover and protec-



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* Metaphorically speaking. No actual dying required.

FIGHTING FOR AV FREEDOM!

tion and they're going into these structures. (Caption on the news footage, quoting the announcer inside the Hoeker. 'Oh neen, het is niet te doen' which loosely translates as 'It's horrible in here'.

CX: At one point, there's a guy onstage in the band, and he is blown off the stage.

SHACKLES: They're in a crisis there.

TRAVERS: Crowd control, it's very difficult. It's really about early notification. If something needs to be done, it needs to be done before the wind.

CX: There's footage we don't have here of mature trees being blown over.

SHACKLES: It's all about monitoring the weather.

CX: Where do you evacuate a festival to? Across town from Indiana a Symphony evacuated at that same time because there was, I quote, 'A storm with lightning in it, within 15 miles'. They pulled the evacuation plan (for 7,000 people) which was, everyone go to your cars. With 60,000 people (at Pukkel-pop), what do you do?

RODERICK: Say a concert in Centennial park with 20,000 kids, there is no safe undercover area. It's all well and good to get a warning but if you don't get the warning it's too late.

CX: OK, lets look at (Indiana) the Thomas Engineering truss stage (that collapsed) and the specifications on their website. It was an accident that should have been an insurance claim. The other extreme at Pukkelop, it is a complete catastrophe, people are inside a tent that collapsed. Where's the threshold – if you have a Carols by Candlelight gig with 5,000 people run by local council. Does a council need an OH&S person on the ground the whole time with ultimate authority? Where's the command chain with (outdoor) events?

RODERICK: Events (outdoor) should have an emergency control organization, an ECO, as you would in any other business. Your chief warden is ultimately responsible for deciding which action to take. That position should overrule anyone else, promoter, anyone with other than a safety position.

CX: It starts with the promoter?

SHACKLES: They have to have an emergency



SHACKLES:

They have to have an emergency plan that complies with standards and is communicated with all the stakeholders. Larger events you have police, fire and emergency services involved in a planning committee.



RICHARD:

There has been an engineering assessment done on that failure – they say the stage performed to its design and a freak gust wind caused it to fail. It fell backwards.

plan that complies with standards and is communicated with all the stakeholders. Larger events you have police, fire and emergency services involved in a planning committee.

IAIN: Isn't it important to recognize that a promoter can't discharge that responsibility? At the end of the day the promoter is responsible for the site.

RODERICK: It's not a discharge of responsibility – at the event of the day, you're the controller of premises. You are showing you care about who's coming to your event.

CX: Looking at the Ottawa Blues Festival, this is obviously a straight up structural failure.

RICHARD: There has been an engineering assessment done on that failure – they say the stage performed to its design and a freak gust wind caused it to fail. It fell backwards.

RODERICK: A Quebec based staging company, this is the third time one of their stages has collapsed.

CX: Stage engineering – the wind exceeded the capabilities? By how much?

RICHARD: 130 kph, not a constant wind speed, but less than a hurricane. So it's too late – engineering is the first thing. A standard wind design category across the industry needs to be in place. Then the emergency guys kick in.

CX: So is there any agreement what the minimum wind threshold should be for a stage?

RICHARD: 41 metres a second which is the Australian standard, 154 kph.

CX: That's more than knocked down Cheap Trick (Ottawa).

RICHARD: Yes (and) we've implemented (with ESG) these procedures to bring down the speed, to remove the ability of the structure to tip over. The raw bones of the structure with a roof on, will withstand 41 metres a second.

IAIN: We work to that. We have a derig speed of 90kph, the production will lower PA, lights and video and drop the skirms and backdrops.

CX: How across these issues are the promoters?

IAIN: We work with major events, they are across this.

CX: How about disconnection of power from a stage? There are reports from Indiana it took 15 minutes for this to happen (after the collapse).

SHACKLES: In your planning, it has to happen. You have a site electrician, the structures are earthed, they know what to do. If that isn't identified in the planning, you have problems.

CX: What if we power down, drop all the gear, now we've lost communication with the crowd...

TRAVERS: We have loud hailer.

IAIN: Then it's too late, the plan (must be) before the wind gets there.

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RODERICK: It's important to have the power shutdown in your plan – shut the power to the steel stage, but not the area lighting. Shut the generator – you can cause more harm than it fixes. With noisy events, I suggest people use the video screens to put up emergency messages. Have a Powerpoint emergency warning – you have warning, put it on the screen. Don't stop the band, don't cause un-ease, put up a weather warning.



IAIN:

Then it's too late, the plan (must be) before the wind gets there.

CX: Now the Love Parade in Germany (in 2010), which was more of a crowd management situation. 21 people were trampled to death.

TRAVERS: You have to be proactive. Identify key areas, implement before it happens.

CX: I was caught in a crowd crush last Easter on Good Friday at the (Sydney) Easter show. I reported it to the organizers. People with prams, complete jam, one security guy. That's one step from this, isn't it?

RODERICK: There is no bureau of crowd warnings. Understand crowd dynamics and early in the game you can pick up where there may be a problem. Early warning system.

RICHARD: Assess the number of people at an event....

TRAVERS: We have control measures, choke points. Put things in place.

RODERICK: Love Parade, you can see things are getting out of control before the tragedy. Why nothing happened? It's speculation.



RODERICK:

There is no bureau of crowd warnings. Understand crowd dynamics and early in the game you can pick up where there may be a problem. Early warning system.

CX: Summing up: Who's ultimately responsible for the safety of a crowd?

TRAVERS: The controller of premises, then each department has a responsibility, they have a duty of care.

CX: What about the stage structure? A promoter could say they've abrogated responsibility by hiring ACME staging co and they look after everything. Is there an expectation promoters can flip the responsibility down to the staging company?

SHACKLES: Gets back to the planning documentation, not just put together to satisfy venues but real things used on the job....

CX: But there's no barrier to entry. (A scenario is that) I could set up CX Stages Inc tomorrow, buy a Chinese copy of a Thomas stage, and compete against ESS, right?



TRAVERS:

It comes down to the land owner, the promoter gets the shonky stage, runs it with budget constraints – if the land owner lets it happen....

IAIN: Correct. And be cheaper. You wouldn't be working to the same standards.

CX: I'd be working to the template PDF document the Chinese supply me, signed by an engineer somewhere.

RICHARD: Well it wouldn't be me!

RODERICK: You probably wouldn't get it signed off.

CX: We'd find one. And the promoters would find us, because we'd be cheap and reassuring. Shackles won't be there, Roderick won't be there, and I'm not using you guys (ACES) for security because I'll get the local mob who look after the footy match.

TRAVERS: It comes down to the land owner, the promoter gets the shonky stage, runs it with budget constraints – if the land owner lets it happen....

CX: The venue contract says I have to provide a risk plan. I provide one. I hire CX Staging Inc – shonky – way cheaper than ESS. The guy at the council has hired me the grounds for ten grand, he's got my risk plan. He's covered, right?

SHACKLES: So he researches the structure, and it doesn't comply with Australian standards, he can't use it.

CX: So when it all blows over, town people get killed, the guy on council who hired me the venue is in trouble.

SHACKLES: It boils down to risk appetite. Maybe some people accept these things.

CX: If we had an Indiana accident where the stage falls over and smashes people in a major city. What would happen to our industry? What are the likely consequences – tomorrow?

TRAVERS: The roll on effects would be huge. Patrons need trust in the industry. If it came out the stage was dodgy and the ECO wasn't implemented, no legislation followed, we'd be in a world of pain.

RODERICK: At the moment we are well ahead of the rest of the world. Indiana there was no requirement to certify the stage. Here it's common practice with bigger events. The problem here – smaller event. Lesser quality, cheap Chinese stages, lack of ability to manage emergencies. They don't think about looking at the weather reports. Smaller local events will be the biggest risk.

IAIN: The industry needs to work together at the planning stage, I don't believe we do that effectively at the moment. Get a construction certificate once the stage is built, but how we design it and the methodology we use in the build phase and the show phase is important. There needs to be a consistent set of standards. The industry is very lucky we haven't had an accident like we've seen on the news (overseas).

CX: Which peak industry body represents our industry?

SHACKLES: We've had that debate time and time again. The core issue is there isn't an association or body, made up of production companies and promoters, and there's no code or real input, no minimum standards.

CX: So we don't have a voice.

SHACKLES: That's right, we don't.

RODERICK: It's probably well time for Australia to look at an organization like PLASA in a broader form than safety, they look after a whole range of things.

CX: It's a debate we need to have.

References

Event Risk & Safety Management (ISO 31000:2009 - Risk Management, AS 4801:2001, OH&S Management systems, AS 4804: 2001 - General OH&S guidelines)

Emergency Plan (ISO 31000:2009 and AS 3745:2010 Planning for Emergencies in Facilities)

Design and engineering of structures and stages (AS/NZS 1170.2:2002 - Wind and any applicable construction codes)

AS1170.0 Structural Design Actions: General Principles

AS1170.1 Structural Design Action: Permanent Imposed and other actions

AS 4100 Steel Structures

AS 1664 Aluminium Structures

Karl G. Ruling, the Technical Standards Manager at PLASA / ESTA says that their Code, ANSI E1.21 is being revised to cover the design, manufacture, and use of all the portable structures used to support scenery, lighting, and sound equipment, and to cover the stages in the production of outdoor entertainment events, excluding structures for the public such as audience bleachers and food stands. Go to http://tsp.plasa.org/tsp/documents/public_review_docs.php



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Some major cities have harbors and rivers. Hong Kong set the lightshow vibe with a huge nightly permanent thing, viewable over the bay. Sydney has no-where to view a lightshow using high buildings as platforms. But Brisbane – wow!

From the old Expo Southbank site, you

SANTOS CITY OF LIGHTS added a big new dimension to the Brisbane Festival.

Julius was there.

can stretch out and see the line of the city over the river, which is a brilliant separation distance. So we welcome the Santos City of Lights, lights and laser spectacular – a nightly centerpiece of the Brisbane Festival.

Which is why I'm on the SS Lollipop with Captain Pugwash. It's a glorious spring afternoon, and we are chugging around the Brisbane river.

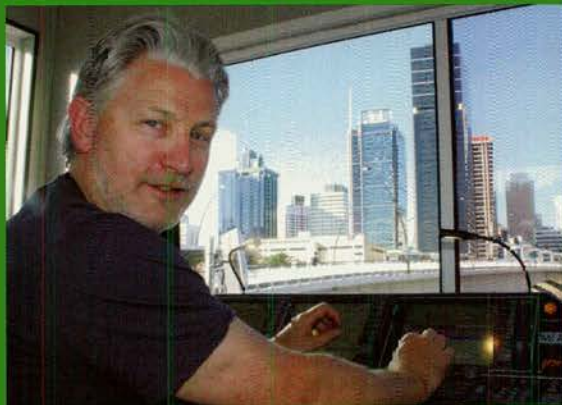
Brisbane Festival

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Paul Rigby, PRG



Chris Newman at the GrandMA

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Pugwash, aka gaffa Clive Rippon, is in charge of making sure four 200kva generators on barges spaced down the river actually work each night.

"They wanted someone with generator experience and a boat license", he explains, as he unties the half cabin cruiser at the Government dock at Southbank. He hits the radio: 'Attention all stations, boat one is on air'. This alerts Chris Newman, lighting operator, and anyone else, that he is available.

Boats and buildings

Jono Perry has the enviable but difficult job of ringleader – he is the Brisbane Festival Technical Director. It's a full time gig, charged with delivering anything and everything with gig like logistics for the festival.

This year there is a lot of height – five major buildings on the riverfront, and turf – stages, events, a bridge and departments. He is fixated on safety.

"We already called in an independent engineer for the Opening Day", he told me



Festival Technical Director Jono Perry with huge lamp.

See on the top of the building? Way over there, in the distance?

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before I could ask. The Riverfire opener had a stage that looked IDENTICAL to the collapsed James Thomas unit at Indiana. "It was a Eurostage design, supplied by Talkin' Audio. But we were sure it was OK", he says.

Some background: Brisbane Festival is an amalgam of what was the River Festival, and formerly a Brisbane Festival that ran each other year. Now it is one annual event.

This time, the inaugural laser and light show on the river was a very big deal.

Rooftops

Because the Festival is a city and state event, doors open. So the building owners were generally receptive to the idea of having searchlights on their roofs. The practical aspects involved first, designing a temporary scaffold tower for the six 170kg, 7000 watt Space Cannon movers, and then having three phase power outlets installed up there.

Creative director Tony Assness, Lighting Designer John Rayment and Glenn Turner from Oracle Attractions collaborated and a specification eventuated that saw Oracle provide lasers, and PRG deliver lights and crew. Northwest had the relatively simple job of running audio replay speakers down almost a kilometre of river shoreline.

Perry had the paperwork to deal with. "There's a process for every outdoor event, and Council needs the work done. I liaise with Queensland Fire and Rescue, and then get the engineering sorted".

The five buildings were one aspect. Then there were the barges.

BRISBANE FESTIVAL have excellent OH&S systems. CX nosed around looking for faults. we couldn't find any!

Fast tides

Rippon is feathering the throttle on the runabout against the brown river, which is running hard out to the bay. "We have more than 2 metres of tide here", he says, "and the spikes need to be greased". The four barges are pinned fore and aft with 20 metre piles, or 'spikes', dropped four metres into the river bed.

"We're pulling 13 metres now, on this low tide. But look at this spike. The barge will be right up here on high tide", he points at a spot over his head. Up and down they go, twice a day. "Anchors would not work, they would move around too much".

He waves to a river ferry. "We had to work with these guys in programming nights. I was out here all night then". A single burner stove points to the onboard catering system. Two fishing rods are stowed down the side of the seat.

Rippon has the best gig in the industry when the air is still and the early Spring days are in the mid twenties. This is quite unlike a Brisbane summer, where it usually is a dripping 28 degrees at midnight, in between storms.



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Victoria Bridge, with one of 12 truss arches. The translucent Cor-flute had an iLed par inside as a nice extra touch

Brisbane Festival

Tower time

The PRG crew emerge from their hotel at 3pm, and head down to the carpark to retrieve their black Mopeds. "We need to get around town, so Paul Rigby got us these", they say a little quickly. Possibly embarrassed by the blatting wimpy noise these things make.

But off they tootle, all in de rigor black, wearing their harnesses and two way radios. Immediately identifiable world wide as a lighting crew. But on Mopeds, not Harleys. "We go two-up all the buildings for safety", says Andy Cowen. His quiet giant European cohort Hendrik Andrees just nods.

We hit the security entrance of Santos Tower, the guards nod at this daily visita-

tion. In the goods lift, our ears pop at level 30. One flight of stairs leads from the lift exit to the roof – a flight up which four strong crew carried six Space Cannons up during the setup weeks.

On the roof is the window cleaning frame, a heavy galvanized steel i-beam rail system. The cooling towers poke through the floor, and the sky is open and blue. On the river side is a scaffold, rigged and checked and checked again. Everything is super strapped down.

The crew power up the Cannons, and switch them to show mode. They call Newman, over the river in the control tower at his Grand MA desk. The tower is a site shed, plonked on an abutment between Victoria bridge and the viewing site.

They check pan and tilt. "When we were

programming, some of the Cannons panned down too far and burned a hole through the yoke on the next unit. Didn't think that was a good idea", says Newman later.

Across several towers, the second crew are firing up more Cannons.

Bridge

Victoria Bridge is one of those classic city bridges that a lot of people walk over. So the dozen 5 kw Big Lite searchlights on there needed to be safe and out of the way. A truss arch was devised, after cantilevering was discarded. Each vertical truss section is closed off with translucent Corflex, and on the outside one iLed Par is in each, set for a nice colour as part of the theme.

Speaking of which, Jono did the rounds of the various public buildings with external lighting, and convinced the owners to reprogram the colours so that Festival Green would be in sympathy with the show. QPAC and the Treasury Casino thus were lit to combine with the show.

I was impressed at the neat power runs along the bridge, again dressed off in Cor-flute and checked by a crew member each day lest someone has messed with it. "We have security on the bridge the whole Festival", says Jono. Sure enough, a bored guard nods to me as I walk over.

Barges

As the Festival now includes the River-fire event on opening night, considerable fireworks logistics exist. Getting barges was a challenge, as the port doesn't have a vast number available for general hire.

Marine Diesel Traders stepped up and built a new fleet, and four of these are on the river for the lightshow. Oracle lasers figured out the water spray system, which includes a couple of V12 dust suppression units, most usually employed on mine sites.

There are pumps everywhere, powered and remote controlled by the Oracle technician in the control room. There's so much water in the air that Pugwash, wearing his generator controller hat, had to devise temporary shields in collaboration with the guys at Generator Rentals, to keep water out of them, "They are not blimped (silenced) as a result now", he tells me. "But it doesn't matter out here".

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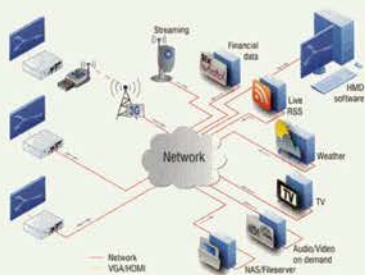
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Setup

The PRG crew are away from home for several months. The setup started in a rented factory space, and then progressed building at a time.

Programming was done on WYSIWYG with lighting director John Rayment and programmer Richard Clarke from J LX Pro-

ductions. Then when the setup was ready, the show was programmed overnight.

"We had to work with Brisbane Ferries and also CASA (Civil Aviation Safety Authority), said Jono. "I sent them a visualization, and we started the programming at 11pm, when the air traffic was at a minimum. At the end of the day, they had to approve the show, since they worry about lasers".

The Radio DMX is Interactive Technol-

gies RD-2400 system with 11 Transceivers, RF Frequency 2.4 GHz to 2.48 GHz. There were 18 dB direct onal aerials transmitting from the control position to each building, QPAC and to the Syncro's under the freeway. After some initial issues lining up the aerials the system settled in really well and has not skipped a beat. The Bridge DMX is cable from control.

Showtime

After the 4pm startup and testing, all the Space Cannons are left on, lamped up, pointing straight up to minimize the heat buildup. "The Big Lights (on Victoria Bridge) get turned on later, they don't like sitting still for hours", says Chris.

As the sun sets, people gather along the foreshore. It's directly in front of QPAC, which itself has a stream of people arriving. Just before showtime two Police on Jet Skis arrive to close the river. Then at 7pm, the 11 minute show starts up, and the crowd ooh's and ah's.

Another day, another Festival event. After a second show, the crew head back up their buildings to put the lights to bed.

Credits

Creative Director- Tony Assness

Lighting Designer- John Rayment
Laser and Water Design- Glenn Turner, Oracle Attractions
Laser Programmer- Tara Cox, Oracle Attractions
Lighting Programmer- Richard Clarke, J LX Productions

Brisbane Festival Team

Technical Director- Jono Perry
Technical Manager- Jason Waide
Operations Manager- Lew Bromley
Technical Administrator- Peta Winters
Project Coordinator- James Merryman
Assistant LD- Daniel Anderson

PRG Crew

Project Managers- Paul Rigby and Chris Newman
Crew Chief- Don McGregor
Data Network Technician- Gary Senior
Searchlight Technicians- Carsten Will, Andy Cowen, Hendrick Andrees, Kris Heinceslater

Oracle Crew

Production Manager- Mark Stevenson
Technician/Operator- Barney Fitzhardinge
Technicians- Paul Morrison, Chris Walsh, Damon Hartley

Crew

Assistant LD- Daniel Anderson
Lighting Operator- Shannon Barclay, J LX Productions
Soundtrack Engineer- Drew Bisset
Norwest Productions- Cameron Walker, Leon Darcy
Boat Captain- Clive "Capt Pugwash" Rippon, Head Rigger- Emmanuel Economidis, All Access Crewing
Generator Hire Service- Peter Walden, Stuart McLaughlin



Tent time

The Spiegeltent (see item at right) was subject to an epic amount of documentation by Jono Perry before being built. Interesting factoids from the big book of paperwork CX perused:

- The tent is evacuated in Germany if winds reach 72kph
- but in France 100kph.
- The Brisbane Festival engineer specifies evacuation at 100kph
- The tent takes 20 hours to set up, with a crew of 6 plus 2 members of the Klessnes family from Belgium.
- This particular tent (there are other exact copies) tours Europe, and comes to Australia in two shipping containers.
- 450 square metres, seating for 400 pax.

A lot of Festival

ELEMENTS BECOME AN EVENT

Brisbane Festival Artistic Director Noel Staunton has a technical background, having worked with Opera Australia. So the Liquid Interactive Light Scope exhibit was wowing people in its white tent-tunnel at Southbank, a technically challenging display that other Festivals might have balked at.

The Liquid Interactive Light Scope is a digital art installation in a 30-meter long tunnel, featuring over 400 LED Screens that completely cover both sidewalls of the tunnel. Motion sensors will react to visitors' movements creating a never-ending array of interactive possibilities. As people pass through the seemly, dark tunnel day and night they see graphics creating seven themes inspired by a variety of large scale visual references.

Technical Direction Company provided the LED system, made up of their new ONE-LED 6mm pitch screens.

Further down the river, Tony Assness designed the Golden Casket Light Sphere, a massive mirrorball inspired installation that drew people at night.

King Georges Square was home to a Spiegeltent, one of only a few in the world and truly a beautiful structure. CX spent a strange hour in there, watching a late show of The Dream Menagerie, comprising a bunch of misfits wandering about (like in our office, only in costumes) and ending with a Donkey. But no tub of lard.

Other venues included the Amphitheatre outside the Powerhouse, a steeply angled structure that required a lot of engineering, along with four stages of approvals. It needed a corridor under the seating wide and high enough for fire engine access to the Powerhouse!

Paul Rigby

Santos City of Lights marks the end of an era for PRG/Bytcraft as it is the last project run by its Sydney Hire Manager and Project Manager, Paul Rigby.

An industry veteran of large scale events Paul is joining Foundation Entertainment, managers of Sydney's Capitol and Lyric Theatres, in the role of Deputy GM. It's an appropriate bookend for Paul's time with Bytcraft/ PRG as he first cut his teeth in the entertainment industry at QPAC 25 years ago and since then has run many large projects for Bytcraft and now PRG.

Paul comments: "Doing my last gig for PRG in Brisbane with our team and the team from the Brisbane Festival has been fantastic. Working with John Rayment again 11 years after the Olympics, has been a real highlight."

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- No Compressor (used in analogue systems): higher sound quality
- On-board DSP per channel (Compressor, EQ, Limiter)
- Quick setup via infrared data link to the transmitter
- Graphical spectrum analyser helps find clear channels
- Remote monitoring and control via PC

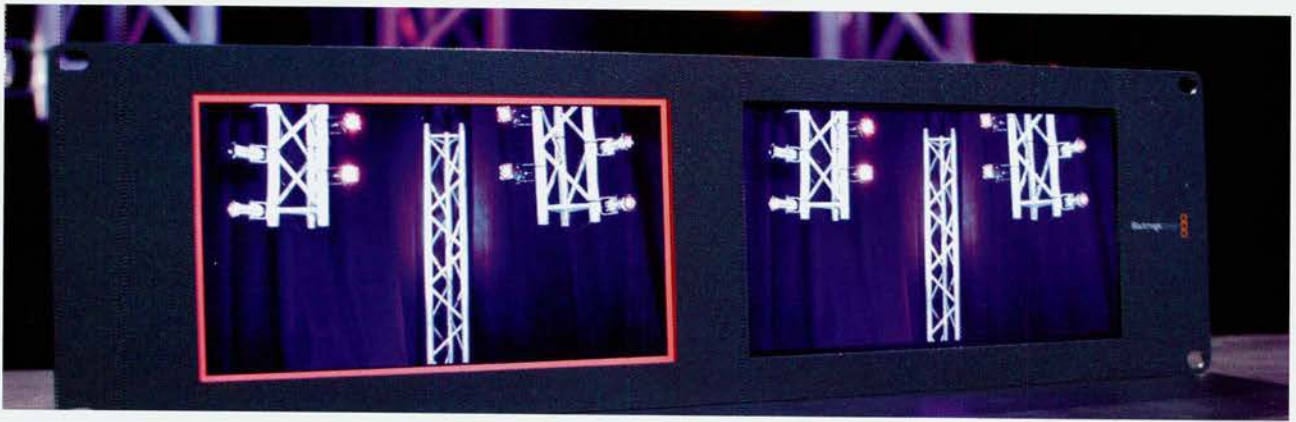


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By Jimmy Den-Ouden



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Blackmagic Design SmartView Duo

More HD for your money



has previously made mention of the fact that HD is becoming more affordable. Blackmagic Design are among

the manufacturers making this so. Recently introduced, their SmartView range of HD LCD displays includes a 17" model, and the one we tested – the dual 8" SmartView Duo.

The SmartView Duo is a very cool looking piece of kit. It's barely 40mm deep including the connectors and weighs... well, not much. This means it's a great real-estate saver in applications like small OB trucks and flyaway kits. The unit runs from a 12v power supply, and Blackmagic Design thoughtfully includes an international plug-pack with a range of clip on input connectors. The casing is made of metal, which is powder coated a brownish-grey colour. I'd prefer a more neutral grey, but for the price I'm really not arguing the point.

The monitors support all the relevant HD formats (and 3G), and display these with beautiful clarity. Picture quality is a huge win, in our opinion rivaling that of units far more expensive. The blue bias tinge, which is apparent in so many monitors, is pleasingly absent from the SmartView Duo. Viewed from significantly below the screen (>45 degrees), some reduction of image quality is noticeable, however the side to side off axis viewing angle is quite wide. If you need a

significant downward angle, flip the monitor upside down and the picture will automatically rotate. The really weird bit is that the screen itself is only actually 800x480 pixels, and yet it looks phenomenal.

Input to the unit is standard BNC, which will automatically detect SD, HD, or 3G inputs. Active loop throughs mean you can bring signals into the screen, and then feed them on to another device. This saves the need for additional expenditure on SDI distribution amps. Other connectors on the back include twin Ethernet ports (there's a mini switch built into the unit), as well as a DB-9 connector for tally inputs.

Each screen in the SmartView Duo supports Red, Green, and even Blue tally indication. Rather than opt for the single LED below the monitor, Blackmagic Design have gone for the much sexier option of showing the tally as a border which over-

lays the image on-screen. It looks great and is much easier to follow when you have multiple monitors stacked vertically.

There are no controls on the SmartView Duo at all. It powers up as soon as you plug it in, and adjustments to brightness, contrast and saturation are all made via a computer running the SmartView Utility. Simply link all your monitors together via short Cat5 cables, and then plug one end into a network switch. This is really cool, since it allows you to easily adjust all your monitors from a central location. You can name the units, and when you choose which one to adjust a white border is displayed on the monitor so you have a visual confirmation of what you're doing. Response is instant.

The only real problem we had with the unit was the one of backward compatibility. We fed in a 576i/25p SD signal and the monitor automatically applied some pillar boxing to it. Annoying, but since most folk will be buying HD monitors to display HD signals it's largely inconsequential. A firmware update would potentially resolve this issue, and the in-built USB port exists for just this purpose.

For the money, we think the SmartView Duo is an excellent little piece of kit. It's lightweight, and has the smarts of a unit far beyond its own price tag.

Brand: Blackmagic Design
Model: SmartView Duo
RRP: \$715.00
Product Info:
www.blackmagic-design.com
Distributor Info:
www.blackmagic-design.com

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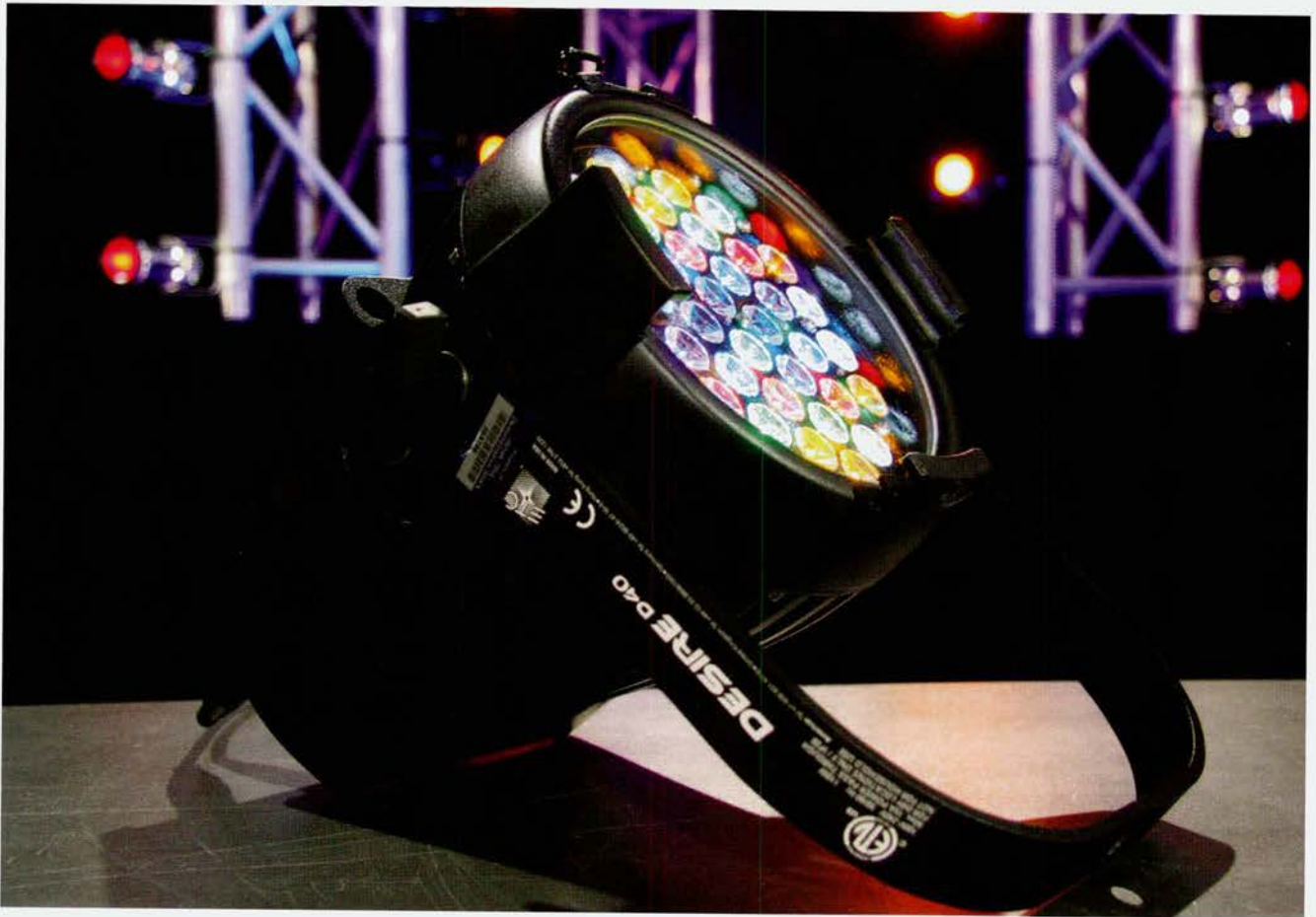
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Source: MI SalesTrak 2011

By Jimmy Den-Ouden



ETC Selador Desire D40

It's the same size and shape as a ParCan, but that's where the similarity ends...



The past several years have seen a plethora of LED fixtures hit the market. Many are capable of movement, and generally speaking we've seen more effect lights rather than specific light sources. Don't get me wrong; many of the LED fixtures currently out there are more than capable of lighting stuff up, but it's not their primary purpose in life.

Purpose built

The Selador Desire range of fixtures is totally designed to light stuff up. It's a true

light source rather than an effect. The D40 range includes 4 models: Vivid and Lustr+ as well as Fire and Ice. All fixtures use 40 Luxeon Rebel 2.5W LED emitters, the basic difference between them being the colour distribution between these modules. Vivid uses the x7 colour mixing system, a legacy from the Selador brand. Fire and Ice use more warm and cool LEDs respectively, while Lustr+ exchanges the 7th colour for a high intensity white LED.

Beam angle on the fixtures is a relatively narrow 17 degrees. The housing is die-cast metal, and much of it is heatsink shaped to assist with cooling. The Desire range

also includes a larger D60 model which is fan cooled, but the D40 relies on convection cooling. Nice in environments where the noise from a farm of cooling fans is likely to be problematic. A hazard of this is the potential for LED "droop", where LEDs running over-temperature can suffer fluctuating output. ETC has this covered, with several different power modes. The "regulated" mode will let you get the most output from the LEDs while ensuring this output remains stable. The housing is available in black, white, silver, and even custom colours. One truly excellent aspect of this fixture is the yoke clamp – it's

nice and secure. The front mount accessory holders will accept the ETC Source4 PAR range of 190mm beam accessories. Each fixture is supplied with a 25 degree round beam lens, but other variations are available including oval beams. So you can even make the beam look like a conventional ParCan.

Control

DMX input and loops are on 5pin XLR, with power in and loop on PowerCon. Control on the Desire D40 is quite advanced. A large LCD with adjacent menu keys is used to select control mode, as well as adjust various operational parameters of the fixture. There's a range of "quick setups" – kind of like macros which automatically adjust all parameters of the fixture. Control modes include RGB, HSI, and even a standalone mode which allows you to control multiple fixtures without a console. There are user editable presets and chases, and when you adjust presets in one fixture these changes made are automatically replicated to all others in the chain. This really makes it useful in situations where quick, hassle free deployment is needed.

Not only will theatrical users like the Desire range, but studio folk are also likely to find it appealing. An adjustable refresh rate means you can avoid the problem of flickering LEDs on camera, while a "plus red" option automatically adds red as you



Brand: ETC
Model: Selador Desire D40
RRP: \$2925.00 inc GST for the D40, \$3345.00 for the IP rated D40XT
Product Info:
www.etcconnect.com
www.layersoflight.com
Distributor Info:
www.jands.com.au

dim the unit, thus replicating the colour temperature of incandescent lamps even when dimmed. The white point of the fixture can be adjusted too, so getting the right colour temperature in the first place is a snap.

So what's the verdict on the Desire range? Comparatively they're not the cheapest fixtures on the market, and all this functionality comes at a physical cost: too – at 6.4kg it's not exactly a lightweight light. This said, there's something beautiful about the way it lights things up. This quality of illumination coupled with the ability to seamlessly integrate with any other luminaire you can think of really does justify both the weight and the price



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By Jimmy Den-Oucen



Roland R-1000



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Play it again, Sam...

Roland's REAC system is a convenient way to push a bunch of channels down one piece of Cat5 cable. Now they've released a REAC multi track recorder. It kind of makes a lot of sense really – replace 48 analogue or AES inputs with a couple of RJ45 connectors and you have a solution which not only weighs less, but also plugs in far more quickly.

Recording happens in 24-bit BWF (broadcast WAV) format at either 44.1 or 48kHz. You can clock it to the REAC ports, a word clock generator or even a colour black video reference signal. Media is a 500 Gb internal caddy mounted drive, which you can also plug a USB lead into and connect to a PC.

The R-1000 doesn't just record either – it can play back multi track and output to a console. This (in principle) lets you do a sound check or rehearsal without actually needing to have the band on stage. Not really a new idea, but traditionally one that required a bit more thought.

The R-1000 provides a solo function for channels. When you don't have anything selected, you get an "attenuatable" sum of all the channels. The solo output is routed both to a front headphone jack with volume control, as well as balanced XLR monitor outputs on the rear. Also on the rear you'll find BNC connectors for sync inputs, MIDI connectors for remote control and 4 Ether-Net ports for REAC.

Routing is quite a complicated affair;

Brand: Roland
Model: R-1000
RRP: Around \$6000 inc GST
Product Info:
www.rolandsystemsgroup.com.au
Distributor Info:
www.rolandsystemsgroup.com.au

with 320 channels worth of ports on the device it's only natural to expect this. Getting the job done is made simpler by the option to auto soft patch based on known configurations. You can store your own routing setups, and the "range" function lets you patch more than one signal at once. That said, the complexity adds a lot of versatility. You can for instance record a combination of signals from 2 digital snake boxes, plus some desk inputs and outputs all at once.

I took the R-1000 out to a gig and did some recordings. My initial REAC config was weird and undocumented, and didn't work. I changed to a supported configuration and it was 100% good. In other words, don't expect a bus driver to bake a cake.

Operation is simple, and touch screen based. Start a new project, arm the tracks, and start recording. You can set the R-1000 so it requires a confirmation button press when you stop – bound to save somebody's

neck at some stage. I didn't try pulling the power plug while it was recording so I can't tell you exactly what happens, but I suspect the results could be unpleasant.

There's a remote control PC application for the R-1000 (and a Mac one too!) – the unit just connects to a laptop via the front USB type B port. The app installed and worked fine first go, and on the basis that it installed drivers on my Mac I'm guessing it may allow you to Solo channels via the computer audio output (I couldn't test this at the time). Metering on the app is great, as is having a keyboard to name tracks.

The other USB port on the front is a type A socket, designed to connect a USB drive directly into the recorder. This allows you to transfer the files straight across to a backup drive without needing to remove the internal drive or fire up a laptop. I used an unpowered pocket USB drive, which proved problematic the R-1000 telling me it was unable to power the drive. A full-size 500Gb drive in a powered enclosure was fine.

The R-1000 is a good addition to the REAC family. After the initial learning curve it's easy to use, and when following the recommended implementations it works just like it should. The optional S-MADI bridge(s) makes it a viable recording and playback solution even for users outside the V-Mixer realm. Price is less than you'd expect to pay for a pair of 24 track analogue I/O units.



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Neumann KH120 Studio Monitors

Best Input. Best Output. Big Claim, is it true?

By Jimmy Den-Ouden



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It might well be. Neumann has some 8 decades of experience in audio, and for this entire time has produced (among other things) transducers in the form of microphones. You'd be hard pressed to find a professional studio devoid of their product. But now they've turned the transducer around the other way, and made it into a speaker.

The marketing blurb says "Best Input. Best Output." – certainly not the most modest of claims, but who needs modesty when you can deliver the goods.

The KH120 is a two way active near-field monitor speaker, but it can also double up as a surround speaker in larger systems. You'll find dual channel class AB amplification inside each box – 50W for the woofer and another 50W for the tweeter. This initially seemed like a strange power balance to me – typically lower frequencies take the lion share of amplifier power. I'll get back to this later. It has something called an MMD waveguide, and a bunch

of configuration options in the form of switches (for the audio options) and DIP switches which let you do other stuff, such as dim the illuminated Neumann logo on the front fascia of the box. There's that modesty again.

The woofer is a 5.25" unit with a composite sandwich cone, and the tweeter is a titanium fabric dome 1" unit. Not huge by any measure, but then bigger isn't always better. The aluminium cabinets are magnetically shielded, and the LF porting is on the front so you can stick them hard against a wall with no adverse effects. At least none that the room compensation switches won't help counter. The waveguide is designed to provide a relatively wide horizontal listening field, while the vertical plane is narrower to reduce reflections off your console, desk, plastic Snoopy dolls, etc...

The room compensation switches provide roll-off and scoop filters for LF and MF, as well as a roll-off or kicker for HF. A really nice touch is the input sensitiv-

ity switch, marked in SPL @ 1m when you feed 0dBu into the box. Range on this is from 94-114db. This is also the first clue as to what happens when you switch the KH120s on. The room compensation filters are more aggressive than I expected – the LF switch cutting 7.5db in the maximum attenuation position. But that's okay – typically if you're employing these switches you're doing so because of an obvious need. In such a situation, subtle adjustments are unlikely to yield the results you need.

Input is via XLR (with earth lift switching), though a KH120D is also detailed in the brochure and this adds a pair of BNC connectors for AES3 input and loop through. The digital model also adds various delay and remote attenuation options, as well as a volume after DAC facility. Cool stuff. The power supply is universal, and auto ranges from 100-240v.

Specified frequency response is 52Hz – 21kHz +/- 3dB, free field. Pretty ambitious for what is fundamentally a small cabinet.

Listening

Wow. It's all true.

The "MMD waveguide" sounds more like a marketing term than a real acoustic one, but whatever the hell it is, it works. Stereo imaging across the boxes is beautiful. The detail is excellent not only in the upper echelons of the frequency range, but right down to the low end.

The frequency response chart for the KH120 is fundamentally linear down to around the 50Hz mark, with no more than about 2dB deviation showing up to 20kHz. Listening to the boxes, this neutrality certainly seems very believable and yet they don't sound boring. This linearity is evident from very low through to high listening levels. How high? I measured 100dB (A weighted, slow response) at 1m without hitting the limiters using Sia's track "Clap your hands".

When the limiters eventually hit, the glowing white logo badges turn an alarming red colour. Obviously with bottom-heavy programme such as dubstep or rap music you'll hit these sooner; remember that the each driver only has 50W behind it. But what elegant Watts they are. The 50+50W class AB amps really do work well, and the KH120s are more than capable of producing enough SPL to hurt. Not that you should need it to.

I spent some serious time listening to tracks from Phil Collins, Angélique Kidjo, Jason Mraz, Simian Mobile Disco, and even some stuff I've recorded. I heard things in all these selections I'd not previously noticed. Reverse gated reverbs are more popular than you might realize! The 30Hz subsonic roll-off is pretty obvious, but if you're dealing with frequencies this low on a regular basis (I can't imagine any reason you'd need to be) then you probably already own a subwoofer. If not, there's a KH810 10" unit on the way, which includes 7.1 bass management processing.

The KH120s are great, and in my room they work superbly well. I do think they'd struggle in a much bigger environment, but Neumann aren't claiming them to be a big room main monitor. So really, they do exactly what it says they do on the box. One little note is to make sure you send them a proper balanced signal – dropping cold to ground on the input led to some strange results for us.

The KH120s are not exactly cheap, but then again for something with Neumann written on it they're not exactly expensive either. The marketing might be a little ostentatious, but ultimately the boxes are worth every cent.

Brand: Neumann
Model: KH120
RRP: \$2498
per pair inc GST.
Product Info:
www.neumann.com
Distributor Info:
www.syntec.com.au



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RoomMatch is a 2 way, full range loudspeaker system designed to array vertically, but with a staggering 15 dispersion models. These use a patented Bose 2" voice coil high frequency transducer known as the EMB 2, mounted on a 'Continuous-Arc Diffraction-Slot (CADS) manifold' which vertically accommodates six drivers into one device.

Either side is a 10" woofer on a three inch voice coil. These need around 500 watts at 8 ohms to run.

The high frequency drivers have an extended midrange ability with the crossover point set low, at 550hz. This removes a crossover point in the middle of the vocal intelligibility area of 1.2kHz, which is common with most other systems. Bose escape this problem by using six EMB2 high devices on two Manifolds, beefing up power handling so that the high end cohort in the RoomMatch is balanced against the dual 10" woofer low end section.

Having two Manifolds (each loaded with three drivers) also allows optional gain

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RESPECTABLE
hiatus of some
years, Bose have
returned to the large
auditorium audio
installation business
with a significant
product offering.**

shading (output reduction) on the lower module of high frequency devices. This is handy if the lowest box is close to audience, for example.

With dual woofers, the system response goes down to 60hz (at minus 3dB), which makes it suitable for full range everything. RoomMatch is thus quite unique in the approach that Bose has taken.

Where wanted, a new subwoofer does the ultra lows. The sub is loaded with dual 15" drivers, and wants 1,000 watts at 4 ohms.

But many installations need music replay and speech, which is the province of the RM cabinet alone.

The RoomMatch full range configurable array has fifteen dispersion patterns, with four different beam widths – 55, 70, 90 and 120 degrees. This makes complete sense for an installation product, where the task for the speaker box is defined for life. You put it in, carefully align it, and walk away. A designer can now specify a super tight throw, 55 x 0.5 degree box – the RM5505, or at the other extreme the RM 12060 with 120 x 60 degrees!



▲ Left to right Rich Bracey, Domenic Castelvetero, Wilson Ticcolau, Andrew Cronin

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All 15 boxes are rated to deliver 121dB SPL with 60Hz to 16kHz (plus or minus 3 dB). For extra low end, the optional subwoofer RMS215 does the business. CX heard the system with and without subs at the launch.

Scale up

Unlike conventional line arrays, Bose call this a progressive directivity array – in effect, the system can have as few as two boxes in one hang, or as many as eight. This depends on the coverage – the widest (short throw) cabinet delivers 120 degrees wide and sixty degrees vertical, and in this case only two cabinets can possibly be hung together.

But where there are 15 top boxes and one subwoofer to chose from, the amplifier option is a sensible single design (available with an Ethernet option), named PowerMatch. This is a class D amp with eight separate 500 watt modules, that can be bridged or combined, delivering 4,000 watts in total.

This seriously reduces the hardware footprint, with an example stadium system of 48 boxes powered by just 12 amplifiers. It also allows many combinations of top boxes and subs to be deployed without tailoring different amplifier models.

Bose ControlSpace Designer software interfaces the amps to the engineer, allowing real time monitoring of amp performance, and remote control.

The final link in this complete audio installation chain is Modeler and Auditor, the complementary Bose proprietary design and listening solution. Modeler will arrange the product into the space, and then Auditor allows the client to hear an approximate version of the actual sound, in a given position in the space. That's hard to beat!

Info

Models

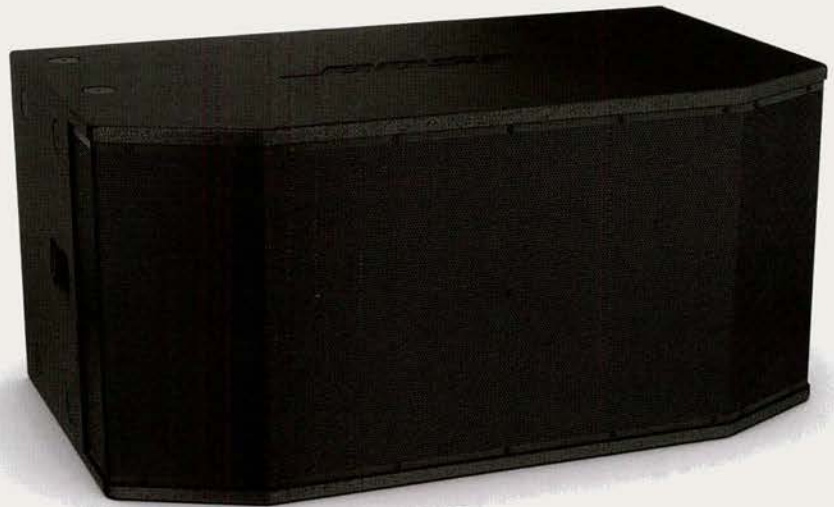
- RM5510 55° H x 10° V
- RM5520 55° H x 20° V
- RM7005 70° H x 05° V
- RM7010 70° H x 10° V
- RM7020 70° H x 20° V
- RM7040 70° H x 40° V
- RM7060 70° H x 60° V
- RM9010 90° H x 10° V
- RM9020 90° H x 20° V
- RM9040 90° H x 40° V
- RM9060 90° H x 60° V
- RM12020 120° H x 20° V
- RM12040 120° H x 40° V
- RM12060 120° H x 60° V

All quoted as:
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 1 m: 121 dB SPL

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 RoomMatch RMS215
 Frequency Range (-10 dB)
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▲ Six full range boxes in front of two subs



▲ RMS215 subwoofer



▲ PM8500 amp, 8 x 500w

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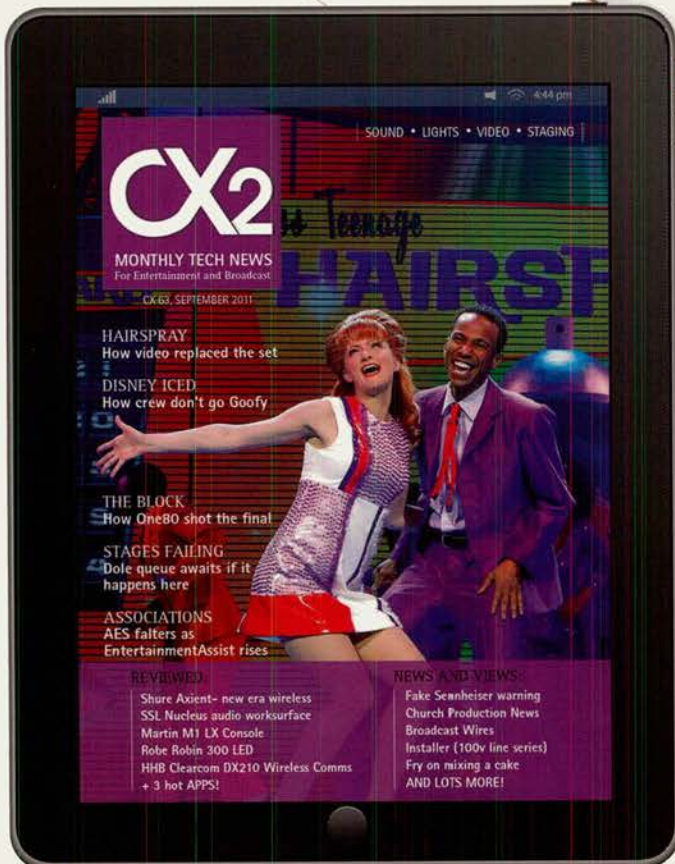
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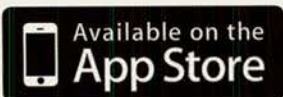
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The Loudness War

DIFFERENCES IN LEVEL between TV shows, commercials and even TV networks is one thing. But there's a lot more at play here – and it affects the way we listen to music. CX-TV recently ran a technical special on this topic, hosted by John Maizels. He spoke with Filip Saelen from Amber Technology, and Network 10 Audio Director, Tony Koveos.

JOHN: In the past we've relied on five devices to help us set loudness. Panel meters, a calibrated measuring stick, one or more pairs of trusted ears (whoever's in charge), and who or whatever controls the off switch! The real trick is; do we understand what the traditional tools tell us, how do we know when we get it right, and are we able to match our customer's expectation? So what problem are we trying to solve?

TONY: The matching of programs. Between stations, we want levels to be the same - program content and commercials. I think in the analog TV days it was a little easier to manage, but now we're challenged to present with today's technology.

JOHN: Filip, you come from a manufacturing background. What have you seen as a change in how we approach loudness?

FILIP: It's a subjective experience, and varies from person to person. We've relied on measurement tools that don't take into account how loudness is perceived by a human being. More like it's based on a peak reading, which is a momentary level, but doesn't tell you how loud something is perceived over time by a human. We're trying to balance level using those tools without direct reference to how loudness is perceived

by the listener.

JOHN: Different tools, different jurisdictions. Filip, you come from a European background where it is largely peak meter based, and Tony in Australia more VU based. In both cases an experienced operator learns to match to the ear.

TONY: Once upon a time everyone who's gone through the broadcast chain has learned to balance to a standard, let's say a voice over – I set my level and I know where the VU meter should be peaking. The tape operators, location sound recorders, camera operators – everyone used to know how to do that. In today's world a lot of the media is digital and can literally be clicked and dragged across, so a lot of those skills have gone. If the track is not captured right in the first instance, at creation or where it's first ingested at the station, you could be in a

JOHN
In Europe the PPM was there to help you not overload a transmitter.

FILIP
When we switched to digital there was a misconception that levels were no longer as important as they were when using analog.

world of pain because it can go through the whole plant at the wrong level. This is the thing to address.

JOHN: It could go through the plant at a series of wrong levels.

TONY: And get to the pre-transmission stage wrong.

FILIP: When we switched to digital there was a misconception that levels were no longer as important as they were when using analog. On the contrary, they are highly critical when we get it wrong – that applies to over-modulating or getting something into data reduction CODECS, (there's) a lot of pitfalls.

JOHN: In Europe the PPM was there to help you not overload a transmitter. In the digital world it's how far can we push before we run out of bits. But neither of those tells us



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how loud the sound is, or whether it sounds pleasant or musical enough.

FILIP: To an extent it might have shifted the focus to getting things right as to getting overall loudness right.

JOHN: The challenge for the customer, is listening to the program, then the commercials come on – they're too loud. Can we debunk the myth? Who is trying to make the program loud, and who is trying to make things not loud?

TONY: There's perceived loudness. Two parts of material can look very similar on a traditional VU meter, but our ear tells us one is perceived louder. Take a drama for example. Dialogue is slower (with) a lot of gaps between dialogue and a low atmosphere. (There's) a certain air about the presentation. Then we go to the commercial, there to sell whatever, 60 words in 30 seconds, no gaps, slipping syllables, a music track that almost competes, and the voiceover track. I can make both those programs peak at 0 VU. But perceived loudness is the commercial is louder. The debate is how do we deal with it, which is where the new meters come in.

FILIP: The problem's been ignored a long time. About ten years ago the International Telecommunications Union started to do some research. Various bodies, manufacturers, broadcasters have been involved. Using human test subjects, in a test scenario people were given different programs.

TONY: This was done around the world, we have samples from all different cultures, as to what they think was loud enough.

FILIP: So based on research, a working standard called ITU 1770 has evolved that takes human hearing into account. It's as close as we can get to consensus. Based on this, a model has been created with an algorithm to measure loudness.

FILIP
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louder.

JOHN: How widely has it been taken up?

FILIP: In the USA it's used today by all major broadcasters; it's a legislated requirement to balance commercials and content on TV. Based out of the problem of customer complaints the commercials were too loud.

JOHN: What is common between the ITU 1770 standard and the EBU R128 standard?

FILIP: ITU 1770 is the basis for the ATSC A/85 Standard, used in North America, the EBU R128 standard, and also the OP 59 Standard which is for Australian TV. In principle, everyone is using the same measurement. It's a work in progress – even over the last couple of months there've been adjustments made. These have gone into ITU 1770 which is now ITU 1770-2.

JOHN: The fact it's developmental is important – in the US the CALM legislation has been put into force so the broadcasters must comply; in Australia we're working to self regulation, which allows us to keep developing rather than be told what to do. What is it that we're doing differently now we're focused on protecting consumers from bad loudness decisions? Tony: what would you be doing in production?

TONY: First what we've done is implement these new meters so we can measure what we're doing. In our control rooms we've found what we were doing is correct. In one control room we have VU meters for no reason other than that they are a reference everyone understands. On the console, a reference that legacy operators can refer to. Underneath that we've got an RTW meter, high resolution peak meter. That looks at the ITU 1770 measurement, instantaneous peak loudness. Then we have a Linear Acoustics LQ 1000 which is a sophisticated loudness meter to look at a 40 millisecond, 30 millisecond or a 3 minute period. While the broadcast we can look at a line across the bottom that shows the average loudness over a program. Minus 24 L KSF – that's what we're getting if the peak meters hit zero. Between the three meters everything is in specification.

JOHN: So the tools correlate, and prove what you were doing intuitively.

TONY: The studio predominantly does dialogue, not bottom end. In the mid frequencies we are well within the spec.

JOHN: The units of LUFS – loudness units at full scale, and LKFS: Loudness units at K scale. Loudness Unit is like dB: one unit up, one down. It describes the difference in loudness. What can we say about LLFS?

FILIP: Indicates the value of LU in reference to full scale. The weighted measurement via the K scale, this came out of the ITU research in reference to full scale.

JOHN: The accepted values are 23 or 24 LU below full scale?

FILIP: The reason why there is a difference – in Europe R128 a newer version of the ITU 1770 standard which is using a relative gate which doesn't take into account silences or very low material in the measurement which is where you get the 1dB difference.

JOHN: 1dB is the smallest amount the human ear can detect. You can hear a 1dB switch on tone, but you'd never hear a 1dB difference on program. What does the 1dB mean for measurement and what tools do we have?

FILIP: Over a long period of time they measured average output of TV networks around the world, and they came up with an average of minus 20. So minus 23, 24 gives some headroom. (There's an ongoing debate about the exact number. Everyone seems to agree finally that's where we're going.

JOHN: What tools do we have?

FILIP: The standard is open – it is not proprietary. Manufacturers can use the same standard to implement this. There's more and more products coming out – computer plug ins, standard meter, on screen. Various derivatives of the standard around the world.

JOHN: How do you know when a device

is correct?

FILIP: Most standards bodies document this, EBU have a 'P Loud' label that manufacturers can use.

JOHN: Tony, when you have a new operator, how do you train that person to understand what the station wants?

TONY: Going back a generation, we used to use true peak meters – like Techtron x 764 – I would set the meter up with the peak indicator at minus 9 dBFS and our nominal at minus 20. That was where we wanted to see our range. A new operator would come into the plant, you'd say there's your target. Your peaks need to fall within this range, and your program should translate well throughout the plant. Next generation, with loudness meters what we find, what we were doing with true peak, it was electrical level not loudness perception, but loudness meters are pretty well on par. If your tonal balance low, medium and high is fairly even and doesn't skew too much, you end up with a similar result with a loudness meter. Operators, the easiest way is to give them a target. We try to do off air tests, see how the show is matched up to the commercials.

FILIP: The way new meters accommodate that, they have the traditional way of measuring and the loudness meter, rather than having five meters all on the one.

TONY: As a live mixing engineer, you're trying to see who's coming on, what mic you're opening and closing, and all you want to do is see something in the periphery to know you're there. Most of the balancing is done with the ear, after all.

FILIP: One of the best practices is to calibrate the monitoring environment, so you know it's set, your ears will do the job.

TONY: Yes, from the mixer's perspective. (But) for a non audio person, ingesting programs, they don't have the experience. Once your monitors are not fresh out of the box, meaning they are worn in, you have a measurement of zero dB on your volume pot, calibrated to whatever SPL

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FILIP: In the film world, 85dBa...

TONY: For us in broadcast, dialogue based we work fairly low because people will listen at a low level. But a variety or game show, we will mix at a higher level. With news type programming it's a known commodity, a tight dynamic range and you know the studio space. You're not going to be surprised. A game show or a sports event, something might happen – water damage, something falling over, wind, you want to tend to that before it becomes a problem.

JOHN: Most CX readers are used to live production. How does this loudness discussion apply to events?

FILIP: At big festivals there is a loudness management policy in place. I was at WOMADelaide; the plan is to prevent complaints and to avoid spill from stages. Loudness management takes into account using directional subs, omni-sub as well, it's getting complex. So if a complaint is made, they log the loudness over time and can say sorry it was a car going past, it wasn't us. Audio being too loud is a concern in live or on TV.

TONY: In a concert, the engineer mixes for the live space. In TV you mix for who-knows-what is at the other end. In radio, you mix for listeners with car radios. TV: people may be watching 4:3 analog in hospital on a little speaker, up to almost THX certified speakers in their home! That's a wide range of customers to please.

JOHN: Is louder always better?

FILIP: I think the loudness war, 'my music has to sound as loud as possible', has really driven listening fatigue to the max. Hopefully looking at loudness in a different way will allow more dynamic material to come to the forefront.

JOHN: Many people have concluded that to control loudness the easiest way is to whack the signal through a heavy compressor.

Seems we are now in an era with the plug in compressor where we just set and forget. What advice should we be giving to people?

FILIP: Compression in my opinion should be used as a creative tool. Hopefully the new way to measure loudness will promote more dynamic mixes and get people a better listening experience.

TONY: I agree with the compression thing, a lot of people hijacked compression thinking it was a loudness creating device; in actual fact it's a tonal device – I can give you 20 compressors and each one has a different tone. A crunchy old analog compressor can do a better job than a digital plug in. Some combinations will drop jaws as to what really works for certain applications. Most mix engineers that make CD's will tell you the same thing – to say I'm going to drive something through a compressor and squash the life out of it, is a false economy.

JOHN: If you're doing a gig live that will go to air, what is your approach to compression at each stage, bearing in mind after it leaves you it's still going to go through a presentation suite.

TONY: Let's go back a generation. Consoles built in the 70's and 80's were rather docile in their translation of what was coming through the front end. We were running a buss compressor, one compressor across the output. The slew rate was slower – the gear was doing it! You put a condenser mic through the console, put it up to line, set a compressor at 2:1 or 3:1 with a moderate attack, moderate release, that was adequate. Now even with the analogue desks, true peak meters show you in an instant what is going on. You might have a paper shuffle, or on a cooking show someone clangs a pan, and it will go through the roof. What we find these days is we have a compressor across every microphone, purely to catch loud things. They would be grouped, with a compressor over the dialogue group. Then a bus compressor – the ratios are all very low, shaving off all the way through. The more pleasant sound is slower attack and

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JOHN
The loudness unit
standards all take into
account surround sound
by saying perceived
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everything.

TONY
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engineer mixes
for the live
space.

moderate release – if the release is too fast, particularly with music, then you'll hear the distortion in the bottom end.

JOHN: So you're reducing the need to grab the fader....

TONY: You (just) can't grab it fast enough. One step further – with surround sound we're monitoring off a Dolby emulator, so what we are hearing is past real time, several milliseconds even, but a fader move would happen and then you'd hear it.

JOHN: So how do people get something useful in that environment?

TONY: That's the art. To do a surround sound broadcast, not only are you mixing to your dialogue, you have to select the level of the dialogue in people's homes. Through the metadata you send out, the surround is created in people's homes. Then you have the next level down which is the mono derivative of that, then the mono derivative that appears on an RF modulation. That's purely for a HD broadcast – surround, stereo mix,

mono mix. You can't monitor in real time. You set up your mix, work through the combinations. Over time you know how a fader move, when mixing in 5.1, affects the downmix.

FILIP: A lot of live sport is delivered to mobile devices in real time – the constraints for dynamic range are different. The person mixing has to mix for the best environment, then the tools downstream have to create different sound streams optimized for the media people use.

JOHN: Do we have tools sufficiently good that you can feed a good 5.1 mix in and generate stereo and other mixes?

FILIP: Definitely, within the TC Electronics range you can do that. Focus on the best delivery, the equipment will do the rest.

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Loudness Glossary, 'The Professional's Guide to Revolutionary New Audio Terms'. Go to www.tcelectronic.com/loudness

JOHN: So – final question. When someone says "loudness", what make your blood boil?

TONY: The squashing of dynamic range across all delivery. Listen to radio, no range. Does it sound better or louder? To me it sounds softer. A Zeppelin or AC/DC record from the 70's sounds better than a Metallica record today. People squash the range – real instruments squashed down, is the wrong colour. I want more depth. Taking it to TV broadcast, where there are problems is the balancing of programs and station to station. The main free to air channels are ball park, there were issues with the HD channels and older gear – there was a 10dB difference between channels. That was a standards issue with a particular platform.

FILIP: The loudness war means listening to music isn't the enjoyable experience it was. It creates listening fatigue. I hope a new way of measuring loudness, adopted around the world, will favor content that is more dynamic. It would create a transparent loop where the people that are making the content can mix to the new standard.

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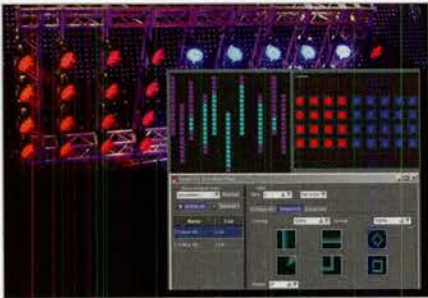
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100v

LINE SYSTEMS

part 5



By Paul Matthews

This month – Enough of the theory! The truck's loaded, the job sheet is filled out and the GPS is loaded with the clients' address. It's a new place run by a brand new manager and all you have is one scrawl on the sheet that says "PA fault, fix ASAP" Before you know it that puft of dust is where your truck once was.

As you pull up and hopefully find a park your first job is detective. Before you even look for the office you're sizing the situation up. It's an outer suburban shopping centre with a Woolies at one end, a BWS at the other and a host of shops in a mall between. You immediately take a guess at the building's age and how many times it's been renovated – because that's going to tell you what condition the system is in. You notice that the front entrance has very recently been extended.

You find the centre management office down the far end of a long hallway which takes you past the public toilets and what looks like the door to a plant room. The secretary is very polite and helpful but apologises for the fact that she knows absolutely nothing as to why you're here, announces that the manager is away today and points to an old Seeburg gunmetal grey rack in the corner of the office with a microphone on top.

There's two amps. One obviously much newer than the other. A mixer, tuner, CD player and thank god – a zone switch (albeit with very little in the way of markings as to which zone does what). No matter how much you try to milk her for infor-

PAUL MATTHEWS
pokes around in mucky racks looking for problems. A foot soldier with solder. Does that make him a solderer of fortune?

mation the secretary can't give you anything else other than "it doesn't work". She mumbles something to the effect that "the boss" had "someone else" look at it last week but "now they won't come back". So you're on your own.

Step one – find the fault! You have no idea what it is and so without making a fool of yourself yelling through the mic or blasting shoppers with noise you thankfully discover the rack can be dragged around on the floor 90 degrees which gives you access to the back with its layers of undisturbed human skin dust and carpet fluff just waiting for you.

Out of your tool box comes a 100v line test speaker and an impedance meter. Finding the speaker terminals on the back of the amps you disconnect the fig 8 cable from the older, bigger amp and connect it across your trusty meter. In place of the cable you connect your test speaker directly to the amp – at the same time switching the other (still connected) amp off. You notice that the fig 8 from the old amp runs to

the zone switch but the new amp (which has a TPS electrical twin 2.5mm connected to it) bypasses the switch.

You return to the front, grab the mic and give it a test – to the satisfying sound of a nice "bing bong" splash tone and a good clear signal from your test speaker. Phew! You've spent 10 minutes so far and just successfully cleared at least HALF of the system as still working. That's good news because no matter what happens next, there's a good chance that when you walk back out – you're going to be able to leave something working for the client. The Secretary gives you a reassuring smile. It's a sound she obviously hasn't heard for a long time.

Next.. the meter. You notice the amp is a 250 watter – and mentally note that means the maximum load for it would be somewhere around 40 ohms so you select a 200 ohm range on the meter, select "all call" on the zone switch and press "test" – with no surprise that the result is around 2 ohms. You then deselect the "all call" and test the impedance of each zone one by one until you find the low one. It's Zone 3 (showing 2 ohms) and the rest all seem "ok" coming in somewhere around 200 and 2000 ohms each with only one other one appearing to have no load on it at all.

Next you disconnect your temporary test rig and put things "back how they were" but before you move on – you disconnect the bogus Line 3 from the back of the zone switch. Then you conduct the same test on the much newer (but smaller) amp which is only a 60 watter and of (shall we say) a

slightly lesser known brand.

This time your test isn't so successful. There's something there – but it's terribly distorted and instantly you know that's the characteristic sound of a transistor amplifier with a blown rail fuse, confirmed by unscrewing the fuses from the back of the amp and finding one very black.

This time your meter (now connected across the TPS) is a bit more forgiving – you get about 10 ohms. But you know that for a 60w amp this should really be well above 160 ohms – so there's the reason for your blown fuse! This amp is going back to the workbench so out it comes and back to the truck. Never replace a rail fuse in the field. You need to do these things in a workshop where you can properly load test the amplifier after you've repaired it (if indeed it is even worth repairing at all). Blown rail fuses usually mean blown output transistors and that's not the sort of thing to muck about with in a client's office.

So in about 30 minutes you now know you don't have one fault but three, possibly four. The shorted Zone 3, the blown small amp, the low impedance on the "new" TPS line and possibly an open circuit zone as well. You have one good amp which has obviously survived the abuse of the shorted zone and a system that still works. Next step is to find out which bit of it still doesn't!

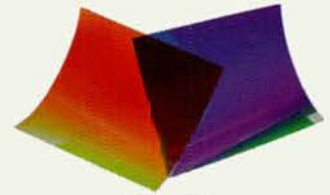
You slide the rack back into place, push "all call" again and fire up the CD player with a suitable Santana disk from your tool box. The meter's moving nicely on the amp – and so now it's time to go for a long walk through the centre with your ears. Don't forget all those dirty corners – like the loading docks, the toilets, the upstairs hallway and that balcony outside where the pizza joint is. You're looking for speakers and listening for Santana.

It comes as no surprise that none of the speakers in the newly built entrance at the front seem to be working. Bets are on that's fed from that new amp and that TPS cable. You're relieved to find the toilets are full of easy listening reverb as is most of the main centre itself but a horn at the back loading dock at Woolies seems very quiet.

So within 60 minutes you've got more than 75% of their system working again – and now the client's going to have no problems paying your exorbitant callout fee. Unfortunately you now have to rush to another job so those dead sectors and that fried amp are going to have to wait until next time!

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good amp that
survived, and
a system that
works. Now
find out what
doesn't work!

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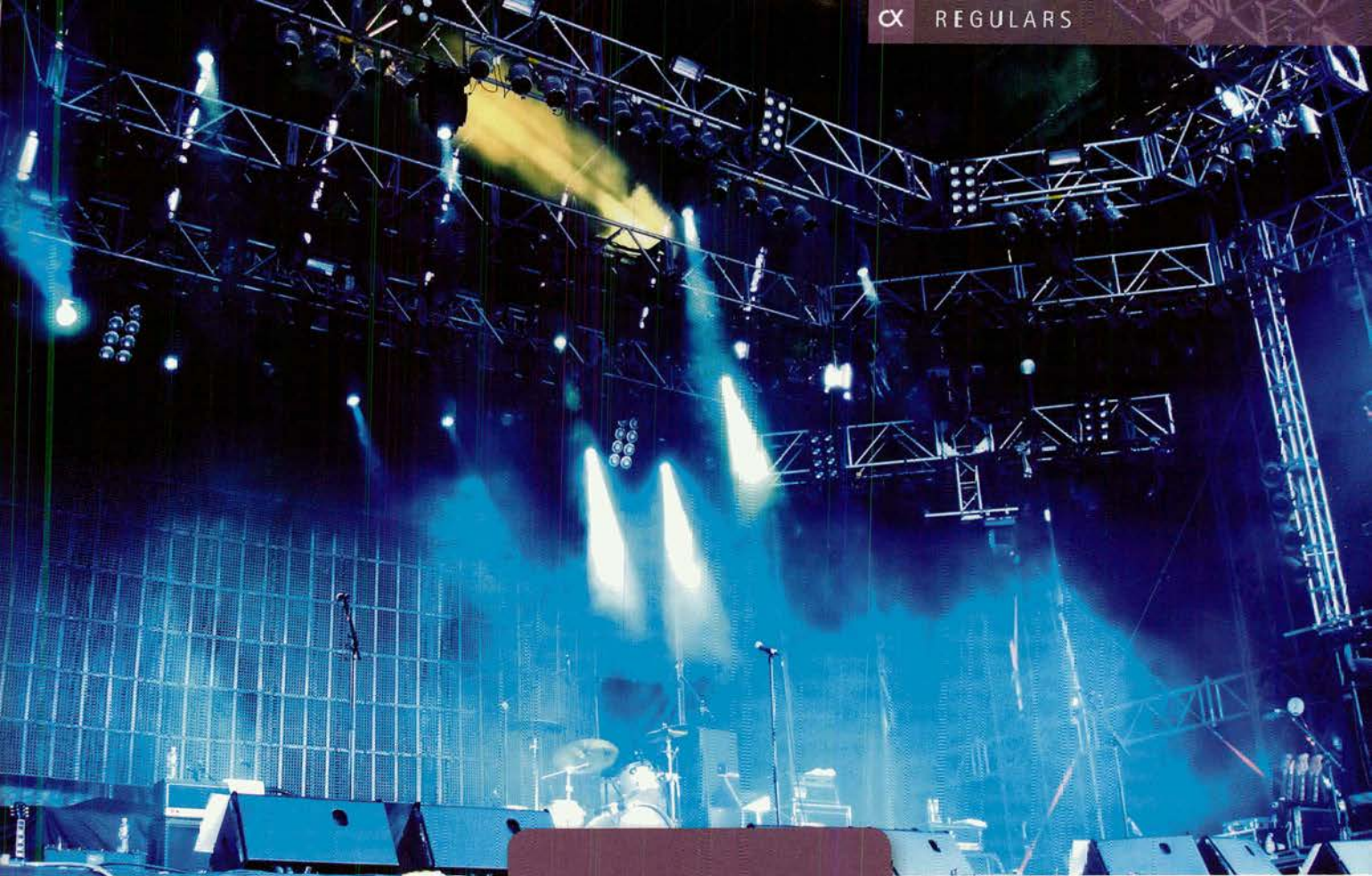
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(When they wanted moving lights he just set himself up at the side of the stage with a long stick to poke them with as necessary!) Not really, just kidding, although it's the sort of thing he might have done.

So with little or no electronics knowledge, Monty started trawling through the do-it-yourself electronics magazines to find a circuit that he could use to make his own dimmers, as he didn't have enough money to buy them. His lack of knowledge became a major problem when sourcing components, so initially he had to buy them in kit form from somewhere like Dick Smith. This of course was back in the days when Dick actually ran the place and not a faceless conglomerate!

After a while he got the hang of it and started making his own hand drawn circuit boards, acid etching the tracks onto them, and buying the components to load on to the board. Slowly he started to churn out something that looked remarkably like a real dimmer rack. They worked about as reliably as his bus did; that is to say, not very well!

But, as long as only he was using them, things were OK. Any problems could be re-patched, re-wired or changed during the show, and no-one was any the wiser. The trouble came when he decided to expand

ONE SATURDAY we got to the factory early to find him slaving away over a hot soldering iron, and a dimmer rack with half the modules lying on the bench....

his business and rent them out to other users. Then, the things had to work!

One Saturday we got to the factory to find him slaving away over a hot soldering iron, and a dimmer rack with half the modules lying on the bench.

"Hey, you're in early" said Col (Colin Park, one of the ARX partners).

Monty looked up with bleary eyes.

"Early? I've been here all night since I got in from last night's gig. Bloody dimmer rack's got a couple of stuffed modules and I can't get them to work. It's going out with the Fudgepackers in half an hour."

He jabbed at a circuit board with the soldering iron, missec and neatly soldered

the index and middle fingers together on his left hand.

"Ow - shi! Look," he said to Col, "I can't think I'll be able to get it working by the time they arrive. The lights are all still in the bus - can you let the guys know there might be a couple less channels, but I'll reduce the bill for them."

"Okey dokey" replied Col, and went off to make a coffee.

Sure enough, twenty minutes after the band arrived to pick up the lighting rig, and Col went over to the lighting guy.

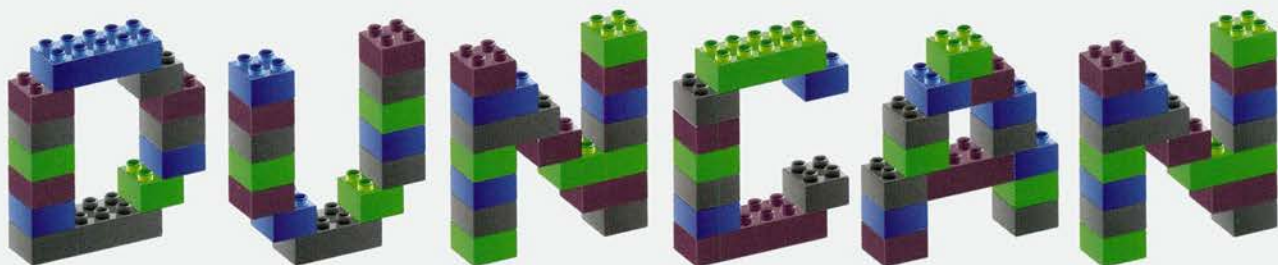
"There's been a bit of a problem with the dimmer rack, guys, and so it'll probably only be a ten channel one today, but Monty says we'll give you a good price on the hire."

The lighting guy hummed and hahhed, mentally weighing up the chances of getting a replacement rig anywhere at such short notice, then said "OK - I guess that'll be alright"

Just then there was a long scream of "Aaaaagh SHIT!!!", rapidly followed by the crashing sounds of three pieces of electronics hitting the office wall one after another!

The two of them looked at each other in silence, mentally subtracting three from twelve. Col was the first to speak:

"Better make that nine channels"



FRY



Dim dem dam

A collection of varied lighting experiences

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With the exception of the infamous Nescafe Par 43 cans (see earlier CX story sometime in 2007) I've never really had much to do with lighting. They say that necessity is the mother of invention, and the Par 43 was an absolute mother of an invention!

Still, if you are an audio person you can't help coming into contact with lighting folk. To some of them it's just a job; to others it's a calling, and they eat sleep and breathe it. Or, in the case of two that we called the Bong Brothers, eat sleep and smoke it!

"Where's the gig, Dunk? The Astradome? Hmm - sounds like a four pipe trip to me!"

It was hard to believe how two guys could inhale such a lot of Bob Hope, and still manage to get up a ladder and hang some lights without floating away on a haze of stale bong water!

Others, like my trusty assistant Biffa, were sound guys, who stepped in when the band's lighting guy never turned up. Unable to refuse their offer of mucho dollars, he set up a loose collection of their lights, plugged them in at random, and ran a slow chase on them all night. The band was so impressed with this cutting edge light show they offered him a high paying permanent gig doing their lights!

He blew the deal on the next gig, though, when he took a little too much advantage of the band's drinks rider, threw up on stage during the load out and was caught mopping it up with their expensive hand

painted backdrop. Shortest lighting career ever!

Although at the factory we were always bagging lighting guys, to tell the truth we actually had a friend who did lights.

We'll call him Monty. And he ran a lighting business called Monty's Audio Visual in a small corner of the old ARX factory. It should have been called Monty's Lighting, because the only audio part was a cheap DJ mixer, which he had

He also would take his dog, a giant lard-arse of a thing called Sam, on the bus during gigs where he would loll around slobbering dribble on everything and everyone and hopefully guard the bus at the same time. Sam's sole aim in life seemed to be just to eat and eat, so in reality Monty had no option but to take him since Sam would eat everything in the house (even the furniture) if he was left at home unattended all day! I guess that

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acquired in a forlorn attempt to get a stranglehold on the driveway DJ hire business. Not having anything in the way of amps or speakers to go with it meant that it just sat in the factory for us to borrow whenever we needed one!

He travelled around from gig to gig in comparative luxury in a big old orange bus, which he had set up with a roller door in the back to provide transport for the complete production, and frequently the band too when he went away on country gigs.

once he had his nuts cut off he found little else in life to interest him. The dog, that is, not Monty!

Just like we started making audio stuff that we wanted to use, so Monty started making his own lighting stuff. At first it was just switchboards that turned lights on or off, but pretty soon the bands started asking for more sophisticated stuff, like dimmers on the lights.

◆◆◆ Continued Page 65

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