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NEWS! Boomtime as punters pay and audiences scream for better lights, sound and video. Audio visual company chess game enters new phase. Yet more equipment, movers and shakers, tips and bad trips in the glittering world of entertainment technical and showbiz management...

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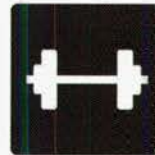
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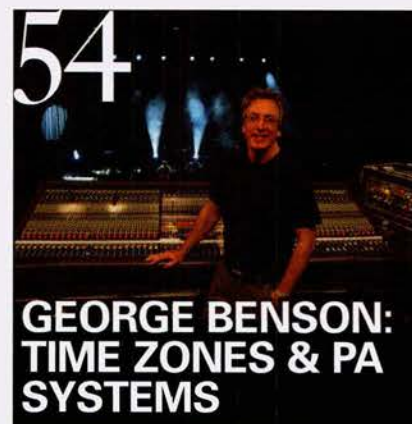
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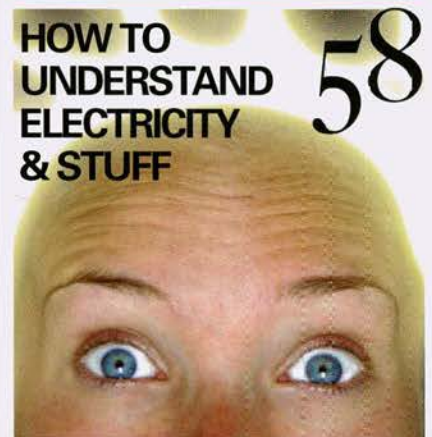
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INDUSTRY PRO



'JMACK' IN THE HOTSEAT

WAY BACK WHEN

Channels 46

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CUE03

Entertainment Training Resource

This magazine contains much information which is a direct resource for anyone studying from the new Entertainment Training Package, named CUE03. From 2006 we will start to map certain articles direct against the relevant Unit of Competency within the package. This makes CX magazine a very cost effective resource for schools, colleges, and universities. Note that we offer a copyright release where articles in CX Magazine may be photocopied and distributed to students within an accredited course.



EDITORIAL

GEORGES

The George Michael tour story herein carries some very hot video ideas. It's a great implementation, and by far the most important part of the tour production. Meantime the other George story (Benson) details just how traditional live audio skills should be practiced. These two shows are at opposite ends of the audience scale (by seat numbers) but share many of the same audience demographics. I'd love to work on either of these tours!

EXPECT THE UNEXPECTED

I was slaving over the stove while Karen was out when everything stopped – stove, music and lights. Jackson (aged 10) and his mates started yelling that their computer game had crashed as well. Trekking outside to the power board I discovered Harrison, aged 5 (and small for his age) had somehow cunningly turned off the house power! Some kind of message to his bro? Which led me to think: don't underestimate children. We hear school teachers telling amazing stories about what kids are capable of. Be alert. We need more lerts.

STUDIO DELUSIONS

The government is reviewing the music training package from which most accredited studio engineer audio courses originate. As a member of the review working group I polled a cross section of colleges on the issue of jobs for their graduates. I'll declare my interest: my college trains live audio amongst other production skills leading to direct employment in a market hungry for graduates who can work live events – not studios. I indirectly compete against a number of large private and TAFE colleges who train pure studio engineer audio.

So far not one college in Australia has managed to produce more than a handful of studio engineers who have gone on to find meaningful employment. There are very few or no job openings in recording studios. So why do young people buy those courses?

BUSINESS

Wow the industry is busy right now, on every front (except film and recording). Did you notice how almost every festival sold real well this last summer, and how many shows there are out there? The punter seems to have the cash. In the venues, schools and churches the pressure is on to have better sound and video as well. Behind the scenes is the fantastic chess game between the Staging Connections Group and the rest of the industry, with the added dimension that former SCG founder Gary Hackett is poised to re-enter the industry. His non-compete period has expired. SCG have, it appears, some further acquisitions they wish to make. A sound company would be logical.

PEMMA

The Production and Event Managers Association of Australasia has arrived with a lot of support, now it needs people to actually do things. There are many failed and flawed associations out there. I actually killed one: ShowSafe; because I was the only committee member left who did anything. The rest talked about doing things. Before my time there were some great 'do-er's' at ShowSafe, but I got the dud guys. They ran out of steam but never words. Get behind this one, because it makes sense.

Julius

Audio Justice: Case N° 1



There are a hundred good excuses for using the old industry standards: 'I can't think anyone would notice,' 'I did what everyone else was doing,' 'I didn't have time to test anything new.'

Unacceptable! It is the solemn duty of every professional audio engineer to seek improvements in their technology and their performance. Audio-Technica's new Artist Series are just such improvements.

With extensive research and superior build quality this new range of microphones aims to improve on the industry standards then jump ahead with innovations like a side addressed stick condenser, a dual element kick drum mic and an incredibly flexible clip on.

The sound is everything you'd expect from Audio-Technica. The vocal mics offer amazingly clear, detailed reproduction and the new instrument mics feature fast transient response and low distortion characteristic that faithfully reproduces the complex details of virtually every sound source.

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NEWS

DEVICES, PEOPLE AND CONCEPTS

AV WHITSUNDAYS DAWNS



Andrew Delangen, Phil Delangen and Matthew Batterson. 5 more staff start soon.

The lucrative contract to supply audio visual services on Hamilton Island has just been awarded to a new start company headed by former Staging Connections Hamilton Island manager Phill Delangen.

Hamilton is a large tropical island with thousands of hotel and apartment rooms, and the 8km's of road are full of golf carts. There is a major airport on the island, making it very attractive for conventions.

Until now Staging Connections operated the audio visual concession on the island, also servicing nearby Hayman Island with a staff of 8. The contract was up for renewal and the bid from AV Whitsundays was successful. Phill doesn't say, but industry sources indicate the Island audio visual operation can turn over around A\$4 million in a good year.


Phill worked for Staging Connections at Hamilton Island since 1999, and lives on the island with his wife and two children. He resigned last year

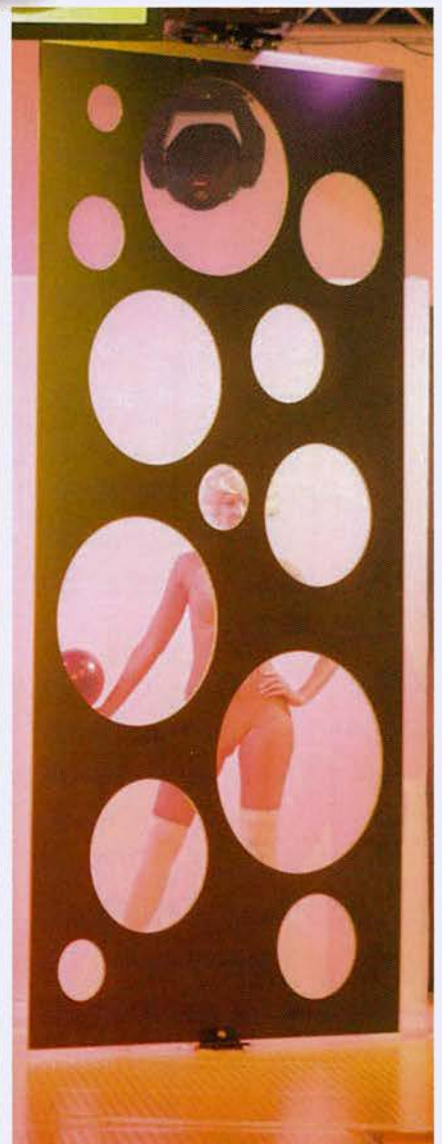
after becoming "frustrated with Staging Connections management. (They) probably didn't look after me as well as they could have. It was a life style thing, they asked me to travel around. I would have had to leave the island if I wanted a better pay packet."

AV Whitsundays will launch in May with around \$700k worth of inventory, "different to what Staging Connections had here, but more suited to the clients. I know what the cost base is, and what the clients need".


"There's lots of different switches when you decide to leave, I think I needed a break, had been extremely busy. They didn't try to talk me out of leaving."

After he quit, Phill stayed on the island and "went fishing". He owns several investment properties on the island, and could live off the income from those. Plus he has a boat, and offers to take any visiting technicians fishing.

www.avwhitsundays.com.au 



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MICROPHONES

PRODUCTION AND EVENT MANAGERS ASSOCIATION IS BORN

The complexity and proliferation of live events like corporate, festival or concert has led to the foundation of a peak industry body to represent production and event managers. PEMAA (Production and Event Managers Association of Australasia) was incorporated as we went to press, and immediately attracted a 'who's who' of production manager membership.

Pioneered by Matt Doherty who is the production director at Big Day Out, PEMAA will represent the industry

where issues and regulation require.

Initially it will engage on issues like User Pays Police. "This is getting out of hand with a group of senior police waging a campaign to get the user pay system expanded. They want to get events to pay for - amongst other things - the drug dog squad", says Matt.

PEMAA want to produce a code of conduct and then an event guide, "otherwise we run the risk of Work Cover taking over in the case of an accident".

Membership is organized into levels, full membership is for professionals working in the field. There are associate members, like venues, suppliers and educators. As this issue is distributed members are appointing a management committee, likely to be headed by Matt Doherty.

CX support the objectives of PEMAA, which has been embraced because it has the backing of professional specialists in the field, who want to build a better industry.

Email: pemaa@mac.com



STARPLEX THEATRE GOES AX



Sam Irrgang (Starplex promotions and functions manager), Peter Asztalos General Manager AALT, EAW AX 396. Dale Martin, (Starplex GM), Luke Thomson (Principal of Trinity College).

Starplex has a new EAW and Powersoft sound system with EAW AX-series speaker elements. The front-of-house cabinets are AX396 and the delays are AX296. The delays have been custom-built in USA for the venue. The system is powered by the new Powersoft LD3004 and LD 1404 digital amplifiers.

The system was installed by Adelaide's Australian Audio and Lighting Technology. Peter Asztalos, General Manager of AALT, says "After consulting with Luke Thomson Principle of Trinity College, I felt the new AX box was the ultimate solution to solve the Starplex audio problems." Ben Clarke of Production Audio Services - distributor of EAW and Powersoft, says "working with AALT and the college, we have been able to assist in the supply of what is truly a world class sound reinforcement system. The EAW AX range is our latest release of installation specific elements, designed with the new Guinness Focusing™ techniques in

mind to accurately reproduce whatever program material is required. Vocal intelligibility is particularly strong in this design."

Luke Thomson, Headmaster of Trinity College, and Dale Martin, Starplex General Manager are pleased to be able to offer the very best in audio quality to the college and to general users of the theatre. Luke Thomson says: "We have been looking for a quality replacement system for some time. AALT have addressed the requirements of the college and theatre clients, paying special attention to the challenges posed by the space... With the system being expandable and upgradeable, we can offer top-quality sound to our users for small and large school events, theatre shows and music performances."

The Starplex Theatre seats 1200 people, and can open into Super-wide mode, with the rear wall folding away to reveal the 4-court basketball stadium. www.aalt.com.au



Steve Coubrough from SPL; New Zealand's first DiGiCo equipped production company

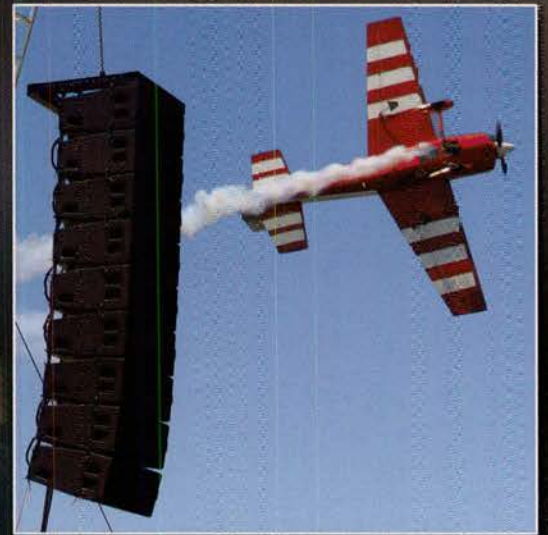
DIGICO DEBUT IN NEW ZEALAND

A DiGiCo D1-Live is the first DiGiCo console to be purchased for New Zealand's production audio market, by Sound Partners Ltd (SPL)

SPL had a busy summer with many festivals and outdoor concerts making full use of the D1- along with its extensive Nexo/Camco inventory. Being the first owners of DiGiCo in New Zealand could also prove to be an extreme advantage for this growing production company in the new age of digital mixing consoles.

www.grouptechnologies.com.au

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THE ELECTRIC CANVAS ADDS PIXELS TO THE PALETTE

The Electric Canvas has expanded its offerings to include video presentation with the arrival of the Onlyview media programming and server system. This proprietary product was developed and tested by the French PIGI manufacturer over a three year period and has been used with great success on many large-scale events over the past two years. Perhaps best known for its PIGI projectors, ETVC Audiovisuel are in fact one of Europe's largest video rental houses with impressive stocks of high-end projectors from Barco and Christie as well as complete digital HD outside broadcast rigs.

Onlyview was created to answer the call from ETVC programmers and

customers for a more flexible and real-time-capable programming environment than currently available. The decision was made to keep Onlyview as an in-house product so the R&D team were free to continually upgrade and improve the product in response to the needs of upcoming projects. The development path to the current version (2.8.16) has been driven by direct requests from a small professional user-base that communicate specific needs and feedback from event customers. With a small user-base, Onlyview enjoys fast response to the challenges put forward by its users. Currently Onlyview is available through selected large-format suppliers in Paris, London, Canada and now Australia.

The feature list for Onlyview is impressive with a large emphasis

placed on real-time previewing and fast response to changes. Using a multi-layer time-line interface, Onlyview shows can be assembled and programmed in record time - a key objective of the R&D team who consist of programmers and operators who have felt the real pressure of on-the-job situations. Creating a basic 2D animated layout can be as simple as dropping a multi-layer Photoshop into a timeline. All the .psd layers are instantly converted to Onlyview layers with all transparency (alpha channels) intact. From there, design elements can be manipulated using key-frames created on the timeline. Video files are imported in mpeg2 format and can be programmed like any other graphic. Live vision is handled by the excellent Blackmagic Extreme cards with low latency and can be treated like another media file.

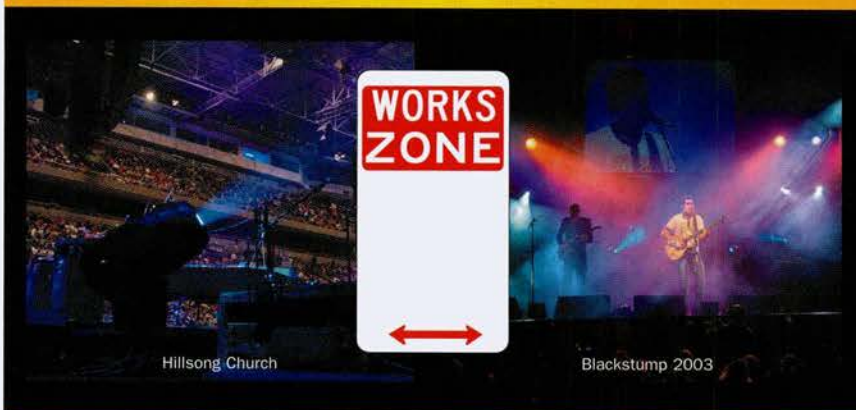
The heart of the system is the direct harnessing of the capabilities of the latest graphics cards developed for the power-hungry computer gaming community. By communicating directly with the graphics card, Onlyview is able to handle many tasks in real-time. Intuitive image warping capabilities are a result of this and allow the operator to quickly accommodate unusual screen shapes or compromised projector positions. A user definable grid of bezier points can be used in real-time to adjust projections to almost any 3D shaped surface. An interesting recent innovation allows industrial position encoders to be attached to stage machinery or fly-lines so that picture objects can track on-stage movement of sets and props. Any number of encoders can be mapped to any key-frame parameter.

One of the simplest but most desirable features of the interface is the ability to mix or cross-fade between any timeline in the show under manual control. Macros can be assembled under "Quick Keys" to automate major cues and to provide contingencies for unexpected events during the show.

There can be many timelines programmed for the show with direct access to control each one. Timelines can be individually programmed to operate with que-to-que key presses, external triggers, triggers from other timelines running on the show as well as full chase/follow of SMPTE or

continued page 14 →

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EBU time-code. With time-code, not only is the timeline itself tracking, but any movie files running on the timeline will also chase code making lip-sync with external audio sources a breeze. Off course, Onlyview can also handle 24 bit multi-track audio output. As an added bonus, the system can control a wide range of external devices such as Betacam and Doremi decks, contact closures and even the PIGI control software.


Unlike other similar systems, Onlyview carries a very detailed hardware and driver specification that has been tested rigorously by the R&D team under show conditions to ensure rock solid stability and performance. This greatly simplifies product support and development. Each display device requires a separate "display" computer with a "producer" PC handling all programming an operation. Systems with 100% hot back-up are easy to configure.

www.theelectriccanvas.com.au 

MARTIN PROFESSIONAL ENTERS PROFIT

Martin Professional has produced a DKK 18 million profit before tax in 2006 (approx. \$4 million), an increase of DKK 83 million over 2005 numbers. Martin say the improvement was attributable to a more focused sales effort, combined with the successful launch of new products, such as the MAC 700 series and the new MAC TW1, as well as a generally greater propensity to invest in the market. The substantial profit improvement was driven both by the higher revenue and by reduced fixed costs.

The entire moving light manufacturing market is still in losses when you consider the sale of Vari-Lite, the troubles faced by High End, and the mixed fortunes of the Italian manufacturers. For every dollar of profit made, there are many dollars of losses to be recouped. Money is made by distributors, lawyers and production houses.

www.martin.com 

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of Australasia.
Email: pemaa@mac.com

MARTIN AUDIO IS SOLD

LOUD Technologies of the USA (EAW, Mackie) has entered into an agreement to purchase the entire share capital of Martin Audio Limited of the UK. Martin Audio's Australian distributor TAG sees a huge upside to this move.

"The big attraction for Loud is Martin Audio's clearly defined role as a highly specialised, highly advanced, highly innovative, premium speaker manufacturer. From TAG's understanding this is clearly understood by Loud and they have

made considerable efforts to ensure that the 'go-forward' plans maintain this and most critically maintain Martin Audio's profile as a UK based manufacturing company."

TAG says Martin Audio will gain access to and integration of advanced control and amplification systems. TAG expects cost reductions from improved raw material purchasing, consolidation of some manufacturing and shared overhead, and finally they say there will be rapid development and expansion of the Martin Audio product range.

www.tag.com.au



AUDIO VISUAL DYNAMICS GOES 15

Fifteen years ago the Worth family purchased a small and pretty run down AV company with just four staff called Movie Hire.

"On that very day a young girl named Constantina Pandazatos joined the company in sales and believe it or not, Tina Grivas as most of you know her, is still with Audio Visual Dynamics although she is now on her second maternity leave following the birth of her beautiful daughter", says Peter Worth.

"We are very proud that we now have 25 of our staff in long service leave calculations and along with Tina, Wendy in accounts also started with us in early 1992."

Audio Visual Dynamics "family" is now around 90 full and part time people, with ten In House AV offices



Two newer team members at Audio Visual Dynamics- Donna Teece and Justin Swan, technicians based at Port Melbourne.

in venues stretching from the Yarra Valley in the East to Geelong in the West.

www.avdynamics.com.au



ZAXCOM INTRO PLUG-ON RECORDING TRANSMITTER

Here's a good idea! This plug-on recording transmitter is designed for quick and easy integration with the shotgun-type microphones typically used in boom-pole applications. The TRX700 records up to 12 hours of

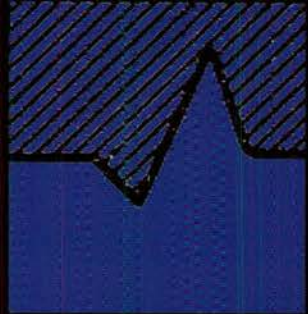
timecode-referenced audio on a removable miniSD card, a patent-pending feature that provides an automatic back-up of the system's RF transmission.

"The TRX700 provides much of the functionality of our popular TRX900 series of digital wireless microphone transceivers, but with the ease-of-use of a plug-on system designed specifically to address the needs of boom-pole operators," said Glenn Sanders, president of Zaxcom.

From just two AA batteries, Zaxcom's TRX700 provides a run time of four hours and 48 volts of phantom power to support the operation of boom-pole microphones.

www.zaxcom.com





Norwest Productions



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Norwest Productions are holding an auction of ex-rental equipment of all sorts.

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Auction Day: - Thursday 31st May 07 - 11am

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Some items being auctioned include

Yamaha O1V96s

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RCF ART300s

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EAW KF860s

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Crown Macro Tech Amplifiers

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For a full auction list please visit www.graysonline.com.au sale#7539
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CHECK THIS OUT!!!!

THE PA PEOPLE SHIFT AND ENTER FOURTH DECADE: NEW RHODES FACILITY RIPE FOR EXPANSION



PA people's Graeme Janes.

The PA People have relocated to new premises in Sydney's Rhodes, and consolidated several separate premises into one. By doing so, the scale of the business becomes evident – they are a serious enterprise, established over 30 years ago.

As the name implies the company specialize in live sound systems, but with a whole lot more. They install complex audio visual systems in boardrooms, engineer customized solutions for large venues like airports or stadiums, and do very large communications gigs, like at the Olympic games.

CX had a tour of the new facility, hosted by general manager Graeme Janes. He entered the industry 18 months ago with management skills, and has managed to make the transition by understanding the unique dynamics of the Australian entertainment technology market. Many implanted managers have failed the test, by applying broad management measures across a specialized niche industry where everyone thinks they know everyone else.

The PA People's new HQ handles all their activities, which include hire and retail, communications work, installations and contracting. The sister company Creative Audio is still based in Brisbane, headed by Neil Packer. They design and manufacture specialized audio hardware and software products including the ControlMatrix system which is exported worldwide.

ControlMatrix is a paging and

messaging control solution with both hardware and software elements including a CobraNet based message storage and replay system. It's used where there is a lot of networked messages needed to be replayed through a PA system, like an airport. Peavey distribute it alongside their Media Matrix products, into which ControlMatrix interfaces. ControlMatrix is installed in such places as Heathrow Airport, Sydney Airport, Terminal 1 & 2 the Smithsonian Institute and Atlanta Airport.

EXPORTING

Selling Creative Audio products offshore and also doing big communications gigs equals a neat export business for The PA People. The communications work they do entails large format talkback and two way radio networks, involving up to 1000 radio sets.

Most recently they did the Doha Asian Games, which followed on from the Commonwealth Games and the Athens Olympics before that. These very large ceremonies have increasingly complex communications requirements, where literally thousands of performers and staff need to be 'called' and cued.

Like other specialist Australian firms, The PA People are enjoying increasing recognition as a provider of skills outside the country, as Australia has a growing reputation as a place where things get done. This is born from our isolation and the need to multitask, whereas in Europe or the USA, more

dedicated specialists exist for each skill set, meaning most can't do more than one job.

INSTALLING

The contracting division at The PA People has up to 70 jobs on the books at once, at various stages. "As of now, we have a paging solution for a shopping mall, sound and lighting for a school hall, a refit for a stone church, Robina Stadium and Sydney Town Hall", Graeme Janes told us.

"We are becoming more aggressive in the corporate boardroom fitout market", he continues, "we are learning what it takes to win. Engineering is not the issue, it's more about confidence" – meaning confidence of consultants.

Graeme points out that where there may be three companies quoting a complex job, the cost often comes to within 3 to 5% between those competing. A client can withstand paying up to 5% more, if they believe the job will be better done.

Like all businesses engaged in the installation of audio visual equipment, The PA People suffer the penalty of being last trade onto a building site, where previous contractors may have cut cables or covered over things. "Because the building trade regard us as outside the trade, we become a punching bag when jobs run late and where we are onsite late. We can have a crew booked and ready for Monday, and last thing Friday they call and say the site is not ready. Project management is very stressful."

The PA People have won a great reputation installing audio into major stadiums – in Sydney these include Telstra Stadium, Aussie Stadium, and the Sydney Cricket Ground. In each case they have a service contract; and also supply crew to operate these ground announcement systems when required.

The company was started in the late 1960's by David Collins, whose little brown carpeted 'all in one' PA systems became ubiquitous across the eastern half of Australia. David is semi-retired, and the business is now headed by Chris Dodds who joined in the 1980's.

The new premises include an expanded pro audio showroom.

PA People are now at 9-11 Leeds St Rhodes. 02 8755 8700

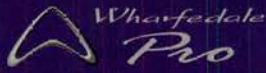
www.papeople.com.au



BRAND DETECTIVE



B.D. Reports on reducing the **COST** of making music



dB POWERED SPEAKER SYSTEMS

DB-600 SYSTEM

RRP: \$2856.00



600W/RMS 3-Way Active PA PACKAGE

- 2 x Basic 100
- 1 x SUB 12
- 2 x Speaker stands in gig bag

\$2379.00

WHARFEDALE POWERED SPEAKER SYSTEMS

WD-600 SYSTEM

RRP: \$2275.00



600W/RMS COMPLETE PA PACKAGE

- 2 EVP-X15
- SFX 613 Mixer
- 3 W' dale mics in case
- 2 x Speaker 10m Cables
- 2 x Speaker stands in gig bags

\$1699.00

DB-800 SYSTEM

RRP: \$3306.00



800W/RMS 3-Way Active PA PACKAGE

- 2 x Basic 200
- 1 x SUB 05
- 2 x Speaker stands in gig bags

\$2799.00

WD-800 SYSTEM

RRP: \$3035.00



800W/RMS COMPLETE PA PACKAGE

- 2 x LX15 Speakers
4 ohms
- SPX-815 Power Mixer
- 3 W' dale mics in case
- 2 x 10m Speaker cables
- 2 x Speaker stands in gig bags

\$2299.00

DB-1400 SYSTEM

RRP: \$4200.00



1400W/RMS 3-Way Active PA PACKAGE

- 2 x Cpera Live 402
- 1 x SUB 15
- 2 x Speaker stands in gig bag

\$3499.00

WD-1400 SYSTEM

RRP: \$4800.00



1400W/RMS COMPLETE PA PACKAGE

- 2 EVP-X12P Cabs
- 2 EVP-X15PB Cabs
- R-2004FX Mixer
- 3 W' dale mics in case
- 4 x Signal cables
- 2 x Speaker poles in gig bags

\$3599.00

Brand Detective brings to your attention quality products available from some of the world's leading professional audio manufacturers at prices now even more affordable than ever.

There is a mass of equipment in the Audio market today and quite often it can be difficult to discern between quality and what is just cheap. The Brand Detective only presents the best value for money Audio products that meet highest quality standards.

Products presented in this catalogue are available at all good Audio outlets and Music stores. For a preferred dealer listing, please go to www.cmi.com.au/valueformoneyaudio

RRP means Recommended Retail Price.

"B.D. Price" The Brand Detective prices are available from special product stockists, a full list of dealers is available on www.cmi.com.au/valueformoneyaudio

All prices were correct at the time of printing, and are subject to change without notice.

- Exceptional sound quality
- Broad bandwidth and dynamic range
- High power/ High efficiency
- 1" compression driver
- Trapezoidal enclosure for easy array and sonic accuracy
- Titanium diaphragm
- Pro-Tech Driver protection system

- Sophisticated crossover design
- Easy carry handle
- Rugged protective steel grill.
- Low resonance enclosure design
- Two 1/4" jack & 2 x speaker sockets.



EVP-X12
B.D. Price \$299.00



EVP-X12M
B.D. Price \$309.00



EVP-X15
B.D. Price \$349.00



EVP-X15M
B.D. Price \$349.00



EVP-X215
B.D. Price \$589.00



EVP-X15B
B.D. Price \$499.00



EVP-X18B
B.D. Price \$659.00

EVP-X SERIES The Wharfedale professional EVP-X series loudspeaker systems are the latest evolution of the highly successful EVP family. The new EVP-X full range speaker system has been built around the development of the exceptional new compression driver. The 44mm HF driver brings unprecedented levels of dynamic pure clarity and sound quality, the crossovers network has been designed to limit and protect the system from overloads. The ProTech driver protection system that is only seen on higher priced speaker systems, the sound performance out of these boxes doesn't match the price tag. You will have to look twice the quality and finish of each model is well worth a look. The trapezoidal design gives low resonance and sonic accuracy in the low frequency range. The enclosure is built tough enough to withstand the rigours of the road, covered with a tough black industrial carpet, top hat for speaker stands and large handles with tough curved steel front grill. The speaker range comes in a 12" and 15 inch two way, monitor wedge design and 15" + 18" sub. The sub system features a dual voice coil woofer and low pass filtering when the job requires that kick ass punchy bass. Arguably this is the best value for money speaker system performance combination seen on the market today...

SPECIFICATIONS	EVP-X12	EVP-X12M	EVP-X15	EVP-X15M	EVP-X215	EVP-X15B	EVP-X18B
Rec Retail Price	\$349.00	\$359.00	\$419.00	\$419.00	\$699.00	\$599.00	\$779.00
RMS Power	250W	250W	300W	300W	500W	400W	600W
System	2 Way Trap	2 Way Monitor	2 Way Trap	Wedge	2 Way Trap	Rectangular enc.	Rectangular enc.
LF Driver	12" Woofer	12" Woofer	15" Woofer	15" Woofer	2 X 15" Woofer	15" Woofer	18" Woofer
HF Driver	1" Ferro Cooled	1" Ferro Cooled	1" Ferro Cooled	1" Ferro Cooled	1" Ferro Cooled	—	—
Freq Response	55-20KHz	60-20KHz	45-20KHz	50-20KHz	40-20KHz	45-250Hz	38-250Hz
Crossover	2 way passive	2 way passive	2 way passive	2 way passive	2 way passive	Hi Pass output	Hi Pass output
Max SPL Peak @1w / 1m	98db	98db	98db	98db	100db	99db	100db
Dimensions W/D/H mm	430 x 370 x 590	424 x 441 x 560	460 x 450 x 675	445 x 473.5 x 645	502 x 467 x 1058	460 x 510 x 591	522 x 610 x 610
Weight Net (kgs)	19.3kg	18.5kg	25.9kg	23.4kg	43.2kg	33.5kg	47.4kg

- 1" exit compression driver. Waveguide elliptical horn technology.
- Trapezoid enclosure.
- Pro-Tech Driver protection system. Rugged protective metal corners Durable Black carpet covering

- Rugged protective steel grill
- Teardrop Handle
- Steel stand adaptor
- Low resonance enclosure design
- Two 1/4" jack sockets.



SVP-10
B.D. Price \$179.00



SVP-12
B.D. Price \$219.00



SVP-15
B.D. Price \$269.00



SVP-215
B.D. Price \$439.00



SVP-15B
B.D. Price \$379.00



SVP-12M
B.D. Price \$219.00

SVP SERIES The SVP range stands for (SUPER VALUE SERIES) this new range of sound reinforcement loudspeakers is designed for reproduction of live music at high volume levels with minimal distortion. The enclosure is lightweight yet built tough enough to withstand the rigours of the road, covered with a tough black industrial carpet and rugged protective metal corners, teardrop handles and steel grill. Trapezoidal enclosure for easy array and sonic accuracy. The range comes in a 10", 12" and 15 inch design the two way system gives better low resonance and sonic accuracy in the low frequency range. The newly developed drivers are designed to perform and are made with the highest quality components the top end boasts a 25mm voice coil compression driver with an exceptional Waveguide HF horn never before seen in this price range. The crossovers are even protected with the ProTech driver protection system that is only seen on higher priced speaker systems.

SPECIFICATIONS	SVP-10	SVP-12	SVP-15	SVP-215	SVP-15B	SVP-12M
Rec Retail Price	\$229.00	\$269.00	\$319.00	\$519.00	\$449.00	\$269.00
RMS Power	100W	150W	150W	200W	250W	250W
System	2 Way Trap	2 Way Trap	2 Way Monitor	2 Way Trap	2 Way Trap	Sub Bass
LF Driver	10" Woofer	12" Woofer	12" Woofer	15" Woofer	2x15" Woofer	15" Woofer
HF Driver	1" Compression	1" Compression	1" Compression	1" Compression	1" Compression	High Output
Freq Response	65-20KHz	50-20KHz	50-20KHz	45-20KHz	40-20KHz	45-250Hz
Max SPL Peak @1w / 1m	96db	97db	97db	97db	102db	98db
Dimensions W/D/H mm	317 x 288 x 494	355 x 428 x 554	428 x 554 x 415	638 x 463 x 390	1014 x 463 x 390	587 x 548 x 429
Weight Net (kgs)	10.28	15.58	14.9	19.26	31	31.52



- Affordable arrayable trapezoidal cabinets
- 2" Driver with Titanium Diaphragm
- Large Waveguide Elliptical horn for superior control and smoother Hi freq. Control
- Plywood & composite construction
- Strong Internal bracing for better sub response
- Linear, full range frequency response
- Pro-Tech driver protection system
- Cast aluminium speaker stand mount adaptor
- Recessed 1/4" & Speakon connectors

LX SERIES The first thing you will notice when you pick up these boxes are they feel and look like a serious touring speaker box with strong internal bracing which prevents bass loss and distortion, the design is the popular trap shape suitable for FOH or array systems, it comes with two cover styles hard wearing tough industrial carpet or the black super strong epoxy paint finish with fly points for rigging hardware, substantial handles and casters on the larger boxes makes them easy to get around. The LX I think should stand for LOUD XTREME that's the way these boxes have been designed, the extra large Waveguide elliptical horn which uses a huge 500mm titanium diaphragm and a massive 1200g large magnet driver that delivers unprecedented

levels of clear quality high frequency characteristics. The 12", 15" and 18" drivers are all aluminium cast frame loudspeakers with massive voice coils featuring extended excursion capability, large magnet structure gives this series high efficiency and reliability in demanding professional applications. Each crossover in the range uses the highest quality components and designed specifically for that system the ProTech driver protection system designed to take care of the HF driver against demanding signals caused by overloading. Beware this range is for the serious sound professional with a price tag which is well under the nearest rival.

SPECIFICATIONS	LX-12	LX-12M	LX-15	LX-153	LX-15M	LX-215	LX-15B	LX-18B	LX-218B
Rec Retail Price	\$579.00	\$569.00	\$639.00	\$769.00	\$689.00	\$1145.00	\$699.00	\$899.00	\$1349.00
RMS Power	400W	350W	400W	450W	350W	700W	700W	800W	1600W
System	2 Way Trap	2 Way Monitor	2 Way Trap	3 Way Trap	2 Way Monitor	2 Way Trap	Sub Bass Trap	Sub Bass Trap	Sub Bass Trap
LF Driver	12" Woofer	12" Woofer	15" Woofer	15" Woofer	15" Woofer/5" Mid	2x15" Woofer	15" Woofer	13" Woofer	2x18" Woofer
HF Driver	2" Titanium	2" Titanium	2" Titanium	6" Mid + 2" HF	2" Titanium	2" Titanium	—	—	—
Frequency Response	50-20KHz	60-20KHz	40-20KHz	40-20KHz	55-20KHz	40-20KHz	42-170Hz	38-150Hz	30-1.5KHz
Max SPL Peak @1w / 1m	97db	97db	98db	101db	99db	101db	98db	99db	100db
Dimensions W/D/H mm	636 x 393 x 373	349 x 580 x 398	760 x 504 x 472	896 x 470 x 450	880 x 504 x 439	1220 x 610 x 501.5	580 x 505 x 481	715 x 574 x 545	1220 x 610 x 502
Weight Net (kgs)	28	20.2	36.37	41.8	40.16	64.2	30	36.57	62.8

Wharfedale Pro **TWIN SERIES & LX-E SPEAKER SYSTEMS**

LX-E SERIES The LX-E Series has the same model line up as the LX Series but with extra features to make them suitable to the professional performance and installation market with hard wearing 2 stage epoxy black finish, constructed from premium grade Birch plywood for extra strength and acoustic properties. The LX-E also includes flying points for ease of installation.

TWIN SERIES Co-axial Driver Compact Sound Reinforcement Speaker System. Proprietary design, High power, high efficiency, Wharfedale Pro coaxial two-way full-range driver units. Sophisticated crossover system. High power output, low distortion sound quality Trapezoid array design. Low profile ceiling mounting Low profile floor monitor. Strong construction using 18mm BIRCH PLYWOOD. Pro-Tech driver protection system. Painted in Black Duralex paint. Fly Points for ease of installation. 2 x Speakon connectors



SPECIFICATIONS	LX-12E	LX-12ME	LX-15E	LX-215E	TWIN-82	TWIN-10X	TWIN-12X	TWIN-15X	TWIN-155BX
Rec Retail Price	\$799.00	\$779.00	\$969.00	\$1569.00	\$679.00	\$749.00	\$899.00	\$1349.00	\$1299.00
RMS Power	400W	350W	400W	700W	100W	150W	200W	300W	600W
System	2 Way Trap	2 Way Monitor	2 Way Trap	2 Way Trap	Co-axial	Co-axial	Co-axial	Co-axial	Sub Bass
LF Driver	12" Woofer	12" Woofer	15" Woofer	2x15" Woofer	8" Woofer	10" Woofer	12" Woofer	15" Woofer	Horn Loaded
HF Driver	2" Titanium	2" Titanium	2" Titanium	2" Titanium	1" Titanium	1" Titanium	1" Titanium	1" Titanium	15" Woofer
Frequency Response	50-20KHz	60-200KHz	45-20KHz	35-20KHz	65-20KHz	60-20KHz	55-20KHz	45-20KHz	40-160Hz
Max SPL Peak @1w / 1m	99db	128dB	99db	103db	94db	96db	98db	99db	99db
Dimensions W/D/H mm	671 x 393 x 450	618 x 426 x 450	760 x 506 x 471	1116 x 506 x 471	373 x 288 x 250	434 x 322 x 319	496 x 362.5 x 364	562 x 454 x 422	646 x 460 x 618
Weight Net (kgs)	28.8	22.5	38.45	58.5	11.2	15.5	17.8	27	45.5

EXTENDABLE
3 YEAR
WARRANTY

LA SERIES

Moulded Sound Reinforcement Speaker System. Comprising of strong construction, High impact, "GiG" tough acoustic resin. Complex Trapezoid design for grouping of cabinets in array. Integral easy carry handles. High freq. Horn coverage can be altered for 60 x 40 or 40 x 60 degree coverage. Integral High Freq. driver overload protection system.



B.D. Price
\$499.00

B.D. Price
\$729.00

B.D. Price
\$489.00

SPECIFICATIONS	PASSIVE		ACTIVE	
	LA-15	LA-15B	LA-15P	LA-15PB
Rec Retail Price	\$599.00	\$579.00	\$899.00	\$869.00
RMS Power	250W	200W	250W	200W
System	2 Way Moulded	Sub Bass Moulded	2 Way Moulded	Sub Bass Moulded
LF Driver	15" Woofer	15" Woofer	15" Woofer	15" Woofer
HF Driver	1" Dynamic Driver	—	1" Dynamic Driver	—
Frequency Response	40-20KHz	30-150Hz	40-20KHz	30-150Hz
Max SPL Peak @1w / 1m	100db	98db	100db	98db
Dimensions W/D/H mm	480 x 380 x 700	480 x 380 x 700	480 x 380 x 700	480 x 380 x 700
Weight Net (kgs)	26	26	26	26

Wharfedale Pro **EVP & SVP SELF POWERED SPEAKER SYSTEMS**

EXTENDABLE
3 YEAR
WARRANTY

EVP-XP & SVP-P

The new EVP-XP & SVP-P powered loudspeakers incorporate a powerful and well protected amplifier module that can be played at maximum levels over long periods without fear of system failure. The built-in 2 channel mixer with line/Mic inputs and bass/treble control make it ideal to plug and play without a mixer needed. The SVP also features a 5 Band EQ.



B.D. Price
\$689.00

B.D. Price
\$699.00

B.D. Price
\$929.00

B.D. Price
\$499.00

B.D. Price
\$539.00

B.D. Price
\$629.00

SPECIFICATIONS	EVP-X12P	EVP-X12PM	EVP-X15PB	SVP-12PM	SVP-15P	SVP-15PB
Rec Retail Price	\$819.00	\$829.00	\$1099.00	\$589.00	\$639.00	\$749.00
RMS Power	300W	300W	300W	150W	200W	250W
System	2 Way Trap	2 Way Monitor	2 Way Trap	2 Way Monitor	2 Way Trap	Sub Bass
LF Driver	12" Woofer	12" Woofer	15" Woofer	12" Woofer	15" Woofer	15" Woofer
HF Driver	1" Ferro Cooled	1" Ferro Cooled	1" Ferro Cooled	1" Compression	1" Compression	—
Frequency Response	55-20KHz	55-20KHz	45-20KHz	50-20KHz	50-20KHz	40-150KHz
Dimensions W/D/H mm	590 x 430 x 370	645 x 460 x 450	675 x 460 x 450	415 x 428 x 554	638 x 463 x 390	587x548x429
Weight Net (kgs)	22.9	27.4	29.5	17.5	21.76	32.54

Wharfedale Pro **STUDIO MONITORS**

DIAMOND 8

Diamond 8 Series Active & Passive Studio Monitors.



B.D. Price
\$169.00

B.D. Price
\$319.00

B.D. Price
\$219.00

B.D. Price
\$419.00

The Diamond 8 series represents a de facto standard for sound quality and balance. The consistency and quality of these speaker systems across a wide variety of source materials, gives a tried and proven basis for a monitor to give the professional recording and post production industry a superb reference for the creation and mixing of program material for the real world.

SPECIFICATIONS	STUDIO-8.1P	STUDIO-8.2P	STUDIO-8.1A	STUDIO-8.2A
Rec Retail Price	\$199.00 ea.	\$269.00 ea	\$379.00 ea	\$499.00 ea
RMS Power	100W	100W	60+40W	60+40W
System	2 Way Passive	2 Way Passive	2 Way Bi-Amp	2 Way Bi-Amp
LF Driver	5" Woofer Kevlar	5" Woofer Kevlar	5" Woofer Kevlar	6.5" Woofer Kevlar
HF Driver	1" Super Tweeter	1" Super Tweeter	1" Super Tweeter	1" Super Tweeter
Frequency Response	50-24KHz	45-24KHz	50-24KHz	45-24KHz
Max SPL Peak @1w / 1m	106db	108db	106db	108db
Material Colour Laminate	IRIDIUM	IRIDIUM	IRIDIUM	IRIDIUM
Dimensions W/D/H mm	295 x 198 x 252	364 x 212 x 257	295 x 198 x 280	364 x 212 x 322
Weight Net (kgs)	5.2	6.2	7.5	8

TITAN 12 Passive



Titan 12 is the latest innovation from Wharfedale Pro. A high performance active or passive speaker system housed in a compact ABS enclosure. Versatile and easily mounted because of its functional cabinet design. The Titan 12 is at home indoors or outdoors, on stage, or in a studios. An ultra-light-weight composite enclosure that's designed to be stand mounted, arrayed or even used as a floor monitor.

B.D. Price
\$349.00

NEW B.D. Price
\$549.00

SPECIFICATIONS	TITAN-12P	TITAN-12 ACTIVE
Rec Retail Price	\$399.00	\$649.00
RMS Power	250W	250W Powered
System	2 Way Passive	2 Way Powered
LF Driver	12" Moisture Proof	12" Moisture Proof
HF Driver	1" Titanium	1" Titanium
Frequency Response	55-20KHz	55-20KHz
Max SPL Peak @1w / 1m	120db	120db
Enclosure Material	Polypropylene	Polypropylene
Dimensions W/D/H mm	556 x 384 x 180	556 x 384 x 180
Weight Net (kgs)	12	20.5

PM-500

RRP: \$379.00

- XLR + Jack Ch Inputs
- 5 channel input
- 120 W/RMS power
- EFX Send / Return
- Digital delay
- Record out
- Two bank channel EQ
- 3 Band Master EQ



B.D. Price \$319.00

PM-600

RRP: \$489.00

- 6 channel input
- 230 W/RMS power
- Fan cooling system
- Tape in/cut in master section
- Digital Delay
- 3 band eq. on output
- Phantom power
- Rack-mountable model also available



B.D. Price \$419.00

PM-700

RRP: \$679.00

- 7 channel input
- 300W/RMS @ 4 ohm
- 450W/ 2 ohm amplifier
- 7 band graphic equalizer
- Dual DSP chips
- 8 preset FX
- Adjustable 'Time' and 'Repeat' delay effect



B.D. Price \$599.00

Wharfedale Pro BX SERIES MOULDED CASING POWERED AUDIO MIXERS

SPX-613

RRP: \$999.00

- 300W+300W@4ohm
- 7 balanced mic input
- 1 super Hi-Z input
- 3 Hi-Z inputs
- 3 stereo line inputs
- 9 band EQ
- 24bit 8 preset reverb and limiter
- USB record port
- 8 digital effects



B.D. Price \$849.00

SPX-815

RRP: \$1199.00

- 400W+400W@4ohm
- 9 balanced mic input
- 2 super Hi-Z inputs
- 5 Hi-Z inputs
- Two RCA inputs and 3 stereo line inputs
- 9 band EQ
- 24bit 8 preset reverb and limiter
- USB record port
- 8 digital EFX



B.D. Price \$999.00

PM-700RM

RRP: \$679.00

- Rack-mountable model
- 7 channel input
- 300 W/RMS power into 4 ohm
- Fan cooling system
- Tape in/out in master section
- 7 band master eq. on output
- Phantom power
- 8 preset effects
- Line + Mic inputs on each



B.D. Price \$579.00

TOPAZ TS SERIES COMPACT AUDIO MIXERS

Topaz Mixers can be used for a whole host of applications in a multitude of environments - clubs, halls, studios, AV suits and the like. All models have Ultra low noise inputs with 50dB gain, Aux1 Pre/Post switchable, all Topaz 4-Bus Mixers are also equipped with bargraph metering with two dual operation 10 segment meters (21dB to +6dB), smooth glide 60mm sliders and global phantom power. Two track machines such as DAT or cassette can be connected via RCA connectors, allowing you to record a mix and monitor off tape (when a tape switch is activated) Ideal for recording a performance or when using backing tapes. The inputs are all high quality and ultra low noise with signal to noise ratio spec the competition would defer to!

TS-164 MIXER

RRP: \$449.00

- 3 Band Eq
- 2 Aux Sends
- Mono output
- Dimensions: 80 H x 370 W x 40 D
- Channel freq response 20Hz-30KHz
- weight 5.1 kg



B.D. Price \$349.00

TS-184 MIXER

RRP: \$669.00

- 10 mono input channels, 2 stereo input channels and 2 stereo effects returns
- Dimensions: 80 H x 400 W x 47 D
- Channel freq response 20Hz-30KHz
- weight 6.3 kg



B.D. Price \$519.00

TS-284 MIXER

RRP: \$1149.00

- 20 mono input channels, 2 stereo input channel and 2 stereo effects returns
- Dimensions: 80 H x 400 W x 77 D
- Channel freq response 20Hz-30KHz
- weight 10.5 kg



B.D. Price \$879.00

PM SERIES PORTABLE PA PACKAGES

PM SERIES

Portable PA System Packages. Come with self powered Mixer / Amplifier, 2 x speakers and 1 x DM-01 Dynamic microphone.



PM-500 SYSTEM:

120 W powered Mixer with 5 inputs, 2 band eq on each ch. Record out, Digital delay, plus two PT-10 two way 10" loudspeakers and one DM 1.0 dynamic microphone.



B.D. Price \$549.00

PM-600 SYSTEM:

230 W powered Mixer with 6 inputs, 2 band eq on each ch. Record out, Digital delay, Effects send/return, 3 band master Eq, two PT-12 two way 12" loudspeakers and one DM 1.0 dynamic microphone.



B.D. Price \$729.00

MP-1200Watt

RRP: \$949.00

- Stereo mode output:
 - 8ohm: 260W
 - 4ohm: 400W
 - 2ohm: 640W
- Bridged Mono mode output:
 - 8ohm: 800W
 - 4ohm: 1280W



- Sophisticated protection circuitry
- All steel construction

B.D. Price \$799.00

MP-1800 Watt

RRP: \$1099.00

- Stereo mode output:
 - 8ohm: 330W
 - 4ohm: 600W
 - 2ohm: 900W
- Bridged Mono mode output:
 - 8ohm: 1200W
 - 4ohm: 1800W



- Sophisticated protection circuitry
- All steel construction

B.D. Price \$899.00

MP-2800 Watt

RRP: \$1499.00

- Stereo mode output:
 - 8ohm: 800W
 - 4ohm: 1400W
- Bridged Mono mode output:
 - 8ohm: 2800W



- Sophisticated protection circuitry
- All steel construction

B.D. Price \$1249.00

Wharfedale Pro WPG SERIES GRAPHIC EQUALIZERS & CROSSOVERS

EXTENDABLE 3 YEAR WARRANTY

WPG-315

RRP: \$249.00

Two ch 15 band Constant Q Graphic Equaliser



B.D. Price \$199.00

WPG-331

RRP: \$249.00

Single ch 31 band Constant Q Graphic Equaliser



B.D. Price \$199.00

WPG-335

RRP: \$399.00

Two ch 31 band Constant Q Graphic Equaliser



B.D. Price \$329.00

EQ-215/EQ-31

RRP: \$369.00

EQ-215: Stereo 2/3 octave graphic equalizer
EQ-31: 1/3 Octave graphic equalizer

- Hardwire by-pass switch with LED Indicator
- Constant Q filtering
- Input signal level + peak LED indicator
- 40Hz/18dB p/ Octave low-cut filter



B.D. Price \$299.00

WPG-202 CROSSOVER

RRP: \$249.00

Stereo 2 way, Mono three way electronic crossover, 1 RU, 2.7kgs N.W



The WPG Series of audio processors provide a cost effective solution to creative signal processing with the benefits of low noise levels and high specifications. Each unit in the range is housed in an extremely strong and rugged package. Modern manufacturing in Wharfedale's own factory ensures the complete reliability and longevity of the WPG Series.

B.D. Price \$199.00

Wharfedale Pro PRO SERIES DIGITAL EFFECT SIGNAL PROCESSOR

EXTENDABLE 3 YEAR WARRANTY

EZVERB

RRP: \$279.00

Stereo / Dual Mono Programmable Effects Processor:

- 255 studio effect presets
- Two separate processors (dual processing)
- up to four studio effects combinations per preset
- Stereo inputs and outputs
- One touch control - no programming necessary
- Effects include plate, room, chamber and hall reverb; forward and reverse gated reverb; stereo chorus and flanging
- Stereo delays and panning
- All steel enclosure



B.D. Price \$229.00

PROVERB

RRP: \$449.00

Stereo / Dual Mono Programmable Effects Processor:

- 255 studio effect presets
- Two separate processors (dual processing)
- Up to four studio effects combinations per preset
- Stereo inputs and outputs
- Easy editing - no programming necessary
- Plate, room, chamber and hall reverb; forward and reverse gated reverb; stereo chorus and flanging; stereo delays and panning; slapback and tapped delays; stereo echoes
- MIDI control
- All steel case.



B.D. Price \$359.00

PROCOM COMPRESSOR

RRP: \$329.00

Stereo / Dual Mono Compressor / Limiter:

- 2 independent compressor/ limiter gates
- Stereo-linked or dual-mono operation
- Detector loop on each ch.
- Balanced/unbalanced operation for both inputs/ outputs
- Input and output level LED
- Soft and hard knee compression for greatest flexibility
- Limiter/compressor selector on each ch.
- Gate has threshold and release controls
- All steel enclosure.



B.D. Price \$269.00

Wharfedale Pro R SERIES COMPACT AUDIO MIXERS

EXTENDABLE 3 YEAR WARRANTY

R-200

RRP: \$229.00

- 4 balanced/unbalanced mono line inputs, 4 low noise
- High headroom XLR mic inputs
- 2 pairs of balanced/unbalanced mono line input
- 48V phantom power
- 3 band EQ in each input channel
- 75Hz, 18dB/octave low cut filter on channels
- Peak LED's on mono channel



B.D. Price \$179.00

R SERIES MIXERS

The R Series of mixers from Wharfedale Professional are designed to offer a superior quality audio performance in an easy to use, great value package. The quality of the R Series is such it can be used in a variety of professional applications such as studio, sound reinforcement, field recording and film/video production. Mic and line inputs are provided on balanced XLR and jack connectors for optimum performance with the main stereo outputs on balanced XLRs for better integration with other professional equipment - Now we introduce to you the R-FX series - the R Series mixer with on board digital effects.

R-1604FX

RRP: \$499.00

- 15 preset digital effects including Delay, Reverb & Chorus
- 4 balanced/unbalanced mono line input, 4 low noise
- High headroom XLR mic inputs
- 4 pairs of balanced/unbalanced mono line inputs
- 48V global phantom power
- 3 band EQ in each input channel, 75Hz, 18dB/octave low cut filter on channels
- 1-4PFL/SOLO and Mute



B.D. Price \$419.00

R-1604

RRP: \$379.00

- Same as above but without effects

B.D. Price \$319.00

R-2004FX

RRP: \$649.00

- 15 preset digital effects including Delay, Reverb & Chorus
- 8 balanced/unbalanced mono line input, 4 low noise
- High headroom XLR mic inputs
- 4 pairs of balanced/unbalanced mono line inputs
- 48V global phantom power
- 3 band EQ in each input ch
- 75Hz, 18dB/octave low cut filter on channels
- 1-4PFL/SOLO and Mute



B.D. Price \$549.00

R-2004

RRP: \$549.00

- Same as above but without effects

B.D. Price \$449.00

USA INSTALLATION & ST STUDIO SERIES POWER AMPLIFIERS



Peak USA models are powerful, heavy duty, reliable and a successful, stable diet of the Australian installation market in a compact 2 RU package. ST Amplifiers excel in power & crystal clear reproduction of sound perfect for small installations.

ST-3 RRP: \$349.00

Studio Series Power amp Stereo Amplifier
125 watts RMS per Channel @ 4ohms. 1 RU.
Convection cooled ultra quiet performance.



B.D. Price \$299.00

ST-5 RRP: \$469.00

Studio Series Power amp Stereo Amplifier
250 watts RMS per Channel @ 4ohms. 2 RU.
Convection cooled ultra quiet performance.



B.D. Price \$399.00

USA-600 RRP: \$599.00

Stereo Power Amplifier
300w RMS per channel @ 4 ohms.
Fan Cooling, Soft Start, Low Noise, 2 RU.



B.D. Price \$499.00

USA-1200 RRP: \$929.00

- Stereo Power Amplifier
- 600 watts per channel @ 4ohms
- Fan Cooled
- Switchable Compression
- Extensive Protection Circuitry including DC Thermal, Slow Start
- Relay Speaker Outputs
- 3 RU



B.D. Price \$779.00

USA-900 RRP: \$799.00

- Stereo Power Amplifier
- 450 watts per channel @ 4ohms
- Fan Cooled
- Switchable Compression
- Extensive Protection Circuitry including DC, Thermal, Slow Start
- Relay Speaker Outputs
- 3 RU



B.D. Price \$669.00

USA-1600 RRP: \$1049.00

- High Powered Stereo Amplifier
- 800 watts per ch @ 4ohms
- Fan Cooled
- Extensive Protection
- Circuitry including DC, Thermal, Slow Start
- Switchable Compression
- Relay Speaker Outputs
- 3 RU



B.D. Price \$879.00

PEAK POWERHEAD MIXERS & STUDIO MONITOR



PMH-840D RRP: \$499.00

400W 8 channel Stereo Powered Mixer with Effects.
200W/RMS per channel @ 4 ohm, 8 XLR/line inputs, 2 band channel EQ, dual 7 band master EQ's, +48V phantom power digital multi-fx, RCA tape-in/rec or Headphones output & volume control. Weight: 12 kg



B.D. Price \$419.00

PMH-1260D RRP: \$699.00

600W 12 channel Stereo Powered Mixer with Effects.
300W/RMS per channel @ 4 ohm, 8 XLR + 2 x stereo mic/line inputs, 3 band channel EQ, dual 7 band master EQ's, +48V phantom power, digital multi-fx, tape-in/rec out RCA's, headphone output & volume control, individual + master auxiliary/external fx control dual 10 segment bar graph meter. Weight: 14 kg. Size in mm: 525w x 305h x 320d.



B.D. Price \$579.00

PSM-250A RRP: \$249.00 ea.

- Active 100W/RMS 2-way nearfield monitor
- 1" Ferro fluid cooled soft dome tweeter
- 6.5" Woofer
- Bi-amped internal power (50W/LF + 50W/HF) clear
- Transparent sound with full linear frequency response.
- Shielded for operation near video monitors.
- Freq: 35Hz-20KHz
- Imp 8 ohm



B.D. Price \$199.00

PEAK MIXING CONSOLES (UNPOWERED)

PMM-6 RRP: \$149.00

6 channel Micro Mixer. 2 XLR + 2 stereo mic/line inputs, +48V phantom power, 3 band EQ on all channels, AUX send on each channel for external effects and monitoring, separate master mix control for room and headphone outputs, 2 assignable track inputs, 10 segment master bargraph meters



B.D. Price \$125.00

PMM-8D WITH FX RRP: \$249.00

8 channel stereo mic/line mixer with effects, 4 XLR + 2 stereo mic/line inputs, 16 segment digital multi effects, +48V phantom power, 3 band EQ on all channels, AUX send on each channel for external effects and monitoring, separate master mix control for room and headphone outputs, 2 assignable track inputs, 10 segment master bar graph meters



B.D. Price \$199.50

PMB-16D WITH FX RRP: \$549.00

16 channel stereo mic/line mixer with effects, 12 XLR + 2 stereo mic/line inputs, 10 pre-set digital multi effects, +48V phantom power, 3 band EQ on all channels, 2 main master controls and 1 stereo sub group faders, dlx faders on all channels. Weight: 9.5 kgs, size in mm: 670 x 390 x 95.



B.D. Price \$449.00

PEAK POWERED MIXING CONSOLES

PMB-1050D RRP: \$569.00

500W 10 channel Stereo Powered Mixer with Effects. 250W/RMS per channel into 4 ohm, 6 XLR + 2 stereo mic/line inputs, 24-bit digital multi effects, +48V phantom power, 3 band channel EQ, 1 group sub plus 2 master faders, 7-band master EQ's. Weight: 11.5 kgs, Size in mm: 490h x 390w x 125d.



B.D. Price \$479.00

PMB-1270D RRP: \$899.00

700W 12 channel Stereo Powered Mixer with Effects. Ultra low noise, 350W/RMS per channel into 4 ohm, 12 XLR inputs, 24-bit digital multi effects, +48V phantom power, 3 band channel EQ, 2 group sub plus 2 master faders, 2 x 7-band master EQ. Size in mm: 646h x 450w x 150d.



B.D. Price \$749.00

PMA-184 RRP: \$999.00

PM-184: 14 channel compact stereo mic/line mixer with 80C watt RMS stereo mixer (400W + 400W @ 4 ohm). 32 preset 24 bit digital multi effects. Features 6 XLR mic inputs plus 4 stereo jack inputs, 4 band EQ on stereo, 3 band EQ with sweepable mid band on m/c channels, switchable 7 band graphic EQ on master, 2 Aux sends per channel.



B.D. Price \$849.00

PM-184 RRP: \$699.00

14 channel mic/line 800 watt RMS stereo mixer (400W + 400W @ 4 ohm). All other console features are same as model PMA-184.

B.D. Price \$599.00

PRA-SERIES VOCAL & INSTRUMENT MICS



PRA-C1 RRP: \$89.00
Supercardioid Dynamic Mic with on/ off switch + clip + A1 case, 50 Hz - 16 KHz, low imp.

B.D. Price \$69.00



PRA-C3 RRP: \$169.00
3 x Supercardioid Dynamic PRA-C Mics + clips in sturdy ABS case.

B.D. Price \$119.00



PRA-C5 RRP: \$249.00
5 x Supercardioid Dynamic PRA-C Mics + clips in sturdy ABS case.

B.D. Price \$179.00

KILLER PRICE

PRO-SERIES MICROPHONES



TOP-248 RRP: \$149.00
Dynamic vocal Mic + clip + A2 case, 50 Hz - 16 KHz, low imp, high sensitivity, wide extended frequency response.

B.D. Price \$119.00



TOP-258 RRP: \$149.00
Dynamic: vocal + instr. mic + clip + A2 case, 50 Hz - 16 KHz, low imp, high sensitivity, wide extended frequency response.

B.D. Price \$119.00

SONATA SERIES MICROPHONES



FH-12S RRP: \$99.00
Dynamic Super Cardioid Mic with switch, A2 case + clip, freq response: 50 Hz - 16 KHz, imp 250 ohm, powerful neodymium magnet, high sensitivity, extremely low handling noise.

B.D. Price \$79.00



FI-10 RRP: \$99.00
Dynamic Super Cardioid Vocals & Instrument Mic with A2 case + clip, flat extended frequency response suitable for miking of various instruments, 50 Hz - 18 KHz, 250 ohm imp, neodymium magnet.

B.D. Price \$79.00

PRO-SERIES DRUMKIT MIC SET

DRK-B5C2 COMPLETE 7PCS SET

Set of 7 PRO Series mics for miking instruments & drums + A4 Case. The kit includes 1 x PRO-218A for low freq, 3 x PRO-228A for mid freq, 2 x PRO-268A Condenser for the mid-high freq and 1 x PRA-288A for miking the snare drum.

HOT \$599.00

B.D. Price PRO-268A \$129.00

B.D. Price PRO-218A \$249.00

B.D. Price PRO-228A \$129.00



B.D. Price PRO-268 \$79.00

PRA-SERIES DRUMKIT MIC SET

DRK-E4C2 COMPLETE 6PCS SET

Set of 6 PRA Series mics for miking instruments & drums, incl 1 x PRA-218B, 3 x PRA-228A, 2 x PRA-268AH + A4 Case. Includes all mic clip adaptors.

HOT \$399.00

B.D. Price PRA-228A \$79.00

B.D. Price PRA-268A \$99.00

B.D. Price PRA-218B \$149.00



SONATA SERIES DRUMKIT MIC SET

DRK-F5H3 COMPLETE 8 PCS MIC SET

Set of 8 Instrument Mics also for use with drums. Set includes 1 x FK-2, 3 x FT-4, 2 x HO-8, 1 x FS-6, 1 x HI-10.

HOT \$549.00

B.D. Price 3 x FT-4 \$79.00 ea

B.D. Price FK-6 \$79.00

B.D. Price 2 x HO-8 \$129.00 ea

B.D. Price FK-2 \$129.00

B.D. Price HI-10 \$119.00



LARGE DIAPHRAGM CONDENSOR MICS FOR RECORDING

CM-H8A

RRP: \$269.00

Large 1" Diaphragm Condenser cardioid Mic with low noise transformer circuitry, swivel adaptor mount, 30 Hz - 20 KHz, low imp. Internal bass roll-off switch makes this mic ideal for studio recording, broadcast and live sound applications. Packaged in a sturdy plastic case.



GREAT PRICE

B.D. Price \$199.00

CM-H8C

RRP: \$549.00

Large 1" Diaphragm true condenser card/ omni/ fig8 Mic, 20 Hz - 20 KHz, low imp. Designed for broadcast, studio & live sound applications with 3 polar patterns, low freq roll off and 10dB attenuator switch. Ideal for extremely high sound pressure level sound reproduction. Includes deluxe carry case, shock mount harness, 48V power supply & foam windsheild.



B.D. Price \$429.00

CM-H8E

RRP: \$549.00

Large 1" Diaphragm Condenser cardioid Mic with external 2 steps low freq roll-off switchable, 30 Hz - 20 KHz, low imp. This microphone can be used in high humidity and dusty environments, and performs equally well for live vocals, instruments, and as a boundary microphone at stage floor level. Includes



B.D. Price \$449.00

CM-H8G

RRP: \$1199.00

Tube 1" Diaphragm Condenser Mic Package offering 9 different polar patterns, from omni through cardioid to fig. 8, all selectable by the user giving it unparalleled versatility in broadcast, studio and live sound applications. 30 Hz - 20 KHz, low imp. Includes Mic harness, power supply and a durable aluminium carry case.



B.D. Price \$899.00

EXTREME VALUE

GOOSENECK SERIES



PRA-518AS

B.D. Price \$75.00

Superior, low noise Gooseneck 1ft Electret Condenser Mic, 50 Hz - 16 KHz, low imp.



PRA-518AM

B.D. Price \$79.00

Superior, low noise Gooseneck 1.5ft Electret Condenser Mic, 50 Hz - 16 KHz, low imp.



PRA-618M

B.D. Price \$79.00

Gooseneck 1.5ft Dynamic Mic with tailored vocal frequency response. 100 Hz 15 KHz, low imp. Ideal for conferences, lectures & interviews.

SHOTGUN & BROADCASTING MICS

PRA-116B (370mm)

RRP: \$279.00

PRA-116B is a gun condenser microphone with a strong directivity and a length of 370mm. The tailored frequency response makes it an ideal candidate for the miking in TV programming, movie production, theatre reinforcement, press interview and outdoor picking-up. It is directly powered by 6V of batteries, which makes the external power supply unnecessary.



B.D. Price \$229.00

PRA-118L (450mm)

RRP: \$679.00

Super Directivity Condenser Shotgun mics. Features excellent control on off-axis sound, natural and crisp frequency reinforcement, 30 Hz - 16 KHz, low imp. Ideal for miking in movie & TV programming, and speech reinforcement in theatres and press interviews.

Also available: PRA-118 short (240mm)- \$599.00

B.D. Price \$549.00

CM-H8HKU/H/O

RRP: \$249.00

The CM-H8K/U/H/O is a set with one preamp but all three capsules, Cardioid, Hypercardioid, and Omni. Each set comes with a HM-32 full elastic shock mount, S-08 windscren, and spare suspension elements for the shock mount, in a hard shell case

B.D. Price \$199.00



SPECIALTY APPLICATION MICS



PRA-383 RRP: \$169.00

Mic for miking brass & wind + A1 case, 1.5 m cable, power supply, 20 Hz - 20 KHz, low imp.

B.D. Price \$139.00

WU-518B

RRP: \$69.00

Uni-dir condenser Lapel Mic + 3.5mm Jack. Features high sonic durability, wide dynamic range, low distortion. 60 Hz - 15 KHz, low imp. Best choice for theatres and live broadcasting.



B.D. Price \$59.00

PRA-52B

RRP: \$119.00

Ceiling Condenser Mic w/10m cable. Features: high sensitivity, wide frequency response, phantom power, 40 Hz - 18 KHz, low imp. Ideal for choir, drama and orchestral performances.



B.D. Price \$99.00

BOUNDARY MICROPHONES



PRA-418

RRP: \$219.00

Omni-directional condenser boundary Microphone + case with power module, 30 Hz - 20 KHz, low imp.

B.D. Price \$179.00



PRO-H7F RRP: \$179.00

A professional supercardioid dynamic mic with classic appearance. Tough die cast housing in chromed finish, including a deskstand and a sturdy ABS carry case!!

B.D. Price \$149.00

PRO-H7E

RRP: \$199.00

A cardioid condenser mic, in gold finish other features are the same as PRO-H7F.



B.D. Price \$169.00

dB PU120

RRP: \$499.00

Compact, entry level diversity system comprising:

- UH- 120 M handheld transmitter
Microphone with cardioid dynamic capsule
- PU 150 R receiver
- 9.5" Rack space wide



B.D. Price \$399.00

PU-120 WIRELESS SYSTEM

The PU-120 Performer series offers professionals the combination of UHF frequency operation with the highest audio performance at an extremely affordable price. The PU-150 receiver includes quartz-controlled design to ensure frequency stability and a high level of rejection of unwanted signals. The PCB circuitry and components are the highest grade possible using only low noise pre-amplifiers and transducers, there are 12 fixed frequencies and up to 6 simultaneous frequencies.

dB PU901

This compact and powerful digitally controlled diversity wireless microphone system features digital pilot tone control, digital squelch control, output volume control, battery status LED on receiver, removable antennas with 16 user switchable frequencies. The PU-901 provides a high-quality wireless connection with ease of use and high reliability.

dB PU-901MD RRP: \$599.00
Vocal-Set featuring hand transmitter with dynamic cardioid mic capsule & 901R table top diversity receiver.

B.D. Price \$499.00

dB PU-901L RRP: \$599.00
Presenter-Set featuring lavalier mic, pocket transmitter & 901R table top diversity receiver.

B.D. Price \$499.00

dB PU-901DHM RRP: \$719.00
Head-Set featuring headset mic, pocket transmitter & 901R table top diversity receiver.

B.D. Price \$599.00

dB PU-901G RRP: \$579.00
Guitar-Set featuring instrument cable, pocket transmitter & 901R table top diversity receiver.

B.D. Price \$489.00

TOURING RACK & UHF IN EAR MONITOR SYSTEM

TOURING RACK

RRP: \$8999.00

Complete with 6 x 910R receivers in rack completely pre-wired with 6 x 910M handheld dynamic cardioid transmitters and 6 x 910L miniature Lavalier transmitters, all usable as a 12 channel system. Includes AS6 antenna splitter.

Also available are 2 x RDA 900 (Remote Directional Antenna), optimises operating reliability and increases the possible range. Can be mounted on mic or speaker stands. Includes all weather cover. Stands not included



B.D. Price \$6999.00

IEM-1100 UHF IN-EAR MONITOR

RRP: \$999.00

PRICE BREAKTHROUGH WITH HIGHEST QUALITY IN-EAR MONITORING AT AN AFFORDABLE PRICE.



- 9.5" transmitter in a metal housing with removable antenna
- 2 control inputs with LED level indicator
- 2 x balanced inputs and parallel outputs
- Belt pack receiver with limiter & volume control
- Pair of high power Sony earphones, plus silicone ear pieces

HOT \$799.00

PORTABLE POWERED SPEAKER SYSTEM

OPERA 110 MOBILE

RRP: \$1650.00



B.D. Price \$1399.00
(EXTRA \$250 FOR WIRELESS MIC TRANSMITTER)



- Master Volume inc. LED limiter
- Optional Delay on TD model
- Volume control Stereo-Aux
- Input controls: external mic gain control, internal wireless gain control, tone control, wireless frequency selector.
- Optional wireless receiver
- Mic/line input socket combined XLR/6.5mm jack. Input sensitivity switch.
- Stereo aux. inputs (cinch)
- Unbalanced line output
- ON/ OFF switch
- Battery status control indicators. Variable (3-12V) dc output socket.
- 12V-dc input
- 115/230 V a/c input & fuse

MOBILE-50L

RRP: \$949.00

MOBILE-50M



Integrated 50W RMS digital amplifier offers efficiency at lowest power consumption. A rechargeable battery provides up to 5 hours of performance time. It is equipped with an integrated wireless receiver with Mic/line inputs. Power consumption can be optimised for different applications with "sleep-mode", "vox mode" and can run/charge with external power supply.

MOBILE 50 B.D. Price \$799.00

includes choice of remote hand held or laval mic transmitter.

BASIC LINE

This new self powered speaker line provides a high quality product with great audio features and performance at an accessible price. Basic Line is designed to meet the needs of entry level applications such as DJ's, schools, and church's alike, where budget orientated solutions are required. In spite of the very attractive price, dB Technologies has not compromised the performance and reliability of these enclosures, featuring Bi-Amp technology, a frequency response of 65-18.000 Hz, XLR + Jack input and Mic-/Line Level switchable.

BASIC-100 RRP: \$649.00
1 x 10" woofer + 1" tweeter, max. SPL 117 dB, bi-amp 70W + 20W RMS.

BASIC-200 RRP: \$699.00
1 x 12" woofer + 1" tweeter, max. SPL 118 dB, bi-amp 120W + 40W RMS.

BASIC-400 RRP \$899.00
1 x 12" woofer + 1" compr. Driver, max. SPL 125 dB, bi-amp 225W + 50W RMS.



OPERA ACTIVE SPEAKER SYSTEM

This is now the Fourth generation of this worldwide popular highly successful Italian made active speaker. All the models are fitted with high-grade Bi-amp H-class output stage and have intelligent electronics, such as the active phase-optimised diplexer or the dynamic soft clip limiter, which protects the system from overload and allows reliable operation right up to the power limit. More bass with more punch at higher sound pressure levels are due to the latest output stage technology and the 12", 15" woofers developed with an extremely light diaphragm material, generously dimensioned magnets and oscillation coils with low gap size provide high efficiency and convert the available power perfectly into sound pressure, the light weight moulded cabs are made from extremely stable polypropylene which makes them super light for stacking or flying.

- INTELLIGENT SELF-PROTECTION SYSTEM
- BI-AMPLIFIED ACTIVE LOUDSPEAKERS
- CAN BE STACKED AND ARRAYED
- EASY TO HANDLE & INSTALL
- VERY LOW STAND BY NOISE
- LINE & MICROPHONE INPUT
- JACK & XLR CONNECTION
- DURABLE AND EASY
- TOTAL RELIABILITY
- READY TO GO



TECHNICAL DATA	OPERA-TWIN 128	OPERA LIVE-210	OPERA LIVE-402	OPERA LIVE-405	OPERA-305
Rec Retail Price	\$850.00	\$749.00	\$999.00	\$1099	\$999.00
Power (RMS)	Active 100W	Active 200W	Active 300W	Active 300W	Passive 350W
Freq. Response	80-20 kHz	6E-18 kHz	60-18 kHz	60-18 kHz	45-20 kHz
Crossover	2000Hz	2000Hz	2000Hz	2000Hz	2000 Hz
Maximum (SPL)	118 dB max	120 dB max	128 d3 max	128 dB max	123 dB max
Speaker Components	2 x 8" woofer 1" Driver	10" woofer 1" Driver	12" woofer 1" Driver	5" woofer 1" Driver	15" woofer 1" Driver
Dimen's in cm (HxWxD)	55 x 31 x 28	55 x 31 x 28	66 x 40 x 35	65 x 40 x 35	70 x 44 x 22
Weight	10 kg	13kg	18 kg	19 kg	14 kg

OPERA SUBS

STAGE OPERA ACTIVE SERIES All elements of this Italian manufactured series are tuned to give maximum performance. High efficiency, best acoustic performance, ease of handling and absolute reliability are the hallmarks of this superior system. The Trapezoidal enclosures are manufactured from 20mm multiflex, and are finished with black structural paint.

SPECIFICATIONS	OPERA-SUB15	OPERA-SUB12	OPERA-SUB05	OPERA-M124
Rec Retail Price	\$1999.00	\$1349.00	\$1449.00	\$1449.00
RMS Power	800W	400W	400W	275W
System	Active Sub Bass	Active Sub Bass	Active Sub Bass	2 Way Monitor
LF Driver	15" Woofer	12" Woofer	15" Woofer	12" Woofer
HF Driver				1"
Frequency Response	40-120Hz	40-150Hz	30-150Hz	70-18KHz
Max SPL Peak @1w / 1m	133db	127db	129dB	126dB
Weight Net (kgs)	32	18.9	27	13



Sweet sound at a budget-friendly price? PowerWorks makes it happen!

SOUNDHOUSE-1 ACTIVE 600W WITH 8" CABS RRP: \$2595



Be it a party sound system, a PA for bands and DJs, or a fixed installation, PowerWorks offers top drawer sound even at peak levels! HK AUDIO engineers developed the PowerWorks line in a state-of-the-art acoustics lab. PowerWorks enclosures are exclusively equipped with high-quality Eminence loudspeakers, custom built in the USA especially for PowerWorks.

All the considerable experience of HK AUDIO engineers, painstakingly matched components and crossovers, and the quality of true Old World craftsmanship endow the PowerWorks line with the power to deliver rich, full, commanding sound.

Featuring a wide selection of passive and active models that may be mixed and matched in a variety of configurations, PowerWorks offers the right solution for the most diverse applications. And it does so at such reasonable prices that anyone can afford to enjoy audio quality engineered by HK AUDIO.

- Features:
- RS-15SUBA bin
 - 2 x RS-82 cabs



*Speaker stands not included

B.D. Price \$1899.00

SOUNDHOUSE-2 ACTIVE 600W WITH 12" CABS RRP: \$2895

- Features:
- RS-15SUBA bin
 - 2 x RS-112 cabs



*Speaker stands not included

B.D. Price \$2295.00

PROJECTOR

- 4 x 18" horn-loaded subwoofer, 2 x 12"/2" horn-loaded satellite
- The heavy-duty power pack for big gigs
- Fully horn-loaded-plenty of punch even at distances of 150 ft. and more!
- Basic system: four 18" subwoofers, two 12"/2" mid/high-range enclosures (flyable!)
- 3-way active system electronics with OF-RTM technology in every cabinet
- 600-watt RMS power amp with DynaClip™ limiter in every subwoofer for chest-slammung bottom-end punch
- 2x 300-watt RMS power amps with OPTO-Limiter for transparent sound in the mid/high-range cabinets
- Subsonic filter protects power amp and speaker from harmful ultra-sub-low frequencies
- 24 dB/octave electronic crossover for a cleaner signal
- 3-coloured LED for monitoring the limiter visually
- Balanced XLR inputs/outputs
- Mid-High Units equipped with mid/long-throw switch
- Locking Powercon® socket
- Ground-lift switch to eliminate hum
- Factory-equipped with castors for easy transport



PROJECTOR COMPLETE ACTIVE 3600W SYSTEM RRP: \$28,995
B.D. Price \$25,995.00

D.E.A.CON

Dynamic Enhancement And Controlling System

- 2 x 12" mid/high unit, 2 x 18" sub A active, 2 x 18" sub B passive
- A compact PA system for bands, featuring powerful sound and effortless handling for large events
- 12" / 2" mid/high units equipped with a 600W RMS digital power amp and digital system controller
- DDO™ controller technology for natural sounding, true dynamic response at every volume level; affords reliable protection of the entire system
- Mid/high unit featuring full-range mode switch, DuoTilt™ and M10 flight rigging points
- 18" subwoofer equipped with a 1,000-watt-RMS digital power amp and a connector for an additional passive bass bin
- Subwoofer with 80 mm casters (3-1/8" wheels)
- Extraordinary flexibility: D.E.A.CON may be deployed with four, two or no subwoofers.
- Accessories: Protective cover, flight frame for mid/high unit, D.E.A.CON tilt unit



DEACON COMPLETE ACTIVE 3200W SYSTEM RRP: \$18,995
B.D. Price \$16,995.00

D.A.R.T

- Delivers strong and clear monitor sound without the hassle of endless tweaking and tuning
- 12" speaker for punchy low mids and excellent speech intelligibility
- 1" driver with 60° x 40° CD horn for transparent midrange and crisp top end
- Digital power amp with 250 watts RMS and over 90% efficiency for powerful lows and low mids
- Power amp with 60 watts RMS for the 1" driver
- Two-way active circuitry featuring OFRTM technology reproduces the full spectrum of sound at any level
- Multi-Band limiting for key frequency ranges
- Multi-functional design with DuoTilt™ speaker stand mounting collar
- Balanced, separately adjustable microphone and line inputs
- RCA connector for patching in signals from CD or tape
- Tricolour LEDs for displaying limiter status
- Included two-band EQ makes sound-shaping fast and easy

112AM ACTIVE 310W F.O.H OR MONITOR

RRP : \$2150



B.D. Price \$1899.00

F.A.S.T

- 300 W power amp
- 12" Low/Mid speaker
- 1" CD horn 60°x 40°
- XLR microphone input
- Combination XLR - 1/4" jack line input
- DynaClip™ Limiter
- OFRT™ technology
- Subsonic Filter
- DuoTilt™ speaker stand mounting collar (lines up sound to project toward the audience)
- Multifunctional housing



112A ACTIVE 300W MULTIFUNTION SPEAKER CABINET SYSTEM RRP: \$1495
B.D. Price \$1299.00

PREMIUM PASSIVE SPEAKER SYSTEMS

PR:O

- 1" driver
- High maximum SPL (128 dB)
- Ergonomically formed handles
- Comes standard with fly-mounts
- Integral hi/low-pass crossover in the bass unit
- DuoTilt™ speaker-stand mounting cups
- M20 pole-mount cup in the bass cabinet
- Speakon® connectors
- Recessed connector panels for plug protection
- Casters available as an option



PRO-12
RRP: \$925.00
\$799.00 *B.D. Price*
12" / 1", 400 W, 8 ohms



PRO-15X
RRP: \$1095.00
\$969.00 *B.D. Price*
bi-functional housing,
15" / 1", 400 W, 8 ohms



PRO-12M
RRP: \$835.00
\$799.00 *B.D. Price*
12" / 1", 400 W stage
monitor, 8 ohms



PRO-15
RRP: \$995.00
\$895.00 *B.D. Price*
15" / 1", 400 W, 8 ohms



PRO-18
RRP: \$1255.00
\$1149.00 *B.D. Price*
18", 500 W subwoofer,
4 ohms



MindPrint DIGITAL RECORDING TOOLS

The people who have joined forces to comprise the MindPrint team share many years of experience helping musicians translate their musical ideas into audible reality. From tube technology, pro audio and mixing consoles, to today's key studio problem: ensuring that digital remains musical, MindPrint have the solutions.

MP-TRIO RRP: \$899.00 *also available MP-TRIO/USB* **TRIO**. The total recording solution! The TRIO by Mind Print combines all of the products needed to make great recordings with your existing computer interface. The TRIO contains a three-way speaker selector, dual headphone outputs, built-in talkback, zero latency monitoring and a great sounding class A mic pre-amp. Other features include •48 V phantom power, •HiZ instrument input by Hughes&Kettner, •Analog Compressor with Adaptive Response™, •Low Cut Filter for MIC/INSTR, •2 Band EQ for MIC/INSTR, •2 Band EQ for LINE, • Analog Insert Send/Return for external processors, •Dedicated direct out, •Simultaneous use of MIC/INSTR., LINE, AUX, DAW analog and DAW digital for a total of 9 channels, •24bit/96kHz Digital Interface S/P-DIF compatible with most DAWs and sound cards, •Dynamic Range >105 dB(a).



HOT
\$699.00

MP-ENVOICE RRP: \$1095.00 **EN-VOICE MK II**. combines a high-quality tube recording preamp with advanced compression. Features •mic input with 48V phantom power, •instrument in, •line in, •balanced insert, •Low-cut 80Hz switchable filter with 3-band parametric EQ, •Attack/release circuit with 8 presets, •USB connectivity for interfacing with other gear, •Switched-mode power supply ensures you're protected from power surges and fluctuations, •Tubecompressor with adjustable Tube-Saturation, •low-cut Sidechain-filter, 300Hz, 6dB/Octave, •Balanced Line-Out XLR and Jack, •Optional digital I/O available.



B.D. Price
\$899.00

MP-DTC RRP: \$3295.00 **DTC** Dual Tube Channel, high-end recording front end with 2 channels of boutique-quality microphone pre-amplification. An advanced 4-band parametric EQ processes in parallel, which means selectable frequencies are handled by each band concurrently for highest quality. Compressor/limiter uses tubes and optocouplers to deliver the ultimate in fresh, crisp sound. Special "Adaptive Response™" circuit tracks signal amplitude and envelope, adjusting attack and release times immediately as necessary. 2 AKM DI-MOD 24-bit/96kHz A/D/A converters enable outstanding input and output sampling quality. Other features include •AD converter: AK 5393 VS, •DA converter: AK 4393 VS, •S/PDIF coaxial IN and OUT, •S/PDIF optical IN and OUT, •AES/EBU IN and OUT (DI-MOD 24/96 AES/EBU), •44.1/48/96 kHz sampling frequency in MASTER mode, •Syncs automatically between 32 - 108 kHz in AUTO mode, •All digital inputs can be used as sync reference, •Can use different sampling rates for DA and AD in master mode, •Stereo monitor out for DA. Dynamic range: >113dB(a).



B.D. Price
\$2699.00

L.U.C.A.S

Smart

*Speaker stands not included

- 1 x 10" subwoofer with built-in electronics, 2 x 6.5"/1" dome tweeter satellites
- The right solution for all entertainers seeking an extremely compact system with well-balanced, solid sound
- Ideal for multimedia presentations and fast, easy installations, weighing only 30kg!
- Independently variable XLR Microphone, Line and Aux inputs
- 2-way active circuitry with OFR™ technology
- 250 W RMS digital power amp drives the 10" subwoofer
- 2x 80 W RMS power amps drives satellites loaded with a 6.5" woofer and 1" dome tweeter
- Total system power: 410 W
- Multi-Band Limiting technology
- HK AUDIO MicroTilt™ for accurate speaker to audience alignment
- Total system weight: 30 kg/ 66 lbs

3 WAY ACTIVE 400W SYSTEM RRP: \$2995.00



B.D. Price \$2699.00

L.U.C.A.S

Impact

*Speaker stands not included

- 1 x 15" subwoofer with built-in electronics, 2 x 8"/1" dome tweeter satellites
- Ideal for solo entertainers, mobile DJs, and acoustic acts requiring more power and greater headroom
- 15" subwoofer, factory-equipped with casters
- Two satellites, each loaded with an 8" speaker and a 1" CD horn
- 2-way active circuitry featuring OFR™ technology
- 700 W RMS bass digital amp featuring DynaClip™ Limiter
- 2x 250 W RMS digital amps with Opto-Limiter for the satellites
- Total system power: 1200 W
- System weight: 47 kg / 103 lbs

2 WAY ACTIVE 1200W SYSTEM RRP: \$6250.00



B.D. Price \$5599.00

L.U.C.A.S

Performer

*Speaker stands not included

- 1 x 15" subwoofer with built-in electronics, 2 x 8"/1" dome tweeter satellites
- Ideal for sound-savvy solo entertainers, small bands and mobile DJs
- 15" subwoofer, factory-equipped with casters for effortless load-in and tear-down
- Two satellites sporting an 8" speaker and a 1" CD horn each
- 2-way active circuitry featuring OFR™ technology
- 500 W RMS digital amps drives the 15" subwoofer
- 2x 200 W RMS digital amps drive the satellites
- Total system power: 900 W
- HK AUDIO MonoTilt™ for optimum sound-to audience alignment
- Total system weight: 44 kg/ 97 lbs

3 WAY ACTIVE 900W SYSTEM RRP: \$4695.00



B.D. Price \$4199.00

L.U.C.A.S

Max

*Speaker stands not included

- 1 x 15" subwoofer with built-in electronics, 2 x satellites with 10" Neodymium speakers and a 1" CD horn
- Ideal for entertainers, bands and mobile DJs who require great sound and more power
- 15" subwoofer, factory-equipped with casters
- Two 10"/1" CD horn-loaded satellites
- 2-way active circuitry featuring OFR™ technology
- 1200 W RMS digital bass power amp drives the 15" Neodymium subwoofer
- 2x 400 W RMS digital power amp drives the satellites
- Total system power: 2000W
- HK AUDIO DuoTilt™ serves to zero in on and align sound to your audience
- System weight: 61 kg/ 134.5 lbs

3 WAY ACTIVE 2000W SYSTEM RRP: \$8895.00



B.D. Price \$7999.00

ELIAS

PX

*Speaker stands not included

- 2 x 15" subwoofer + 2 x 12"/1" satellites with built-in electronics
- 12"/1" mid/high cabinet with integrated 400 W RMS power amp with Opto Limiter
- mid/high cabinet switch-able to full-range mode
- 15" subwoofer with integrated 400 W RMS power amp and DynaClip™ limiter
- Mid/high cabinets with DuoTilt™ pole mount adapter
- Integrated flying points
- Subwoofer with M20 pole mount adapter
- Subwoofer with 100 mm blue wheels

3 WAY ACTIVE 1600W SYSTEM RRP: \$7995.00



B.D. Price \$7195.00

Your Brand Detective:

ACTOR

DX

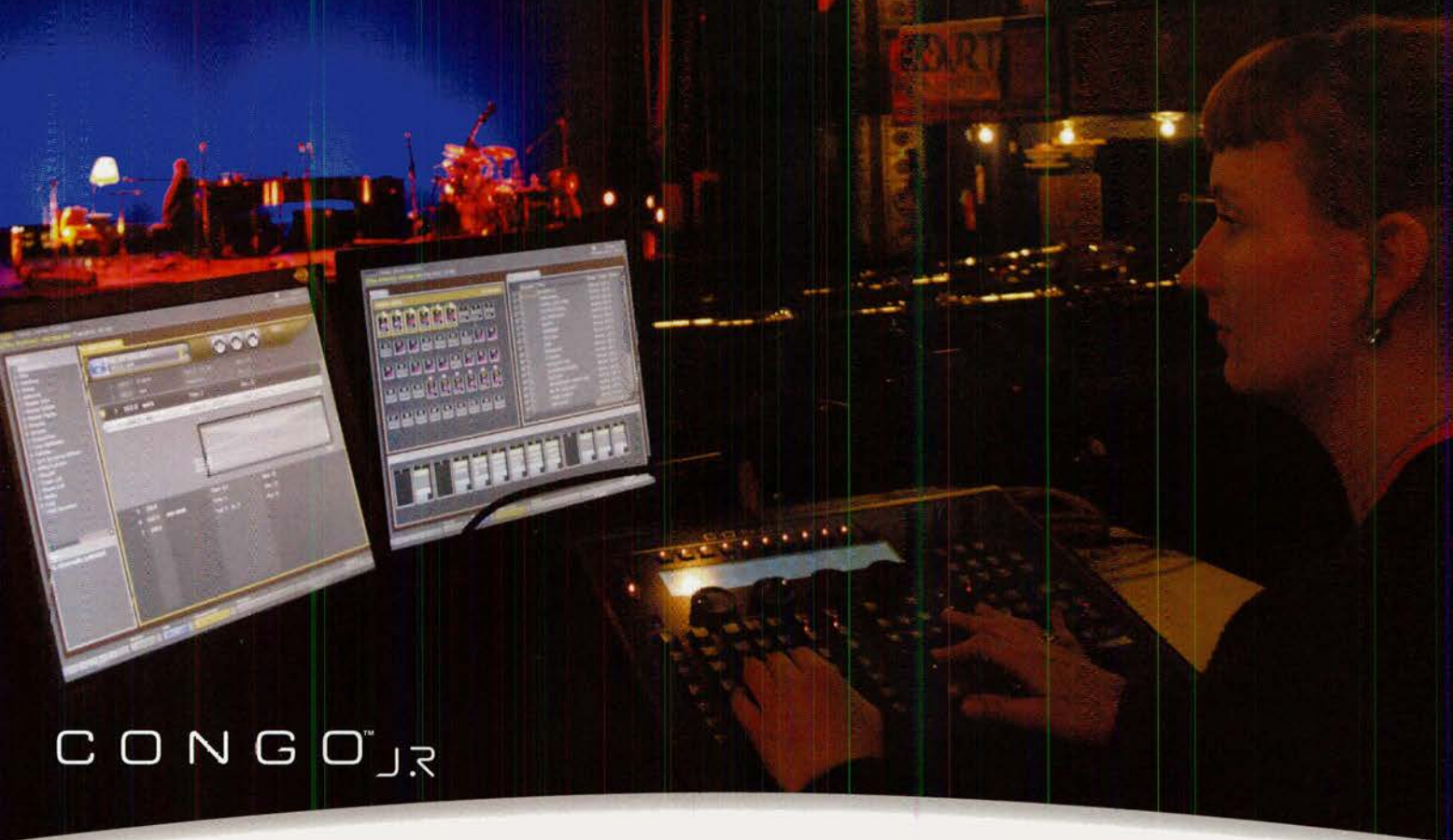
- 2 x 15" subwoofer active, 2 x 15" subwoofer passive, 2 x 12"/1.4" satellites
- 56-bit D.D.O.™ system controller
- 8 controller presets
- 3,200 W RMS of total system power
- 2x mid-high units (12"/1.4"), 600-watt PWM power amp and DuoTilt™
- 2x active bass cabinets (15"), 1000-watt PWM power amp
- 2x passive bass (15")
- ergonomically formed hand-grips

COMPLETE ACTIVE 3200W SYSTEM RRP: \$15,495



B.D. Price \$13,899.00

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CONGO[™] JR



Congo jr

Congo jr, new from ETC!

"The Congo jr lighting control console allows me, through its intelligent and logical display, to concentrate on my work as a lighting designer instead of putting time and effort into remembering sequences of keystrokes. And Congo jr is so compact and lightweight that I can carry it with me or check it through with my luggage. I'd use it on any show. It doesn't matter whether it's a tour around the world with a band, or a small dance performance on my home ground, I know the Congo jr has all the features that I need. And more – loads more. Size doesn't matter – intelligence does."

– Emma Westerberg, international lighting designer, on tour with Congo jr

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www.jands.com.au



Congo jr with Master Playback Fader wing

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12" x 1" HORN DRIVER / 12" x 1" HORN DRIVER

ART 315/325

15" x 1" HORN DRIVER / 15" x 2" HORN DRIVER

Since the late 90's, the RCF Art 300A has been the 'darling' of the professional rental industry and private owners alike. D.J.'s, musicians, sound guys, corporate A/V, you name it, the RCF 300A did it.

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SOUNDCRAFT VI SERIES EXTENDED WITH INTRODUCTION OF COMPACT SOUNDCRAFT VI4

Only months after the introduction of the Soundcraft Vi6, the Vi Series of digital live sound consoles has been extended with the new Soundcraft Vi4 model. It offers all the functionality and facilities of the Soundcraft Vi6, but in a smaller, more compact footprint more suited for space-conscious applications such as Theatres, Houses of Worship and venues or clubs with space-limited mix positions.

In just under 1.5m/5 feet, the Soundcraft Vi4 offers access to 48 inputs on 24 faders, with a total of 27 output busses available for use as masters, groups, auxes or matrices. All other features of the Soundcraft Vi6, such as the Vistonics II touch-screen user interface and the Soundcraft FaderGlow fader function display are inherited by the Soundcraft Vi4.

Also available on the Soundcraft Vi4 is the new Processing Card option, which adds 8 assignable Lexicon Effects sections, together with 30-band BSS Audio graphic equalisers available on every output.

www.jands.com.au



EDIROL R-09 IN NEW COLOURS

EDIROL's R-09 portable digital recorder has done well, and to celebrate there's two special edition models in red and white plus some new accessories.

R-09 won the MIA (Music Industry Association) award for innovation last year largely because of ease of use with advanced recording features. You can record via the built-in stereo mic in CD quality or in space-saving MP3 format. The unit uses SD data cards (a 64MB one is included) to store your sound – no tape required. All recordings can be backed up to your computer via USB and the unit features an OLED (Organic Light Emitting Diode) screen for data management. It also has an ultra-long battery life so can be relied upon in any situation.

www.edirol.com



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Hot off the press from dB Technologies in Italy, amazing new prices on Opera cabinets with retail prices being reduced by up to an incredible 25%!

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For more information, visit the Australia Distributors Website: www.cmi.com.au

ENTER MANDYLIGHTS



Opening Mandylights.



Ian Anderson (Mitech), Mike Emerson (Acer Arera), Steve Leiter (Haycomm) & Andrew Wnslade (Show Technology).



Ruth Lowry (Theatr.cks), Dave Betteridge (Loud and Clear Audio) & Roger Hind (Theatricks).



Dan Mercer (Mandylights), Ben Alcott (Blacksheep Productions), Nikk. Davis (Blacksheep Productions) & Claire Pentecost (Mandylights).



Richard Neville (Mandylights), Dan Silvester (Freelance), Daniel Munro (Lots of Watts) and Nick Macfie (Production Technologies) inside the visualisation studio.

Is it a collective or a brains trust? This is Australia's first lighting company without equipment, rather it has three lighting designers working from the most terrific premises in Lillyfield, close to the Sydney CBD.

The three Mandylights directors have lighting as their passion and say they can muster crew who reflect this core ideal. The elder is Greg Yates who says he has been thinking of the concept for some time. He is joined by Richard Neville and Dan Mercer who are young but usually not silly.

They assert they can share out projects so that there is redundancy and of course more people means more creativity. Although there is no equipment, there is a serious investment in the office and studio, which are really first class.

The Visualisation Studio was created to provide programmers with a comfortable and practical, dedicated space where they could pre-program a show using the best tools available. The heart of the studio is ESP Vision software - the largest setup of its kind in Australia, and one of only a handful of systems available outside the USA.

Mandylight's system is capable of listening to up to six streams of DMX via hard cables, ethernet or Artnet and visualising complicated designs in real time with accuracy and detail. Operators can control pyrotechnics, fly motors, use live video inputs to simulate everything from projection to SoftLED screens - not to mention have full control over every feature of their lighting rig.

The powerful computer that drives the system is fully roadcased and can be shipped anywhere for use on the road, or programmers can visit the Lillyfield studio and make full use of the facility.

www.mandylights.com



MIX WITH THE BEST.



The Yamaha M7CL digital mixing console has an interface allowing you to perform any mixing application faster and more intuitively. Visit our showroom for a demo today. Mix with the best at Soundcorp – Best Products, Best Service and Best Price.



32-Channel M7CL: \$24,000

48-Channel M7CL: \$30,000

Including optional MBM7CL Meter Bridge (as pictured). Soundcorp also stocks a huge range of input/cutput Mini-YGDAI expansion cards. Call us for your requirements.

M7CL Digital Mixing Console

The time to go digital is now...

If you're planning to build or upgrade a mid-size sound system – installed or portable – now's the time to move up to a top-performance, easy-operation digital system based on the M7CL. This is one digital mixing console that lets you concentrate on sound without being overwhelmed by the technology.

If you've been delaying a move to digital because of interface or operational issues, the wait is over. The Yamaha M7CL Digital Mixing Console offers professional digital console performance and features for live sound in a 32- or 48-channel system that can actually be easier to use than a conventional analogue console. It sounds great, too.



Yamaha Centralogic™

Yamaha's Centralogic interface takes the most direct approach to giving you maximum operational ease and efficiency in a digital console. Rather than trying to simulate the feel and workflow of an analogue mixer, Centralogic goes straight to the heart of the matter, simplifying digital operation to the point where it is actually as intuitive as analogue.



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www.soundcorp.com.au

TOY TIME AS CX GOES MPS

When CX Magazine's Business Manager, Steve James, went looking for a new company car, he had something quite specific in mind. "Knowing that the car would carry the 'CX MAG' number plate, I wanted the car to make a statement about the character of the magazine" states Steve.

Enter the Mazda 3 MPS; a 2.3 litre turbo powered dynamo which generates 190 kilowatts (380nm) and devours the 0 – 100km sprint in 6.1 seconds making it the fastest production car Mazda has ever produced. Yeah, so it's fast but what's that got to do with CX you ask? We thought we would ask Steve the same question and watch him squirm as he tries to justify getting a speed machine as the new company car.

"Well, the similarities between the Mazda MPS and CX Magazine are obvious!" says Steve, but apparently not as obvious to the rest of us uninitiated so we chuck a Pauline Hanson and ask 'Ploose explainin?'

Unperturbed, Steve waxes lyrical about his car versus magazine analogy; "What we have here are two



products that offer outstanding 'bang for your bucks' produced by companies with a reputation for longevity and consistent quality in a cut-throat market". (Before the cynical amongst you begin to dry retch at the rhetoric reminiscent of late night TV infomercials it should be noted that since Steve took over managing CX, sales have hit record highs and are continuing to build, so he must really believe his own publicity.)

"Not only that" he continues unabated (and we're kinda sorry we got him started) "Jayson Jimenez and the team at West End Mazda were

exemplary in their approach to customer service which I believe is essential in building successful business relationships."

Well, while we agree in context with what he's saying, we still suspect its a dubious parallel designed to deflect from the real issue (he just wanted a sizzling set of wheels) but since it's rumored that Steve was a Kung Fu instructor in a previous life and occasionally still glazes over with a wild, unpredictable look in his eyes, we decided it was best (and probably safer) not to press the point any further. CX



SCENE CHANGE OPENS IN WOLLONGONG

New audiovisual group Scene Change has announced its second office in Wollongong.

Scene Change Wollongong will be run by Sean Keaveny, who has spent the last six years as Technical Supervisor at the 6000-seat WIN Sports and Entertainment Centre.

Prior to that he managed Staging Connections in-house offices at venues



L-R Peter Kolevas, Sean Keaveny, Ian Whitworth.

around Australia, including the Novotel Northbeach, Hilton Brisbane and Sheraton Mirage Port Douglas.

"We've known Sean for years, and he's a perfect fit for us. He knows hotels, he has a lot of high-end production skills and contacts from his time at the WEC, and he's a Wollongong guy through and through. There's nothing going on there that he doesn't know about," said Scene Change Director Ian Whitworth.

In line with the Scene Change business model, Keaveny will be taking an equity stake in the business.

"Ian and I have been travelling around the country talking to potential clients, and there's been a strong response to the idea of a national brand combined with local ownership," said Director

Peter Kolevas. "They know that a local manager who's bet his house on the business has a pretty strong incentive to deliver a great show."

Keaveny sees major potential in the Wollongong area. A number of new hotel developments are already under way, with its proximity to Sydney making it an increasingly attractive conference destination.

"I've been wanting to set something up myself for a while, because I think Wollongong's about to really take off as a destination," said Keaveny. "It's good to be able to do it with Peter and Ian, because they've got a good brand and they care about the technical quality of what we do."

Other Scene Change announcements are expected shortly. Their new 'Revolucion' web site and marketing campaign was recently launched at the Meetings Events Australia conference in Hobart. Prominent members of the conference industry were seen sporting the distinctive 'Scene Che' t-shirt, featuring Hobart Manager Rod Street in Che Guevara mode.

"We're having more fun than you can possibly imagine. Watch this space," said Whitworth.


www.scenechange.com.au CX



HERE COMES THE ROAD HOG

High End Systems announce the newest member of the Wholehog family: the Road Hog.

The Road Hog console provides 2048 DMX channels of control. Two internal touch screens display data and allow quick access. Using standard Wholehog console hardware and Windows XP embedded with the Wholehog operating software, the Road Hog is shooting for reliability.

More product specifications are posted on the website at www.highenc.com 

AMA TURNS 30

Very soon it's the big Three-Oh for the AMA (Australian Music Association), one of the most functional associations we know of. AMA has successfully lobbied governments to spend more on music education, a long and difficult process that is now yielding results in the sell-through of instruments.

CX has been a supporter of the AMA all along, and we remain impressed how vicious and ruthless competitors (equipment distributors and retailers) can mainly be united through good stewardship and common cause. There's always a small minority sitting alone, but they get cold out there eventually.

Celebrations for the 30th will be held at AMAC 2007 (the annual music equipment trade convention and trade show) from 15-17 September at the Gold Coast.

The AMA has a sometimes painfully drawn out process of consultation with its members in defining how it should operate, and the AMAC show is a current hot topic. Every trade show owner knows (we know from our ENTECH days) that trade show exhibitors are fast to complain if they perceive their trade show participation has not matched their sometimes caft expectations. And they enjoy telling how the show should be located somewhere else and run at another time. Best of all, they say they'll boycott the event, but later come back because they feel disadvantaged.

AMA has listened and has made some changes, which they say will happen at this year's AMAC which is run at the same time and place as usual. It's worth attending. We do.

www.australianmusic.asn.au 

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www.audioproducts.co.nz



LONG-THROW TORU 4°-8° FOLLOWSPOT

Selecon announce Toru, (the Maori word for 'three') joining the wider angle Rua (9°-16°) and Tahī (18°-24°) follow spots which were launched last year. Delivering 1000 lux at 90m - 4° and 1000 lux at 53m - 8°, Toru provides the output to cut through the brightest outdoor or large venue entertainment lighting rig, near the output of Xenon units yet costing much, much less and only requiring a domestic outlet to power the unit.

The high light output of the Performer Series meets the need for an affordable Followspot which will

cut through the higher light levels used on stages today. The simple layout of the controls (black-out iris; mechanical dowser; cutters; CTO; Frost) ensures lighties quickly feel comfortable and in command while the Performer Series exhaust system ensures that they don't have to suffer from added heat while doing their work. The electronic power supply is flicker free and allows for dimming of the lamp to 50% of its output.

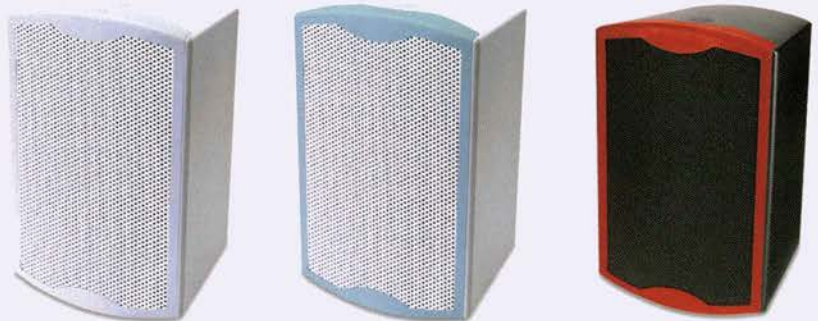
Four Performer Series Toru Followspots will light up Rock Star Supernova, the very first act to take the stage in the brand new 12,000-seat Vector Arena on March 23rd, Auckland, New Zealand.

www.seleconlight.com/performer 

NEW DI SPEAKER RANGE FROM TANNOY

Tannoy offer the Di Series range of ultra compact surface mount weather resistant loudspeakers. They come with Tannoy's point source, constant directivity drive unit technologies and are good for theme parks, retail premises, restaurants and cafés, corporate audio visual and houses of worship.

A multi position yoke bracket is supplied with all models for simple installation. To further increase install flexibility, two optional mounting accessories are available - a pole mount adaptor kit and the unique, pre-wired K-Ball, a fully adjustable one-size-fits-all wall bracket.



Allowing pre-wiring of the system, the K-Ball carries a wiring loom through the arm of the bracket to a Euroblock type connector plug located in the bracket's ball joint. When mounted in conjunction with a standard conduit junction box (J-box)

the assembly is then ready to receive the speaker during the commissioning stage of the install. The speaker can then be swiveled into the desired angle for optimum coverage before tightening the locking collar.

www.syntec.com.au 

LOUD! TIM WILLIAMS FROM ROCKSTUFF GOES ON THE ROAD WITH "THE ANGELS"



I took the call and it was in the bag - Rockstuff was touring the production and backline for Aussie rock legends The Angels. What a blast this will be! I guessed this would be a good time to step up our production department with some pro gear to accommodate these well-seasoned professionals.

After a touch of research and a few phone calls to some dinosaur audio gurus, the decision was unanimous. The HK DEACON series system would be Rockstuff's weapon of choice.

And what a band to road test this monster on! Being a huge Angel's fan since I was knee high, I couldn't wait to crank their huge anthems through this awesome system, not so much

for the punters but for myself. Selfish I know but hey, I'm paying for the bloody rig.

We arrived at the first venue, the 300 capacity Warracknabeal Hotel in country Victoria without a hitch although half deaf from having listened to Angels cd's full bore in the car.

Set up could not have been easier. Although the boxes are weighty the heavy-duty casters made life so much easier. No shopping trolleys here either! Basically we patched it all in and bam, the clearest and punchiest system I've ever had the privilege of owning! These subs have so much depth! Being a drummer I love to feel

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the punch of a bass drum but I've never been able to achieve the volume and warmth

I want from other systems. The HK gave me all the bass I needed and then some.

Buzz Sidstrup couldn't believe how huge the little Gretsch kit sounded through the HK. The Brewster bros vintage guitars sounded crystal clear and bigger than Texas and was their vocals too.

Chris Bailey's bass licks were done a huge justice simply by D.I. into the system. BLOODY UNREAL!! I was listening to The Angels through my HK loud and clear with more room to move upward.

The show was great, the band played tight as a button and all night long I was getting

compliments from punters and muso's saying it was the best system and mix they had ever heard in these parts! And they assured me it wasn't just the dozen cans they'd had prior to our conversation. All my crew backed up the local muso's statements with the smiles they had all night and the occasional 'hell yeah' nod of approval.

After the show the Angels boys couldn't believe how big the band sounded, they Rick said he loved being able to feel the kick drum as it was easier to get into the groove of the song they were playing.

Righto...enough beers with the Angels, off to Mildura.

We got to the Edge in Mildura and this was possibly the coolest venue I've ever seen! Something straight cut of Bedrock or Los Vegas. The 1000 capacity venue had me thinking maybe I should have bought two DEAKON systems. Once we had the system patched it was the moment of truth for the HK. For sound check the boys played 'Take a Long Line' and man did the system pump. More than capable for this venue.

As the room filled, 9.15pm came round and the Angels were on. Loud was an understatement! Once again, huge bottom end crystal clear mid highs. I thought maybe at this volume level the system might start showing signs of weakness but it was really just warming up.

It was about that time the venue owner made the statement that totally blew me away. He said the Living End played there a few weeks prior to the Angels and the sound was nowhere near as loud or as clear as the Angels.

All in all, not one bone to pick with the HK DEAKON system. I couldn't be happier with my purchase. When you have industry professionals telling you they haven't heard the Angels sound that good in a long time, you know you're not a quitter.



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CHARITY OR FUNDRAISER

But for who?
Where does the
money go when you
pay to attend an
event that is dressed
up as a 'not-for-
profit' charity show?

James and the band running through a set | Metallica's rehearsal studio, Northern California

thinking sound

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James Hetfield, vocalist

photo courtesy of Jeff Yeager

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By **BUCK FREEMAN**

Years ago INXS headed the Concert For Life in Sydney, outdoors at Centennial Park. The semis were still being loaded when the early edition of the Sydney Morning Herald hit the footpath with a concert review that focused on the financial arrangements. The concert featured extensive lighting and audio, and it seemed that some vendors were paid and others not. The newspaper was critical that a production manager had been flown out from England to supervise the gig.

The topic of 'costs' arises often since many gigs are 'charity' shows. Some are beyond criticism, like Wave Aid which was masterminded by Michael Chugg and which raised around \$2 million.

Venue managers and production folk talk off the record about this one, it is a hot topic. CX is happy to pull back the curtain to reveal some of the many stories behind the charity show or fundraiser event. Absolutely no one quoted in this story was prepared to be identified, and when you read on, you'll understand why.

CORPORATE FUNDRAISERS

There are event organizers out there who specialize in putting together really interesting dinners with 'A list' entertainment, a four course meal, and an auction of donated goods and services. It is always packaged as a fund raiser for a charity. The bigger the charity the better.

Our charity contacts report being pitched by event organizers on a regular basis. "They offer us a major celebrity or act, who is 'interested' in our work and who wants to appear at a fund raiser", says one. "The fund raiser is usually a sit down dinner, marketed by the event organizer direct to their corporate networks. Large companies will usually buy a table of eight or ten at – say – two grand, and throw some money in for a charity auction as well. They can afford it, and justify it on the basis it benefits charity".

So far so good: the charity does little more than say yes, and the show happens. The charity gets the money. Right?

ABC Radio ran a story several years ago which quoted Maurice Henderson, who is the Executive

Director of the Queen Elizabeth Hospital Research Foundation based in Adelaide. He says his foundation signed on to the 2003 speaking tour by Rudolph Giuliani, the ex-mayor of New York City.

In the story, he alleges they were shown a budget from the promoter, which suggested they would receive \$197,000. "In the end we actually turned up with \$20,000." The story alleges that the promoter had a variety of probably valid explanations as to why the event came up short.

Also contained within the ABC Radio report was an assertion that a tour by Cherie Blair, the wife of the British Prime Minister would result in her taking a fee that was suggested as \$250,000 and ABC alleged that the promoter was "set to pick up a similar amount."

CX hasn't seen a contract between a charity and an events manager for a large fundraising dinner or tour – and the charities we approached were alarmed that a story like this may be written.

"Fund raising is a delicate topic", one said, "because public expectations ebb and wane according to water cooler sentiment. What might be a hot topic today is gone tomorrow." Indeed the fund raising industry faces a public who now are more aware that almost every fund raising activity comes with a middle man.

People are now a lot more resistant to telemarketing calls where the funds solicited benefit a charity. Because they understand that the caller, the telemarketing company, will take an undisclosed chunk of the proceeds.

The bottom line is that there is a growing stable of events producers who schmooze charity bosses and take control of events which are then produced for profit share. The event producer gets a fee which usually exceeds the profit, which is not profit, rather it is 'surplus', which goes to the charity.

There is a charity and an events producer squaring off for a legal fight over who bears the loss at a particular show, even with supposedly reduced costs the gig did not break even, courtesy of the event producer's fee. Rather than cop a reduction in fee, the producer is demanding the charity cough up the difference between what the producer got and what they wanted.

SHOW ME THE MONEY

Every production company is asked

to supply services for fundraisers and charity events on a very regular basis.

"If I said yes and did it for free every time asked, I'll be broke next month", a sound company owner from Melbourne told CX. "The variety of packaging astounds me – it seems like every second function has a fund raising beneficiary".

"Yeah, it's a significant part of my business", confirmed a Perth company owner. "My response is 'sure, I'll do you a charity price' and I put a discount on the Rental Point quote. No one pays the quoted price anyway – Rental Point can do a packaged production if you bother to create them, but because every show is slightly different we just assemble a system and the software costs everything as a line item. And I mean, everything – mic leads, mic stands, all the stuff you wouldn't normally charge for. It makes a system that you'd send out for a concert at \$2,000 for the equipment hire appear to cost around \$7,500 - and that's before tuck and crew".

Another response was typical: "We tell them we'll do the gig at cost". So what is cost? Anyone working in our industry knows that market forces dictate how much production equipment you can hire depends on whether the hire company wants the gig. An example: lights for a major international tour, spanning five states and almost three weeks cost \$40,000 with crew – while a smallish outdoor corporate gig with a 16 x 24 stage in a Hoeker was lit for \$70,000.

I come from Detroit where it is no different – the USA faces the same issues and has a similar market dynamic.

There's a very rough rule of thumb for a successful production company that has shows every week, where roughly one third of the revenue covers overhead (premises, power, insurance, office staff, maintenance), one third covers the cost of the gig (transport, consumables and crew), and the final third goes to the equipment (lease payments, depreciation, acquisition). They consider the final third to be earnings before interest, tax and depreciation or EBITDA – a measure of how successful a business is.

The bottom line: only a very experienced event manager knows the exact worth of a production. They know a ballroom at Hotel X costs about that much to light, and an eight send monitor rig with small line array and a mid range digital desk costs around this much. They know they

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need riggers, loaders, stage, drapes, and extra setup time and they know what a 'standard' gig that is not a fund raiser will cost.

Within that, there is still a big variation in quotes – if you can get quotes. Most production suppliers tire of generating unsuccessful quotes and start to 'load up' the price as a strange form of punishment. They reason that they are asked to quote to 'assist' their competition who is 'preferred', so the price creeps up – not down. Go figure.

Finally, there is the strange disparity between what a band or performer gets for a corporate gig and what they get when they play at your local venue. Mathematics is your friend. 800 seats at a large RSL, sold for \$25 each would return about 75% to the act. That's $800 \times \$25 = \$20,000$ with 75% equaling \$15,000 to the band. The agent takes 10%.

A national retailer called CX to ask why, having done the above math, a band agent was asking \$60,000 to play at his conference on a Tuesday night. It was the band the retailer had enjoyed at the club in the above example, who had taken roughly the fee shown. Which was \$15,000 for

the Saturday night.

We called the agent.

When the context of this article became evident, the agent turned nasty. Very nasty. He implied that if we quoted him, or identified his agency, or the band, some bad things may happen. We reminded him that making threats over the phone was not particularly lawful, and he hung up on us.

Rattled by this, we didn't get the answer to the obvious question which is 'how much would it cost for the band to play a charity fundraiser?' What is the 'cost' of a band performance, after the obvious deductions of transport and equipment?

We're not deriding agents because prima facie the agent concerned is actually doing exactly what the band is paying him to do – extract maximum earnings and distribute same to band, minus fee. He's a good agent, albeit a rude and obnoxious one.

As for the retailer, he went back and negotiated the fee down to \$45,000 plus an air ticket, limos and hotel for the lead singer who lives in Melbourne. He needed to supply a rider that included French Champagne, Chivas Regal, meals for each band

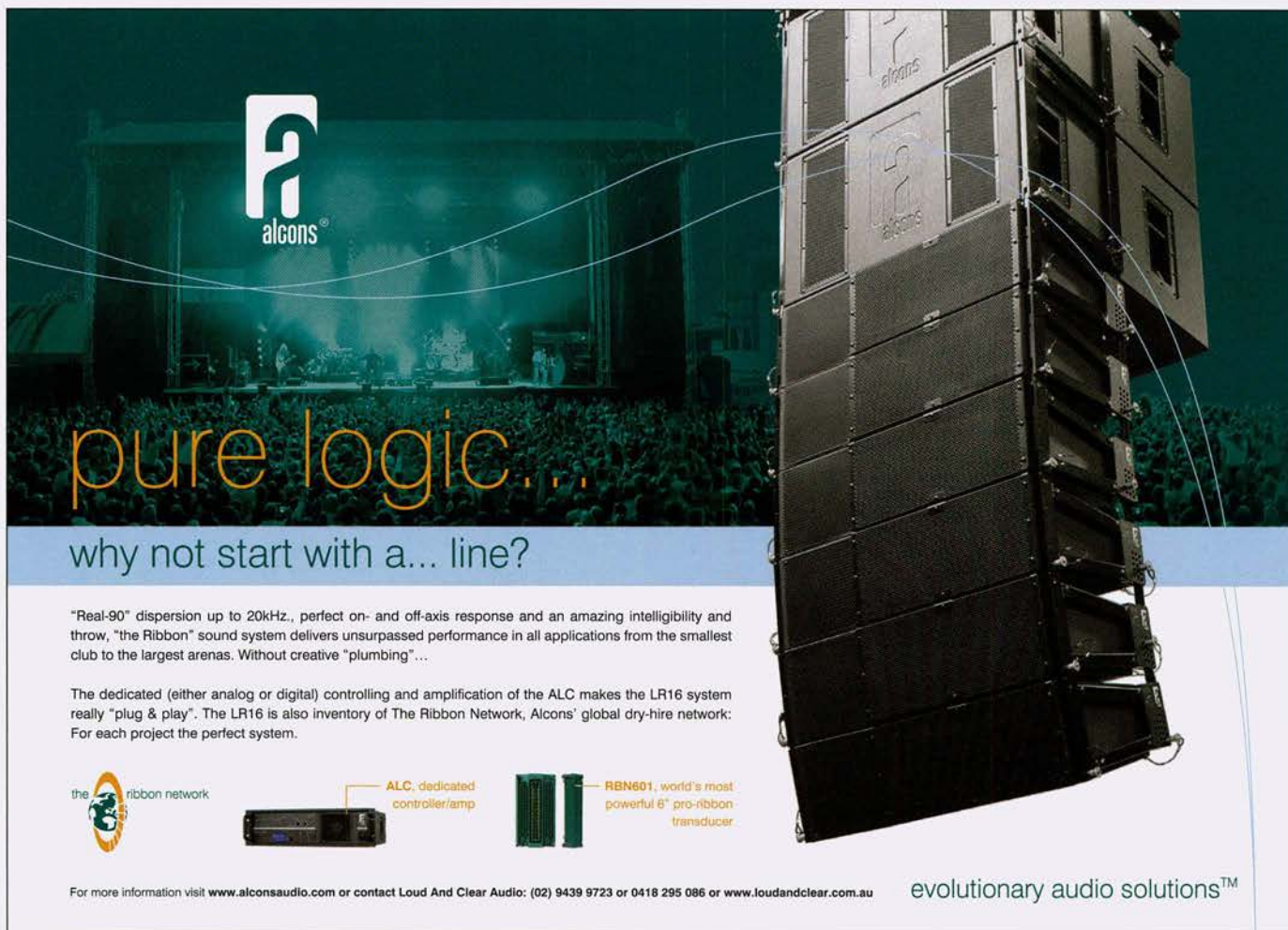
member's partner plus the band manager, and of course crew meals for four others.

The final fudge factor in all of this is the practice of some event producers which is to mark up all goods and services – in other words, to take a margin on all outgoings, as well as a fee. There is no consistent rule, and it can lead to major problems if the client (charity) learns that the lighting company was paid \$8,000 of a \$10,000 total fee for lighting. The producer got the rest.

THE AUCTION

Usually a good fundraiser has an auction where a guitar signed by – say – George Benson (yum cha brand guitar, original cost \$100) might go for three grand. There needs to be a range of interesting and aspirational merchandise that is bid for at the appropriate time of night.

The best auction is one run after the main course, when alcohol levels are at the highest. Most people stop drinking half way through the main, intending to sober up for the drive home. You see people walking to the car park with armfuls of appliances they don't need or will never use. Best



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of all is the Gold Balloon for \$500 which is a good return for some helium.

I have sat at the back, ironically operating sound (since this is CX magazine) for quite a few of these, and did some rough calculations. A table full of associates will bid harder than a table made up of random couples. Some people need to bid and most people want to win. It's a form of gambling. Some people are shocked when they win, but try to hide their horror – they just pledged \$5,000 for a trip to Brampton Island. The trip itself was donated by the travel company who are on table 2. They got 2 free seats and a supposed promotional benefit for their trouble.

As soon as the winning bid is declared and the hammer falls, a pretty girl with appropriate cleavage appears beside the lucky winner with a clipboard and a pledge form, which is a kind of contract. They try to wrangle a credit card on the spot, failing which they get the form completed and the organizer is on the phone at 9.05am the next working day to chase down the money.

If the prize is a holiday or travel, the prize giver knows there is a good chance it won't actually happen, because people who can afford a corporate table haven't got the time or inclination to travel to the prize destination. Naturally the trip has a time limit and is not transferable.

One great night I sat and watched the CEO of a major company bidding, and bidding, and bidding and he won – he thought – a Porsche for just \$20,000! The guy was leaping around, or as much as a gullet load of Crown Lager would allow. When he settled down and was groping for his wallet, his workers were gushing about how generous the boss was. "Generous? I got the car for a song!" he yelled loud enough for me to hear, three tables away.

Turns out he won the use of the car, for a week. How embarrassing.

In light of all this, of course an event needs a great organizer, and a great organizer can't possibly pull together auction merchandise, a gig, and sell the lot to cynical corporations for cost. Hopefully there'll be a little more transparency in future, but that begs the question: will people buy tickets, go to dinners, and bid at auctions, if they know the charity eventually only gets a fraction of the action?

CX

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INDUSTRY PROFESSIONAL – THE PROFILE

CX puts a real pro in the hotseat!

By JEFF MACKENZIE (JMackK)

What do you do?

I work for Jands. I currently manage the Technical Resource Group (TRG).

What does that mean?

I work with a team of talented audio & lighting systems engineers tasked with providing front line technical support for all Jands distributed products. This includes system design, training, product demonstrations and problem resolution.

Where do you do it?

It's mainly office based, but the position involves extensive interstate travel.

What was the moment, the event, that set you on the pathway you are now on?

I don't think there was ONE event. I was always interested in electronics. During high school I found myself repairing and/or manufacturing equipment for mates in bands. One thing led to another and I ended up owning & operating my own pub/club PA system. This was during the peak of the Aussie pub/club scene, so it was a great time to be involved in the industry. Plenty of work. Eventually my "after hours" work/hobby became all consuming and I resigned from my day job with a national telecommunications provider (name withheld) to concentrate on my audio interests.

Who has really, truly inspired you, and why?

Bruce Jackson. I had the pleasure of working with Bruce at the Sydney Olympic Games opening ceremony. He's a true industry pioneer and a great role model. It's also kind of neat that he was one of the original founders of Jands, the company I now work for.



Jeff Mackenzie at former 80's music venue the Parthenon.

Is there a gizmo, product, or device that has changed your (working) life? And why?

Hmmm, I think its not one product as such, more a global trend. The convergence of computer (IT) technology and audio products has produced incredibly powerful systems such as digital signal processors, digital mixing consoles & digital transport systems such as CobraNet. I think it would be extremely hard to find a job these days that does NOT rely on some form of digital processing.

What are your hobbies/interests?

Other than audio which I don't really classify as an interest, more a

way of life, I'm still very much into electronics and technology, radio communications, and amateur radio. My wife describes me as a geek. However, in my defense, I also enjoy non technology based activities like camping and bushwalking (although I usually have some form of radio comms close at hand).

Describe your family/nearest/ dearest...

That would be my wife Barbara, even though she describes me as a geek. We actually met loading a truck for a gig (she was a lighting operator at the time). She later bailed out of the industry to pursue the big money and reasonable hours promised by

the IT sector. Although, I think she secretly wants to get behind a follow spot again, and hang around pubs @ 3am loading trucks!! We also share the house with two kids, a dog, three goldfish and a pool cleaning robot called Max.

Is there a significant trend that you think about (good or bad), about your job/industry sector?

Professionalism (is that a real word?). The industry has really matured over the last however many years. Safe work practices, OH&S, certified training. None of this existed when I first started. Back then, if you attempted to describe your job to a non industry person they'd give you a slightly disgusted look and say "so you're a roadie then?" Now when I describe my work to people I generally get comments like "that sounds really interesting, what qualifications do you need?"

Is there a guru in your industry that you have not met, and why would you like to meet them?

I'm still waiting for someone to invent an invisible sound stopping force field. Once we have that we can solve all those pesky problems relating to poor room acoustics, or old ladies who live next door to night clubs.

Do you have a funny moment, or an incident, to share with us?

Many, however they all work better when told around a table in a noisy bar after a few light refreshments. In the cold light of ink on paper they seem more stupid than funny. For example; there was the time during a major outdoor gig when the heavens opened and the ground flooded. We were standing on stage watching this river running under the stage when we realized the three phase power distribution was under there. Without thinking we (myself and two other react first think last types) ran under the stage to rescue the distro. It was then we realized what we had just done. There we were, standing in ankle deep water holding a live 415v distribution rack above the water line. Apparently the cries of turn the power off could be heard for blocks. There were several events like this. It's amazing we all survived (relatively) unscathed.

SOME CAREER HIGHLIGHTS

- Early 80s – pubs, clubs, no sleep, to this day still use the same Chiropractor.
- Late 80s – when music was broadcast live on TV. ABC shows like Blah, Blah, Blah (Andrew Denton), MTV concerts, Midday Show circuit (Ray's hair hasn't changed) People's Choice Awards (what happened to them?) Outdoor Festivals – Sydney Domain Concerts. Then came 1988 – another year spent outdoors and with no sleep.
- 90s – worked for PA People, we built a complete concert system from the ground up.
- New millennium – arrival of the mega event:
 - Sydney 2000 Olympic Games – opening & closing ceremonies
 - Athens 2004 Olympic Games – opening & closing ceremonies
 - Melbourne 2006 Commonwealth Games – opening & closing ceremonies
 - Didn't get a good response at work or home about this year's Asian Games in Doha and am currently lobbying for a pass to do Beijing in 2008.



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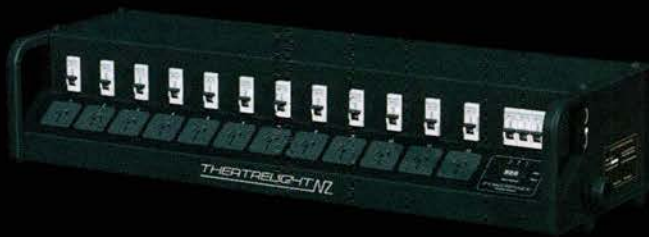
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Cerberus are from Japan – they took the leap of faith and have discovered that a great team can make all of the difference.

Over the last few years I have traveled to Japan for a series of tour and clinics for guitar manufacturer "ESP" – while there I met some fantastic people and in my own way, taken the same leap of faith that has been mentioned.

I met one of the lecturers named Shinya Tange at one of the clinics I was performing at in at Nagoya.

Shinya hails from Japanese metal giants "Outrage", who in the late 80's was one of the most popular metal bands in Japan. He moved onto lecturing in drums at the famous "MI Institute" in Japan. Shinya has gained a reputation of one of the best players around. The guitar company ESP own and operate the MI in Japan. They approached Shinya to create a "supergroup" of players to record a CD and represent the Institute. Shinya has also been instrumental in arranging the studios for all outrage recordings.

Make no mistake, metal music in Japan is much bigger than our mainstream stars here in Australia. Over more than a few Sake's Shinya and I made friends and discussed the Aussie music scene.



Shoot forward a year and Shinya contacted me about coming to Australia with a new project "Cerberus".

The guys did their research on a few studio's and asked my opinion on who to go with. To me, it's more of a question "what do you want soundwise". From personal experience, a studio can have a great name and great gear but it's the human element that will always make the difference. Shinya hit me with influences in sound like Deep Purple/ Black Sabbath – something in this day of over produced triggered drum sounds is a rare sound that needs an experienced ear.

Bring in "Rob Zimola" – working with Rob over various projects from the last few years, I knew he was the guy to get us the sounds. Anyone that used to cut 2 inch tape by hand has my vote on getting the right tones for a real rock band sound.

I contacted Rob on the prospect of working with the guys, also mentioning they were really a thrash style band wanting a real band sound – again, quite the challenge. Getting the size of the big metal sound but using a real kit, real guitars (miked and doubled) – The dates were set



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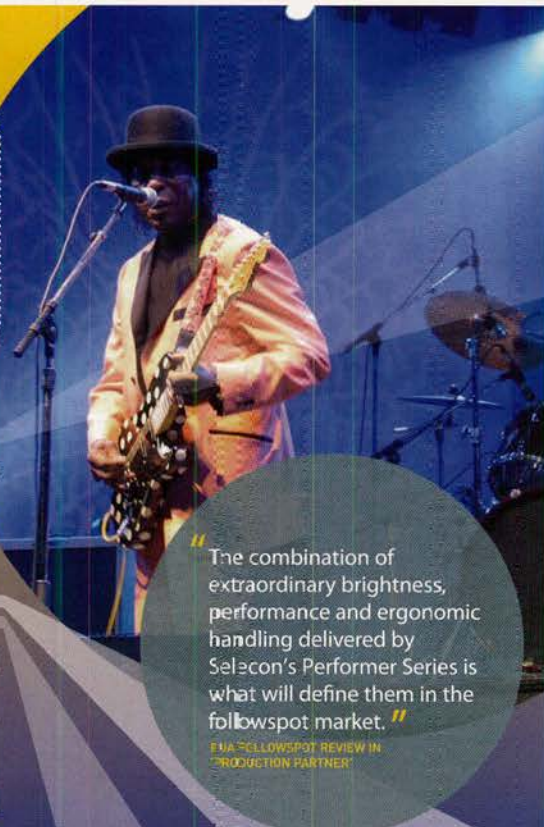
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Photo courtesy of David Ferguson, Byron Bay Blues Festival 2002. Production Manager: Chris McGuffen, Lighting Design: Francesco Calvi and Pacific plastic image projections by David Ferguson.

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Rob Zimola (2nd from left) with the band.

and the band locked in.

The guys arrived into Sydney airport after a grueling flight from Japan that included a 5 hour stopover in Hong Kong. The plans were set for a total of 10 days for studio time.

First scheduled was a day of set-up to ease everyone down to tracking 10 songs.

The boys were keen to hit the Studio and get started – a strong work ethic always helps.

Day one – The boys are at R&R Studio to meet with Rob. Delivered to the studio was the kit supplied by Tama as Shinya is a high profile endorsee and it was time for the boys to sit and chat with Rob. It's important to really take some time to sit and discuss or a rough pre-production – while a week of pre-production is always preferred, a day is fine provided everyone has an idea of what they want and is prepared to be open also.

At the end of day one the boys were relaxed and excited about working with the right person. Shinya talked of nightmare situations where the band was subject to unscrupulous tour promoters and horror stories of recording in other countries, again – the leap of faith. It looked like the guys had hit the right place to record.

Rob's style as a producer is something that has been of real interest to me over the last few years. Someone that knows how to capture the "Human" context of music with an emphasis on "performance" – The term "drop-in" is hardly used. Again, if you're

trying to sound like Queen, over producing and drop-in's are fine, but even they nailed most parts in single takes.

The drum room at JuliusMedia is fast developing a rep as one of the hottest rooms to get real sounds. The usual names in Sydney are bandied about by people a lot but when you look further there are always pro alternatives – this is the perfect example.

Throughout the next four days the boys hit the studio with razor sharp precision, tracking most songs live – "the way a band should be". Although some serious drinking sessions took place afterward, having a strong focus on delivery in the studio makes all the difference.

The Japanese have a very different approach to songwriting than a lot of western bands, making the Japanese metal sound a different beast altogether. While influenced by the greats of western metal, there is a very different flavor running through the sound – very sharp and strong song structure – a difficult one to put into words but easy to pick up on the ear.

THE GEAR OF WAR

For guitar amps Akira requested I arrange a Mesa Boogie head, however knowing the band and the sound they wanted, I suggested the new Fender "Metalhead" series as they have a certain attack being a solid state head but something that is new to the realm of solid state, is: warmth. The bottom end of these

amps is perfectly suited for a live miking environment – again, it's about taste – fat crunchy and controlled. There was a Shure SM57 and a Beyer TGX 10 on the cabinet.

The bass comprised of two USA Ashdown bass bins (not to be confused with the much cheaper "Ashton" brand); and a Peavey Mark Two head - vintage late 80's! Rob took a direct line out of the amp, and put an AKG D12 on the speaker.

Both Akira (guitar) and Daijiro (Bass) used active pickups, again – more punch and the emg's worked a treat with the Metalhead.

Drums were a custom Tama kit. The kick had an EV RE20 dynamic mic inside – Rob feels it delivered the right 'rock' bottom end with a bright click sound. "We put a 20c piece on the drum beater, held there with some double sided tape. It gives a snappy belt!"

"We put a full 125 litre bottle of water in there, inside the kick to dampen the space in the drum, it added more density. We found that worked!"

The snare had a Beyer TGX10 mic on there, it was bright and compliant – it gave us the snap we required. Rack toms had SM 57's on them, to give a good rock sound. We wanted a live sound, so we miked the kit like a live gig. Nothing was overdubbed, no drum drop-ins. All takes.

The floor tom also had an RE-20, and the overheads were Neumann U87's.

KEEPING IT SIMPLE


Bands tend to lean too heavy on the hopes of what will be recorded as opposed to "knowing" how "they" sound – spending time with ones gear and band, listening to demo's of the band and deciding on how they want to sound is crucial in getting what any band wants.

The engineer is only a part of the process. A great band is a great band – so rehearsal and being prepared is going to ensure a greater degree of quality for the end product.

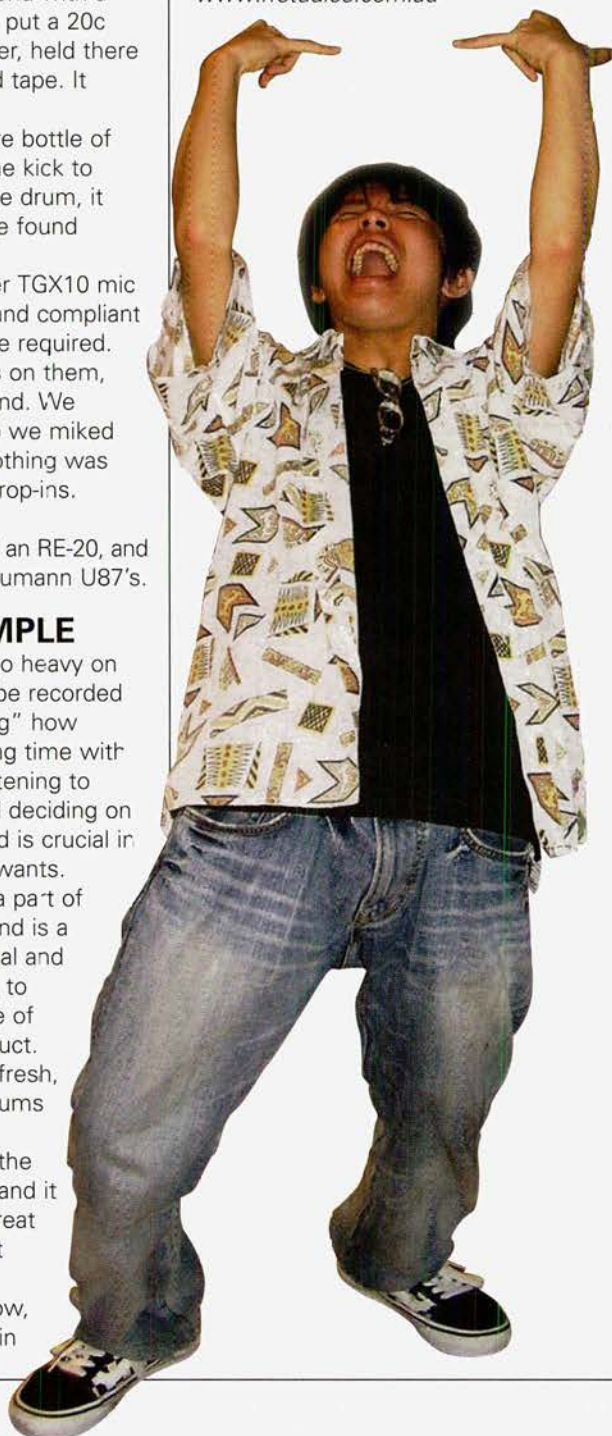
The end product is a fresh, powerful sound with drums you can hear and more importantly feel. While the risk was taken by the band it was rewarded with a great sounding mix that wasn't compromised or overly sampled – real rock! Now, she's off for mastering in

the USA.

This whole approach provided the band with a once in a lifetime opportunity to see our great country and record some metal at the same time. Maybe it's an idea that other bands can adopt, Gaining the experience of traveling and enjoying the differences other cultures have to offer.

That's the dream – rocking around the world. 

R & R Recording Studio is owned by Rob Zimola and located within Julius Media college in Sydney. The studio has analogue multitrack and extensive ProTools along with a large control room and studio. Call 02 9684 2103. www.rrstudios.com.au



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HOW TO: DO LIGHTS

BY GREG 'GY' YATES OF MANDYLIGHTS

A random collection of tips and trip-ups for young players



How to: Relate to someone talking in artistic clichés?

Keep talking to them. Don't try and make them talk in lighting terms cause they can't and wont. Get out of these people what they want to see. Get out of them the vision in their head. As I told a lighting 101 class once "describe to me your dream. Do you dream in colour? I dream different to you. What do you see....."

Get the picture and the ideas out people. The hardest part is deciphering what they want or mean or think they want. Get them to break it down into base requirements. The artistic ones are the worst. They will want a light hung in a crazy location. They will want a CMY colour chase happening – but no red please. Like a

bag of M+M with no yellow ones – its time consuming to take out the yellow ones!

How to: Set up a gig (The order of setup!)

- Find out the requirements
- Book the gear
- Book the crew
- Get the gear and crew to turn up at the load in
- Tip the truck
- Get the kit into the room
- Assemble truss/drop in bars
- Hang lamps
- Plug it all up
- Turn it all on
- It all works
- Have a tea break
- Let the LD programme.

How to: Decide whether you need a rigger

The rigging companies will say yes you always do. The reality is that you always do. BUT what are you rigging? Does it weigh 2 ton or 2 kilo? What is it hanging over? What are holding it up with? How many kilos is a green spanset good for? (If you are asking what's a spanset, you SHOULD NOT be rigging anything)

How to: Decide how much \$\$ to charge

As much as possible with in the constraints of what the client and the budget allow!

Seriously a tricky one – BUT..... the real answer is that what we do is a profession, a real job, it's not something you do until you get a "proper" job. It needs to pay our rent our mortgage, our living expenses, our party time, our kids expensive education. Charge plenty.

How to: Win friends and influence people

Read the book by Dale Carnegie. Give them what they want. Service the client.

How to: Set up a Mandylights collective

Drink lots of beer and think about this concept for 6 years and then drink more beer and actually do it and go WOW.

How to: Keep costs down on a concert sized show

Be realistic.

How to: Keep costs down on smaller show

Be realistic.

How to: Light a fashion parade with no roof rigging points

It's all about the spike.

How not to light a fashion parade

It's all about that photo.

How to prep a simple cue list

Listen to the music or read the script.

How to deal with stupid people

There are no stupid questions, just stupid people.

How to cost up a charity concert

100% discount. Hirepoint does it.



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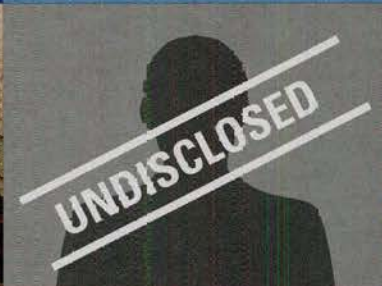
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VIC ARTS CENTRE / DIGICO D1 DR 48



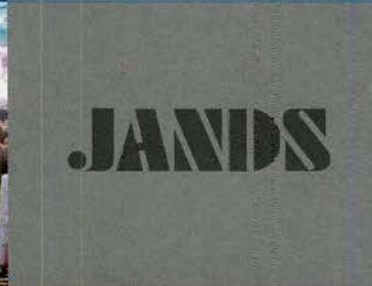
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HISTORY

We go back into the archives, and compare now with then. This magazine is a direct descendant of Channels and Connections, both edited by Julius Grafton.

Channels
The professional Sound and Lighting magazine
Number 13
1st May - 15th June 1992

Big new Studio & Broadcast supplement

LIFE: THE BIG GIG

Hospital gets proceeds

SYDNEY: The Concert for Life was Australia's biggest tele-charity concert, held in the March in Sydney's Centennial Park. The event was pulled together by people close to FNSS, who wanted to raise an event upon completion of receiving their next album.

Moving Light makers say: Don't copy us!

ITALY: Moving Light manufacturers Clay Paky and Coemar have come out shouting after High End Systems, the American makers of the Intellibeam, effected a backdoor invasion into the Italian market. Clay Paky's Vin Nubian told Channels: "Our company is the most copied company in the world. We have EXACT copies of our product made in the United States. We are unfortunately heading down the same road as being someone else's copy. We are giving our ideas to other people to copy. We have, with Coemar, made the light industry in Italy, with Coemar, made the light industry in France, with Coemar, made the light industry in the United Kingdom. We have for the past 15 years specialised in manufacture of intelligent lighting. The Golden Scan is the most famous of the scanning tools we build, and is copied by many other manufacturers."

Rod Stewart
Sound problems plague tour

ON THE ROAD: Lars Brogaard visited a year on Rod Stewart's PFM engineer in Sydney, where the world tour passed in a hall with a show big on versatility but a little wanting in audio quality. Lars is unimpressed that he wears a comfortable and effective. That he uses a venerable array, based around a new 36 vocal mixer XL-3 console.

Sitting before something like half a million dollars worth of equipment, the tall, black-haired star, who truly put us in a worthy show. A show that has already encompassed the world at large will certainly result in a show that runs like clockwork, and the elements were all there. (Continued on Page 2)



John Schaefer with Lars Brogaard's PFM gear

INSIDE YOUR FREE COPY:

UNFAIR!

Paul Reed couldn't get a US work visa as America's last 'Life' operator, yet international crew work here is unregulated.

Editorial Page 2

RIMINI

More than a Film Show - the 10th annual SIB Second & Lighting show is just over. We were there for the fireworks. Page 18.

Moving Lights Compared Page 26

and much more.....

- ▶ ALEX 1 - Gadget 3
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- ▶ Connector Bible 31
- ▶ Society Page 42

Channels edition 13, 1st May 1992. What a vintage!

15 YEARS AGO: CHANNELS, MAY 1992

Channels was, by this time, produced in two glorious colours. The spelling was terrible, causing great duress with the publishers who were of course Jands. Channels was originally conceived as an industry journal with a Jands flavor, fair and reasonable since it was free, and they were paying the bills. By May 1992 things had gotten away from the brief, there were advertisements from other equipment companies in there, like AR Audio - who are now TAG; GUVT and ARX.

In hindsight, the industry obviously needed the mag, because it was attracting support 'across party lines', so to speak. The magazine that existed at the time was called Sonics, and it was edited by someone seconded from Fishing News. The publisher was the advertising rep, his standard line was 'buy some advertising and then tell us what to print'. Riveting stuff.

Reviewing the archives we are stuck by how bad the photo reproduction was. We sent black and white prints to a lab, where they made a bromide and then a plate. It was primitive, it was slow, and wow- it cost a lot to print. "Don't copy us!"

We went to Italy to view the start of an exciting era: that of the moving light. Clay Paky and Coemar were up in arms and made sensational claims against High End Systems who had made inroads into their local market. The Texans were somewhat taken aback when Channels repeated the claims to them. Fast forward to now, and try to imagine just how many movers have been made and sold since.

"Sound problems plague tour"

Sound guy Lars Brogaard met Channels for the first time, and he exhibited "a complete lack of diplomacy", according to the head of the audio company he hired for the Rod Stewart tour of Australia. Ian Richardson from Audio and Recording was defending his firm against complaints of questionable sound, promoter Michael Chugg said he had letters from each city on the tour. "I don't normally get letters like that", he said.

The rest:

Plans announced to refurb Sydney's Capitol Theatre. GUVT were Greater Union Village Technology, equipment distributor and cinema outfitters. Duncan Fry wrote about punters hanging around the mixing console, full of beer and advice. Not much has changed since.

What things cost:

Take a deep breath, these are 1992 dollars folks..... Clay Paky Super Scan 1200HMI: \$12,843

CINDE PowerManager

New 9 Volt (PM9) is now available to complete the range of PowerManagers

PowerManager replaces multiple external DC power supplies with one central, AC-to-DC converter, eliminating rack clutter and increasing safety.

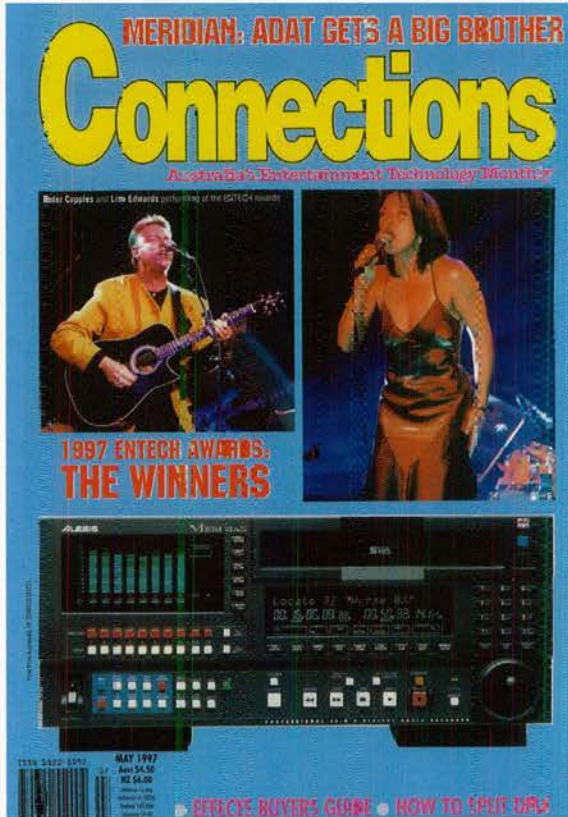
- 5volt (PM5), 9volt (PM9) & 12volt (PM12) models
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Here it is: Connections May 1997. Note the numbers: we did 18 issues of Channels, and 100 plus 1 issues of Connections before it became CX (and this is CX # 27). The ONE extra Connections was between number 34 (June 1996) and number 35 (August 1996). Reason? We added a July issue where previously we skipped July (and January). We didn't want to confuse our subscription database. So the issue of CX that you are now reading is our 146th magazine!

Intellabeam 700MSR: \$7.292
Mini Scan \$3,960
Cheap fogger! Cupo \$549

What we wore:

There was still remnants of 80's big hair. The male pony tail was in. Suits were shiry.

How we were

Channels was a sexist organ, with near naked females included wherever possible, but always in context. Purely an editorial decision.....

**10 YEARS AGO:
MAY 1997**

Connections Magazine had been going for four years and this issue was an exhausted look at ENTECH in Melbourne – the third ENTECH show. By now we had better reprographics, but only just. Half the mag was in full colour, the rest was in spot colour. The spelling was still poor, and readers were fulsome in their wish: "Get a sub editor....."

ENTECH Melbourne

It was a hangover that went on and on, the first and last ENTECH to be staged in Melbourne drew 4.636 trade and 100 exhibitors. It worked, the awards night was at the Plaza Ballroom, and what a saga. The AV was dodgy, the sound guy drunk, and host John Blackman threw out the script and ad-libbed when a lump of CLS lighting truss was nominated as best lighting product. His 'Dicky Kree' act was unleashed on an

unsuspecting female awards recipient. There were barely any dry undies in the place, we laughed so hard. Not reported at the time: ENTECH was almost sold to P&O Events of the UK; the sale faltered as the CEO sized up the drunken hordes at the awards and realized things were slightly different down in the colony.

Alesis and the Meridian

It was the beginning of the end for Alesis, who had unbelievable good fortune with the ADAT multitrack recorder – remember, insert one VHS video tape, press record and pray. They had tweaked and finessed the format, and then decided to launch an upmarket version of the same thing. Tascam saw them off with the DA88, and ProTools were already eating into the market, which itself was shrinking.

The rest:

DVC was born: it was a brand new format, and at ENTECH we saw it for the first time in Australia. We flew in an expert along with the first player as hard baggage. Meyer Sound had new representation in the form of Richardson and Devine. Hard to believe it's been ten years, guys. Mac 600 and the Studio Color battled it out – the moving head was here.

What things cost:

High End Data Flash \$691.
Aphex 104 Big Bottom \$475.
AMS RMX16 digital reverb: \$12,500. **CX**

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FRANKFURT 2007

Amüsieren wir uns meine Freunde?



By **DUNCAN FRY**

For the traveller there's nothing quite as bad as the sinking feeling you get when you watch the baggage carousel slowly spinning around and it gradually dawns on you that your bags aren't going to be slithering and bouncing their way down that rubber belt any time soon. And for those of us on QF10 going to the Frankfurt MusikMesse this year, it meant that all our prototypes, brochures, last minute bits and pieces - and our clothes - had a high likelihood of not joining us on the stand!

At least we had the consolation of knowing that it wasn't just us; in fact, every bag loaded on in Melbourne hadn't made it to the stainless steel post-modern perfection of Frankfurt airport. So, we left our details with the ground staff, and wandered off to our hotel, ready for a day of unshaven smelliness as we waited for news of our luggage.

Luckily for us a smiling young Frankfurter rolled up to our hotel later that afternoon in a bongo van loaded to the roof with bags, and put us out



It says 'Now more orangey', which makes you wonder what Fanta tasted like before.

of our misery and malodorousness. At least we weren't going to be hanging around our stand for four days just handing out smiles and handshakes!

Setting up the stand proved to be a trickier problem than anybody had imagined. Our German distributor arrived with a load of lighting truss to make a framework to hang stuff from, and so we started to knock it together. It wasn't anything particularly tricky - a rectangle of trussing the same size as the walled booth area, held up by a pillar of truss at each corner.

We banged the rectangle together and then pushed up a side to put the pillars underneath. And there it got stuck! The walls of the booth, locked together with the special booth builder's secret tools were too close together; one of the panels was a



This is what happens when you let people who can't read build your stand - an upside down line array.

non-standard piece 50mm narrower than the others, and it was that 50mm we needed to be able to push the thing up to the right height! So there we were, trapped holding a big chunk of trussing in the air that was getting heavier by the second, while frantic calls were made to the Show organisers to come and open up the walls so we could push the bloody thing up just a little bit higher!

In the meantime we had the complete contents of the stand spread all over the aisle, just as the carpet layers arrived to put carpet down the aisles throughout the hall. And of course they had picked on our little disaster zone corner to start!



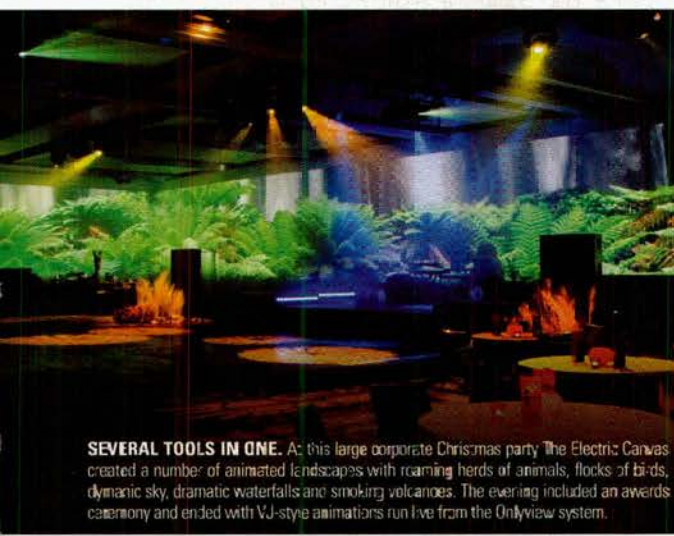
Radical new speaker concept - Nipple Audio.



ONLYVIEW®



DOHA 2006. At the Opening of the 2006 Asian Games in Doha, Onlyview ran all the multimedia. A single operator controlled content to the world's largest LED screen, two independent stadium screens, eleven video projectors, and a HD broadcast feed.



SEVERAL TOOLS IN ONE. At this large corporate Christmas party The Electric Canvas created a number of animated landscapes with roaming herds of animals, flocks of birds, dynamic sky, dramatic waterfalls and smoking volcanoes. The evening included an awards ceremony and ended with VJ-style animations run live from the Onlyview system.

Image courtesy E/T/C Audiovisual



2005 MTV Europe Music Awards, Lisbon. Onlyview was used to manage a plethora of images and clips projected by 10 video projectors onto a 32 by 9 metre motorised surface. The system was coupled to the flying machinery allowing automatic accurate tracking of images with the movement of the screens. The system also controlled content to a huge LED backdrop and several LED message screens positioned around the audience.

SHORT OF VENUE TIME FOR SET-UP, PROGRAMMING AND REHEARSAL?
NEED FLEXIBILITY FOR THAT CHALLENGING TOUR ITINERARY OR TRICKY BRIEF?
LAST MINUTE CHANGES CAUSING A SWEAT?

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We eventually realised that we didn't have to keep supporting the trussing since it was jammed solid to the walls, so a ladder wedged underneath was enough to keep it safe. In the meantime we decided to take a turn around our hall while we left it to the locals to sort out.

Every year I wander the aisles of the show, staggered by the simply huge amount of product there. There's just so much stuff! Stand after stand displaying 12" and horn boxes, each exhibitor convinced that theirs is the one true box, the one that sounds/ looks/ feels better than all the rest. Either that or a bloody line array, and there were more of them than you could poke a stick at.

This year it was the turn of the 'mini' line array. They were everywhere. Because they are smaller, just about every manufacturer or distributor had one on their stand. The obvious question "Why?" was one that no-one was able to supply an answer to, apart from "Because we can!"

Over in Chinatown, the name

loosely given to the area of OEM (Original Equipment Manufacturers) displays that range along one side of each hall, there were seemingly identical line arrays in big, medium and small sizes, as well as clones of most of the major brands. And this in a show that proudly says it 'fights against counterfeiting'!

The sheer size of the show and the similarity of product on display do make it a little wearying after a while. Certainly there were times I felt I would die happy if I never saw a line array speaker again, which must be depressing for the true innovators out there whose products get lumped in with all the copiers.

But more than one person said to me: "All this stuff is supposed to make things easier and sound better, but rarely does. What's gone wrong?" Good question, and one that deserves looking at in greater detail at some future stage.

Last year the stand next to us had a hugely expensive big espresso coffee machine stolen overnight. I noticed that this year they had a

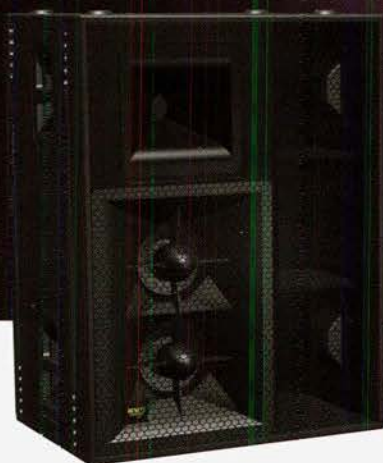
replacement machine securely chained to the truss on their booth!

Another stand regularly plays the AC/DC 'No Bull' concert in Spain, performed in a bullfight arena in Madrid (I think), to advertise their Butt-kicker panel that you stand on which vibrates with the bass frequencies. It's very impressive, but this year they went one better with a DVD of Rammstein, an awe-inspiring German heavy metal band featuring a short stocky barrel shaped singer wearing heavy metal lederhosen. Powerful stuff, and often described as "music to invade Poland to". Everything in dropped D tuning and a pitch transposer on the vocals for that guttural growl.

This year the EV/Dynacord stand reflected the corporate vision of their new owners Bosch Communications Systems. So there were no more stupid screaming games, or Gladiator style biffa matches, but a whole new concept – music! A couple singing and playing music, demonstrating the quality of the products. After some of the annoying crap they've dished up

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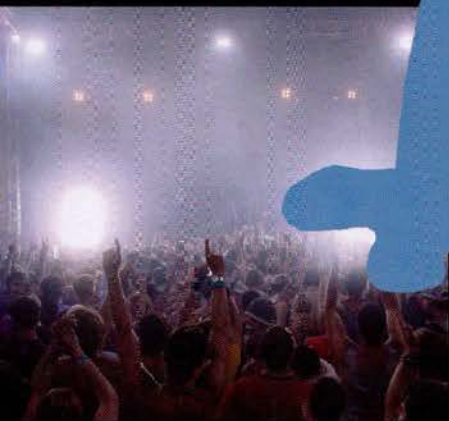
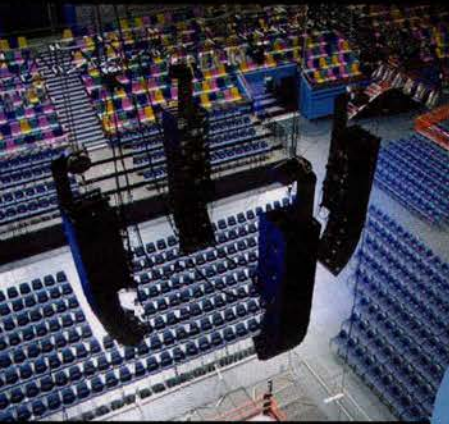
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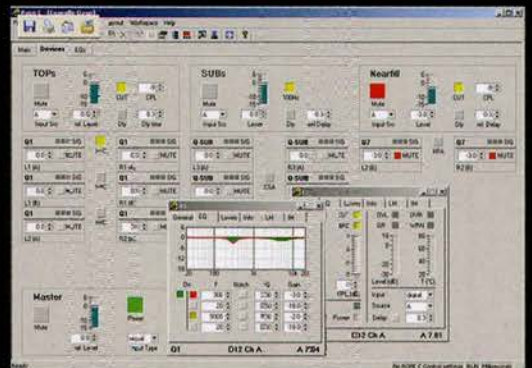
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Victoria Marshall launches the cult of personality.

in past shows, it was a welcome change!

They also had appearances by Thund-Her-Struck, an all girl AC/DC tribute band. Apart from no meat-and-two-veg, the other thing lacking was no Argustina (Argusette?) prancing around in school uniform. Call me an old perv if you will (and many do) about a girl guitarist wearing a Divinyls style school uniform and rolling around on the stage with a Gibson SG would quadruple this band's appeal overnight!

The hall below ours was the Guitar hall, so being a bit of a dumb plucker myself, I wandered down there early one morning to see what was new.

For all those people who must have a Fifties Tele or Strat but can't afford one, the Fender stand had a whole wall of Stratocasters and Telecasters (cut no EastDoncasters!) made to look old and used. Battered and bashed, worn, scraped, belt sanded to look like a much-used ancient relic – and they all had 'Sold' stickers on them! There's simply no accounting for taste – or lack of it!

Over on the Marshall stand we were greeted by a 10 metre tall display of new Marshall Managing Director Victoria Marshall. The family resemblance is obvious; she looks just like Jim, but with bigger boobs! 

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Michael Briggs



TIME ZONES AND PA SYSTEMS

Michael Briggs flew around the world in an Easterly direction, from Santa Ynez in California to do sound for George Benson and Al Jarreau.

By JULIUS GRAFTON

They started in Johannesburg, then went to Durban, Capetown and Perth. "We're a little beat up right now", he told CX in Sydney.

It isn't just the grinding travel (Capetown to Johannesburg, change planes for Perth, lard, setup show) but that every place he goes, he has a different PA system and a different console. With 39 inputs from a large band, plus effects to program, this

makes for a very busy soundcheck.

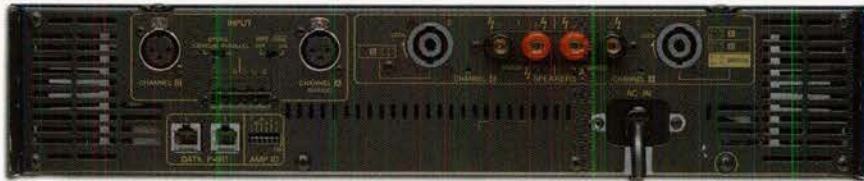
George Benson and Al Jarreau occupy a hallowed turf, and roughly appeal to the same audience. They fuse jazz into pop, and between them have scored barnstormingly successful hit songs and a van load of Grammy awards. The underlying theme is fantastic musicianship, and where you find that kind of act you usually find a great sound engineer.

The first part of what makes Michael a great sound person is that he is dealing with different production

at almost every show. "I have a rider", he says quietly, "and of course will accept a near substitute." His preferred console? A Gamble EX, of which there are not many examples, anywhere.

Today Michael has a Midas Heritage 3000 and he is happy because he has three shows in a row with the same console. Previously he used a PM5D at Twin Towns, where the tour picked up the club's production which was supplemented by Norwest in Brisbane. Before that –

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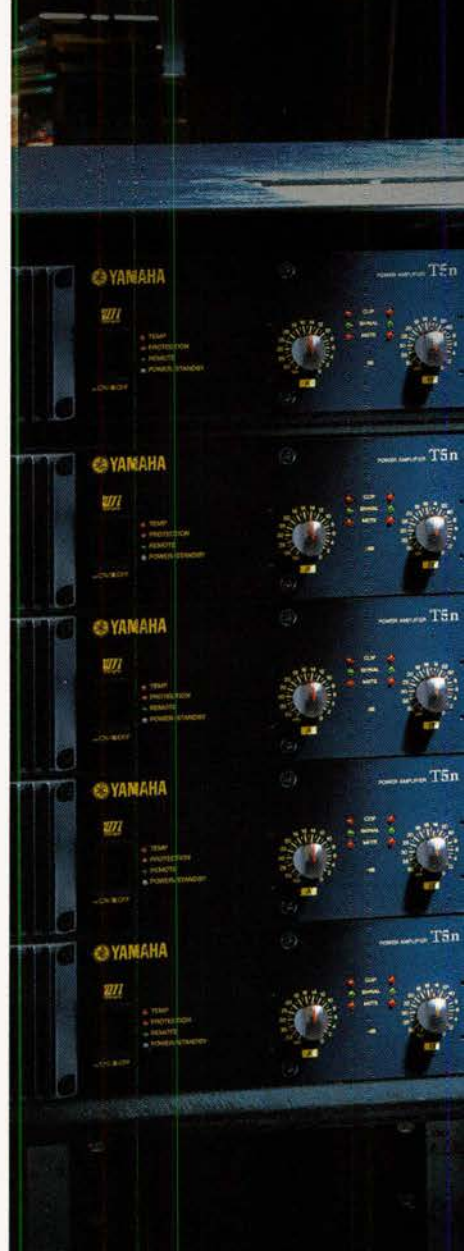
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The Tn Series has arrived.





This is the only part of the PA on tour! The Al Jerreau vocal effects rack.

a Digidesign Venue; "my favourite digital console", from Novatech in Adelaide where Michael was impressed – again – by the Kudo line array.

This is real sound engineering. "I keep my chops up, every day

reprogramming effects, setting consoles, tuning different systems and fixing people's PA's." By contrast, many acts tour and pick up production but either have with them one console, or insist on a digital console of the same kind, where a

simple USB key insertion resets the thing.

Consider a Heritage 3000 – it has over 2,500 different rotary controls, and probably the same number of switches and lights! Starting at channel 1, Michael laboriously goes

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through and sets every channel strip, then has an extended sound check with both acts, because that's what they expect.

The band also didn't rehearse before starting the tour, which is different. They had done one showcase gig together, and then made decisions about lineup. Al Jerreau's musical director (playing keys and sax) and bass player were grafted onto the George Benson band, which comprises his musical director on piano, a keyboard player, guitarist, drummer and his own bass player. This lineup entailed minimal chop and change through the show – obviously one bass player was on at once, but other than that, up to three keyboards worked with guitar, bass and drums. Naturally George Benson played guitar on some of his material.

Because George Benson works without a set list, the guest keyboard player (Al J's musical director) needed some charts, so a book of 300 songs was carefully placed on a heavy duty music stand! He could be seen frantically flipping from page to page when he got a brief cue from George as to what was to be played next.

We attended the Sydney show, so the band were settling into a new groove and were relatively tight. After Australia the tour moved to New Zealand and then the USA. At the end of June it was scheduled to do five weeks of European festivals.

"The audiences in Europe vary a lot", Michael reports, "from very serious jazz aficionados in Monteux, through to just wanting a party in Germany". In every case he mixes this show "full and punchy", as that is what the acts want. "These guys are legends, the vocals are great".

At this point in the interview we are just prior the Sydney second show, a rare respite from the pace of the schedule, one which had them do a show in Perth, hit the hotel for a few hours, get up at 4am to fly to Adelaide and do a show that night.

Michael had a massage which was cut short. "She came half an hour late", he said, before finding out that the same masseuse had earlier worked over the American Production manager. He looked a little weary, but is used to the tour routine.

The PA system engineer from Johnston Audio was searching for a house rigger to free up the speaker looms so they could fly in a V-Dosc




Australian Production Manager,
Martin Rutter.

array. The night before was the first Sydney show in the new 'Harbour Theatre' mode at the Sydney Entertainment Centre (2700 seats). At interval one of the Lake Contour digital loudspeaker processors failed, sending digital noise to one midrange output. This caused the midrange drivers in two of the eight V-Dosc boxes to fail.

"The audience were not auding at the end of it", said Australian Production manager Martin Rutter, "because the noise stopped!"

Michael seemed fairly relaxed, and the problem wasn't addressed since there was no house rigger on hand, and time had run out.

The system in Sydney had eight V-Dosc a side, with floor stacked subs and Arc boxes for re-earfill. It sounded really sweet in this new intimate mode, which was a little weird since it has the stage on the ground directly in front of the raked seats which seem to go very high – I was in row R, and above the lighting trusses. The followspots were at the top rear, and spill lit the audience all the way down to the mixing console which itself was on a mid level landing.

In a nutshell – the PA sounded good, the mix was simply outstanding, and the venue mode was acceptable and filled a niche between the largest theatres in town and the Horden Pavilion. 

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HOW TO SET UP A WIRELESS MICROPHONE SYSTEM

An introduction to the use of a single wireless microphone system.

By **ANDY MACKENZIE**

101 BASIC

A wireless microphone system will typically consist of:

- A receiver
- A DC power supply for the receiver
- A pair of antennas for the receiver
- A transmitter, either hand held or belt pack
- A microphone capsule to fit the transmitter

Choose a suitable location for the receiver. This should be somewhere close enough to the performance area not to test the range of the wireless system. In small venues, the receiver could be set up at FOH position, but it is better practice to set it up close to the stage.

Connect the DC power supply (or IEC cable if the unit has an internal power supply). Do this with the mains supply switched off – even though 16V won't hurt you, it can damage or destroy the power connector. Make sure that you do up the cable restraint or you might find your radio microphone switching itself off in the middle of the gig.



Connect the output signal cable between the receiver and the mixing console. Make sure that if you are using a line output from the receiver you connect it to a line input on the

console, or if using a microphone output you use a microphone input. The impedance and level mismatches that can otherwise result are worth avoiding. If the receiver has a level switch, make sure it is set correctly.



Fit the antennas to the receiver and put them in the correct orientation. You need to use both antennas for a diversity system, and you need to avoid having them parallel. Ideally the angle between them should be 90 degrees both side to side and front to back. If the antennas are not set up correctly, the benefits of using a diversity system can be lost, leading to reduced range and increased dropouts.

Switch on the receiver and check the signal level meter. At this point, it should show no signal being received, as the transmitter is not



switched on. If the meter shows that signal is being received, it means there is another transmitter in the area using that frequency. In this case you should change the frequency of the receiver to a channel without interference.



Now set up the transmitter. Put in a new battery for every show and make sure it is properly and securely connected. Alkaline batteries will last

up to about 8 hours in a wireless microphone, but another way of saying 'up to' is 'usually less than' – do you want to bet the success of your show on 'up to'? Save the second hand batteries for your multimeter or rehearsals.



Switch the transmitter on and check that it is tuned to the same frequency as the receiver. Different systems use different methods for changing frequency – have a look in the manual or ask the people at the hire company if you're renting the system.

Once the transmitter is switched on and tuned in, you should see full signal on the RF (radio frequency) meter on the receiver, and when you

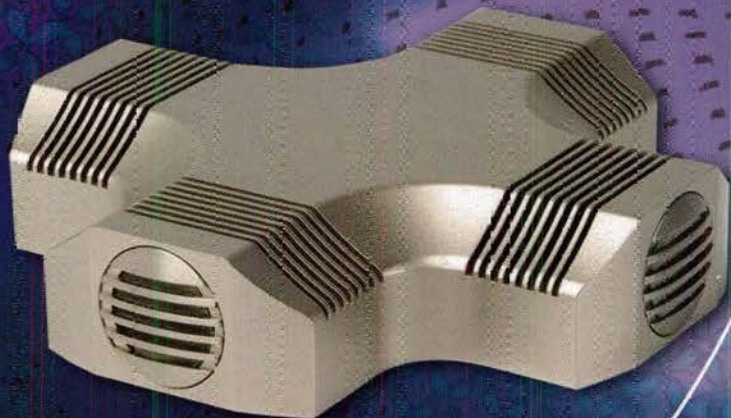
speak into the microphone the AF (audio frequency) meter should register signal.



Now that it is all working, you set your console up and treat it just like any other microphone. With a couple of extra rules. Do a coverage check – walk everywhere that the microphone user is likely to go, talking into the microphone, and make sure there are no dropouts. Make sure the user of the microphone knows about the power switch, and whether it is OK for them to use it. If the wireless microphone is being used for a critical application, it may be worth having a spare cable microphone set up just in case – and make sure the performer knows where to find it if they need it.



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HOW TO UNDERSTAND ELECTRICITY AND STUFF

We work in an industry which is heavily dependent on electricity – in fact, if the electricity ran out tomorrow the industry could no longer exist. Since we use electricity for everything we do, it's only right that we have a basic understanding of it.

By **ANDY MACKENZIE**

Fortunately for us, the basic principles of electricity are pretty simple.

VOLTS, AMPS, OHMS AND WATTS

Our understanding of electricity needs to begin with four essential ingredients.

Voltage – is where the electricity comes from. The voltage source you are using might be a mains outlet, it might be a solar panel, or it might be a battery. It doesn't really matter at this point. In general terms, the bigger the voltage, the more electricity it will supply. Voltage is based on a difference between two points – like the positive and negative terminals of a battery, or the active

and neutral of a mains outlet. Amazingly enough, voltage is measured in volts (V).

Current – is what happens when two points at different voltages are joined by something conductive, like a wire. Electric current will flow from one point to the other. Think of an ordinary household light. When we switch the light on, current flows between the active and the neutral –



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through the switch, the wiring, and the light. If we flick the switch, it breaks the circuit, and with a break in the circuit, no current flows anywhere in the system. Current is measured in amps (A).

Resistance – refers to how easily current can flow through something. The higher the resistance, the more difficult it is for current to flow. Some things, like copper wire, have quite low resistance. Some things, like trees and air, have quite high resistance. The resistance of a conductor can also be affected by its size – a thicker wire has less resistance, a longer one has more. Resistance is measured in ohms (Ω).

Voltage, current and resistance share an unbreakable bond, known as Ohm's law. Mathematically, it looks like this:

$$\text{Voltage} = \text{Current} \times \text{Resistance}$$

What does this actually mean though? Well, it means that if we increase the voltage without changing the resistance, the current will increase (think lighting dimmer). It means that if we reduce the resistance while maintaining the voltage, the current will increase. It means that the only way to sustain a current if the resistance increases is to increase the voltage as well. And so on.

And what about power? Where does it fit in? What is a watt?

Electric circuits dissipate power as a result of current flowing. Depending on the particular device, power can be dissipated in a variety of ways – in incandescent lights, the filament heats up and glows as a result. In loudspeakers, the power moves the speaker cone.

Power is linked to the other three quantities in a simple relationship:

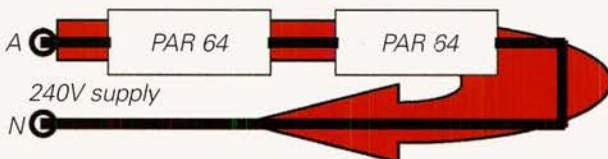
$$\text{Power} = \text{Voltage} \times \text{Current}$$

A circuit drawing 1A from a 1V supply will produce 1W of power. Remember though – not all the power is dissipated in the way that you want. An awful lot of the power that electrical devices use goes into making heat. Remember also that there is no way a device can put out more power than goes in. As an example, it is impossible for a 3000W amplifier to produce its maximum output while plugged into a standard power outlet. Why? Because the outlet can supply 240V at a maximum current of 10A: $240V \times 10A = 2400W$. Where would the other 600W come from? Magic? And this is without even considering any power lost as heat.

SERIES AND PARALLEL CIRCUITS

All electrical circuits are either series, parallel or a combination of the two. Let's look at a series circuit first.

In a series circuit, there is one current path that flows through all the components of the circuit, as shown below:



The circuit shown is one commonly used to power 120V PAR64 lamps from a 240V supply. The current travels from the supply through both lamps – one after the other. This means that the same amount of current flows in both lamps, and if one lamp blows, they both stop working. It also means that the voltage is divided evenly between the two lamps, providing them with 120V each.

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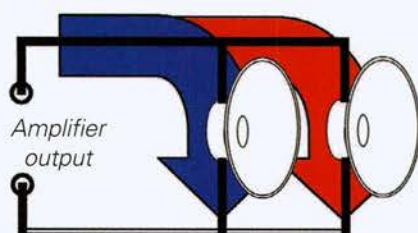
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In any series circuit, all points in the circuit carry the same amount of current and the supply voltage is equal to the sum of the individual component voltages. The total resistance of the circuit is the sum of the individual component resistances.

If we were to carelessly connect 240V PAR64 lamps in the configuration above, what would the result be? Each lamp would be supplied with 120V and Ohm's law tells us that if the voltage supply is halved, the current will also be halved. This means that each lamp is drawing half the current it needs to produce its 1000W output. But that doesn't mean the lamps are running at half power – the voltage and the current to the lamp have both been halved, so the output of each lamp is one quarter of its maximum – each lamp is producing only 250W.

What if we carelessly connected a single 120V PAR64 to a 240V supply? It would very briefly try to output 4000W, then blow up.

In a parallel circuit, there are multiple current paths, each supplied with the same voltage and each carrying current. A typical example is the connection of two speakers in parallel.



If we connect two speakers to the output of the amplifier, they are both supplied with the same voltage. This means that each speaker will draw the same amount of current, and produce the same power. If we were to connect two more speakers, theoretically each of the four would receive the same power as a single speaker connected to the amplifier. In practice this is not always the case – the more speakers we connect in parallel, the more output current the amplifier must produce, and all amplifiers have their limitations.

In a parallel circuit, each branch of the circuit has the same voltage applied. The total circuit current is the sum of the branch currents. The total resistance of the circuit can be calculated using the equation

$$1/R_{total} = 1/R1 + 1/R2 + 1/R3$$

(R1, R2 and R3 are the individual branch resistances. Additional branches are included as required).

This parallel relationship also explains the process of piggy-backing a number of lamps or appliances – each is supplied with the same voltage, so each will draw its rated current. This requires that the power source, whatever the type, needs to be capable of supplying the required current. In the case of mains outlets this is determined by the rating of the circuit breaker. In the case of amplifiers, most manufacturers will provide information in the specs about the minimum load the amplifier is designed to drive. No power source should ever be expected to supply more than its rated current – that's just asking for trouble.

So there you have it. Everything you really need to know about electricity in one easy lesson. CX

Disclaimer: Don't think that because you have read this you are now an expert in electricity and its wily ways. There is a LOT more that you could learn, and one of the key points is this: Electricity is dangerous, and if you get overconfident then sooner or later it will kill you.

And for all those planning to write in about how much I left out ... You're right. I did leave a lot of stuff out, and a lot of what I put in is greatly simplified. That's because I wanted people to read and understand it. If you want to do the next instalment, go ahead and send it to us.

HOW TO READ NUMERICAL COLOUR CODE

Lots of cable manufacturers colour code their multicore cables, and why not? After all, it does have a whole lot of advantages over just printing the numbers on – printed numbers can rub off, while insulation colour won't, the insulation colour runs the full length of the cable while the numbers only turn up every 10cm or so, and there's a good chance you'll be able to read the colour code even in the poor lighting and clutter in the back of the rack.

The biggest problem I've noticed is that not everyone reads the colours the same. Some people have devised their own system, others simply use the colours as a guide to putting on numerical labels. The intent, however, is that the cable colours follow the international standard resistor colour code as shown above.

Well, that's just splendid for cables

0	1	2	3	4	5	6	7	8	9
Black	Brown	Red	Orange	Yellow	Green	Blue	Violet	Grey	White

with less than 10 cores, but what happens with a 30 channel multicore? Simple, really – we use a second digit. The first digit is indicated by the overall colour of the insulation and the second is indicated by the trace colour, so that a red cable with a blue trace is number 26. This opens the numbering range up for any cable with less than 100 cores, which most people would accept is enough.

There are loads of little rhymes to help you remember the sequence, most of which are offensive to someone and some of which are offensive to everyone. The only one I've ever encountered which doesn't offend anyone (except possibly some

bakers) is: Black Bread Rots Out Your Guts, But Visitors Get White. See how the first letters are the same as the first letters of the colours...

Others prefer to just memorise the colours, which isn't too tricky either once you notice the link to the colour spectrum.

Either way, once you have all your crew working with colour codes it gives you an incredibly simple numbering system that can be used for just about anything, can be read easily from a distance, looks the same no matter which way up it is and could save you many tedious hours of heat shrinking little numbered labels onto cable that's already colour coded. CX

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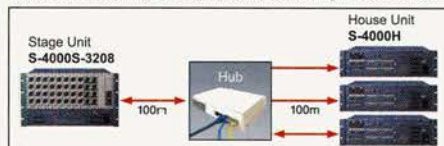
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HOW TO...BITS

HOW TO: UNDERSTAND GENERATION Y

Why indeed, but Generation Y denizens are aged between 11 and 30 and having spent some years teaching them in college, we now know a lot more. Like, the school system has failed to teach them some things.

Math is one. In many places math is only an option in senior high, and doesn't it show. Our college kids generally can't do head math, like 'what is half of 70?' Or even adding 10% tax on top of \$100. The other starcard skill that is sometimes missing in action is writing. Hard writing is a skill that isn't checked when schools insist on projects being typed from Year 7.

The entertainment technical industry needs head math and hand writing in the field, as do most businesses.

While Gen Y has terrific computer skills, they treat everything as disposable. Got a problem with part of a PA or light rig? Chuck away things rather than fix them. Go Google the problem instead of systematically looking for it.

They also like taking risks and are surprisingly susceptible to being conned, it's as if they didn't listen to their parents. But maybe no-one does. – JG

HOW TO: WIN THE NOBEL PRIZE FOR PHYSICS

This one's actually rather tricky, and

there's only really one way to do it.

Figure out how something really, really difficult works (cold fusion would be a good one) or discover something previously undiscovered that changes our whole understanding of physics. Publish a paper about it.

Send a copy of your paper to the Nobel Prize people. They're in Geneva.

Sit back and hope no-one comes up with anything better before you get the prize. – AM

HOW TO: GET A JOB OPERATING MOVING LIGHTS

Australia's 'Mr Moving Lights' owns 1,130 of them at last count, and he gets plenty of CV's from Generation Y

people wanting a career making lights move. They go in the bin, says Tony Davies from Chameleon. "It's the last thing you ask for – start on the factory floor first".

At Julius Events College a number of students each year come in with the fixation, dazzled by the discharge lamps, flapping like moths over the Hog 1000 or GrandMA. They only want the lighting training, and try to skid through video and audio. Sure enough, at year end they are scratching for work while everyone else is snapped up.

One private school in Sydney even pre-conditions its students with ludicrous expectations that take a year here to shift. Lesson: learn several skills, because then you'll be more employable. – JG

HOW TO: MAKE A CAREER ENEMY

I did it about 30 years ago: hired to operate followspot for the opening of Parramatta Westfield shopping centre I assumed I'd get a theatre hourly pay rate. When I didn't I flipped out and ran off to the Union. They took it on, and the production company was

forced to pay me the difference. It wasn't worth the 30 years of one sided agro which continues to this day. \$20 recouped for 30 years of hassles.

There's a couple of hindsight lessons – check the pay first; don't complain unless you are prepared to make an enemy; don't get emotional; and best of all: don't be a followspot operator unless there is no other option! – JG

HOW TO: INFLUENCE PEOPLE (AND MAKE FRIENDS)

There's a saying that good guy's never win, but recently that has been turned around on Wall Street of all places, where morality is the new fad thing. A few years ago I ran a critical article about a guys business and was blown away by the emails of support for him that swamped me.

I had dinner with him – and saw what people liked. He is sincere, and only says what he means to be true. He is personable, with empathy. He is smart and he is good at what he does best.

There are people who talk, and

people who walk. But the one constant is that if you are truthful and open, you'll cut through the pack. You can learn it. I'm still trying. – JG

HOW TO: BEAT JETLAG

It's like a hangover, you know it'll come the next day but you drink regardless. Your first couple of long haul trips will hit you like a ton of bricks, but there are solutions.

The best solution is the schedule, and if you're on tour you have no control. But where possible, fly in daylight hours. That way you arrive at night, and can sleep. Arriving at 5.30 in the morning is torture.

If you surf Zuji.com, you'll find there are flights headed in a westerly direction that chase the sun. You can fly to Asia in the afternoon, stopover, and catch a morning flight to Europe that arrives at supper time. Likewise Europe to the USA, and even out of the USA back home.

But there is a prevailing mentality to 'use the day' and fly by night, so take some Normison and try to sleep if you can. A shower or swim at the destination helps. Try to fly west, not east. – JG

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GEORGE MICHAEL: 25 LIVE

Back on the road with his first solo tour since the early nineties, the former wham! man has captivated audiences all over Europe with a show that celebrates 25 years in the business. Mark Cunningham reports ...

It is very comforting to report that, despite his numerous public embarrassments of recent years, the 43 year old artist formerly known as Giorgos Kyriacos Panayiotou is performing at the very top of his game. Essentially a 'Best Of' package, marking his quarter century as a hit-maker, Michael's current show fully embraces the colossal advances in live production technology that have emerged since his last solo tour, 15 years ago.

While all the GM classics appeared to be present at Earls Court, there were a few surprises in store. Michael duetted superbly with Sugababe Mutya Buena on 'This Is Not Real Love' and 'My Mother Had A Brother' was accompanied by the artist's moving story of his uncle's suicide. Less poetic was the anti-Bush rant, 'Shoot The Dog', which reinforced Michael's political fury with the aid of a 40ft 'Bush' inflatable and his fellating friend - a diminutive British bulldog.

Launched in front of 13,000 fans at Barcelona's Palau Sant Jordi arena, the 16-truck 25 LVE European tour travelled to 28 cities in Europe across this run. It looks like he will now tour some more.....

With his 15-piece band and backing vocalists 'relegated' to a three-tier platform that resembles a futuristic take on Elvis's classic 'Jailhouse Rock' movie scene, the only thing likely to dwarf George Michael's presence was the huge, dominating 'ski slope' video wall that divided the stage.

After the tour plans were drawn up the rehearsal period began with a week at Music Bark to settle in the backline and monitors. "We then continued at AIR Studios with the band, and then moved into Lyndhurst Hall (AIR's largest room) to get George and the band used to a more ambient sound and the set layout, and working together on CCTV as they cannot see each other on the touring set," advised tour director Ken Watts, whose involvement with Michael goes back to the Wham! days.

"LiteStructures was then used for the production build and we all came together for production rehearsals at Wembley Arena."

For production manager Mark 'Springo' Spring, it was his first time at LiteStructures and he enjoyed the experience. "The US could use somewhere like that because if we needed some part of the set changed, replaced or welded, the expertise was literally next door. They should be pretty proud of themselves - the grid and the weight loading capacity makes it all work, and I'd go there again in a heartbeat."

Extending like an ultra hi-tech Venetian blind, the 25m x 9m curved display screen featured 3,000 of Barco's MiStrip LED modules and was provided as part of the XL Video video package. Robustly built to withstand Michael's stage movement, the enormous backdrop created a stunning visual element.

Appearing as a 'strip of pixels', the MiStrip is a linear LED screen element that can be combined in any shape and quantity to make up any size and form of LED screen. Despite its sleek appearance, the MiStrip is structurally very strong, which made it ideal for Willie Williams' video staging design. The modularity of the system and special mechanics developed for the tour allowed the lower rear part of the screen to

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open up and reveal Michael's walk-on at the start of the show.

The process began when Frederic Opsomer from Innovative Designs in Belgium was contacted by Williams. Said Opsomer: "I received a phone call from Willie back in May, asking if it was possible to make a video screen that was curved like a ski slope and could be walked on. I had no drawings in front of me so I could only imagine what he meant!

"We were making the Barco MiStrip at the time so we developed it further to make it mountable in a panel. We also put a PMMA protection cover over each individual strip that could withstand a person walking on it. We made this cover anti-reflective so that when follow spots shone on George, the light did not bounce back into the eyes of the audience."

Opsomer showed the prototype to George Michael and his team who were extremely pleased with the result. He manufactured and delivered 3,000 strips that would be constructed to Williams' design: a flat backdrop that curved into the flat floor and then curved downstage.

He added: "We had to consider which type of LED to use because the shape of the screen meant the horizontal and vertical viewing angles were critical to the finished effect. We used SMD LEDs with a viewing angle of 175° and pixel pitch of 13.25mm. The strips were separated by 48mm centre to centre, with aluminium filler strips in between, and were powered using a Barco OLite platform."

Phil Mercer, the project manager for XL Video, commented: "The project demanded extremely high



look like a distant relative of the one from Paul McCartney's 2005 US tour but the crew included a number of Macca's cruckers, such the aforementioned 'Springo' and his assistant Diane Eichorst, agent and promoter Barrie Marshall, stage manager Scott Chase, carpenter Eino Cardelli and monitor engineer John Roden.

"It's because of Barrie that I'm here," said Springo. "The hinging part of the video wall is very simple –

out too easily, but we don't have any problems that can't be solved because we went into a lot of rigging studies for this. The big video wall can be pulled off in modules of 1.5 metres at a time."

What was Ken Watts' initial reaction to the video concept in terms of logistics? "A challenge. But I always knew that when George decided to step on stage again it would be a special and unique production. Credit goes to Mark Spring for making it a tourable package."

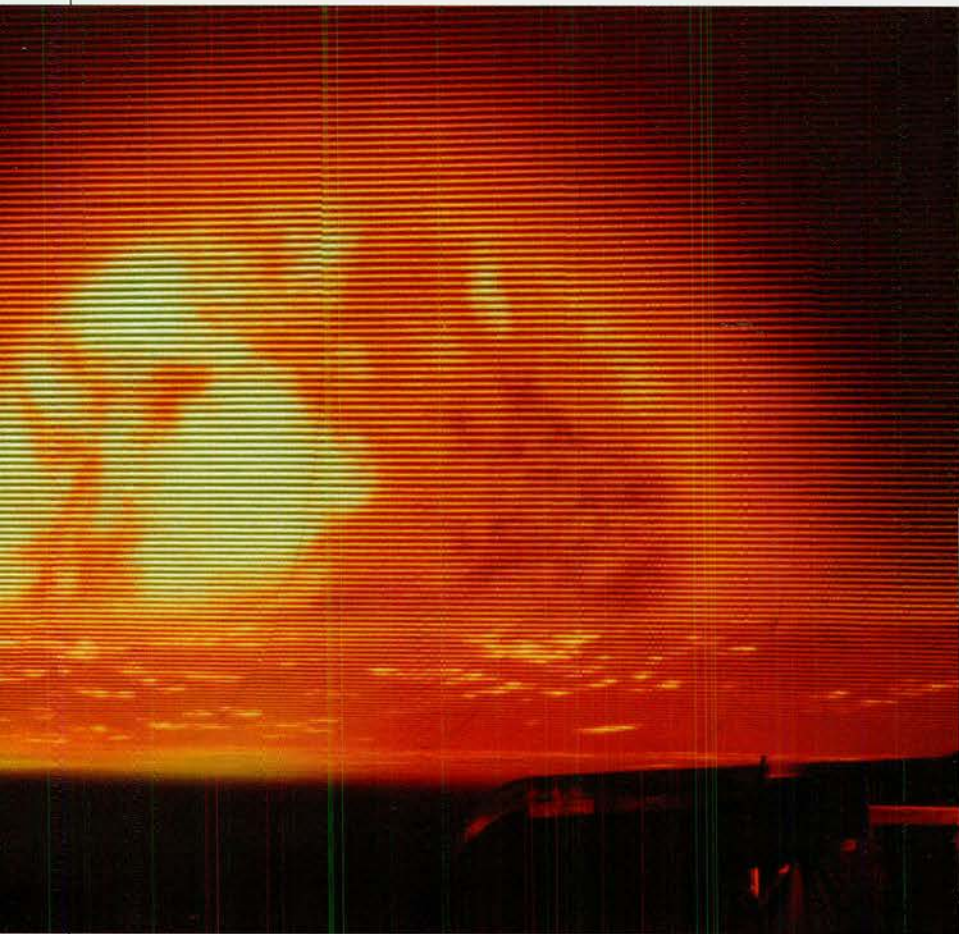
XL Video supplied the full camera package and the side screens for the show, which included two Barco 45m2 ILite 12 inner screens for pre-recorded footage and two Lighthouse 25m2 LED outer screens fed by I-Mag. A team of three cameramen and three LED technicians, under the instruction of director Andy Bramley and engineer Ed Jarman, co-ordinated a Kayak PPU camera system using Doremi hard drive machines for playback. XL Video also had the added task of installing a CCTV system by attaching monitors to the microphone stands, so that the musicians could see each other.

“ 3,000 Barco MiStrips were constructed to Williams' design: a flat backdrop that curved into the flat floor and then curved downstage.”

resolution – this proved to be no issue at all for the MiStrip which fulfilled a very exacting design brief. It made us start to think of all the other applications we can use this product for. It is so modular and flexible, and has the tried and trusted Barco processing and signal distribution as the basic building blocks of the system."

Not only did the 25 LIVE big screen

it takes a standard XL frame and has the video applied to it. The part that George stands on and the 'half pipe' in the rear are on a stage deck and those were harder to put in because they're heavier. Originally it was a really heavy show in terms of weight loading – around 50,000 kilos – but then it got reduced as the picture narrowed. It doesn't just go on and



VIDEO CONTENT

Filling the main screen was a dazzling mix of video graphics content, for which Willie Williams brought in a crack team of animators and software gurus. Most impressive were the frequency graph-like waves that 'danced' in response to the band's sound with a different colour applied to each of the main sound sources – red for Michael's voice, green for guitars, purple for drums/percussion, and so on. Jason Bruges Studio was commissioned to supply the responsive software.

According to Williams' producer, Sam Pattinson of onedotzero, the team were blessed with ample pre-production time in which to originate new material, license existing material (from Getty Images and TV sources) and commission new sequences from external artists. The bulk of the material was made by onedotzero's Damian Hale and Luke Halls under Williams' direction, and included 3D renderings of a mirrorball ('Fast Love'), sun and sea ('Praying For Time'), and diamonds ('Everything She Wants'), plus a cityscape, also for 'Fast Love'.

For 'Shoot The Dog', Damian Hale

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Photo: Colin West, TES Managing Director with his Vista T4.

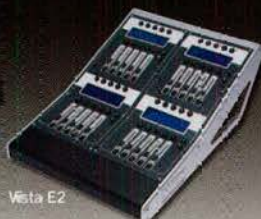
"The Vista is the latest in lighting technology and Jands has always been good to us in the past," said Mike Longmire, TES' Production Manager when asked why they chose the Vista T4. "Programming is amazingly quick, the timeline based programming seems to really click with lighting designers. We've had a few people use it for the first time and they were getting things programmed far more quickly than I think they would on comparable consoles. It also has a really superior effects generator."

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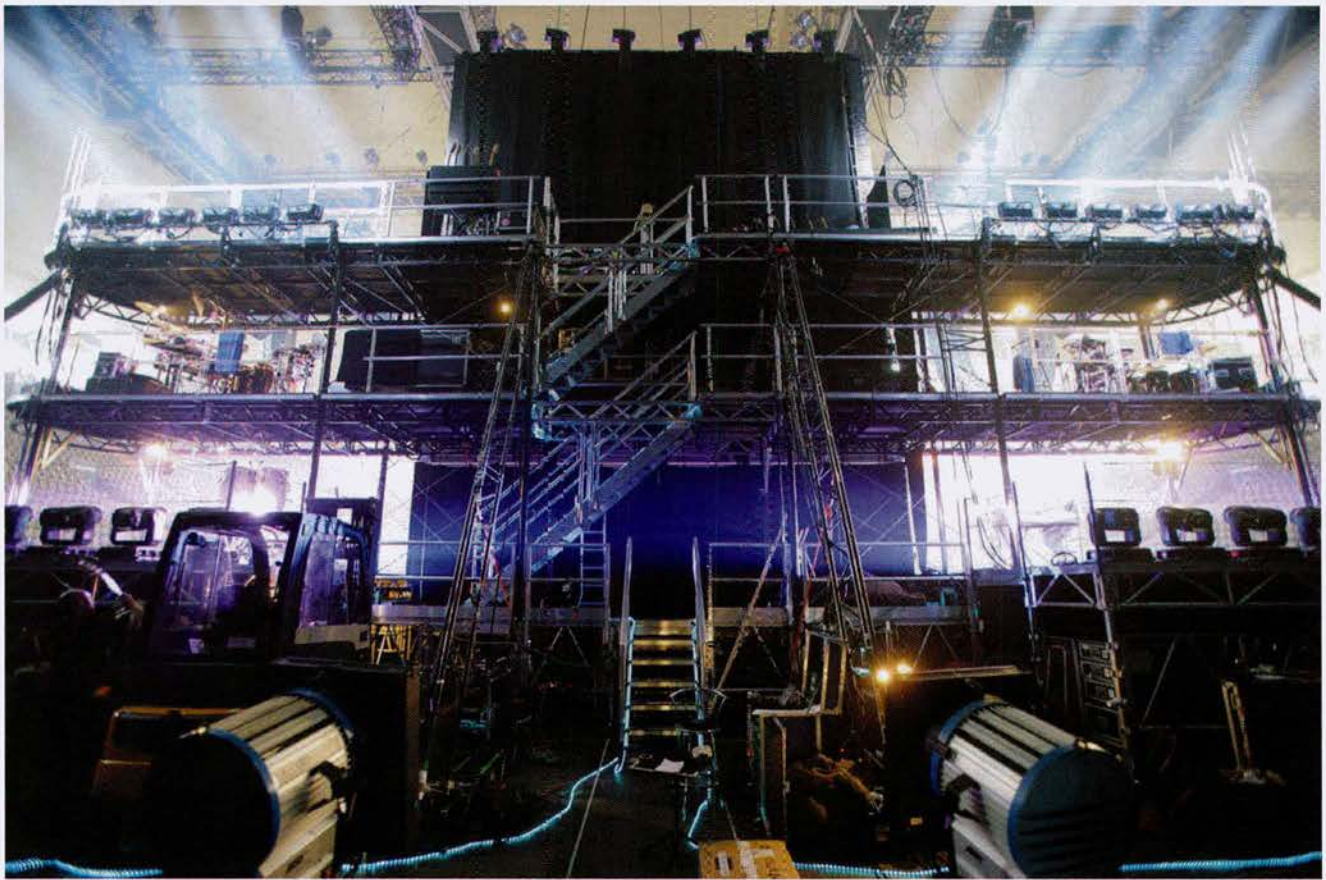
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Behind the stage with the video LED feature at centre.

reworked 2DTV's original animation and added 'references' to the Abu Ghraib and Guantanamo Bay prisoners. Meanwhile, brand new work was commissioned by Alex Rutterford, Richard Cullen, Universal Everything and Run Wrake respectively for the songs 'Outside', 'A Different Corner', 'Freedom 90' and 'Last Christmas'.

Saïc Pattinson: "The show is obviously video heavy. I think George

solution after it became obvious to Sam Pattinson that an accurate and flexible pixel mapping system would be required.

Responding to timecode from the sound department, the video playback and control software developed for 25 LIVE by Digital Antics provides pixel mapping and layered compositing in real-time for multiple sources. This included QuickTime movie files from local hard

End-to-end development of the various software components was completed in just eight weeks using a mixture of technologies including C++, VB.NET, DirectX and DirectShow. This tight pre-production schedule included rehearsal time at LiteStructures and Wembley Arena with Digital Antics' systems programmers Quintin Willison and Craig Edwards working around the clock to deliver software capable of coping with the constantly evolving requirements of the production.

TOTALLY FABRICATED

The Vince Foster-designed set was constructed by Total Fabrications, with Neil Darracott of Xolve involved in the structural engineering. A rolling set of this size was never going to be easy but, as Watts told us, nothing was going to prevent the prolific company from delivering on time.

"We had some small problems to begin with but the Total Fabs team came to the production rehearsals and worked through that period to resolve them and then make the adjustments that you always find you need once you're applying the product to the task."

Total Fabs' brief was three-fold. The

“The show is obviously video heavy. I think George was very interested in the content and has a good understanding of how to use video as part of show design. We were also faced with the problem...”

was very interested in the content and has a good understanding of how to use video as part of show design. We were also faced with the problem of having a big black hole if there was nothing on the LED. But the screen is such a beautiful thing that a simple texture or flat colour really worked on it."

Interactive and control systems specialist Digital Antics worked closely with Williams to develop a bespoke video playback and control

drives, SDI video input and DVI graphics input as well as command and control over several external devices, including a Berco Folsom DVI Matrix and a Doremi Labs V1 DDR.

The software was designed with simplicity and usability in mind for programmer Luke Halls and Bramley and Jarman at FPH. For the video operations team, an easy-to-use touch screen interface was designed with all important information and controls clearly laid out for immediate access.

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interM



Gary Bradshaw at the FOH controls.

first part was to provide a sub structure to enable the LED vertical wall to continue across stage to beyond the downstage edge and provide the ability for the LED strip to become part of the stage floor. The uniform separation between each strip had to be maintained over the whole structure.

Part of the 5m x 6.1m LED stage floor design called for infill panels between each LED strip to provide strength and protection to the strips, and it was decided to continue these infill panels over the whole of the LED wall. The interface between the upstage LED wall and the LED stage was a 2.5m radius quadrant of LED strip which was designed to split in the middle to allow Michael to make his entrance. This had to be carefully engineered to open and close at variable speeds and with millimetre precision so as when the quadrants were closed, to look seamless. The movement for this was engineered by Specialz, working closely with Total Fabs' design office.

“His main weapon was the d&b J-Series — arguably the line array success story of 2006”

The LED wall continued downstage curving towards the floor thus totalling 84 square metres of LED floor. The whole stage floor system was packed into bespoke dollied system allowing safe transport of the delicate LED strips.

The second part was an upstage double level 18.3m x 2.4 m balcony for all the musicians. Part of the brief required to columns to have a very minimal appearance which meant that the sub structure had to be able to take the loads from the balcony through the stage floor to the ground. This load was in addition to the local loads from the stage area.

In addition there was provision for stairs upstage of the LED wall integrated within the balcony structure. Part of the minimalist look was to use a polycarbonate hand rail system allowing the lighting designer to light these in various different ways. The balcony fronts

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were designed to incorporate LED lighting strips.

The final aspect to the project was the 23.5m x 10.1m main stage whose two levels incorporated internal stair units to the under stage which had an extensive dressing room area. This created several technical difficulties as the area was required to have minimal stage sub structure to allow as much unimpeded sub stage area as possible whilst being able to deal with the loads from the stage and the platform and provide enough stability and support.

On top of this whole stage was required to be rolling so as it could be assembled downstage whilst the lighting grid and vertical LED wall was assembled and positioned. The design of the arena stage system allowed the millimetre perfect positioning of the vertical LED wall to the top of the curved LED wall.

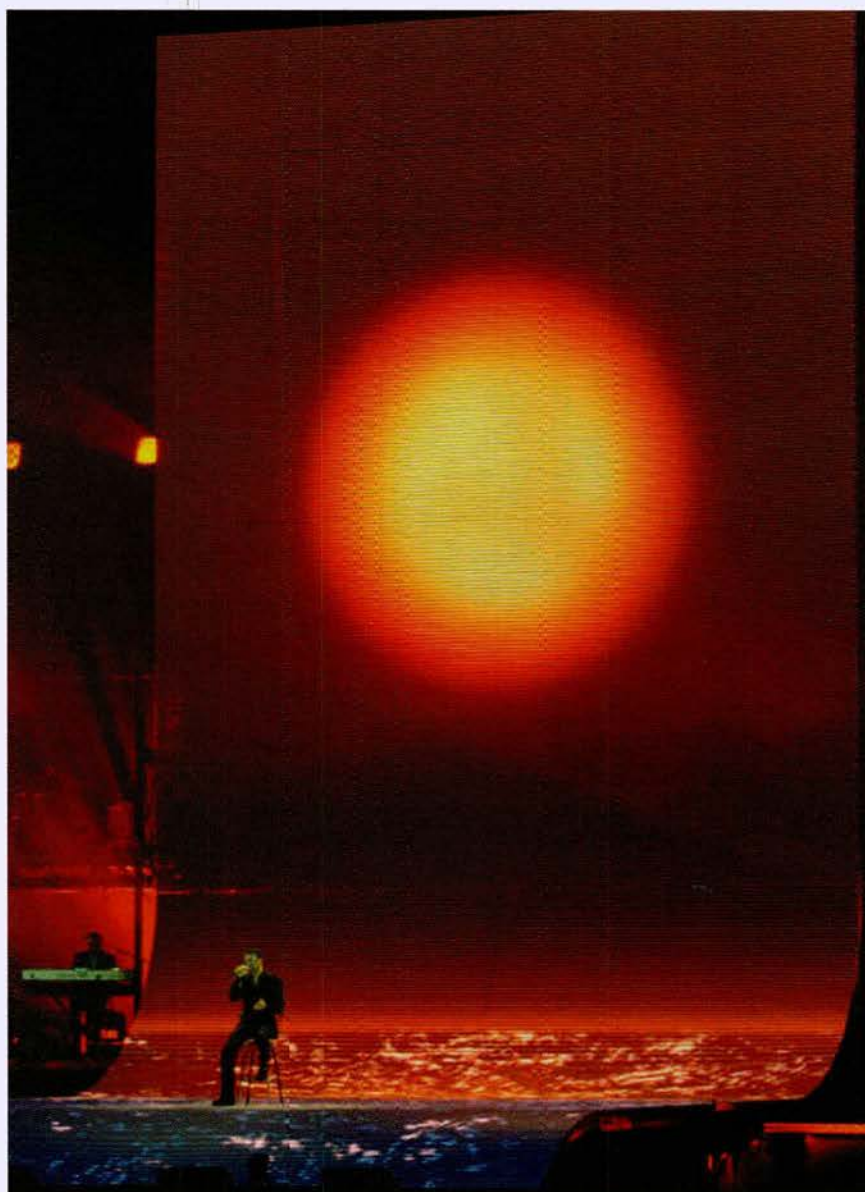
FOH & MONITOR SOUND

TPi met the tour entourage at Earls Court. This was perhaps not the most suitable of venues for experiencing 25 LIVE's audio, but with Gary Bradshaw at the FOH controls, the show had a good chance of achieving a quality result there.

His main weapon was the d&b J-Series – arguably the line array success story of 2006 – as supplied by Wigwam Acoustics. "This has been my first use of J-Series and it's blown me away," said Bradshaw. "We have J8 cabinets at the top of the hangs and the wider dispersion J12s at the bottom, then we have Martin Audio LCs in the side hangs, and LMs facing backwards to cater for the 270° audience, plus J-SUBs on the floor and Q10s and Q7s for in-fills."

At Earls Court there were also a number of d&b and L-Acoustics V-DOSC delays. Bradshaw commented: "Adding V-DOSC for Earls Court was partly an availability decision, but it's also similar to the J-Series in terms of high end and vocal delivery. Until now, I'd always said that V-DOSC had the most hi-fi high end of any PA system, but J-Series is better in my opinion.

"The range is higher and it's definitely the best system for vocals, which is what this show is all about. It's also more powerful and I'd guess that it would perform very well outdoors. In most venues we're not using the delays, it's just that Earls Court is so bad, acoustically, that you



need that extra help with definition. As far as I'm concerned you shouldn't do gigs in here at all!"

While the J-Series was powered by d&b's own D12 amplifier and processor racks, the Martin contingent was run by MA 2.8 amps and Lab.gruppen LA48a amps powered the extra V-DOSC delays.

Wham!'s monitor engineer on their final tour in 1986, Bradshaw has become "quite a fan" of the DiGiCo D5 Live console, and been very happy with its performance on other recent tours with Annie Lennox and Take That.

In order to accommodate a channel-heavy production, Bradshaw's D5 had all of its internal effects and processing channels disabled. He was therefore forced to rely on external racks, featuring a TC 6000 for GM's vocal reverb and ADT, and drum reverbs. Two TC D2s were assigned for delays, and Yamaha SPX

990s and Lexicon PCM 91 for band effects. All the dynamics, such as compression for vocals, stayed within the D5.

While Bradshaw's lot was "reasonably straightforward", it was a different matter in monitor world, where the control zone was hidden away behind the set rather than the wings and, like the band, relied on CCTV for visual contact with Michael and his musos.

Piloting the knobs and faders were Andy 'Baggy' Robinson and John Roden who respectively used a D5 exclusively for Michael's personal monitoring and a D5T for the band mixes. As in the case of Bradshaw's desk, all of the internal processing in the monitor desks were sacrificed in order to provide the maximum amount of channels.

"The D5s were the tools for the job, but I love them anyway," said

Baggy. "The D5T is known as the Theatre model but we call it the Turbo because it has more outputs, and with 15 in the band we need all we can get!

"Initially I was asked onboard to mix monitors but I told them it would be too big a job for one engineer, so we quickly employed John and went over to DiGiCo's HQ to work out the best approach. Each board has two local racks and two stage racks, and they are maxed out."

Although Baggy felt this wasn't a complex gig, as such, the sheer amount of kit made it well above average. "Of course, when you turn the DSP off in the board, you still need it, hence all the outboard gear. So there's a dozen SPX 2000s and 36 channels of TC EQ, Avalon tube compressors for George's vocals, and then you need all the racks to connect it all to. Wigwam very carefully put it all together in these big racks and the whole thing is plugged together with about 18 cables – it's a work of art really.

"We're on our own multicore loop and there are 16 channels of AES between us and Gary if we want to share anything like effects returns and a few mixes.

“Monitors require a D5 exclusively for Michael's personal monitoring and a D5T for the band mixes.”

We're effectively running 320 channels on a 16 x 8 foot riser!"

There were 17 channels of in-ear monitoring and 24 of radio mics, and most were always in use. Vocal mics, including Michael's, were Sennheiser SKM 5200 hand-helds with Neumann KK 104 capsules that received a solid thumbs-up from the engineers at FOH and in monitor world. "The kit has been superb with no failures of any kind, plus the back-up has been first class," said Baggy.

Other mics in use were Sennheiser 901s (kick drum), 406s (toms) and 904s (percussion), a Beyer M88 (additional kick mic), AKG C414 and Shure SM57 (snare), and Neumann U87s for drum and percussion overheads.

Michael used six d&b M2 wedges and six Q1 sidefills on stage but everyone else, including the singer, had Sennheiser G2 (eW300) wireless in-ears. Baggy commented: "The Sennheiser kit is excellent, but like many engineers I would love the company to introduce a hard-wired in-ear monitoring system. It would solve a number of problems."

Surprisingly, Michael's IEM mix was the one non-digital element of the monitoring. Said Baggy: "We use the D5 to generate his effects and band mix but the route from his mic to his ears is all analogue. He picked up on a little digital latency and the subtle chorus effect of that was slightly off-putting to him. When he was singing off-mike it got up to around 6-8 milliseconds so we chose a different route. Having gone through that learning curve I think we could return to digital by re-thinking the signal route, but we're OK for now."

INTERFERENCE

As soon as John Roden took one look at the video wall, he foresaw problems with RF interference, having jumped through similar hoops with Paul McCartney's US tour last year.

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LX man man Benoit Richards & programmer Dennis Gardner.

Broadcaster, freelance radio technician Johnny Sugden was charged with the responsibility of troubleshooting this dilemma. He explained: "Dave Hawker [Sennheiser's director of engineering] and I went to rehearsals at LiveStructures and we found that the screen was not only giving off a large amount of RF itself, but that its surface acted like a giant reflector of

signals to rise above the noise floor of the screen.

"Every day is a challenge depending on the physical properties of the venue, so we're constantly tweaking everything to get the optimum cover," added Sugden. "The SECC in Glasgow has a low roof with tons of metalwork up there, and it's situations like that which can

Australia and was replaced at the controls by Benoit Richards.

Richards has worked with Michael Lippman [GM's American manager] for eight years, designing shows for his acts Rob Thomas and Matchbox 20, as well as lighting such rock acts as Yes, Metallica, April Wine and Dream Theater. "I do feel very blessed to have been invited over to Europe by Michael to take over the reins," he said. "I get chills up the spine every night because George is such an amazing performer, and I dance my little butt off at the console." Having watched the show from behind Richards, we can confirm this behaviour!

The ultimate hero in the lighting camp, said Richards, has been programmer Dennis Gardner because... "If it wasn't for Dennis, this tour would have been in jeopardy after Vince left. He immediately took over and ran with it so that when I showed up in Oslo [on October 19] I was able to take over with ease and add my musical touch.

"I figured that George was looking for more of a beat-structured show that was more in line with a dance

“I get chills up the spine every night because George is such an amazing performer, and I dance my little butt off at the console.”

radio signals. So we went away and designed the system around that

"In order to get the audio signals through at the highest quality we're using the new [450-960 MHz] AEOCCF antennae from Sennheiser. They are 35° x 35°, have a flat response and you can pinpoint where the signal is directed on the stage." Also in use was a 'Vulcan' dual power amplifier – developed by Hawker – which increased the power output of EM

seriously affect what we're trying to achieve. In contrast, Earls Court, being a lot higher and more open, is fairly simple from an RF perspective."

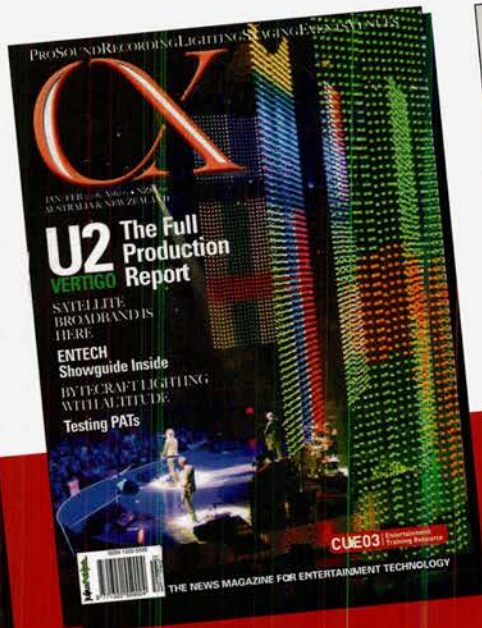
CHANGING HANDS AT THE LIGHTING DESK

The tour began with Vince Foster at the helm of the lighting and set design. However, shortly after the initial European shows, he vanished from the tour to join the Kylie production in

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music and nightclub feel. I didn't want to rock the boat and reinvent the wheel, mid-tour, so little changed in the way of fixtures. I did make a few changes such as adding five moving lights each side above the wings so we could top-light the backing vocalists and use them for side lighting, but essentially I worked with what Vince had specified – I just used them a little differently."

Michael's brief was that the video wall should not be impeded by lighting, and so there was a heavy reliance on truss and front spots. Said

large number of Atomic strobes with colour changers.

"We also have nine 8-lite Molephays with colour changers for audience lighting which is important to George because he provokes a lot of interaction with the crowd," commented Richards. "On the set we have some little Birdies all over the place to front-light the musicians and pull them out from the big washes. There are some iPix LED fixtures to add extra sources of colour within the lower two band stages, and under the second and third stage

Well respected for his work with Peter Gabriel, Gardner operated the master console that managed the server while Richards ran the second as a networked client or slave, mirroring all the moves of the master. "This was ideal when we were programming, because it meant that Dennis and I could take charge of different parts of the rig at the same time."

Addressing his audience, a more mature and modest singer than we last saw on the road noted: "This tour has reminded me that for all the shit we see, there's still so much love around."

In order to avoid the inevitable cluster f**k on the tube, TPI made a sharp exit before the end of the show, having witnessed a superbly executed production from all angles. If forced to make any criticism, the only slightly bothersome aspect were the sometimes painfully long blackout pauses between each and every song which Ken Watts explained was due to "the artist just wanting to 'settle' himself... it's something he's always done".

25 LIVE climaxed with a run of five sell-out shows at London's Wembley Arena, closely followed by a special one-off charity show for NHS nurses at the newly-refurbished Roundhouse. Expect an infinitely more settled George Michael at a stadium near you in 2007.



“Addressing his audience, a more mature and modest singer than we last saw on the road noted: “This tour has reminded me that for all the shit we see, there’s still so much love around.”

Richards: "George likes off-angled spots and that's how we highlight him in front of the big screen, which at times is a phenomenally bright light source itself, so the centre of the stage is definitely a challenge."

Neg Earth supplied all the lighting, trussing and rigging throughout Europe, and Richards name-checked Dave Ridgeway, crew chief John Shelley Smith and Paul Kell for their crucial assistance. The lighting rig – separated by the big screen – majors in Martin MAC 2000 Profiles and Washes, X&Y Big Lite 4.5kW and a

floors there are 16 PixelLine modules." Completing the lighting spec are six Robert Juliat Ivanhoe truss spots and Super Troupers out front.

Richards was consulted during the development of the Flying Pig Hog III console, and both he and Gardner piloted one each, running 20 DMX universes on Art-Net between them. "In the past 18 months, the console has made such incredible progress with huge fixes in the networking that it's now without doubt the best in the world – as it was always meant to be."



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HOW TO BE A CONTRACTOR

You can work as a contractor today, without significant impediment. Before you do, there are a number of issues to deal with.

By **JULIUS GRAFTON**

A great deal of employment in entertainment and events is done as a contractor, instead of as permanent or casual staff. It better suits the 'project' nature of our industry, and it usually better suits the travelling transient lifestyle that many specialist workers enjoy.

LEGAL ENTITY

You are a person who trades as <your name>. "Julius Grafton" can trade as Julius Grafton, so when someone writes a cheque to Julius Grafton, I can bank it in that bank account. Because that is who I am.

If I want to be known as "CX guru", and I get a cheque made out to that entity, how will I bank it?

If I go to the bank and try to open a cheque account styled as "CX Guru", they will boot me out unless I have one of the two things which follow.....

REGISTERED BUSINESS NAME

I can go to my state office in charge of business names, such as the Dept. of Fair Trading (in NSW) and register a business name, if it has not already been registered. As of today, I could register that name. It would be fashioned as: 'Julius Grafton trading as CX Guru', and that is how the cheque account would be named.

Operating a business entitles you to claim some expenses which you may not normally be able to write off against tax. Only an accountant can properly define these.

It costs about \$100 to set up a registered business name; and when

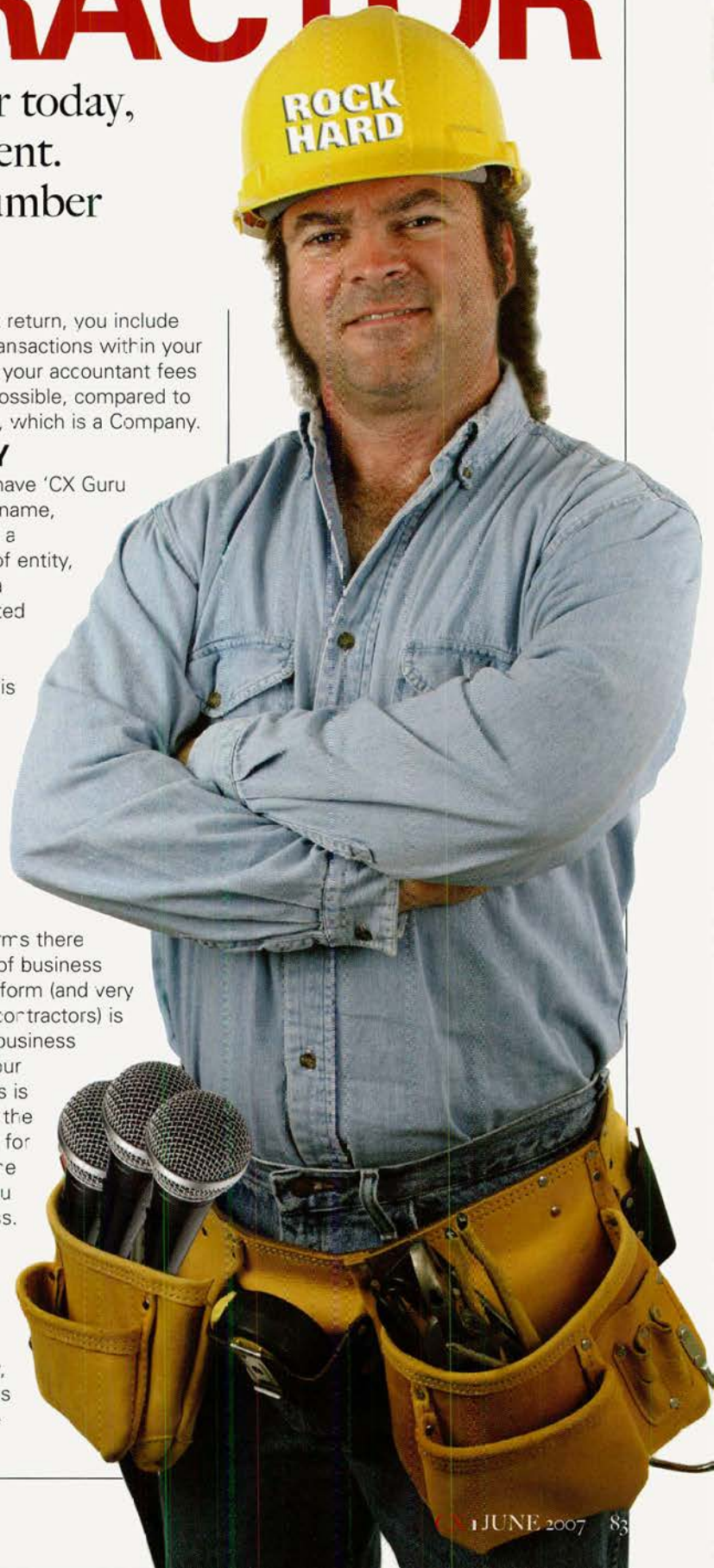
you do your tax return, you include the business transactions within your own affairs. So your accountant fees are as low as possible, compared to the next option, which is a Company.

COMPANY

I'd prefer to have 'CX Guru Pty Ltd' as my name, however this is a different form of entity, it is known as a proprietary limited company. This means the proprietor (in this case me) has limited liability for the activities of the company. In fact, the company is its own legal entity.

In general terms there are two forms of business entity, the first form (and very common with contractors) is the registered business name or just your own name. This is where you and the business count for exactly the same thing at law. You are the business.

A 'Company' is a new, separate entity at law – and if it is 'your' company, then that means you own all the shares in the



company. So CX Guru Pty Ltd, if it existed (which it should, because I like the idea) would have 2 shares (the legal minimum number of shares) both owned by me.

The other thing to know about a company is that aside from the share holding, as in the person who owns the shares, it also needs what is called a Director, and a Secretary (can be the same person). So at CX Guru P/L, the shareholder is me, and the Director/Secretary is also me.

Do you need to be a shareholder to be a Director? No. There are heaps of companies out there with multiple shareholders who are not Directors. And there are heaps of companies with Directors who own no shares.

Because the company is able to operate its own bank account, and operate as a separate legal entity, there are laws and rules about what a director can do, so don't ever take on this role without some thought and study.

It costs about \$750 set up a company, and it needs to file separate tax returns and a statutory return to the regulator every year. These cost at least \$1,000 a year to prepare, so unless you turn over more than \$50,000 it is not really worth while.

INSURANCE

Almost all contractors are required to carry their own Public Liability Insurance, which covers other people for your dumbass mistakes, such as when you set fire to the venue because your methane ignition stunt backfired. Painful.

The first question to ask anyone who wishes you to contract to them is 'do I require public liability insurance?' When the answer is yes, ask how much insurance cover is required (they may only need you to carry cover for \$100,000 or they may require cover as high as \$10 million which is not uncommon), and then you go and obtain the insurance. Get quotes. It costs money, anything from a few hundred dollars for \$100,000 worth of cover, upwards.

It also costs a very lot of money when you injure people, so having the insurance is essential.

A CONTRACTOR DEFINED

You've probably already been an employee, even casually. This is where pay as you earn (PAYE) tax is deducted from each pay packet, and



at the end of the year you are sent a Group Certificate so you can put in a tax return.

Hint: keep all your pay slips, because SOME employers are slack and do not send the Group Certificate! If no pay slip, keep your bank statements, showing the net pay (net means 'after tax pay').

If you are an employee, the employer must cover you for workers compensation and deduct tax. As a contractor, you look after these issues. Employers also do not need to pay payroll tax for contractors, and do not provide annual holidays or sick pay. Contractors get none of that, just a flat fee per hour worked.

If you were working for \$20 an hour, and being taxed so that your take home pay was more like \$16 an hour, contracting for \$20 an hour sounds attractive at first – but it isn't. A \$20 an hour employee needs to contract for around \$26 per hour to stay roughly equal. Here is why:

can see that the weekly gross wage of \$750 before tax blows out as a cost to your employer by 28%, and this is before payroll tax is added on. Plus maybe your employer spent unproductive time training you or inducting you.

Plenty of people resent being paid \$20 an hour and being charged out at \$45 an hour but wow, when you add on the above costs plus then add a percentage of the company fixed costs, sometimes your firm is struggling to break even. Yeah I know, spoken like a true employer, which I am.

So next time you are offered a contractor gig, keep the above in mind. Superannuation, workers compensation, holiday and sick pay are all line items that an employer MUST pay against every directly employed person but NOT where those people are contractors.

Why doesn't every employer just hire contractors? There are tax rulings

	Your hourly rate	Daily pay	Weekly pay
Extra costs!	\$20.00	\$150.00	\$750.00
Superannuation	\$1.80	\$13.50	\$67.50
Workers comp	\$1.80	\$13.50	\$67.50
Holiday pay	\$1.67	\$12.50	\$62.50
Sick pay	\$0.49	\$3.69	\$18.44
Total cost to employer!	\$25.76	\$193.19	\$ 965.94

The above example has a very high Worker's Comp premium, equal to that paid by building site workers – but this may be your category! You

which provide rules where a contractor must be an independent, 'arm's length' entity. You can't normally employ a contractor full time

where the contractor would otherwise have been deemed an employee. Otherwise every employer would do it, to push those extra costs off against the contractor.

Also consider this: a contractor can be terminated without notice, unless they have a 'contract' in place which details how much notice is required for termination. In practice, "no work tomorrow" means no money for a contractor.

Contractor Advantages

- Flexible workdays, you choose
- You claim expenses against tax
- Usually able to charge more than employee

Disadvantages

- Costs such as Insurance and Accounting
- Irregular income

Of course market forces will dictate whether you are a contractor or not – some jobs are simply only available to contractors, because the employer doesn't want the bother of setting up new employees every time they need crew or staff for a short duration.

TAX AND THE CONTRACTOR

It's great initially, getting extra money each hour. Our \$20 per hour salary type person (who gets \$16 after tax) is now invoicing at \$26 per hour as contractor. Suddenly the bank account doesn't have \$600 in it each week, it has \$975 in there, a whole \$375 more! Wow-ee, pub, club, mall..... here we go!

You know now, and need to continue to know, that as a contractor you are required to pay tax and to cover yourself for insurance. And provide for your annual holidays and sick pay.

There are two tax issues that a contractor needs to deal with.

1. Your own PAYE tax

This is where your accountant helps you, and you really MUST engage an accountant at the point of writing your first invoice, not in six months time! This tax is usually paid by instalment, and beware because once the tax office becomes aware you are contracting, it will require a thing called PROVISIONAL TAX, which is extra tax paid in advance. See your accountant, because we know plenty of new contractors who have crashed and burned with a tax debt and penalties!

2. GST

I recently taught a college class here at Julius Events College about GST and I was overwhelmed by the love in the room. It was euphoric, the way the whole class nodded in unison, smiling the whole time. "Genii, they are!" I told Karen when I got home.

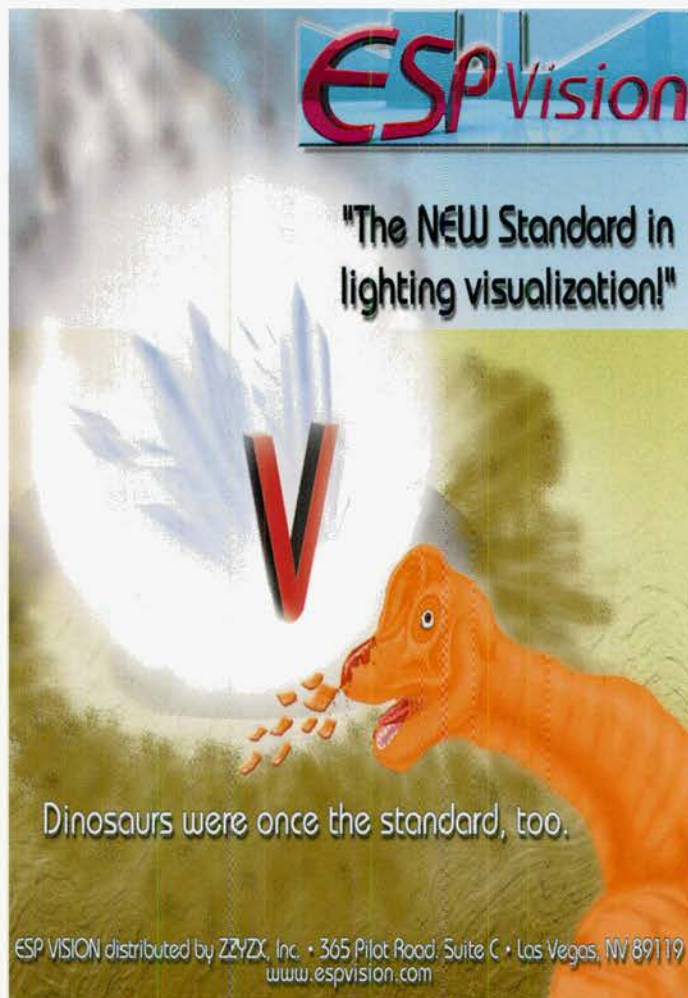
"Species maximus. Alpha humans. Those students are the cream of human endeavour", I waxed. "They got it all, straight off". She looked wisely at me and poured another beer. "Cream? Straight off? What you on, guru?"

She knows what my students know and what I missed, which is learning about GST is/was the low point of their academic year so far. The horror. The horror. Napalm in the morning. Gorillas in the mist.....

But enough of this, because you'll need to deal with it, and once again this is another solid and impervious reason why You Need An Accountant BEFORE you write your first invoice!

GST is another 'How To Do It'. Watch this space, I bet you can't wait!

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