

# Lighting & Sound INTERNATIONAL

March 2002

The Entertainment Technology Monthly

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## Bright Lights

- Technical Focus on LED Technology

## Brit Awards

- Backstage from Earls Court 2

## Hall of Fame

- The reinvention of the Royal Albert Hall

## Mixing Solo

- Profile of Allen & Heath

## Spun Gold

- Saskia Boddeke's latest production



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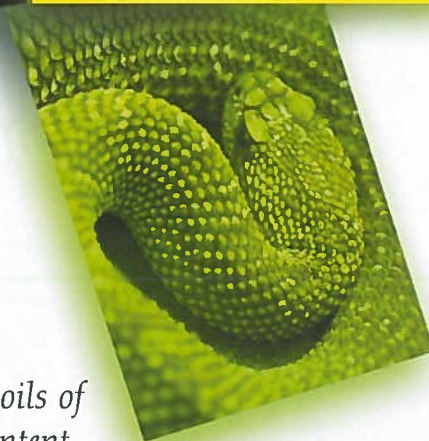
*the pale tracery  
of a new leaf*



*the ripe richness of  
ancient groves*



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# The Art of Light



# Lighting & Sound INTERNATIONAL

March 2002 Volume 17, Issue 3

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## Lighting & Sound INTERNATIONAL

The magazine is available on annual subscription: UK £55.00 Europe and rest of world £70.00 (€ 112 - US\$100.00) Airmail £95.00 (€ 152 - US\$137.00). Single copy price £3.50 plus postage.

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Published from the PLASA office:  
 38 St Leonards Road, Eastbourne, East Sussex BN21 3UT, UK.  
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Lighting & Sound International is published monthly for \$100.00 per year by The Professional Lighting and Sound Association, 38 St Leonards Road, Eastbourne, East Sussex BN21 3UT. Periodicals class postage paid at Rahway, N.J. Postmaster: Send USA address corrections to Lighting & Sound International, c/o Mercury Airfreight International Ltd, 365 Blair Road, Avenel, N.J. 07001.

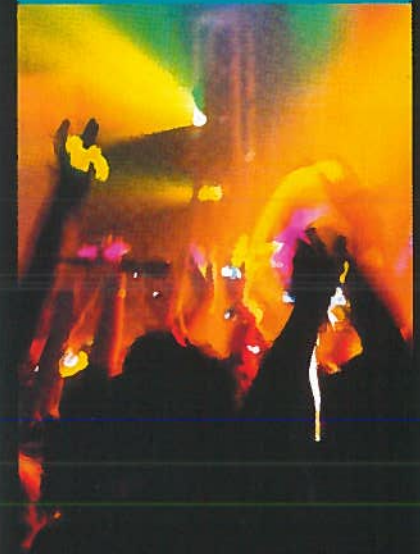
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## International News Round-Up

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# Marantz and Denon to Merge Operations

**Marantz Japan Inc and Denon have announced the establishment of D&M Holdings Inc, a joint holding company to merge the operations of Marantz and Denon. The transaction is expected to be completed by May 2002 and will create a global leader in the home theatre and audio-video (AV) market, while maintaining the established Marantz and Denon brands.**

D&M Holdings will employ approximately 1,650 people around the world and will succeed Marantz's as a publicly traded concern on the Second Section of the Tokyo Stock Exchange (TSE II: 6799). The home theatre and AV market has enjoyed rapid growth in recent years, due to the emergence of home theatre applications, as well as an industry wide digital evolution. D&M Holdings will be well positioned to benefit from

this pattern of growth through the development of digital products by matching Denon and Marantz's expertise in digital AV and visual products as well as wireless technology.

Commenting on the deal, Tatsuo Kabumoto, CEO of Marantz told L&S: "The combination of Denon and Marantz, backed by world class companies like Ripplewood Holdings and Philips, establishes a platform on which we intend to build a world class company. Marantz regards the establishment of D&M Holdings as yet another important strategic step forward following its acquisition of trademark rights and sales subsidiaries operating in Europe and the US from Philips last May."

Mitsushige Sakamoto, CEO of Denon added: "Integrating Denon's digital AV technology with Marantz's video and wireless technology will allow D&M Holdings to secure its position as a leading competitor in the home theatre market."

# New Out Board to Ensure Future of TiMax

**Following the demise of Out Board Electronics Ltd, which entered into voluntary liquidation in November 2001, the 'assets, name and goodwill' of the company have been purchased from the liquidators by the company's original founder and inventor of TiMax, Robin Whittaker, and former commercial director, Dave Haydon.**

Whittaker and Haydon have set up a new company called Sheriff Technology Ltd, which will trade under the 'Out Board' name. This will focus its core business on TiMax and its applications, as well as related audio. The company also intends to establish manufacturing and marketing joint-ventures in chain-hoist motor control, PAT testing and AC distribution.

For its core audio control products sector, the company has entered into a UK manufacturing partnership with a division of Solid State Logic (SSL) to enable the ongoing supply of TiMax rack systems and TiMax ImageMakers to the pro audio marketplace. Systems are available for delivery now, and the company intends to expand its rental and production support programme to include flexible rental and lease/purchase programmes, alongside a pool of experienced and trained TiMax sound designers and show programmers/operators.

Telephone and fax numbers remain as before, although new address details apply: Out Board Electronics (Sheriff Technology Ltd), Magna House, Dales Manor Business Park, Sawston, Cambridge, CB2 4TJ, UK.



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# MAC 2000

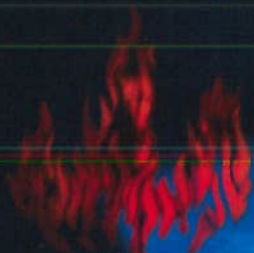
Electronic performance

## Performance is Everything

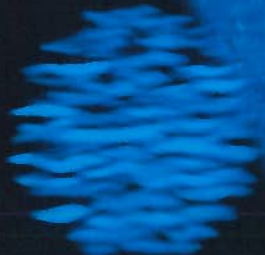
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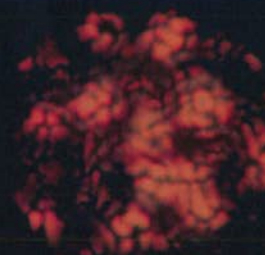
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## Double Decker Projection

Fourth Phase is accustomed to working in strange and interesting locations, but using an open-top double-decker bus as a drive-by projection platform is a first! Contracted by Simon Garrett, managing director of event organization specialist Pandemonium, Fourth Phase London was asked to project the Audi logo onto the exterior walls of the Audi showrooms on Piccadilly to mark a press launch.

The search for the ideal projection platform was initially narrowed down to a particular room at The Ritz, but it sadly proved unavailable. In a moment of inspiration, the Fourth Phase team noticed an almost suitably positioned Big Bus Company bus stop.

Fourth Phase duly hired a bus for the evening, and parked it at the bus stop. From the top of the bus, Fourth Phase used a Pani BP6 projector fitted with a slide (made by DHA Lighting), to project the Audi logo onto the front of the showroom. As the bus stop was approximately 4m off centre in

relation to the Audi showroom, the slide was pre-distorted to compensate.

"As far as we are aware," remarked Alan Thomson, managing director of Fourth Phase, London "this is the first time that a double-decker bus has been used as a projection platform. But it just illustrates how the London team is able to overcome awkward circumstances to realise a client's brief."

## Crest Audio UK

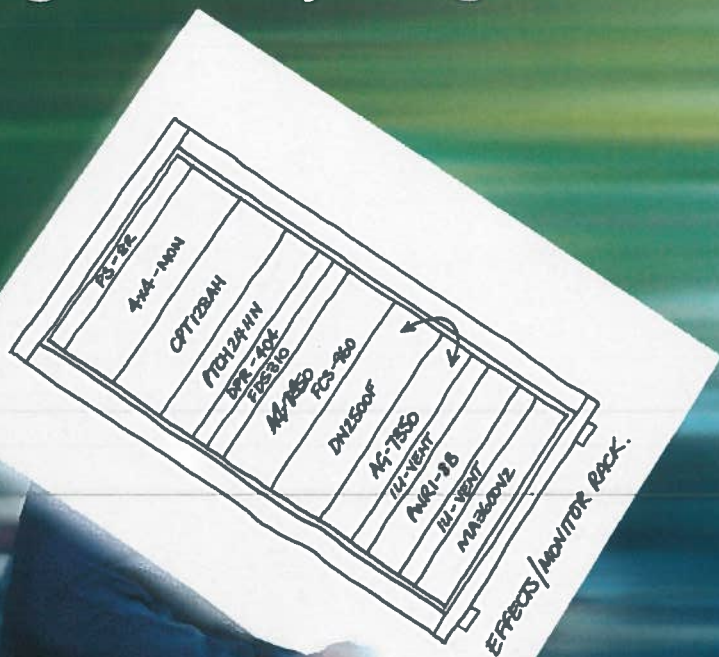
Crest Audio UK has been formed to handle the UK distribution of the pro audio product range of US manufacturer Crest Audio.

The company is a newly formed division of Peavey Electronics Ltd, joining the company's existing MediaMatrix and Architectural Acoustics divisions. Group marketing manager Dave Bearman sees Crest as a perfect fit with Peavey's other products. He also announced the appointment of Andy Simmons, previously with Sound Department, as sales manager for Crest Audio UK.

Crest manufactures a high end range of power amplifiers and professional mixing consoles, together with the Crest Performance series of power amplifiers, speaker systems and audio equipment. The entire range will be available through the new distribution channel. Although Crest Audio UK will be a separate operation with a discrete marketing and sales strategy, it will benefit from the backing of sales and customer service of the Peavey organization.

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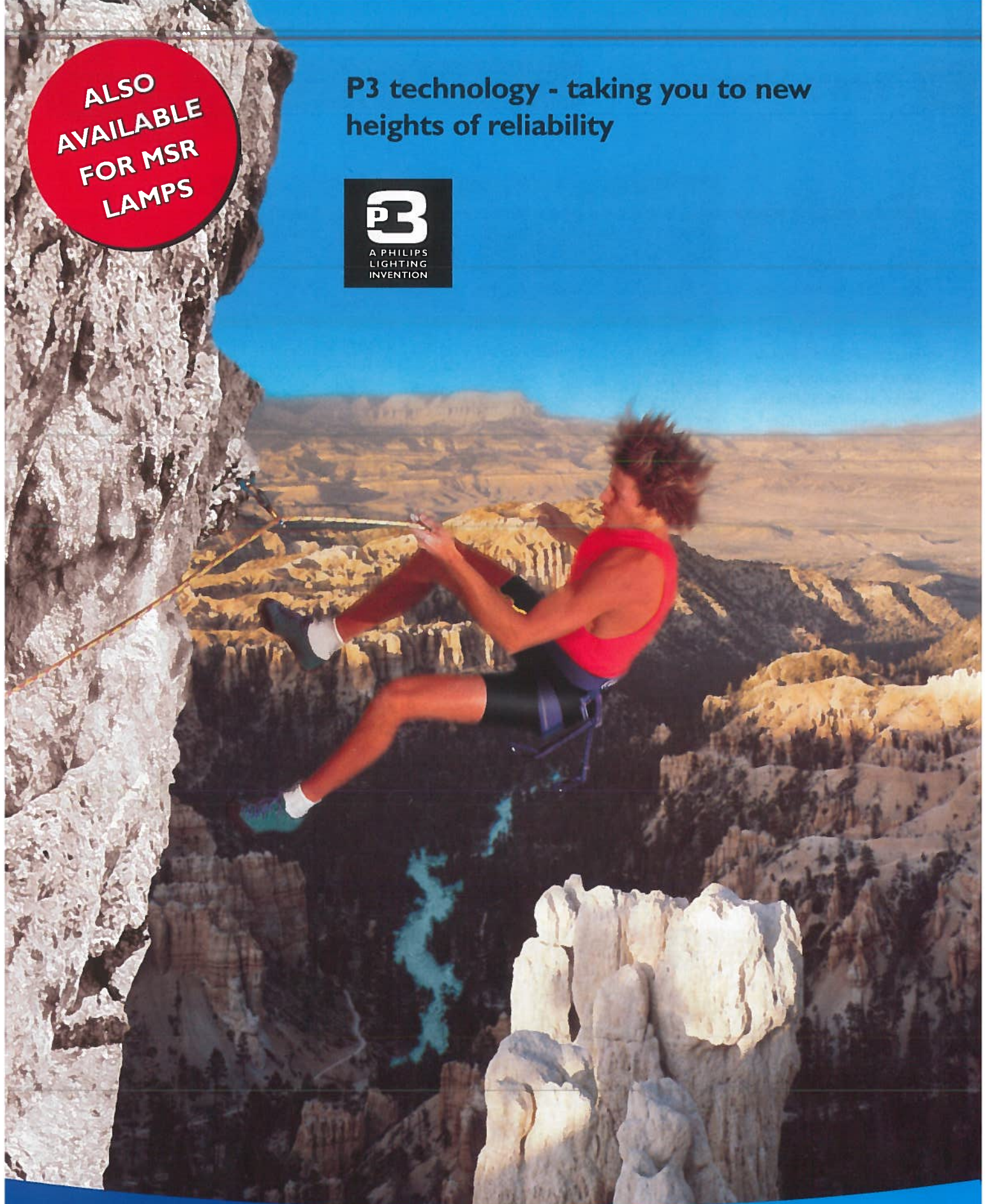


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## Reading Students Union

PAI have recently completed an installation at Reading University's Students Union Bar. The project was for a complete sound and lighting system, which used Mackie Fusion for the main dance floor and a combination of Martin Professional and Abstract fixtures for the effects lighting.



To run the sound system, PAI's Martin Draisey selected to use the new Mackie Industrial DX8/10e digital audio mixer. "I was invited to Mackie's showrooms in Wickford by Andy Austin-Brown for a seminar on the DX8/10e. The presentation was fronted by Costa Lakoumentas (the man behind the development of the mixer) and I was genuinely enthused by what I learned. The unit is highly flexible. At Reading University, for instance, we have used it as a digital processor and loudspeaker management system. I used 9 of its 10 outputs, for main, left and right (Fussion), six circuits for the peripheral loudspeakers (Monitor 8s and 5s), and a single one for the PL80s in the toilets and washrooms. The software and operation made a refreshing change: within a short amount of time I had the DX10 configured and the venue delays and EQs all set up."

PAI's decision to go with a Fussion system was based on the need for a set-up that could handle anything the students could throw at it. "We had to 'fly' the Fussion 3000 cabinets, continues Draisey, "as there was no place for us to stack the system. We hung the cabinets either side of the stage using brackets and assemblies built and designed in our fabrication shop. The 1800s/sa sub bass units were housed under the stage. The peripheral system, comprising the Mackie Industrial Monitor 8s and 5s, is utilized in the main for the daytime trading operation, since part of the design brief was to have sound from 11am onwards." Providing the amplification

across the venue is a QSC system.

PAI also installed the effects lighting system, and configured eight Martin Professional MAC 250s on a 3m central circle of truss hung from the ceiling, along with four existing Martin Professional Roboscan 518s. The balcony front was fitted with eight Abstract VR8s and a further eight Martin CX-4 colour changers.

PAR 56s were also used to provide general colour to the dance floor,

whilst further effects were provided by MAD scans and Martin Professional Destroyers. At the helm of the lighting system sits a Pulsar Masterpiece 216.

The venue has a well-stocked DJ booth with a Cloud mixer, Technics turntables, a Denon 1800F and a Mackie ART300A for monitoring.



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# Association NEWS

## Recent Employment Law Changes Will Affect All Companies

The march of constant change in employment law and regulations carries on unabated! Key issues affecting all employers seem to arise almost every day. There have been a number of key changes in recent months which members should be aware of.

» From 1st February 2002, the new maximum award for unfair dismissal increased to £60,100 made up of a maximum compensatory award of £52,600 and £7,500 basic award. Compensation for unlawful sex, race and disability discrimination remains unlimited.

» In October 2001 the requirement in the Working Time Regulations that a worker must be employed for 13 weeks before becoming entitled to the statutory four weeks paid annual leave became illegal. Workers are now entitled to paid leave from day one of their employment, although in the first year it can be taken by accruing it at the rate of one twelfth of their full entitlement every month.

The Maternity and Parental Leave (Amendment) Regulations have changed the following rules:

Parents of children born or placed with them for adoption between 15 December 1994 and 14 December 1999 may take parental leave in respect of such children  
Parents have three years in which to take their parental leave

Parental leave for parents of disabled children is increased from 13 to 18 weeks

Amongst the main points of the Employment Bill 2001 some of the most significant proposals are intended to reduce the current yearly 130,000 tribunal applications. In particular, there

are some controversial measures intended to stop employees from lodging tribunal claims before exhausting company grievance and disciplinary procedures - failure to comply could risk losing half of any potential award.

Equally failure by employers to have or use fair disciplinary procedures can lead to the Tribunal determining that the dismissal was unfair and also affect the size of the award to the employee.

The Employment Bill sets out new provisions for statutory dismissal and disciplinary and grievance procedures, including powers to ensure they are used and completed with compensatory awards varied where they have not been by employers or applicant.

In addition the Government now regards the statutory Statement of Particulars (the 'written statement') of terms and conditions of employment to be the basis of the employment relationship and the first point of reference in disputes. Proposed changes are to be made in the legislation to ensure that all stages of the new minimum disciplinary and dismissal procedures must be set out in the written statement and the exemption for employers with less than 20 employees removed. This means that all employers will have to include their disciplinary rules and the new minimum procedures in the written statement.

*Future articles will update progress on this Bill and other important changes or provide advice on key employment issues. Written by Clive Payne of CP Associates, a specialist adviser to PLASA Members on Human Resource Issues. Telephone: +44 1582 755182*

## PLASA's 2002 AGM and Dinner

The Association's annual 2002 AGM and Industry Dinner will take place on Friday 14 June at Down Hall Country House Hotel, situated in Hatfield Heath, Hertfordshire. As in previous years, the AGM will provide members with an opportunity to learn more about the work of the Association and give them time to network with other members.

Information about the event and booking details will be sent to the membership shortly, but if you have any queries in the meantime, feel free to contact Helen Willis on 01323 410335 or E-mail [helen@plasa.org](mailto:helen@plasa.org).

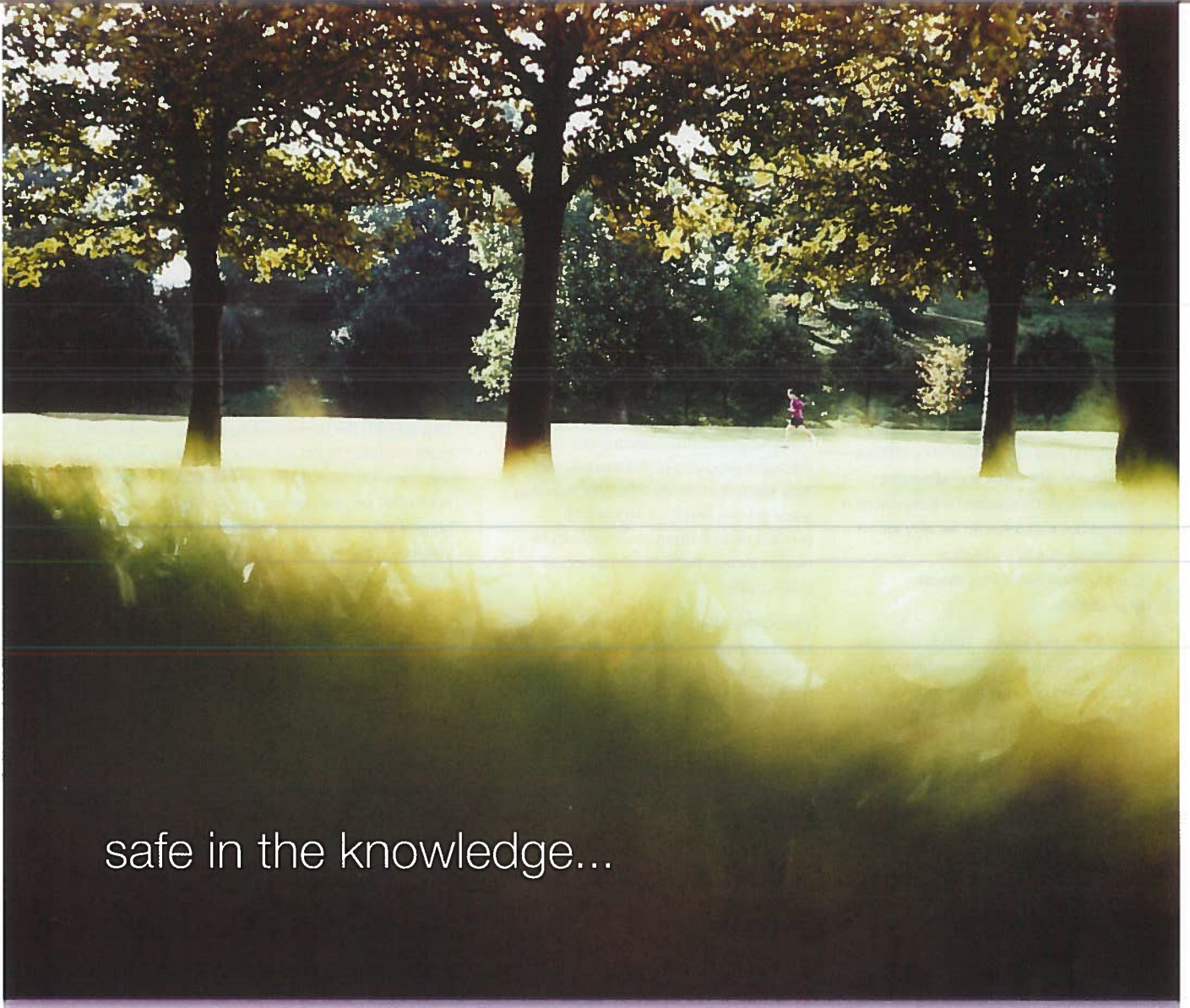
## New Online Health and Safety Forum

With Health and Safety considerations becoming more and more important throughout the industry thanks to increased regulatory control, the PLASA standards office has introduced a new Health and Safety Forum on the PLASA website.

Ron Bonner, PLASA's new Health and Safety Standards Officer hopes that members will make use of the Forum to debate and offer comment on all aspects of Health and Safety issues that are having, or may have an impact, on the way in which they conduct their business. The Forum will also serve as a useful reference on how other members are approaching their duty to this very important and necessary area.

The Forum is open to members only and can be accessed via password by logging on to the PLASA website at

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## Audio-Technica's Opens New Office Complex

Audio-Technica officially opened the doors of Technica House/AstroStudio, the company's newest office complex, at the end of last year. Local officials, friends and key representatives from Audio-Technica's corporate headquarters and subsidiary offices worldwide attended a dedication ceremony that included a gala party, a tour of the AstroStudio facility and a speech by Audio-Technica Corporation president Kazuo Matsushita.

Located in Bunkyo-ku, Tokyo, the eight-storey building is unique architecturally, being based on a giant transducer. As well as the impressive office environment it provides, Technica House also features AstroStudio, a world-class Dolby 5.1-ready surround recording, mixing and monitoring facility.

Kazuo Matsushita explained the thinking behind the inclusion of the commercially ready studio. "AstroStudio provides Audio-Technica with a real-world, 5.1 environment to test and evaluate microphones and new transducer technologies prior to releasing products to the market. We also wanted to create a familiar meeting place for our family of artists who provide us with input and feedback on market trends. AstroStudio meets all those goals."

The studio offers 5.1 recording capabilities and features an AMEK console, a 5.1 Genelec Active Monitoring System, outboard gear by Lexicon, Focusrite, Eventide, Aphex, Tube-Tech, T.C. electronics and Neve, as well as a DigiDesign Pro Tools System. Also on the equipment list is a wide selection of classic keyboards, guitar amplifiers and drums.

## Bridging the Gap

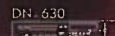
If you've been following the news lately, you'll know that the 325m long Millennium Bridge, which spans the Thames between St. Paul's Cathedral and Tate Modern on the south, reopened recently following extensive remedial work to remove its now legendary 'wobble'.

To deal with the problem, engineers Arup installed giant dampers to act as shock absorbers for the structure. During the test period, which involved over 1,000 people walking on the bridge, the biggest concern was for the safety of those involved. The challenge was to devise a communications system which would allow engineers to communicate from one side of the bridge to the other in both directions, as well as to those on the bridge itself.

Communications contractors RG Jones turned to Delta Sound who, in turn, enlisted the help of Kelsey Acoustics to provide a fibre optic link between two BSS Soundwebs on either side of the bridge. The Soundwebs provided a network for a combination of microphones and loudspeakers, which enabled all concerned to hear and be heard.

電音 DENON  
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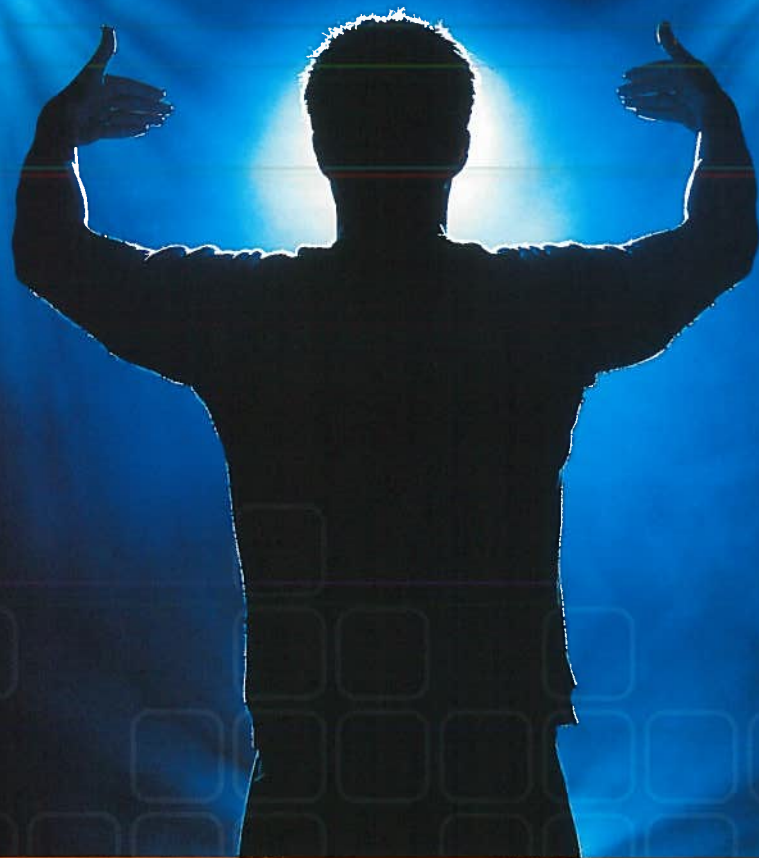
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## People on the Move

ETC has expanded its presence in Europe with the appointment of **Ingo Bernert** as field project manager for the Northern Region. With over 17 years' experience in the lighting industry, Bernert has spent the past five working for ETC dealer Despar GmbH, where he played an active role in the appointment of Despar as an authorized dealer for ETC's dimming and control equipment in Germany.



**Jens Horneman** has been recruited by Coemar as sales and marketing director for its European markets. Jens returns to the industry after some years in the financial services sector, and will join the senior management team of the Stanton Group. He will be based in Paris and liaise closely with Coemar's US headquarters in Florida.

Philips CSI has appointed **Reg Nicholls** as general manager to head up its growing UK operation. He takes over from **Kevin Diss**, who now takes on the role of general manager of Philips Lighting in the UK. In his new role, Nicholls will be responsible for expanding Philips' market presence in the CCTV, PA, congress and communications markets.

A new face on the international trade show circuit is Le Mark's **Rebecca Lacey**. She has joined the company as project manager with the task of expanding sales and the product profile of Le Mark's reusable PAL Roadcase Label and accessory range within the US.

IAG (UK) Ltd has appointed **Dean Davoile** to its Huntingdon-based headquarters. He will take on the role of national sales manager (UK) for all brands under the IAG Professional banner, including Wharfedale Professional loudspeakers and electronics. Previously heading up sales at Logic System Pro Audio, Davoile's responsibilities involve the launch of three new professional product lines.



Clockwise from far left - ETC's Ingo Bernert; Martin Professional's Dave Jacobs and Peter Ed, who has recently launched PE Consulting

and over the last two years, the duo have established SPS as a major player in the conference market. He was previously sales and marketing director of Cerebrum Lighting. The company has also appointed **Tim Brewster** as its new head of scenic construction. He joins from Set and Stage.

AC Lighting has announced four new appointments. **Ray Dolby** has joined the Special Projects Division in the role of project manager. Dolby has worked in the lighting industry since leaving school and was most recently with Lighting Technology Projects in London. Also joining from Lighting Technology is **Ron Knell**, who takes on the position of senior account manager in the export sales department. The new personal assistant to managing director **David Leggett** is **Deborah Simpson**. Simpson has an extensive background in corporate management, as well as in software training and development. The fourth appointment is **Warren Shepperd** who returns to AC Lighting to take up the position of colour media manager.

March saw the launch of PE Consulting, introduced to provide business development expertise to entertainment technology and themed entertainment companies. Behind the company is **Peter Ed**, well known to many in the entertainment industry. He has approaching 25 years experience in practically every aspect of his profession and has worked with ARRI (GB), Strand Lighting and ETC.

The Association of Lighting Designers has appointed two of the Association's members, **Robert Orno** and **Richard Pilbrow**, as joint presidents. Both men are highly respected: Orno has spent the past 40 years as a lighting designer and theatre consultant, whilst Pilbrow is the chairman of Theatre Projects Consultants, in addition to being one of the world's leading theatre design consultants.

They succeed **Michael Northen** MBE, who passed away last spring.

Stardraw.com has appointed **Kevin Harrison** to the position of Symbols Manager. Harrison will be the key contact for any manufacturers and end users.

Britannia Row Productions (BRP) has added **Jim Alexander** to its ranks. Alexander is that classic of the industry, a former ENTSS man from his time at college, who now specializes in the corporate event market.

**Paul Wood** is joining projection specialist Paradigm as the company's general manager. In addition to running its operations, Wood will also finalize the company's accreditation for ISO9001:2000 and manage its investment programme.

Martin Professional has appointed **Dave Jacobs** as technical manager. Jacobs has a background in electronic and electrical servicing and was previously service manager at Celco Ltd.

Following the sudden death last month of founder and managing director **Bob Salt**, RW Salt Communications has announced the appointment of a new general manager, **Craig Buckley**. Buckley, who is well known to many in the audio industry, joins RW Salt from Bose.

**Karl Christmas** has been appointed UK sales manager for studio/post and broadcast at SCV London, taking responsibility for high end pro sales. Formerly a freelance music producer and for many years in sales and marketing with TC Electronics, Yamaha and others, Christmas has built a strong background in pro audio. Among the many big names he will be handling is the new Fostex DV40 mastering recorder, high end Genelec monitors and Lucid ranges.

Telestage has promoted **Alun Edwards** to oversee all areas of its sales activities. He will be responsible for sales activities at home and overseas, and will work closely with TeleStage's parent company Waagner Biro.

Show Presentation Services has appointed **Mike Fisher** as its head of lighting, following **Stephen Prince's** return to lighting design on a freelance basis. Fisher joined SPS in 1999

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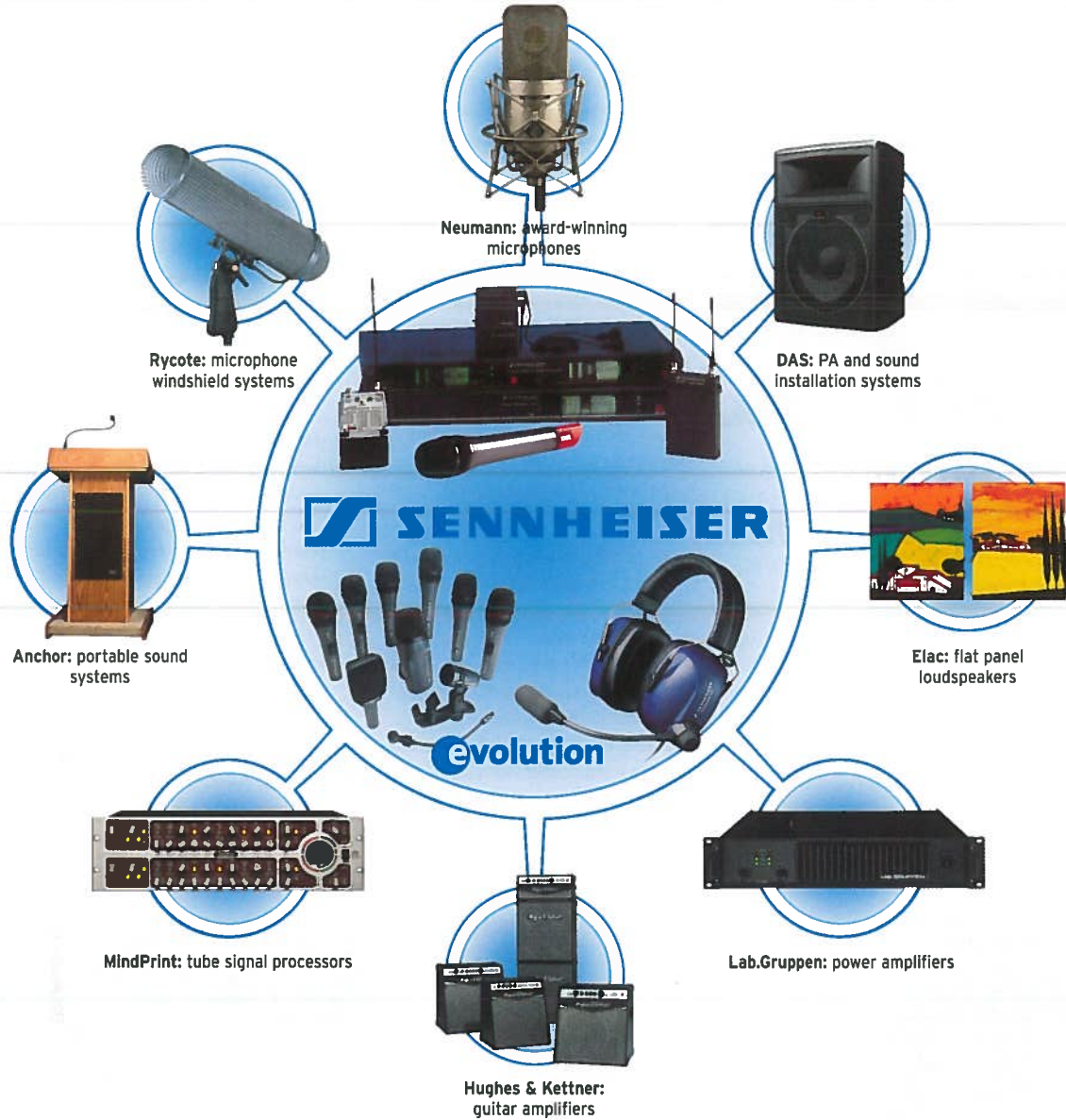
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## BBC Launch *The Trench*

*The Trench is a new BBC documentary series following the 10th Battalion of the East Yorkshire regiment and the role they played in the First World War.*

Filming for the series began in October 2001 and involved 24 volunteers from Hull and East Yorkshire, all of whom were of similar ages to the original soldiers. The volunteers spent two weeks in an authentically constructed trench system in Northern France.

UK PA company Big Sound, based in Wales, was asked to provide the speaker and 5.1 surround systems that would deliver the required sound effects in the most realistic form. One key consideration for the company was the need for the systems to deliver high-end sound effects despite being positioned as far away from the actual set as possible in order that they didn't interfere with camera sightlines. To address these issues, Big Sound opted for a mixture of powered speakers and mini stacks of powered cubes.

Duncan Wild, senior engineer at Big Sound, commented: "The sound delivery was so realistic, especially the 5.1 of bullets flying over the top of trenches, that the actors didn't realise they were listening to a series of sound effects delivered through powered speakers and mini stacks of powered cubes." Pyrotechnics were also used for some of the main scenes, with additional sound processed through the PA system.

The Trench is due for release on BBC2 this month.

## Jands Wins Major Walsh Bay Contract

*Jands Australia, in cooperation with Stage Technologies, has been awarded an A\$5m (£1.8m) contract for Sydney's new Walsh Bay Theatre.*

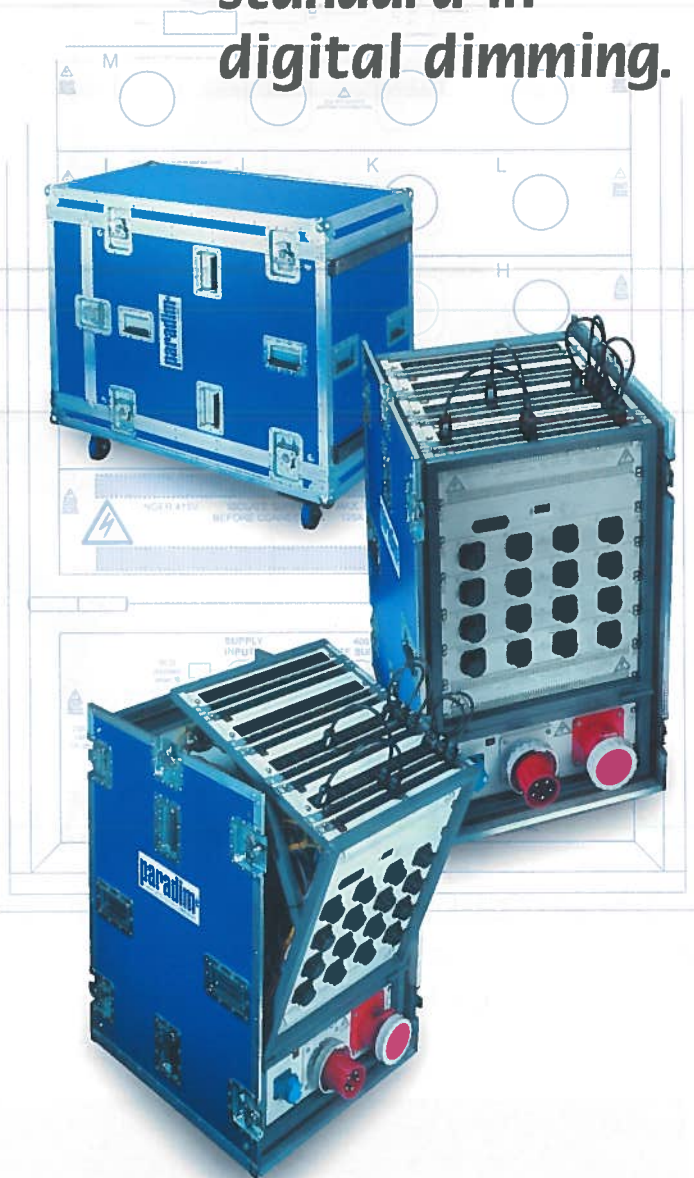
The Walsh Bay redevelopment project, to be completed by early 2003, comprises over 250 prestige apartments and a new theatre on the harbour foreshore in the historic Rocks area of Sydney. In partnership with Stage Technologies PLC, Jands will supply and install stage machinery, power flying equipment and theatre infrastructure services including paging, closed circuit televisions and the stage manager's console. Jands is also supplying and installing Jands HP series dimmers, wired lighting bars and cable reelers, curtains and decorative proscenium surrounds.

Working with French company Serapid, Jands will also supply and install Linklift 100 machines. The 850-seat theatre will be a venue for touring shows and several resident companies, including Sydney Theatre Company and Bangarra, the modern Aboriginal dance group.

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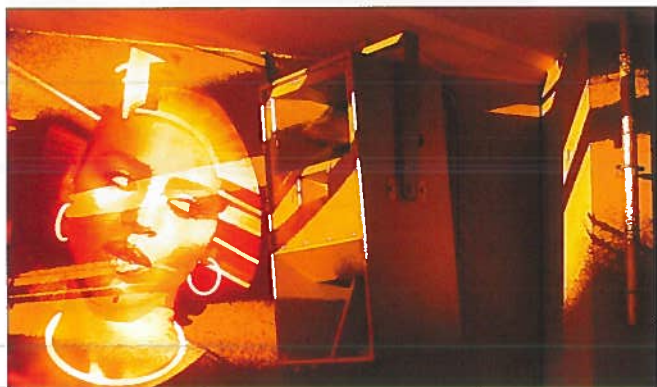
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## Cherry Jam



*When entrepreneur Alan Grant was planning his new West London venue, Cherry Jam, he knew sound was going to be of prime importance for the multi-arts programme he had planned.*

Having worked with Mark Metcalf at Notting Hill Arts Club for five years, he chose Blue Box Company to specify and install the audio system. Based around the principle of creating a hi-fi sound environment, Metcalf chose Funktion One Resolution loudspeakers for the main system and Genelec studio monitors for the bar area.

Two Funktion One Resolution 2 cabinets are flown left and right of the stage, augmented by two F118s supplying low bass, and a rear fill of one Res2 hi pack and two additional F118 bass enclosures. "One of the main briefs for the architects," comments Metcalf, "was sound insulation as the venue is in the heart of a residential block. The consequent sound proofing, coupled with the compact size of the venue, has resulted in some very neutral acoustics and the Resolution system fills the space effortlessly with very clean dynamic sound."

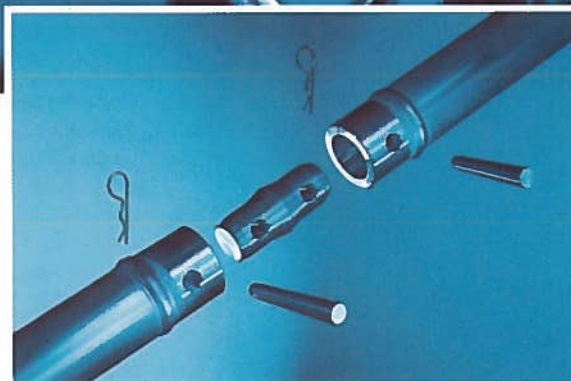
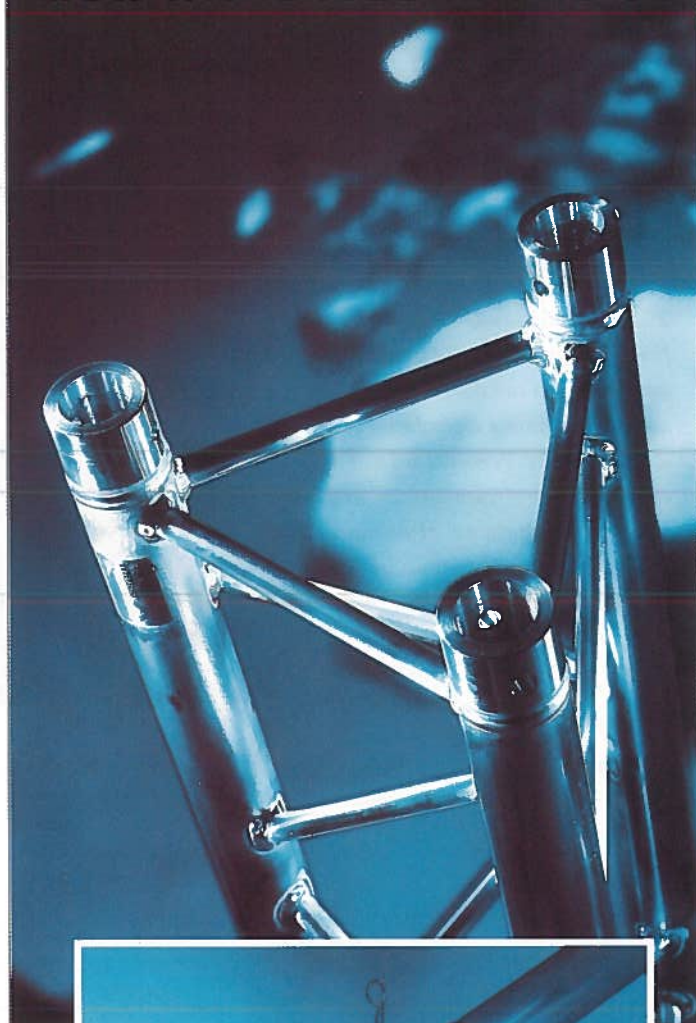
Early on, one of the other prime drivers behind the project, DJ and musician Ben Watt had commissioned 'Cherry Picked' pre club music compilations from various local dignitaries (Jurgan Teller, Tracy Thorn and the like) and as these were to be an important part of the venue's programming, it was essential that these hand-picked tunes came over with equal clarity and drive as the main DJ and band programming. Res 2s allow this as they perform equally well at lower levels without losing their fundamental characteristics. Likewise, the live programme is benefiting from the dynamics of these tight punchy loudspeakers. Genelec 1029As supplement the main system to provide balanced sound throughout the venue.

New QSC Powerlight2 series amplifiers and XTA DP226 digital processors drive the system, whilst the ubiquitous Pioneer DJM600, fed by two Technics SL1210s and two Pioneer CDJ 500S CD players, comprises the DJ front end. A Cloud CX242 zoner provides central control with DJ monitoring provided by Nexo PS8, with a Nexo LS400 providing copious low end, all driven by the Nexo PS8 amp and controller. Ben Watt designed the DJ area and was keen to keep its profile at a low level to allow the DJs to blend with the crowd.

Band equipment is fronted by the new Midas Venice 32-4-2 mixing console chosen for its high spec and compact size. Monitor and FOH band EQ is supplied by XTA GQ600 graphics with gates and compressors from the new PreSonus ACP88 that is fast gaining ground in live and studio applications. FX are provided by the industry-standard Yamaha SPX990s. Monitor wedges are Funktion One PSM 115s and all microphones are Shure including the Beta 52 kick drum mic and Beta 98s for drums and percussion. The usual complement of 58s and 57s, two SM81s plus BSS DI boxes complete the inventory.

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## SIEL 2002

*The SIEL show certainly had a buzz to it this year: most exhibitors were pretty upbeat about business in general and attendance seemed good, but the organisers' claim of just under 25,000 visitors (unaudited) over the four days is still a little hard to swallow when compared with the audited, de-duped attendance figures of other shows. Percentages are more reliable in the circumstances, and in terms of international attendance, the published figure of just under 5% indicates that this is still a predominantly French show, but a highly successful one at that.*

### LIGHTING

**Impact Diffusion** distributes lighting brands such as Clay Paky, MA Lighting, Pulsar, ELC, Color Kinetics and Rainbow. News from the stand at SIEL included the very latest addition to **Clay Paky's** Stage Line of moving head fixtures - the Stage Profile Plus SV. This HMI 1200 fixture features an impressive new patent pending four-plane framing system which can create large and small dynamic quadrilateral and triangular profiles, framed moving images and 90° rotation of the entire system, together with all the other features you would expect from a fixture of this level. **Pulsar's** Snowy Johnson reports an excellent response to the company's ChromaRange of LED fixtures, the latest addition to which is the ChromaPanel, an LED-loaded colour-changing panel.

US manufacturer **Color Kinetics**, the fiercely protective pioneer of LED colour-changing technology, is a stablemate at Impact. Its line of highly-engineered fixtures is aimed predominantly at architectural installations.

**MA Lighting** showed its grandMA lighting control system, including the 3D visualiser which we saw at LDI in Orlando late last year (see L&S December 2001). Since then, software developments have included the addition of colour mixing to the views and an enhanced fixture library. MA's Marcus Krömer reports that the response to this package has been very positive.

Another brand represented on the Impact stand was **Oxo**, and its Con'dome and Flightdome weather-proof covers for projectors. **Adda Super Cases** is the UK distributor for these popular products, and Adda's Derrick Saunders was present, looking very much at home in the company of his former colleagues at Pulsar and Clay Paky.



**Anytronics** was showing its very reliable dimming and switching wares on the stand of distributor **Areco**, highlighting the latest addition to its 193 range of dimmers, the SmartDIM. This is a front-panel menu-driven, 10 or 12 amps per channel dimmer pack which has received a good response since its launch at PLASA 2001.

**Flying Pig Systems** was on the stand of distributor **ESL**, showing one of the hottest new product introductions of 2001, the Wholehog 3, also covered in our review of LDI. Hugh Davies Webb was in almost continuous demo mode, highlighting the huge amount of interest this latest development has generated.

Hermann Sorger of **Lighting Innovation** was showing the company's latest product, the Motoryoke 2, a heavier-duty version of the Motoryoke. The original Motoryoke has been selling well: 60 units have gone to Northern Light for installation at Singapore's Theatre on the Bay. Sorger also reports that the company has now brought all its manufacturing in-house, allowing for greater quality control.

**Robert Juliat** showed several new products, chief among them the Topaze 1200W MSR followspot which joins the Marius as part of the Provence family of products. Main features include cold strike, MSR or MSD 1200W lamp, 7-14° beam angle and the same high quality optics as the company's SX range.

SIEL provided the European launchpad for **ETC's** sophisticated Emphasis control system, which integrates a control console (Expression and Express models) with the Emmy Award-winning WYSIWYG design and visualization toolbox and the power of the ETCNet2 networking system. The latest WYSIWYG



*Clockwise from top left: MA Lighting's Marcus Krömer and Kevin Migeon with the grandMA; Lesley Harmer (Harmer PR), Garry Nelsson (Lighting Technology), Brigitte Delehaye (Durango), Joanna Shapley (Rosco) and Zoë Castle (Rosco); Nexo's Denis Baudier and consultant Francois Deffarges with the GEO array; Yann Carbonnet and Ingo Haasch on the EVI Audio France stand*

software also received its European debut. The main advance, according to developers **CAST Lighting**, is its re-designed user interface which takes a more task-oriented approach to operations. Both these developments were covered in some detail in our LDI report.

**DHA Lighting** introduced a new, stylish, low maintenance gobo projector: called Chameleon, this is a compact and attractive projector which will find favour with lighting and interior designers working in architectural, retail and display applications. The Chameleon has already received a great deal of interest from the US market following its launch at LDI. Like DHA's Gecko projector, the unit uses a 75W MR16 lamp, but also allows for full directional adjustment around two axes.

**Lighting Technology Group**, although not exhibiting at the show, took the opportunity provided by SIEL to open the doors of their Paris showroom to the industry. LTG has seen a number of staff departures recently which have inevitably set tongues wagging, but the Group's managing director, David Morgan, reports that following some rationalization of overheads - both staff and premises - the company is back in good shape and confident for the future.

### SOUND

**L-Acoustics** was one of the prominent home-grown pro audio manufacturers at the show. As well as reporting that its dV-SUB subwoofer and MTD108a coaxial speaker, introduced at SIEL a year ago, are both doing well in the marketplace, the company also revealed the achievement of a long-held ambition on the part of founder Dr

# News Round-Up



Christian Heil. Heil has always wanted to provide a sound system for Pink Floyd, and recently, via the link with Britannia Row as part of L-Acoustics' UK V-DOSC Network, he got his chance - or at least as near as it is possible to get nowadays - with David Gilmour's solo shows at the Paris Congress Centre in January.

Nexo had the first European showing of its GEO compact line array system which we covered in our review of AES New York (see L&S January 2002). This system - aimed at smaller auditorium and arena applications - brings significant new innovations to the field, including the HRW (Hyperboloid Reflective Wavesource) or 'acoustic mirror', which provides a virtual source behind the cabinet.

New from Dynacord is the Cobra system - a brand new compact line array aimed, much like Nexo's GEO, at the 1,000-2,000 seater market. A basic Cobra array comprises four Cobra top boxes and four Cobra sub-bass units, along with a cabled rack with the DSP 244 digital controller and two L2400 amplifiers for the sub and mid/high frequency ranges. The systems' Voice Coil Tracking Protection allows for power amplifiers with ratings as high as 1200W into 8ohms to be used to achieve the greatest possible dynamic range.



Martin Audio's Rob Lingfield with the company's Wavefront line array system

New from Electro-Voice is the 'Eliminator i' (i for 'improved') speaker system, which has a reworked crossover system to provide a higher power handling of 350W continuous. Three models make up the range - the full-range (50Hz-20kHz), two-way cabinet, the subwoofer (incorporating the DL18MT driver) and the Eliminator ii - a double 15" version of the full-range cabinet. Other introductions from EV include powered versions of the Sx100 and Sx250 sound reinforcement speakers - SxA100 and SxA250 respectively.

Martin Audio's big news is the Wavefront W8L line array system, which brings Martin's traditional horn-loaded architecture to the line

array market. This is a 3-way system in a single, fully horn-loaded enclosure, incorporating a 15" high-efficiency bass unit, twin 8" mids and three 1" exit compression drivers. Far from receiving a global fanfare, the W8L has been soft-launched, and Martin's sales and marketing director Rob Lingfield revealed that substantial numbers of boxes have already been shipped to both the USA and China. (For more on this and other systems, see our review of Line Array systems in L&S February 2002).

d&b audiotechnik was making its second appearance at the show. The company reports that its French office, opened in 2000 and headed by sound engineer Didier 'Lulu' Lubin, now has six dealers across France offering full technical support. The company introduced the new display E-PAC controller which is designed to drive all its C, CI, E-Series and MAX loudspeakers. The E-PAC now offers full control of all functions via a rotary digital encoder and LCD display on the front panel.

Lee Baldock

## FX You Can Feel

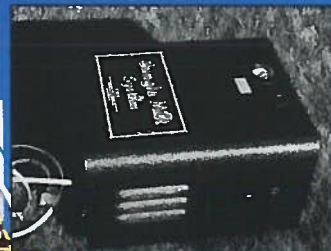
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# CITC



## Imagine Belfast 2008

*Fifty mile an hour winds and driving rain didn't deter the spectacular industrial light and visual show - Nightlights - that launched Imagine Belfast 2008 - the City's bid to be the European Capital of Culture in 2008.*

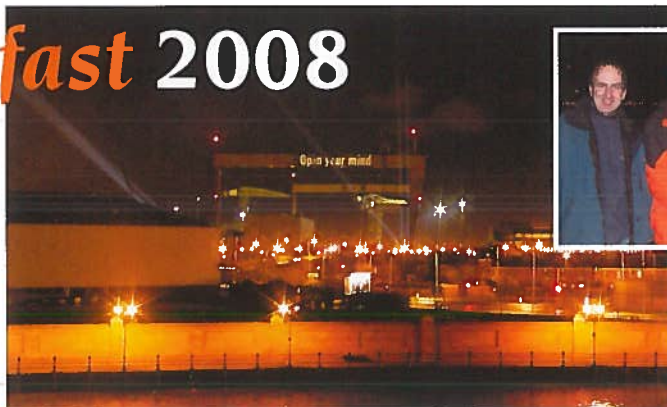
Nightlights ran for a week and involved projections onto Goliath, one of the two giant cranes at the Harland & Wolff shipyard that dominate the Belfast skyline. It was produced by Production Services Ireland for the Imagine Belfast 2008 organization, with projection by E\T\C UK and lighting by Searchlight Ireland.

The idea of projecting onto the crane evolved as several circumstances fell into place. Imagine Belfast 2008 did an 'ideas' postcard mailing to everyone in the city which received an overwhelming response. Thousands of inspirational phrases and slogans reflecting people's hopes and aspirations for the future of Belfast appeared on the returned postcards.

They wanted to use some of these for the campaign and they also wanted to do 'something' with the cranes. Simultaneously, Harland & Wolff also made the historic decision to allow their cranes to be used for a non-industrial purpose for the first time ever.

At this stage, Brian Reilly from Production Services Ireland was brought onboard to co-ordinate the enormous technical and logistical effort needed to bring the launch together. Realising it was not possible to physically attach anything to the cranes, projection was the obvious way forward.

In turn, Reilly approached Peter Canning of High Resolution Lighting in Dublin. Canning has just formed another company, Searchlight Ireland, with Darren Wring from Fineline, the busy Bristol-based UK rental house. Reilly had



Darren Wring (Searchlight Ireland), Ross Ashton (E\T\C UK), Peter Canning (Searchlight Ireland), Brian Reilly (Production Services Ireland) and Willie Finnie.

used their searchlights on the Belfast Festival at the end of 2001 and seen the impact. Searchlight Ireland was founded to bring these weatherized mega searchlights to the Irish market.

For Nightlights, Canning and Wring hatched a lighting scheme involving six of their massive 7kW Diablo Xenon searchlights. For projection hardware and co-ordination of the show, they called in Ross Ashton and the team at E\T\C UK. Artwork for the text images was designed and processed by Dublin-based Willie Finnie and then sent to E\T\C to be converted into films for the two 6kW PIGI projectors, each fitted with PIGI scrollers.

Goliath's beam span is 140 metres. His overall height is 96 metres and the underside of his bridge girders are 70 metres from the ground. The depth of the bridge girders is nearly 30ft. A site visit revealed that the optimum position for the projectors to fill an 80 metre span and the 30ft draft of Goliath's bridge girder, was to be located 110ft up, 160 metres back (from the crane) on the roof of the shipyard's Advanced Module Shed. By the time the images reached Goliath, also with a 22 degree lift, the projection distance was over 200 metres.

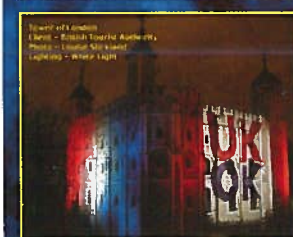
Getting the projectors into the right place was one of Brian Reilly's biggest challenges. First the roof of the building had to be certified by a

structural engineer so weight could be applied in the required area. To facilitate this, Reilly had a scaffolding load-bearing spreader platform built on that part of the roof. Then Reilly had to source a purpose-built projection cabin, supplied by a local firm - with large windows at the front, which needed craning up onto the roof of the building.

None of the dozen large cranes at Harland & Wolff was in the right position to help with this, so they hired a crane, which also lifted the mains cables from the deck to the roof of the building. Once in position, the cabin was battened down to the spreader platform with industrial strength ratchet straps - when the wind got up on the launch night, this was well appreciated! The crane also lifted 17 large cases full of projection gear - in a speedy hour and a half operation.

The Diablo searchlights were placed at the base of Goliath's legs - three per side. The fully weatherized units were individually programmed - via their internal software - with a movement and iris chase and left to do their thing. They were also programmed to avoid the flight path of the nearby City Airport, and the lighting crew alerted the airport's control tower each night as the show fired up.

Belfast is currently the hot favourite to win the nomination as 2008 European Capital of Culture.

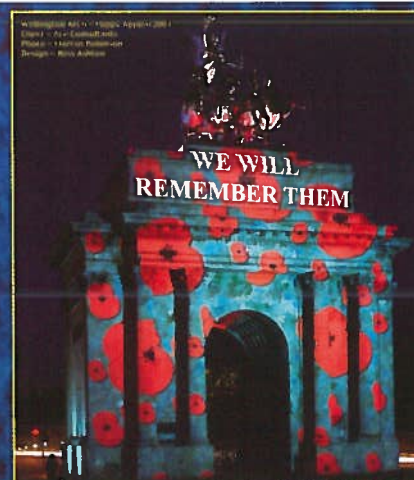


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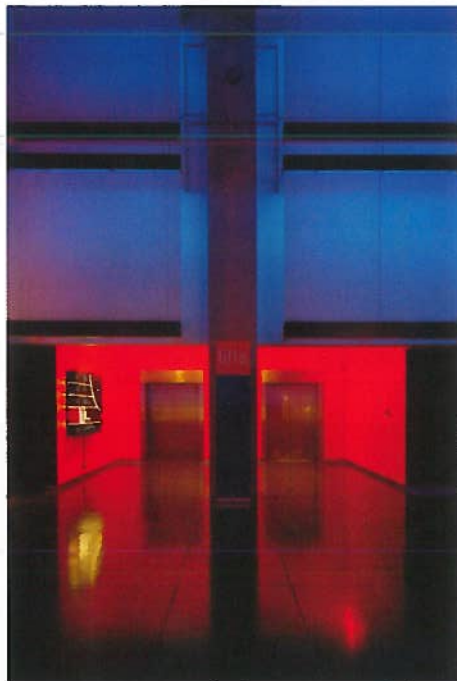
# rosco at the science museum

A theatre of Science, a building that creates a condition, a state of mind, a borderless space where science continuously develops, where exhibitions continuously change, the Science Museum is a place where architecture and light truly form one. The very narrow wavelength of blue light distracts the human eye and together with large scrim panels creates a feeling of infinity. Orange accents create dramatic contrasts with the blue. A curtain wall

consisting of louvres and coloured glass get the sun into the building. On either side of the main space, behind the concrete wall, cascading stairs connect the different floors to each other. The blue concept is continued in a different way, having Rosco Ultramarine Blue Supersaturated Point on the walls and white pools of light on the passerelles and stairs.

ARCHITECT: RICHARD MACCORMAC

PHOTOGRAPHS: ROOS ALDERSHOFF



Rogier van der Heide is an architectural lighting designer, founder and principal of Hollands Licht Advanced Lighting Design, an international lighting design company based in Amsterdam.



Current projects include the World Horticultural Expo Floriade (Netherlands), The National Museum for Natural History (Netherlands), The Tate Modern (UK, with Richard MacCormac) and Abu Dhabi 3rd. Bridge Crossing (United Arab Emirates).

Rogier teaches architectural lighting design at the Amsterdam School of Arts and he is a visiting teacher at several other institutes. In 1999 Lighting Dimensions awarded him Designer of the Year. This year, Rogier received an Edison Award of Excellence for the Science Museum's lighting design.

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## Famous Stockholm Globe is Upgraded

A new sound installation at the famous Globe Arena in Stockholm, scene of the 2000 European Song Contest, will feature clusters of Martin Audio Wavefront 8 Compacts. The audio rental and contractor company DM Audio AB - Martin Audio's Swedish distributor - has finalized the design to update and expand the installation which they undertook 12 years ago - when the arena was originally built.

"The reason for the expansion," explained DM Audio's Lars Wern, "is that when the arena has hosted touring artists, their sound engineers have often received complaints from the audience seated in the highest seats. Most tours do not bring enough equipment, or simply can't tilt the speakers upwards enough (the catwalk is situated 36 metres above the floor)." To help the visiting sound engineers, the decision was taken to install a delay speaker system that could be added to the main system, and at the same time beef up the installed central cluster in the arena.

This called for a more sophisticated solution and resulted in a system that included six clusters - three on each side of the arena. Each cluster will support three Martin Audio Wavefront W8C speakers, powered by QSC Powerlight 236 and Powerlight 218 amplifiers. A Rane RPM 26v digital matrix mixer handles the equalization, delay settings and dynamics. To allow for the switching on and off of individual speakers in each of the clusters, a Rane Via 10 Ethernet bridge is used to communicate with relays in the amp racks.

The whole installation is managed by a QSCControl II computer control system, and the control PC can either remain in the control room or be connected at the actual bleacher covered by the speakers. In this way individual adjustments can be made to tailor the sound from the delay speakers to the main clusters.

The system has now been in use for a variety of events and artists. The high seats have gained in value and the audience is now participating in the events much more enthusiastically.

## SCV Move Home

SCV London has moved its operation to larger premises in Loughton, Essex. Conveniently placed close to junction 5 of the M11, the new site is midway between the North Circular and the M25. SCV MD Julian Blyth told us: "Working in London was becoming increasingly frustrating. Time travel was a major problem: people being caught up in London's traffic snarl was losing us an enormous amount of time. From our new location, we will be able to service our customers faster and staff hassle will be reduced."

The company can now be reached at 40 Chigwell Lane, Oakwood Estate, Loughton, Essex, IG10 3NY, UK. Telephone: +44 020 8428 0778.

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## Wharfedale Creates New Systems Division

IAG Professional (International Audio Group) has restructured its Wharfedale operation. The product lines formerly covered solely by Wharfedale Professional will now be divided between two divisions - Wharfedale Pro and Wharfedale Systems.

This new focus on different market sectors is in answer to the increasing diversity of the products and plans for further expansion of the Wharfedale Pro ranges worldwide. Increasing business, especially in the professional product areas, has led IAG to recruit new staff in both sales and product development. This has provided a platform from which to develop new loudspeaker and electronics, which, in turn, has increased sales and distribution worldwide.

The Systems Division will now handle the established range of installation speakers, including the Programme 30D, 2080 and 2090 series. The LoudPanel (NXT Technology) products will also come under the Systems banner. Wharfedale Pro, meanwhile, will concentrate on the VS, LiX and EVP high performance loudspeakers for PA/MI use. The most recent addition to the Pro portfolio is a range of mixers, amplifiers, processors and effects, which were launched at NAMM earlier this year.



Pictured with the giant sphere at the South London Gallery are (from left to right) Chris Newman, Keith Tyson and Michael J Smith

## Kaleido Sphere of Light

The Griven Kaleido MSD 575 lamped CYM colour changer has found itself an unusual use, internally lighting a two metre giant sphere which is one of the highlights at conceptual artist Keith Tyson's solo show - Supercollider - which recently opened at the South London Gallery.

DMX control electronics designed and programmed by Chris Newman of Brighton-based Sensatech change the colour according to the temperature of internal heating and cooling elements (simulating the inner core of our evolving earth). The sphere and support came from South London based one-off specialist manufacturer Michael J Smith, also responsible for other exhibits at the show.

Commenting on the installation, Tony Kingsley of Griven's UK distributor Ambient Lighting, told L&SI: "The opal perspex reflects the light to give an even coverage, helped of course by the wide angle output of the Kaleido. The unit is cleverly concealed in the base with the control gear and projects upwards, but the overall effect is colour from nowhere."

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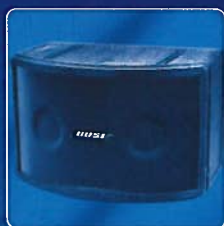
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## Entech 2002, Australia by Catriona Strom and Andy Ciddor

Entech 2002 saw the welcome return of the show to its former venue at the Sydney Exhibition and Convention Centre in Darling Harbour, after its brief sojourn in the rather desolate Olympic precinct at Homebush. However, the change to an earlier, February time slot, proved to be rather unlucky weatherwise. On the first two days of the show, Sydney endured torrential downpours, with each day's rainfall being equal to the entire average rainfall for the month.

That inclement weather may well be responsible for the slightly lower attendance of 5,143, compared with the 6,222 at Entech 2000. However from the comments of many exhibitors, the most notable absence was that of the casual brochure collectors (or 'tyre-kickers' as they're affectionately known).

The Australian entertainment industry is a market dominated by products sourced from Europe and North America, so coming just a few months after PLASA and LDI, the Entech show floor featured many products which had already made their debut at these shows. What was different however, were the products that had been announced, or shown in prototype at LDI and PLASA, but by Entech were actually available and shipping.

Real products on show for the first time, included production versions of **Jem's** Glaciator heavy fogger; **Navigator Systems'** low-cost Rental Desk software; the Wavefront 8



*Clockwise from far left: The Entech 2002 show floor; Andrew Holmes (Premier Technology) proudly showing off his DMX Wire-Less link system; Nic Moreau (Enttec) explains his EVO console to Paul Siwinski*

LongThrow - **Martin Audio's** long-awaited array loudspeaker; **MA Lighting's** grandMA 3D visualizer; the DMX controlled douser for **Selecon's** Pacific profile spots and **Rosco's** Model 1700 fogger. The Delta 3000 Smart Fogger, whilst present, was still in beta test.

Despite that predominance of overseas products in the local marketplace, or perhaps even because of it, there are a number of highly innovative Australian entertainment technology companies. Not only do these companies compete with overseas products in the relatively small Australian market, but many of them also export the bulk of their output into the home markets of their European, Asian and American competitors.

**Amphenol Australia**, the independent company that develops Amphenol's entertainment interconnection products, was showing a very

simple, but seriously useful, addition to its product line. Previously only available in matte black, the components of Amphenol's thermoplastic, chassis-mounted 3-pin XLR connectors are now available in colours. Colour-coding your patch panels, wall-boxes and stage-boxes becomes very simple.

Innovative professional audio developers **ARX**, had several new products. The MSX 32 is a 2 RU, 8 in/32 out, active microphone splitter with a range of linking and output options. The MSX 8 is its 1 RU 2in/8out smaller sibling. The CentreMIXX is a neat solution for the addition of a centre cluster in a system with only left and right outputs. In addition to summing the L and R signals, the CentreMIXX has an auxiliary input for the injection of an emphasized signal into the centre channel mix. Also on display was the SPL 30, the latest and broadest addition to the ARX self-powered loudspeaker range.

**Bytecraft**, well known for its scenery automation and sophisticated dimming systems, introduced two additions to its more affordable APC range: a docking version of the rack-mounted model (the return of the STM?) and a wall-mounting model for small installations.

*continued on page 32...*

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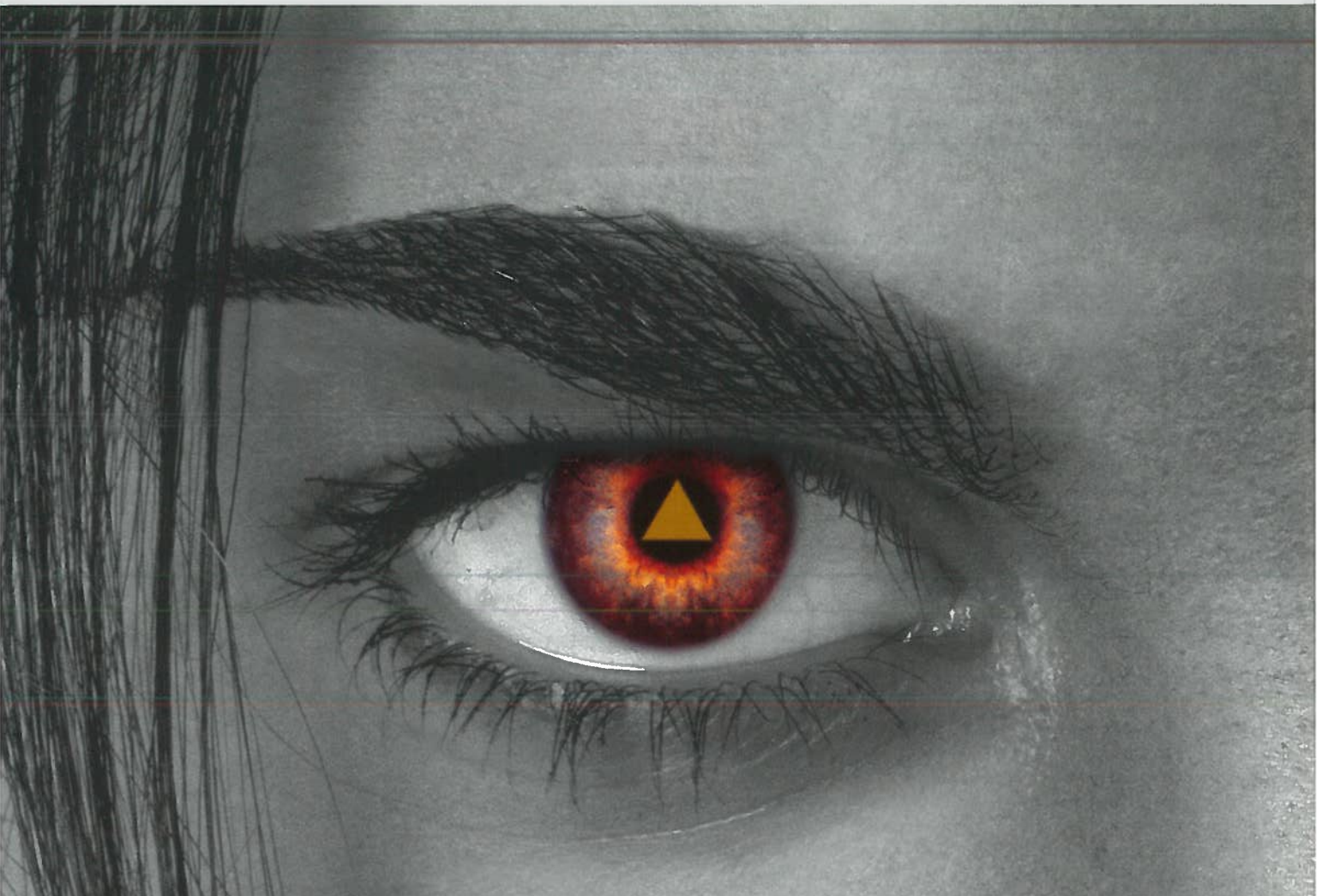
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PROFESSIONAL SHOW LIGHTING

# News Round-Up



Peter Ratcliffe (Random Audio) and Lee Conlon (Showcraft) discussing L-Acoustic loudspeakers



DMX specialist **Enttec** was showing EVO, its lighting console. With 1024 channel output via Ethernet and the functionality of many high end moving light consoles, this sub £2,000 desk was attracting a lot of interest.

LSC was demonstrating the prototype of the PATPAD moving light module for the maxIm console, which first appeared at PLASA 2001. PATPAD uses an approach to the control of moving lights that seems both flexible and intuitive. Also on display was the budget-priced iPak dimmer rack, which features the same power module as the successful ePak professional dimmer.

**Premier Lighting** is primarily known as a hire and production company with a reputation for getting the job done. Its new product, the DMX Wire-Less, a simple, no-nonsense radio DMX512 system, was originally developed by Andrew Holmes for in-house production use. The system, now available on sale, has already spent a year being rigorously field tested (i.e. mistreated) by Premier's crews.

**Technical Art Solutions**, a company started by Dan Ditman, formerly of Compulite, was showing

its dimmers and DMX distribution equipment. Although only recently developed, nearly 500 channels of its TechArt TV5000 series dimmers have already been installed in two television studios for the Seven Network and the studio at the Australian Film, Television and Radio School.

Entech 2002 also saw the first appearance of two very recently formed, specialist loudspeaker distribution companies. **Funktion-One Australia** is run by former Victorian Arts Centre head of audio, John O'Donnell. The company, which was formed in mid 2001 to distribute Tony Andrews and John Newsham's range of funky-looking Resolution loudspeakers, now also handles the Funktion-One recommended MC<sup>2</sup> range of amplifiers.

Since October 2000, **Jands Production Services** (IPS) has been hiring out its L-Acoustics V-DOSC

loudspeaker arrays for production work. However, until recently there has been no avenue in Australia to purchase L-Acoustics products. Peter Ratcliffe, head of sound operations and part-owner of IPS, is making the entire L-Acoustics range available to the Australian market through his own company, **Random Audio**. In keeping with L-Acoustics rental-channel policy, however, the top-of-the-range V-DOSC and dV-DOSC cabinets are only for sale as permanent installations.

**Technical Audio Group** (Australia's Euphonix distributor) took advantage of the large Industry presence at Entech to announce an order from the Sydney Opera House, for Australia's largest Euphonix System 5 digital audio console. To the surprise of many, this vast console will not be installed in the recording studio, but will be located in Opera Theatre, for the presentation of live ballet and opera.

Entech 2002 was generally considered a success, although the whole concept of the trade show presentation is being questioned in some quarters of the industry. In response, the Entech organizers are promising that the 2004 show will be in a new format, retuned and revised to meet the needs of exhibitors and trade visitors.

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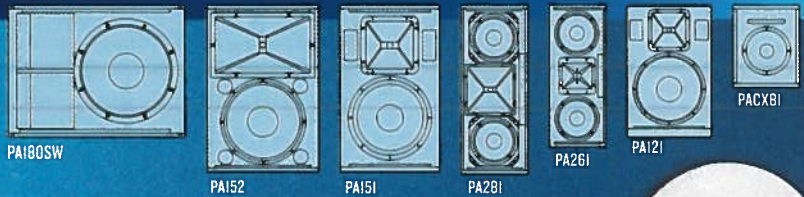


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## Borrowed Time at the ICA

Our pictures shows *Borrowed Time* - the latest work by David Cotterell, an artist shortlisted for Beck's Futures 2002, the UK's largest arts prize. His nominated entry features a film of a train emerging from a tunnel.

As it draws near, the gallery fills with a cloud of smoke onto which an image of the steam train is projected to create a ghostly apparition. Reminiscent of the Lumière brothers, the train rushes towards the viewer before fading to black. The smoke effects are being produced using Cirrus Low-smoke machines supplied by The Effects Company.

The smoke is unusual in that it is a mixture of Liquid CO<sub>2</sub> and a standard glycol-based smoke fluid. Synchronizing and controlling all the elements of the installation is a Pulsar Masterpiece 108 control system, specially adapted for the purpose by the company's Andy Graves, who also built a custom interface to work between the video and control set-up.

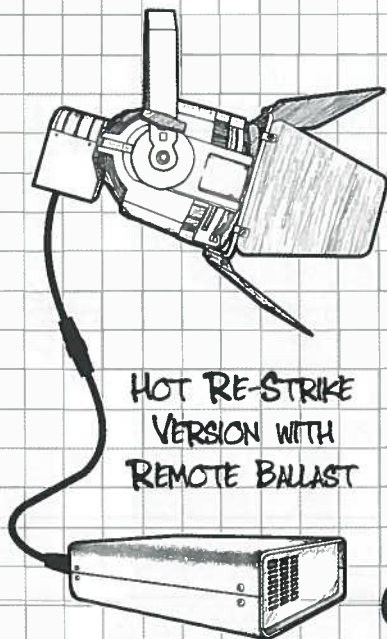
Beck's Futures 2002 will be exhibited at the Institute of Contemporary Arts, London from 29 March to 6 May, before setting out on a tour of the UK and Europe.



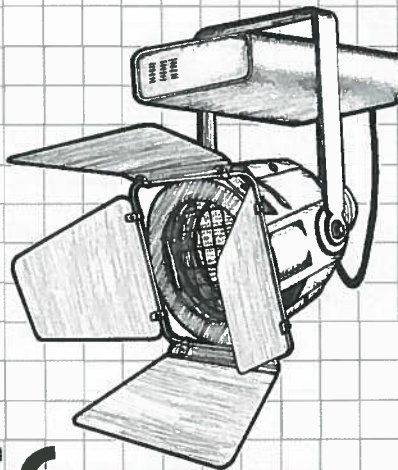
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## Litestructures Opens London Rental Operation

Following increased demand for its rental products in and around the capital, trussing and staging specialist Litestructures has opened a new hire operation based in Wanstead, East London. Strategically positioned close to the City and the newer docklands venues of Excel and the Arena, the location also allows easy access to the north circular and M25, offering excellent links to the wider region.

The operation is being fronted by Emma Church, who re-joins the company after a two year break, and who has a wealth of product knowledge gained from the three years she spent working at Litestructures' head office in Wakefield.

The key products available for hire include the Astralite Original 3 truss range, the Litedeck stage units/system and the Litedeck rolling risers, which are proving increasingly popular thanks to the fact that they greatly reduce set-up times at gigs where several bands appear on the same stage. These rolling risers are also very useful during load-ins, doubling as 'dollies' for transporting equipment between truck and stage.

Litestructures London can be contacted at Unit 2 Kubrick Business Centre, Station Approach, Wanstead Park, London, E7 0HU, UK. Telephone: +44 208 221 1196.

## Apologies

Rogue publishing gremlins made their presence felt in the last issue. In our piece on Alessandro Safina last month, we forgot to credit the people who supplied the photos. Our thanks to Rosella Gori, Interscope and Thirteen/WNET.

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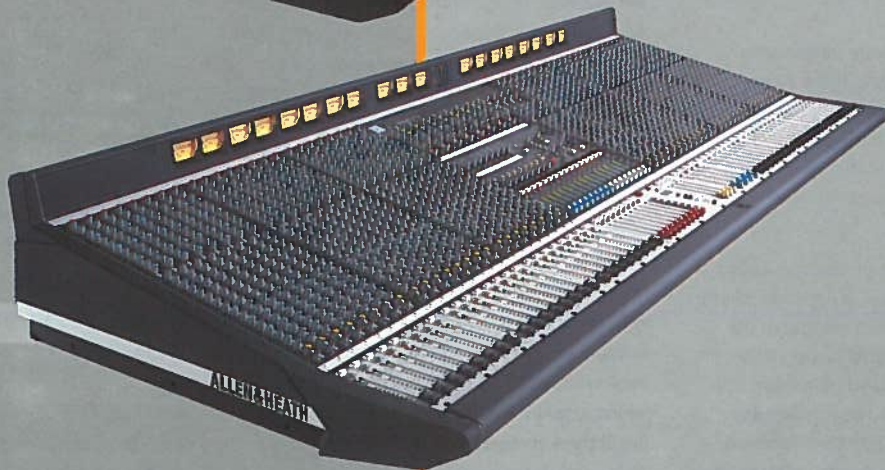
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## Cultural Spectacular in Al-Janadriyah

*The 17th National Heritage Festival at al-Janadriyah (situated just outside Riyadh in Saudi Arabia) was the most successful yet. The cream of British production and design talent ensured that the creative elements of this year's specially commissioned opera provided an unforgettable wow factor for the 1,000 assembled VIPs from across the Middle East, as the nine scenes of the pageant blended together to form an hour-long spectacular.*



Organized by the Kingdom of Saudi, this is one of the most important annual cultural festivals in the Arab calendar. The festival has become a crossroads where poetry, intellect, culture, art, theatre, heritage and history meet, and is a fitting tribute to King Fahd of Saudi Arabia and Crown Prince Abdullah.

The lynchpin this year was the partnership forged by Najdat Anzour, one of the most eminent and creative producer/directors in the Middle East and Christopher George, whose contribution to British TV scenic design has constantly expanded the boundaries of expectation.

The two men first met on a production called 'Searching for Salah-al-Deen', a series of 30 one-hour episodes, about the reclamation of the Holy Lands from the occupied forces of the Crusaders, which blended and paralleled 12th century period scenes with the modern day conflict in the Middle East. On that occasion George helped the director by providing various Crusader props and armouries, and designing a giant catapult, which was fabricated in Syria within 10 days.

Anzour had been asked for a number of years to direct Janadriyah, and when he finally accepted, Christopher George was called in as his production designer. His Excellency Dr Dhazi al Gasaibi, the Saudi Ambassador to London, wrote the libretto whilst Mohammed Abdullah wrote the music for the specially-commissioned modern opera.

Christopher George had designed an environment for the Crown Prince around the perfect viewing position, creating different layers of perspective using Screenco LED screens. This produced a multi-layered effect with various reveals, the centrepiece of which was a huge arch, fabricated from LED screens.

"Najdat and I wanted to utilize all the different mediums and bring in live action, because opera sometimes can be quite static. So we introduced different elements such as dance, opera and combinations of video image and drama."

For instance, in one of the scenes dedicated to Saladin, there was one poignant moment when a massive image of Saladin appeared on the screens. The lights then dimmed, the dancers fled and the real-life Saladin strode commandingly through the arch and taunted the audience.

Under the direction of Najdat, the sound team of Walheed, Andy Rose and Derrick Zieba designed an imaginative and complementary soundscape with armour clashing, horses screaming, bullets whizzing everywhere, explosions from in front and from behind, whirring tanks, wailing families, all brought to life in three-dimensional surround sound by Zieba and Britannia Row Productions.

The audience was completely riveted during these powerful scenes. The violence of the current Middle Eastern conflict contrasted dramatically with sublime scenes where millions of pilgrims revolved around the sacred centre of Mecca. This was played on the huge LED screens and emphasized by the sacred dance, choreographed by Nasser Ibrahim, on the stage. The whole scene was beautifully backlit by lighting director Darryl Nood. The moods of each progressive scene were transformed using the very latest moving light technology provided by Andy Martin of AFM.

A mixture of 15mm and 25mm pixel pitch screens were arranged to form seven arches and columns that were designed to enhance the perspective views, making the stage seem even

deeper than it was. In all, Screenco supplied two 8 x 6 15mm screens, situated at stage left and right, two 2 x 5 25mm upstage columns, 26 modules (25mm) forming the downstage arch, and two 4 x 2 25mm screens upstage left and right.

"The screens were fantastic," enthused George. "The development of screens is becoming more and more refined. Soon they will be available as a sort of visual wallpaper. You can use these displays architecturally without the limitations of projection distances and they are now so bright that you no longer have problems with the lighting bleaching it all out."

Holding such a large production in this unique complex brought its own production challenges, and as the magnitude of the show became apparent, George brought in Star Hire (Event Services) Ltd to ensure the engineering and structural safety of the production were of the highest standard.

Roger Barrett, Star Hire's technical director, visited the al-Janadriyah complex in advance of the event, to ascertain the structural and rigging requirements of the show. No load bearing calculations were available for the 'arena style' venue, and it was originally thought prudent that there should be minimal suspension from the roof, but Star Hire brought in sophisticated laser measuring instruments that monitored the performance of the 100m clearspan roof under stress. Consequently, it was discovered that more of the production could be flown than initially anticipated.

Star Hire supplied their truss for the screens, lighting and sound and took an experienced team of skilled crew (comprising Andrew 'Bomber' Phillips, Bob Fennell, Pete English,

# News Round-Up



Graham Drew and Andrew Cross) who undertook all of the rigging and specialist engineering requirements on the event site. Roger Barrett commented: "Relationships between all of the suppliers and management were great throughout this project. This was vital, as we were pushing back production boundaries in new territories.

"One such key person was project director Lt. Col. Engineer Ahmed M al Alarabi, whose help was invaluable in liaising with the local teams and making the project a success.

"The remote location meant that we had to be totally self-sufficient. We only had one panic call to the UK, when a local supplier failed to deliver over 2000sq.m of black drape. Acre Jean rose to the challenge and with assistance from Rockit Cargo, a whole set was at Heathrow three hours later, delivered to Saudi overnight and rigged the next day. We were all impressed with the helpful and friendly attitude of the Saudi local crew. Once our crew got to know them it became apparent that crew humour transcends all religious, cultural and linguistic barriers!"



Christopher George derived enormous satisfaction from being involved in the creation of a live production as opposed to a recorded television production. But, he says: "It is a crying shame that this should only be a one-off. Hopefully in the future we will be able to bring it to many thousands of people around the world."

He continued: "Najdat is a hugely creative director but sufficiently humble to allow people the freedom to contribute in their own ways. As a production designer you find yourself in a situation where you have to be able to adapt to

the circumstances and come up with concepts that are fitting to the environment. It's good to start with an open mind, because the creative process can happen instantly from the interaction of all the creative minds involved. It's wonderful to witness the unfolding of those shared imaginations, into the physical structures that form the environment. Dreams happen spontaneously, the physical reality take a little more work!"

George paid special tribute to the crew: "The professionalism of the support teams and technical crews was superb. They all worked beyond the call of duty to help bring this show to life. Of course, all of this doesn't work unless you can get all of the equipment there in time and back in one piece - Rockit Cargo - need I say more?"

Summarising, George commented: "I believe we broke a lot of boundaries (between the recorded sound and the specially-shot material). We brought all the disciplines together into a very interesting mix and it was a hugely exciting project to have been involved with - a totally unique experience, and great fun."

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## S Club



S Club 7 have recently completed a UK arena tour. Considering it's only a matter of months since their last outing, it's to the band's credit that they decided to create a whole new image for this tour. The impressive set, designed by Hattie Spice (no relation to the Girls) and co-ordinated by Charlie Kall, included not only a series of lifts and moving elements, but a massive over-audience catwalk. To rig the show, rigging contractors Summit Steel used 220m of James Thomas trussing, along with 55 CM Lodestar holsts. These were used to provide backdrop, side screen, tracking screen and catwalk support trussing, as well as cable bridges and hoists used during daily fit-up for the scenic elements.

Total Fabrications Ltd were called in to manufacture the catwalk deck and handrail to fit the truss structure supplied by Summit Steel. "The catwalk was suspended using 26 Summit hoists fitted with position encoders and our remote load monitoring system," commented Summit's Jon Bray. "By using QMotion's K10s computer hoist command system we were able to ensure safe, accurate and repeatable positioning of the catwalk."

A massive 70sq.m LED screen, supplied by XL Video, dominated centre stage, made up of Generale Location 25mm modules. This split in two, with each half moving sideways to form a dramatic upstage entrance. The screen tracking was controlled by QMotion, again supplied through Summit. The system, designed and built by QMotion to Chris Walker of Summit's specifications, is driven by a QMotion custom tailored 'SC7' winch - a truss mountable winch originally built to Summit's specifications for last year's S Club 7 tour.

The stage was flanked either side by two 20 x 15 metre 'soft' screens, with projected sources from Barco ELMs. Each of the 18 songs in the set featured video. Some involved abstract footage, much of which was created 'live' as the tour progressed and video director Leach sampled video snapshots from the actual performance. At other points it was precisely cued pre-recorded footage being beamed onto the screens. The cameras included two hand-helds, two in the pit and one out front, and XL also supplied Leach with a Cartoni Dutch head for the weirder angles. With 21 people onstage - 7 band, 7 dancers and S-Club 7 - Leach had an extremely hectic show to cut and mix.

In the LD chair was Pete Barnes. Working with a rig supplied by LSD Fourth Phase, he made deft use of the largely Coemar and Martin-dominated rig. The sound was supplied by SSE, with Jim Ebdon mixing FOH on a Midas XL4. The L-Acoustics V-dosc rig was powered by Camco amps. Monitoring was taken care of by a combination of Innova Son's Compact Live and a Midas Heritage 3000.



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During February, DHA Lighting treated members of the ABTT to a backstage tour of *My Fair Lady* at the Theatre Royal, Drury Lane. Organised by Louise Tester, DHA's UK sales manager, the event attracted over 70 guests.

Howard Bird, executive director of the ABTT, opened the session. Bryan Raven of White Light, Steve McAndrew, chief electrician at the Theatre Royal, and production electrician Alistair Grant together described the workings of the variety of equipment used on the show.



## DHA Backstage at My Fair Lady

They were followed by John Hastie and Mike Sharp from Stage Technologies who explained the show's staging automation system and finally Louise Tester who demonstrated the DHA Digital Light Curtain, fibre optic starcloth and YoYo+ effects.

Things then moved behind the scenes as visitors explored everything from the dimmer rooms and lighting desk to the followspot positions and backstage scenery. Martin Gouier from the Theatre Royal took people up to the flies, Mike Dixon showed them the lighting desk and Steve McAndrew did a tour below stage. Jo Walker from the Theatre Royal was on the stage answering

questions and, as White Light supplied the show's lighting rig, David Howe and Roger Hennigan were also on hand throughout to answer questions.

For DHA, the event also presented the opportunity to demonstrate the range of DHA products featured on the show. These include the YoYo - an indexing gobo yoyo which was re-worked and re-launched as the YoYo+ specifically for *My Fair Lady* - the range of DHA Digital Light Curtains in the rig and the company's AutoYoke with animation wheel and indexing gobo rotator.

Our picture shows the stage set washed by DHA lighting effects.

## Vertigo Expansion

Vertigo Rigging - specialist in events and entertainment rigging - will shortly move to larger premises in Deptford, London. Sited between Surrey Quays and Greenwich, Deptford is ideal for accessing central London and the West End. The facility has 14,500sq.ft of purpose-built warehousing, alongside specially designed offices for project management and administration.

According to Vertigo Rigging director Rebecca Loughran, the move will allow the company to plan for further growth: "We now have the capacity to expand our equipment inventory and our stock of truss, motors and associated rigging."

As from 15 April, the company's contact details will be: Vertigo Rigging, Unit 1 Deptford Trading Estate, Blackhorse Road, Deptford, London SE8 3HY. Telephone: +44 (0)7071 200099.

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# News Round-Up



## ISCEx 2002

The Institute of Sound and Communications Engineers' first combined seminar/exhibition event exceeded all expectations when it took place on Wednesday 27 February at Birmingham's recently upgraded Alexandra Stadium.

The full day's seminar programme covered a wide variety of subjects including Video Conferencing, Audio Measurements, VA Standards and a 'behind the scenes' look at the acoustic problems of Paddington station. There was also a sneak preview and demonstration of the World's first disposal loudspeaker! The highlight of the day was the inaugural Warren-Barnett Memorial Lecture, delivered by Peter Mapp, in memory of two respected figures in the industry.

Twelve specialist PA/VA manufacturers supported the event, and all reported a high level of interest from the 100 or so ISCE members and others who braved a squally day. Plans for ISCEx 2003 are already underway.

## Pop Idol V2

No sooner had we gone to press with our news piece on Pop Idol last issue, than further information and images filed into our inbox from Total Fabrications, the company responsible for the set fabrication.

"When Andy Walmsley of A1 Set Design first approached us with his concept, I didn't realise quite how big it was," said Peter Hind, project manager for Total Fabrications.

"The model he brought along was well proportioned and elaborate, but in the absence of drawings gave no indication that the real thing would be over 27m wide, 10m tall, and occupy 300sq.m of studio space." This fact soon became apparent once Peter began to scale off the model's dimensions and render them into full 3D CAD drawings in preparation for manufacture. "Though large scale, the essential elements of Andy's design were quite typical for the kind of sets we regularly produce for



pop groups. However there was one fundamental difference. Typically we produce stage sets designed to tour; not so with Pop Idol. Thames TV wanted the set delivered in large pre-assembled pieces - the rationale being that the set could be shifted outside the studio quickly to make space for another production."

All told the set took eight trucks to deliver, the Pop Idol sign being so large it required a flat bed trailer all to itself. The aerial walkway was built in sections 5m long and complete with integral handrails.

But it's the video screen supports that Peter is most proud of: "The central rotating video screen, and the other general video screen supports all required a 'look no hands' element. Something I think we achieved really well." Fans will be pleased to learn of a touring version featuring the shows' finalists visiting an arena near you soon. And where will the set come from? Vote now.

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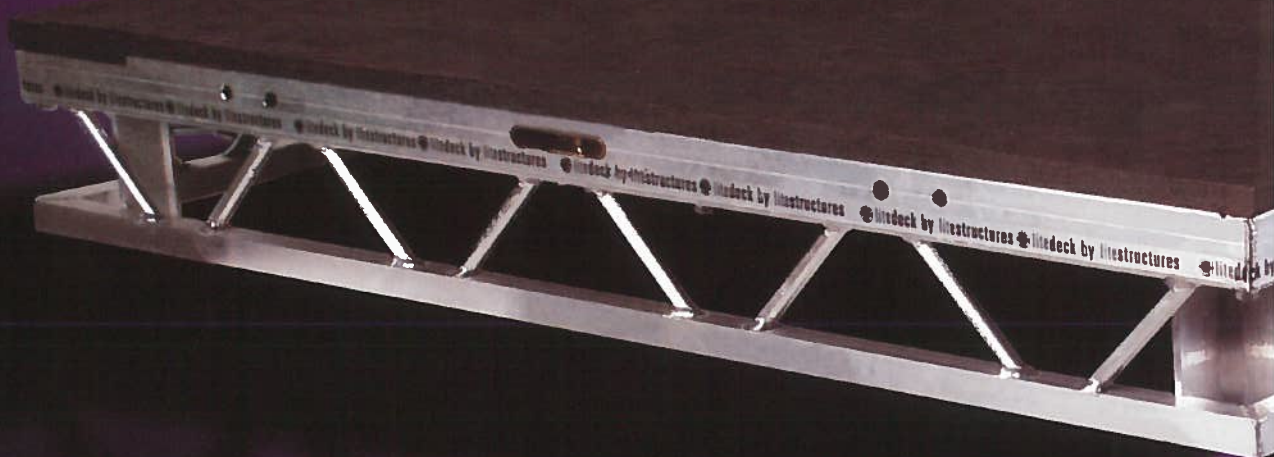
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## Court Powers Up with Ramjet 3000

Court Acoustics has launched its most powerful unit yet, the new RAMJET 3000 concert, touring and installation system. The two-bin system comprises a trapezoid high bin with a horn loaded 12" (304mm) 400W 4" voice coil driver, whose phasing plug combines with a 2" titanium compression driver. This is loaded by a conical horn which, according to Court, provides substantially reduced distortion, compared with conventional horn flares.

Its 60°x 60° dispersion and square mouth, means that the RH1 can be used in either plane for wide dispersion arrays, vertical line arrays, stacking or conventional bracket mounting. The RL1 3kW bass bin is a unique design with 4 x 15" (380mm) 750W bass units in the mouth of an 8 square foot horn. The large back chamber is also vented into the horn mouth, combining bass and sub bass down to 25Hz.

Tel: +44 (0)1237 424508 [www.courtacoustics.net](http://www.courtacoustics.net)



## Artistic Licence launch new LED colour mixing fixture

The new Colour-Fresnel CFN-60, which will find many applications in architectural mood lighting, is the latest addition to the Artistic Licence range of digital lighting solutions. The product is based on additive colour mixing of red, green and blue high power light emitting diodes with the resultant light providing in excess of 16 million colour combinations.

Colour-Fresnel is housed in a Reggiani recessed fixture that provides rotation in two axes and a variable focus fresnel lens. The product, which is available in both a white and a silver finish, operates on a 24V, four wire control signal. It can be controlled and powered by either Power-Pipe or LVD-12, and can also be mixed with other Digital Lighting fixtures, providing further flexibility.

Tel: +44 (0)20 8863 4515 [www.ArtisticLicence.com](http://www.ArtisticLicence.com)

## Neutrik's new generation Speakon

Neutrik has released the Speakon SPX series of amplifier/speaker connectors. The new unit offers the same reliability as the company's NL4FC, whilst also offering increased power handling, connection security and flexibility, and is intended to replace its predecessor over the next few years. The new SPX Series can deliver currents up to 50 amps on all four contacts for audio applications. This means a single connector is capable of carrying the current load from amplifiers of over 1kW. Another unique design element is that electrical contact is made only after the connector is completely inserted and locked to prevent arcing when connected under load.

Tel: +44 (0)1983 811441 [www.neutrik.co.uk](http://www.neutrik.co.uk)

## VS Series from Wharfedale Pro

Based on the successful VS range, the new VS Series from Wharfedale Pro has been the subject of both sonic and cosmetic improvements. The new trapezoidal enclosures feature a Dual Electro-Dynamic Driver - Elliptical Wave Guide/Horn high frequency section. This innovation gives high quality sound and musicality using bespoke drivers unique to Wharfedale. The range includes the VS-10, VS-12 and VS-12M monitors, the VS-15 and the VS-153 three way system and the VS-15B and VS-18B sub woofer systems.

Tel: +44 (0)1480 447700 [www.wharfedalepro.com](http://www.wharfedalepro.com)



SGM has launched a new range of professional moving head fixtures. The new Giotto Spot 400, Wash 400 and Profile 400 are professional moving head fixtures designed for use in high profile entertainment applications including concerts, theatres and television studios. All three fixtures are compact and lightweight and have a range of features including 400W hot re-strike MSR lamp, 9°-24° motorized zoom, electronic ballast (90-245V).

Tel: +39 0721 476 477 [www.sgm.it](http://www.sgm.it)

## Shure launches Performance Gear microphones

Shure recently unveiled its new Performance Gear range of microphones. Comprising six models designed for vocals and various instruments, all Performance Gear microphones come packaged with cables and mounting accessories to provide plug-and-play simplicity, as well as rugged reliability for onstage performance. As a complement to its individual models, the Performance Gear line additionally includes a pair of drum mic kits, both of which come in their own carrying cases.



Vocal models include the PG48 and PG58. The PG48 has a cardioid pick-up pattern and a smooth frequency response. For more demanding vocal applications such as lead and back-up vocals, the PG58 offers a more tailored frequency response, an even tighter cardioid pattern, an internal shock mount to further reduce handling noise, and a dent-resistant hardened ball grille.

Tel: +44 (0)20 8808 2222 [www.hwinternational.co.uk](http://www.hwinternational.co.uk)

## Laser Studio's colour DPSS laser

Laser Studio - part of the i-Vision Group - has launched the latest addition to its I-scan Performer range of DPSS (Diode Pumped Solid State) lasers. The new 1W colour unit currently offers eight modulated colour outputs, and the aim is to develop the system into a 256 fully modulated colour system in the future.

The new laser weighs just 31kgs, is approximately the size of a small travel case and plugs into a 13 amp socket. Brightness wise - utilizing the high efficiency of the diode lightsource, this DPSS laser has an efficiency of 10:1 over ion technology, and the diode lifetime is expected to be in excess of 10,000 hours.

Laser Studio has also released a new 5W mono-colour exterior DPSS unit comparable in brightness to a 10W system.

Tel: +44 (0)1291 630883 [www.ivisionuk.com](http://www.ivisionuk.com)

## Rolec Music Store

Rolec has launched its new PHD-1 Music Store. The unit can store up to 2500 tracks and the latest chart hits can be added thanks to a monthly update CD supplied by Rolec. Pre-programmed timed announcements, adverts, tag lines and promotional offers can also be stored, and since the machine's internal clock is date-sensitive, it has the facility to recognize specific seasons and programme appropriate music up to a year in advance.

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## SGM expands range of moving head fixtures

## EVO DCI software for JBL's EVO intelligent loudspeakers

EVO, the intelligent loudspeaker system from JBL, is now being installed in schools, houses of worship and small performance venues throughout the world. Now, with JBL's new Freeware computer program - EVO DCI (Digital Control Interface) - the internal power of EVO can be accessed, edited and stored via Windows-based computers. The computer is simply plugged into the RS232 port on the front panel of the EVOi.net, which is the communications hub of an EVO system for up to four EVO Loudspeakers.

EVO DCI v1.0 is an easy-to-use software application that allows users to monitor and control EVOi.324 loudspeakers. The results and performance of many functions can be viewed, adjusted and stored for later use. This software program is intended for EVO installers who wish to use EVO in applications that fall outside the standard EVO applications or where fine-tuning may provide optimum results. EVO DCI is available free of charge via download from JBL Professional's website.

Tel: +1 818 830 8711 [www.jblpro.com](http://www.jblpro.com)

## Maltbury release Metrodeck Ultra



Maltbury has unveiled Metrodeck Ultra, its new lightweight modular staging system. The Ultra is based on Maltbury's popular mid-weight staging system, Metrodeck, with which it is also fully compatible. Weighing a mere 10kg for a 1x1m unit, Metrodeck Ultra consists of a lightweight top, constructed from a speciality ply sandwich board with a foam filling, and a durable

aluminium frame. For construction, Velcro straps are used to connect adjacent units, with smaller straps joining the decks and larger ones securing leg to leg connections. In addition, eliminating the need for a spanner, T-bars can be used to secure, by hand, the legs of individual modules.

Tel: +44 (0)845 130 8881 [www.maltbury.com](http://www.maltbury.com)

## CSE with OPTI DMX Club Strobeblowers

One of the most enduring effects in the club scene is the Strobeblower from Luton-based lighting specialists, OPTI. When it was first launched, it proved an instant hit with promoters because it combined laser-like effects without the cost and complexity associated with true

lasers. As a result, it has become one of the all-time classic effects for concerts, clubs and events all over the world.

Now it's received an important updating which puts it right back at the forefront of dance music theatre. OPTI has introduced a DMX to Analogue converter box that can be used with its Club Strobeblower, Terrastrobe or the Shutter/Dimming option of the K Range projectors to allow easier control from a central lighting desk. Taking advantage of this development, UK lighting hire company Colour Sound Experiment (CSE) based in Park Royal, London, have converted their entire hire stock of OPTI Club Strobeblowers. These have since been featured on tours by dance acts, Orbital and The Bays, as well as at The End's recent sixth birthday celebrations.

Tel: +44 (0)1582 411413 [www.optikinetix.com](http://www.optikinetix.com)



## Lightning 25sx Projector



Digital Projection International has released the Lightning 25sx projector. At 14000 ANSI lumens and SXGA resolution, the Lightning 25sx is one of the world's brightest projectors. It is complemented by a palette of more than 1

billion colours, absolute greyscale tracking and luminance uniformity greater than 90%. It is suited to a wide range of applications and the on-screen results are engaging video, HDTV and computer imagery with an inherent 'Film Look' appeal.

Tel: +44 (0)161 947 3353 [www.digitalprojection.co.uk](http://www.digitalprojection.co.uk)

## JTS launches studio microphone

JTS has announced the launch of a professional-class studio monitoring headphone set. JTS HP-535 headphones feature a closed design, with an adjustable frame and flexible ear-flap to ensure good fit and maximum comfort. Acoustic quality is assured by the use of a neodymium-ferrous magnet assembly in super-thin 40mm diaphragm drivers. The result is a frequency range of 20-20,000Hz, and a sensitivity of 104dB +/- 3dB/mW at 1,000Hz. The HP-535s come with both gold plated mini-jack and 1/4" RCA adaptor with a 3m cable.

Tel: +44 (0)20 8761 9911 [www.proelint.co.uk](http://www.proelint.co.uk)

## High End Systems introduces a brighter x.Spot

In response to feedback from end users, High End Systems has released a new, fully modular 2:1 zoom optic system for the x.Spot, along with a new faceted 'flat field' reflector. This version of x.Spot will be marketed as x.Spot HO (High Output).

Additional output is primarily achieved through the larger aperture (higher 'f stop') and greater efficiency of the 2:1 zoom lens system, while increased colour temperature and improved beam uniformity are a result of the faceted reflector. Designers can now specify 4:1 zoom fixtures for shorter throw, wide projection applications and 2:1 zoom fixtures for longer throw or beamage applications.

High End will continue to offer x.Spot with 4:1 zoom optics: the 4:1 zoom unit will also now include the faceted 'flat field' reflector, thus incorporating the higher colour temperature and flattened field benefits of this technology. All the components may be retrofitted to original x.Spots.

Tel: +1 (512) 836 2242 [www.highend.com](http://www.highend.com)

## QSC 215PCM active subwoofer

QSC has launched the 215PCM self-contained active subwoofer system with dual 15-inch drivers. The core module of QSC's ISIS (Integrated, Self-Powered, Self-Processed Industrial Systems) speaker line, the 215PCM provides power amplification not only for itself, but also two channels for driving full-range or bi-amp 'top box' speakers. Its optimum frequency response is 35-115Hz at the -3dB down points. A second model, the 215SB, is the identical enclosure minus the amplification and DSP. Powering the 215PCM is an integral 3000W amplifier for the subwoofer itself. The backpack also contains a two-channel amplifier equivalent to a PowerLight 236 (725 W @ 8 ohms; 1100 W @ 4 ohms; 1850 W @ 2 ohms) for the top boxes.

Tel: +44 (0)20 8808 2222 [www.hwinternational.co.uk](http://www.hwinternational.co.uk)

## New V Series from Tannoy

Responding to input from the marketplace, Tannoy has launched the V Series, a new range of point source, dual concentric sound reinforcement loudspeaker systems, which feature a modern cabinet design providing installation flexibility.



The V Series combines the qualities and high performance of Tannoy's established installation loudspeakers into a new dual-wedge cabinet shape. The flexible and discrete cabinet shape makes the speakers ideal for use as floor monitors and low profile ceiling mounting in landscape configuration.

The Tannoy V8 replaces the i8 and T8 and is designed for high quality music and speech reinforcement. The high-powered 8-inch Dual Concentric drive unit features Tannoy's unique Point Source technology and a halogen high frequency protection system.

The Tannoy V12 follows the format of the Tannoy V8 but with a 12" Dual Concentric offering much greater efficiency, power handling and bass performance in foreground applications. It replaces the i12 and T12. The Tannoy V15 incorporates an entirely new, high performance, Dual Concentric drive unit - the 15" PowerDual. With substantially increased efficiency and power handling over previous 15" units the V15 not only replaces the i15, but also the T300.

Finally, the constant directivity 12" SuperDual V300 (replacing the S300) ensures an even frequency response over a wide area.

Tel: +44 (0)1236 420199 [www.tannoy.com](http://www.tannoy.com)

## Rental Management Systems introduces RMS22

New features of the latest version of the rental management software package include a whole set of new clear icons, built-in support for backup and restore of data and reports, saving of the last used sort-order and sorted column in all List-tabs and Finder-windows, a new facility for multiple contacts per company, default country and telephone settings and much more.

For a full run-down of all the latest features from RMS22, visit the company website at the address below.

Tel: +31 416 695 021 [www.rmsplanning.com](http://www.rmsplanning.com)

## Marantz announces Mordaunt-Short distribution deal

Marantz Professional Europe has announced a distribution deal with UK manufacturer Mordaunt-Short for loudspeaker products suitable for use in professional surround sound and installation applications. Following careful evaluation of the Mordaunt-Short (MS) range, the Marantz team has introduced the Declaration THX Select System, Premiere System 300 and MS302 2-way cabinet.

Both pre-configured surround sound systems and the MS302 cabinet offer audiophile-quality cabinets suited to a wide range of applications, with proprietary aluminium Continuous Profile Cones (CTC) providing high-power, low-distortion performance levels using powerful Y30 magnets. All systems utilize ultra-thin diaphragm, aluminium-dome self-shielding, neodymium HF drivers, housed in separated enclosures for minimum cross-modulation.

The top of the range Declaration THX Select System is certified to the THX standard for 5.1-channel soundtrack replay, guaranteeing 105dB SPL in up to 2000ft<sup>3</sup> commercial surround sound environments. The MS502 3-way floor standing units include 150W RMS active subwoofers, while the two-way MS504 centre and MS506 dipole surround speakers all offer trademark MS visual impact and audio fidelity. Dual layer front baffles ensure effective damping and the front L/R units feature ballast chambers for tighter extended bass performance.

The Premiere system 300 features the MS302, with the complete system including the MS304 2-way centre speaker and the newly added 23Hz response MS907 active subwoofer.

Tel: +44 (0)1753 686080 [www.marantz.com](http://www.marantz.com)



## Sony 112-channel digital console configuration

Sony has announced a significant enhancement to its award-winning DMX-R100 digital console, with the introduction of its DMBK-R109 MADI (Multichannel Audio Digital

Interface) card. The interface expands to 108 the number of audio inputs that can be configured in a single DMX-R100 and supports the dual console cascade mode, providing an integrated 168-input, 112-channel, 48 fader digital mix system. Uniquely, the internal 32-bit fixed point Bus resolution is maintained between cascaded consoles, ensuring no compromise on sound quality.

Tel: +44 (0)1256 355011 [www.sonybiz.net/pro audio](http://www.sonybiz.net/pro audio)

We are keen to expand our coverage of the latest developments in new technology. If you have recently launched, or are about to launch, a new product, send details and a photograph to [news@plasa.org](mailto:news@plasa.org)

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# technical focus

technical editor:  
James Eade

This month in technical focus the main review looks at progress in LED technology. Also there is a look at power line telecommunications, e-marking of vehicle electronics and the potential ramifications this may have within the industry.

## MAINS COMMUNICATIONS

There has been a lot of discussion recently in various press concerning power line telecommunications, or PLT. The main essence is that with the 230V mains cable network running around every property, it would provide an easy path for data, linking PCs, laptops, entertainment systems and the like without installing any further wiring. One company, LANergy based in Wales, is the latest to demonstrate such communications with data rates up to 14Mbit/s.

Whilst on the face of it this seems a good idea, saving on cabling costs for one, there is much heated debate about the ramifications such a system would have. Most of the arguments against are based on the interference that would be around when running high speed data over unscreened cables, affecting any sensitive equipment placed near a mains supply. Similarly, operation of equipment may be affected when faced with an incredibly 'noisy' mains supply, particularly those devices using transformerless power supply designs. Even those that do have iron supplies may find that if driving delicate audio equipment the noise radiated from the mains cables inside the cabinet will radiate sufficient electromagnetic interference (EMI) to be problematical.

Manufacturers may start designing new equipment to cater for such eventualities, but there is potentially a large problem for existing equipment that does not have any such filtering in place. Depending on the level of signal, there could be a whole host of EMI hot spots including everything from radiating lamp posts in the street upsetting OB work, to digital breakthrough on show comms systems, not to mention any use of radio mics - just when most had got rid of local taxi firms on the old VHF band!

## 'E'- MARK FOR MOBILES

If you use vehicles designed for operating electronic equipment from, such as outside broadcast vehicles or camera platforms, be wary of a 'new' European Directive, apparently due to come into force in October this year. The directive, actually issued in 1995 and seemingly ignored by many, is designed to improve safety by minimizing the risk of interference to essential electronic systems in vehicles caused by auxiliary electronics. Whilst a large part is devoted to radio transmitters, it actually applies to all electrical/electronic

equipment. As of 10th October 2002, no vehicles built after this date will be allowed to have retro-fitted equipment not displaying an e-mark. The e-mark should not be confused with the more common CE mark that is for general equipment and shows compliance to a different set of directives. The e-mark is really aimed at ensuring equipment has good EMC compatibility with vehicles' electronics.

What relevance the e-mark has for equipment designed to be used in stationary vehicles is unclear: various bodies are currently lobbying the Government for clarification and guidance on the directive. Further more, as two-way radios are commonly fitted to vehicles, not to mention mobile phones, it's reassuring to see that the Radiocommunications Agency is unaware of any manufacturers making e-marked equipment! The PLASA Standards Office is investigating further and would appreciate any feedback from anyone who may be affected by this. Emails can be sent to [technical@plasa.org](mailto:technical@plasa.org)

## NEW CONNECTORS

Neutrik have been busy working on their range of speakon connectors and have introduced two new types, the SPX and STX series. The SPX is a 'standard' Speakon having backward compatibility with existing types. The new generation features a higher current rating for the operation of high power speakers and amplifiers carrying more than 1kW. Rating is 50A per contact at 250V ac, de-rating to 40A/contact when all four are used. There is also a right angle version that can be retrofitted without actually disconnecting the main connector; only the shell needs to be changed.

The STX style is a new generation of four-pole connector not compatible with the existing range, but much more rugged and durable. They feature a metal housing with gaskets to make them weatherproof to IP54 when mated. Contact rating is 40A/contact rms at 250V ac and 50A/contact at 50% duty cycle. There is only a cable connector and corresponding female chassis connector available currently.

For further information visit [www.neutrik.com](http://www.neutrik.com). The site has a wealth of information including AutoCAD drawings of all their range - very useful for design engineers.



"THE GREY AREA IS IN THE EMPLOYER'S UNDERTAKING: IF THE TASK IS PART OF THE EMPLOYER'S NORMAL UNDERTAKING, THEN THEY MUST MAKE AVAILABLE ANY INFORMATION NEEDED TO AVOID RISK. IF THE SUBCONTRACTOR TAKES THE WORK AWAY TO HIS OWN PREMISES, THEN IT CEASES TO BE AN ISSUE."

➤ HEALTH & SAFETY AT WORK - PAGE 50

## RADIO SPECTRUM UPDATE

The Joint Frequency Management Group (JFMG) has issued an update concerning spectrum management for entertainment applications. The Electronic Communications Committee has published a draft report on the current and future spectrum requirements of the entertainment industry. The report reviews the current allocation and expected demand, and also considers how to improve pan-European harmonization in the use of these bands. Whilst this is unconnected with the debate over the old terrestrial TV band covered last month, if the repossession did go ahead then there'll be more of a case for opening up other parts of the spectrum. Any suggestions should be directed straight to the Radiocommunications Agency, although the JFMG are collating feedback on behalf of users to forward on. If you would like to contribute then contact JFMG at [www.jfmg.co.uk](http://www.jfmg.co.uk)

## A LIGHTER LOOK - EXPLODING ICs

Most people would assume that silicon is a pretty inert old substance, being the main constituent of sand and integrated circuits. American scientists however, have found that by finely dividing it down to nanocrystal thickness, it burns incredibly fast, i.e. explosively fast. The scientists claim that such small exploding samples of silicon can be used to analyse samples in the field, or serve as power sources for micron-sized electronic sensors. However, with the level of modern computer CPU chips now getting wafer thicknesses down to the order of 0.13mm, thus giving greater speed and components per surface area, it may not be too long before the processors get so thin your PC doesn't just lock up, it blows up!

"SIMPLY CHECK THE VOLTAGE BETWEEN TWO LIVE CONDUCTORS, ONE FROM EACH OUTLET. THE VOLTAGE DIFFERENCE BETWEEN THE LIVES SHOULD BE ZERO IF THE OUTLETS ARE ON THE SAME PHASE. (OF COURSE FOR ANY SINGLE OUTLET YOU SHOULD ALSO HAVE LIVE TO NEUTRAL = 230V; LIVE TO EARTH = 230V; NEUTRAL TO EARTH = 0V.)"

## ➤ QUESTIONS & ANSWERS

### STANDARDS AND H&S REVIEW

#### HEALTH AND SAFETY AT WORK ACT

February's issue of Standards News has a guide to the Health and Safety at Work Act, or more particularly, the part concerning the general duties section of the enabling Act of health and safety legislation. It explains the relevant interpretation of the Act, and how it applies to employers and employees.

Of interest is section three, which places an absolute duty on employers and the self-employed to ensure that their work poses no risk to others. More important though, is the duty of employers who take on small specialist sub-contractors to perform specific duties. One may think that if someone is contracted to perform a specific task, the onus is on them to perform the relevant risk assessments and discharge their duties safely. This is generally true, but if the work is part of the employer's normal course of duty, e.g. the annual inspection and maintenance of a rigging system which is contracted out to a specialist, then the liability for risk is more likely to be on the employer, rather than the subcontractor. This of course does not absolve the contractor of his duty to himself, any employees he might have or to anyone coming into contact with the work being carried out.

The grey area is in the employer's undertaking: if the task is part of the employer's normal undertaking, then they must make available any information needed to avoid risk. If the subcontractor takes the work away to his own premises, then it ceases to be an issue.

This has quite serious implications, and covers a multitude of situations from the rigging example above to the annual PAT testing of an installation where the onus is on the employer to give the contractor relevant safety information.

Here's a true story, about a stage lighting rental company and a local authority. The venue was a public leisure centre, and the lighting company was contracted to put in a lighting rig for a show. The venue, being

council owned, had its own scaffold tower which was supplied for the use of the crew. Unfortunately for one lampie, after extending the safe working height of 4.9m to 7m to get a bit higher, and ignoring the lack of outriggers as they 'had not been supplied', the tower fell over and broke both the guys' ankles. Painful for the guy no doubt, and easy to 'tut-tut' from the comfort of an armchair and cast aspersions about how 'I (or my staff) wouldn't do it like that!', but there are many who would empathize with the probable scenario: fit-up running late, rig still not flown, venue haven't done exactly what they promised to do, and so the lampies just got on with the job in time-honoured tradition.

Did the local authority get it in the neck from the HSE for not supplying the right kit then? No: in fact, the lighting company did, as the installation of a temporary lighting rig for a show was not part of said authority's usual undertaking, and as such the lighting company was responsible for ensuring adequate health and safety precautions were taken.

So, as with all things health and safety, situations can be pretty difficult to interpret and it is wise to be fully aware of your obligations.

If you need advice and guidance in this area, contact Ron Bonner at the PLASA Standards Office on +44 (0)1323 410335.

#### PORTABLE APPLIANCE TESTING

The IEE has issued errata to the Code of Practice for In-service Inspection and Testing of Electrical Equipment. Relevant to any one who carries out Portable Appliance Testing (PAT), the changes are mostly grammatical corrections and can be downloaded free of charge from [www.iee.org/technical/](http://www.iee.org/technical/). If you carry out appliance testing or other testing of in-service electrical equipment, then the code of practice is well worth obtaining, and costs £25 from the IEE. The code is a comprehensive guide to the inspection and testing of electrical equipment supplied by a plug and socket, and is written both for administrators with responsibility for electrical maintenance and the staff who carry out the inspections and tests.

### QUESTIONS & ANSWERS

This month we have two questions concerning generators – quite apt with the spring build up to summer outdoor events, as well as one concerning 13A outlets.

**Q: I was working for a film lighting company recently and was surprised to see them earthing their generators by parking the truck on the earth spike, which, in turn, was sitting on a concrete base. Surely this can't be good?**

**A:** It isn't, particularly if the concrete is dry. Earth leakage protection may not work properly due to the poor earth, and there is great risk of electric shock where no such residual current devices are used. Residual current circuit breakers (RCCBs, or residual current devices) must always be fitted, and generally be rated at 30mA trip current with a disconnection time of 0.4secs. It's important not to confuse RCCBs with the older 'voltage earth leakage circuit breakers' (ELCBs) that used to be quite common; these have been deleted from the 15th Edition of the wiring regulations, and should ideally be replaced with RCCBs.

To illustrate the point, if a fault develops in a Par can, the severity of the shock will depend on the effectiveness of the Parcan's protective conductor system. If the protective system has zero resistance, a dead short would occur and trip the breaker or fuse. However, if the protective conductor circuit has a resistance of 1000Ω, (highly probable for the small surface area of a rod on dry concrete) then a maximum current of 0.24A would flow down the earth. If no RCCB is used, then this extra current wouldn't stand a chance of tripping any MCBs and the rig would be live. If an RCCB is used and set to an unusually high current, such as 300mA because of old leaky dimmers for example, it wouldn't trip either in this case.

It is allowable to set RCCBs at higher trip currents with longer disconnection times than the 0.4s required of socket outlets and similar, but they must be followed further down the line with lower operating current devices. For example, the main MDU from the generator could be set at 100mA 1sec disconnection, but each dimmer or socket box supplied from the MDU must have its own device set at 30mA 0.4sec.

Generator fed supplies must have earth impedances less than 0.1ohms, and the easiest way of checking this is to invest in an earth loop impedance meter.

**Q: If I use a generator to supply power, what should be earthed and earth-referenced, and how?**

**A:** It's just been shown that driving on the earth spike is not a good idea, and there are two sources of information on how to do it properly.

Section 551 of BS 7671:2001 (16th Edition Wiring regs) deals with generating sets. In particular 551-04-06 states: 'For portable generating sets and generating sets which are intended to be moved to unspecified locations for temporary or short-term use, the following requirements apply to installations which are not permanently fixed:

1. Between separate items of equipment, protective conductors shall be provided which are part of a suitable cord or cable and which comply with Table 54G. All protective conductors shall comply with Chapter 54.

2. In TN, TT and IT systems a residual current device with a rated residual operating current ( $I_{\Delta n}$ ) not exceeding 30mA shall be installed in accordance with the requirements for automatic disconnection of Regulation 413-02.'

However, a more useful document is BS 7909:1998, which is 'Code of practice for design and installation of temporary distribution systems delivering a.c. electrical supplies for lighting, technical services and other entertainment related purposes' - covered in last month's TF. This document contains a section on earthing, of which part deals specifically with generator earthing:

#### 6.4.2.4 Generator Earthing

"Earthing for temporary mobile generators should follow normal practice as far as possible. The neutral/star point terminal of the generator should be connected to the CPC (circuit protective conductor), exposed metalwork of the generator chassis, and the body of the earth. If site conditions prevent a low impedance connection to earth at the generator, earth bonding connections at one or more other points on the CPC system should be considered to ensure that touch potential between earthed parts and exposed conductive parts cannot become dangerous.

"NOTE: If the main earth connection is located away from the generator to obtain a suitably low impedance, an additional supplementary bonding connection to local earth at the generator, e.g. a plate under the generator vehicle wheels, can provide additional local protection for the operator."

The note given about local earthing on the generator is quite valid - it CAN provide additional local protection, but is not to be relied on.

BS 7909:1998, which is 21 pages long, contains further advice on earthing, equipotential bonding, RCDs, etc. If you wanted to buy a copy, the British Standards Institution (tel: +44 (0)20 8996 9001) will sell you a copy for £66. Alternatively, PLASA offers copies to members at a 25% discount, i.e. £49.50. Simply contact [standards@plasa.org](mailto:standards@plasa.org) to order one.

**Q: Is there any way of checking whether sockets in a venue are all on the same phase, and if they have been wired correctly?**

**A: A brief investigation can't find any rules stating that all outlets in a room must be on the same phase, only that one shouldn't be**

able to touch appliances connected on different phases. It is unusual to find different phases in a room, but not unlikely. It is thus wise to check, and it's reasonably straightforward. Simply check the voltage between two live conductors, one from each outlet. The voltage difference between the lives should be zero if the outlets are on the same phase. (Of course for any single outlet you should also have live to neutral = 230V; live to earth = 230V; neutral to earth = 0V.) Don't forget to switch your multimeter to a 500V or more range, in case they are on different phases, as you'll measure 415V not 230V. An easy way to check the correct wiring of the outlet is to buy a socket outlet tester, such as the old 3-neon Martindale type. There are more advanced ones available from suppliers such as RS for under £30 that have more functionality.

#### LINE ARRAYS - AN UPDATE

The L&SI post-bag is still filling regularly with encouraging comments on Technical Focus, and thank you to those who take the trouble to write in. A couple of letters following February's issue on Line Arrays have pointed out that Stephen Court, of Court Acoustics, was working on early developments of the Line Array back in 1974. In 1975 Court developed the 'black box', a line array suitable for high level music reproduction that came about following discussions with JBL's chief transducer engineer. The system comprised two bins which were time aligned and phase corrected via a plug-in card in a standard BSS crossover. The novelty was in the unique phase corrector mounted in the 1" throat of the HF drivers, giving the system phase coherence.



After a period looking at point source (spherical) speaker systems, Court Acoustics has recently introduced the Ramjet 3000 system (pictured - for further details see our new technology section, pages 45-47), which can be used either conventionally or stacked. Geometry is equal in both planes, allowing the system to be stacked either horizontally or vertically forming a line array in either plane. Further information can be obtained from Court Acoustics at [www.courtacoustics.net](http://www.courtacoustics.net)

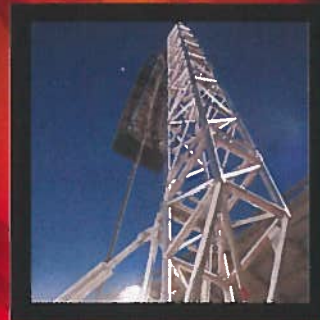
Also on the subject of line arrays, a typographic gremlin crept into the table for JBL's Vertec average SPL level. The figure should have read 143dB not 123dB - apologies to JBL for this error.

**If you have any queries or comments to make, e-mail [technical@plasa.org](mailto:technical@plasa.org)**

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This month Technical Focus takes a look at the development of the humble light emitting diode, or LED, the innocuous little indicator that is rapidly gaining a foothold in the entertainment market.

### A POTTED HISTORY

The LED has been around for many years and in many guises. Some of the earliest recorded laboratory developments were back in 1962, with the first commercial quantity devices appearing around 1969 when manufacturers such as Monsanto brought out the MV2 red LED. In those early days, the devices came in small metal cans and operated in the infra-red spectrum; but soon, further research brought LEDs into the visible spectrum with the wavelengths steadily decreasing as technology progressed.

The 70s saw further developments and refinements of the red LEDs, but the 80s saw a new era in LED technology. Brightnesses were up to 68mcd (milli-candelas), which was, at the time, considered very bright.

However, in the mid 80s the first devices on transparent substrates came out. Based on gallium aluminium arsenide phosphide, brightnesses of up to 300mcd were achieved at a wavelength in the region of 640nm - not far off primary red.

The nineties saw the first blue LEDs; the device that would kick-start the entertainment applications of LEDs. With good reds and greens available, all that was required was a good blue to enable RGB

mixing, and hence achieving the all-important white. Silicon carbide transpired to be the answer for the generation of blue shades, and soon after came the white LED, either using a package of blue, green and red LEDs or a blue LED shining on a white phosphor coating.

The advantages of LEDs over traditional small filament bulbs are many; although for a long time they couldn't compete on brightness, that is now changing with exceptionally bright white devices. They were popular for all manner of reasons when they came out, they are cool sources, last for tens of thousands of hours, are considerably more efficient, more durable and much less fragile than their glass filament equivalents.

### WHERE TO NOW?

Originally LEDs found themselves in all manner of indicating applications; power indicators on equipment, seven segment displays appearing in early electronic calculators and watches, and just anywhere a relatively cheap long life indicating device was required.

Nowadays, with the increase in life expectancy, brightness and more even colour matching, LEDs are found in everything from traffic lights to car brake lights. With the advent of super high-brightness LEDs and developments in the drive electronics, the last few years has seen great progress in the use of the humble LED. There are other benefits of LEDs too; the light output contains very little infra-red or ultra-violet (although UV LEDs have recently been developed), and as such they are ideal for lighting delicate displays in museums where UV might degrade the specimens and IR would cook them.



Artistic Licence has long been applying LED technology in a range of luminaires. In recent years, the company has developed a range of

digital lighting fixtures including the Water-Pipe, Terra-Fill and Colour-Pipe ranges, backed up by a range of control and dimming systems.

In February, the company launched Colour-Fresnel CFN-60. The product is based on additive colour mixing of red, green and blue high power light emitting diodes, and the resultant light provides in excess of 16 million colour combinations. Colour-Fresnel operates on a 24V, four wire control signal, and can be controlled and powered by the company's Power-Pipe intelligent power supply/low voltage dimmer or LVD-12 dimming system. ArtisticColour-Fresnel will find many applications in architectural mood lighting. Key application areas include night clubs, bars and corporate foyers.

[www.ArtisticLicence.com](http://www.ArtisticLicence.com)

### THE TECHNOLOGY

LEDs are made by laying down on a substrate various 'impurities'; these impurities govern the colour and other attributes. For a red LED, the doping chemical is commonly gallium arsenide. Since the way this process is carried out is not always exact, there can be variations in the colour achieved, and it becomes a bit of a lottery to try and collate a batch of LEDs all with the exact same colour. Whilst for most cases this is not too much of a concern, it does become problematical when looking at assembling thousands into a large screen.

**Colour-Fresnel by Artistic Licence**

Colour-Fresnel is one of the wide range of LED colour mixing luminaires available from Artistic Licence. A recessed downlight with pan, tilt, variable focus and over 16 million colours.

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W [www.cie-audio.com](http://www.cie-audio.com) E [audio@cie-ltd.co.uk](mailto:audio@cie-ltd.co.uk)

**interM**



Unitek have long been pioneers and innovators in the application of LED technology used in large display signs and video screens. The company's expertise in technical development and engineering has led to the design, manufacture and installation of many projects using LED, LCD and fibre optic technologies. In August last year, they threw down the gauntlet to the other giants of LED high resolution displays with the launch of the Megascreeen MSS/10 using VHR technology. This is Unitek's first very high resolution display designed specifically for the rental market.

Employed in the screen is the company's VHR technology processing, a system intended to ensure that image sharpness is sustained across a wide range of viewing distances. Horizontal viewing angles are in excess of 160° and precision LED alignment should ensure consistent performance across all panels without 'tiling' effects. Unitek has taken the unique approach of offering lamp-type LEDs rather than surface-mount technology (SMT) devices, squeezing three full-size oval LEDs into each 10mm square pixel. The result should be light output in excess of 5000 nits from weatherproof modules. This should also eliminate inherent problems associated with SMT devices such as heat dissipation.

[www.UnitekGroup.com](http://www.UnitekGroup.com)

Further experiments are pushing up the wavelengths of operation, with the latest generation of UV devices operating at respectable output levels. There are claims that such UV LEDs will revolutionize lighting since when they are used in conjunction with a phosphor, they can generate incredibly efficient levels of white light, and arguably will render tungsten lighting obsolete. Considering the progress made in the last 20 years, such developments are probably not all that far off.

## CONTROL

For those less electronically-minded, a diode is a semiconductor that has the property of only conducting in one direction (forward biased) and acts as a kind of insulator when the current is reversed (reverse biased). Diodes are found in everything, from power supplies changing the a.c. to d.c., to the detector circuits in radios, as well as being the base building block for transistors and integrated circuits. There are many variations on a theme too, of which the LED is one: 'zener' diodes are designed to conduct in the reverse bias condition at a preset voltage, rectifier types are higher current versions used in power

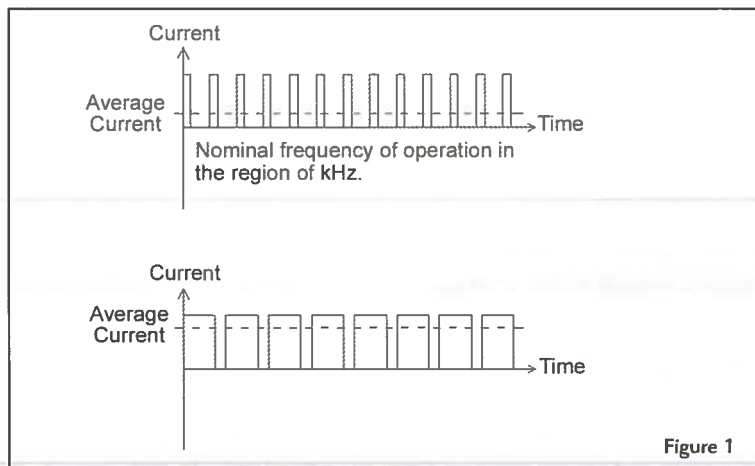


Figure 1

supplies, germanium 'point contact' styles are used in radio receivers and RF switches.

Broadly speaking, LEDs are constant voltage devices - that is, they operate at a fixed voltage only, in the region of a couple of volts. Little change in brightness is achieved by varying the voltage across them (other than 'on' or 'off!'), and so in order to achieve the flexibility of dimming the LEDs, a method of power control is used known as Pulse Width Modulation (PWM). By varying the average current across the diode, the device can be made to appear dimmer or brighter. Figure 1 (pictured) shows this method of control.

This also indicates why manufacturers quote figures such as '1.67 million colours available' - one would think that if it is possible to dim the device from full on to off, then across three RGB LEDs it would be possible to achieve every shade. Unfortunately, this is not quite the case. With such PWM, the control is invariably digital (e.g. DMX) and as such there is only a finite number of steps available. Roughly speaking, a single channel of DMX can give 255 increments in control. So, if a channel each is attributed to a red green and blue LED, then the result is  $255 \times 255 \times 255 = 16.6$  million additive-mixed colours. In reality of course the human eye would be hard pushed to distinguish between them all, and not even Lee Filters or Rosco produce swatch books that thick! The result is pretty near infinite colour mixing that's more than good enough for most.

As an aside, some readers may be aware that US-based Color Kinetics has patented digital control of LEDs. The patent, in essence, is a combination of three elements: pulse width modulation as a method of controlling the brightness of LEDs; using two or more colours to achieve additive colour mixing; and remote control via digital data. All these elements are not exactly new - early post-war electrical textbooks discuss 'chopper' circuits for the control of d.c. motors, and most of us will remember colour mixing practicals in school

science lessons. As for remote control of equipment via digital data - well, hands up those who don't have a mouse connected to their desktop computer, for example.

However, it's the combination of these elements that is seen by the US as a novel idea and hence the patent stands. In Europe, there are at least five companies (such as Artistic Licence with designs dating back to the invention of the blue LED) actively demonstrating prior art to the patent office.

Aside from PWM, few other viable control methods are available. There do exist some other control methods using constant voltage current sources, but they are not necessarily as practical or efficient as PWM.

It should be noted that the term 'brightness' is very subjective; a device may appear bright when contrasted against a dark background,

The Barco name is known to just about everybody in the industry, thanks largely to its development of large screen solutions and projection technology for presentation and display applications.



Taking advantage of this long-standing expertise in video processing and large area display technology, Barco developed the DLite series. The D7 is the high-end indoor and outdoor solution in the range. The D7 achieves a visual resolution of 7mm in combination with a cluster/physical resolution of 14 mm based on the company's proprietary 'Dual Pixel Technology'. The system also features built-in intelligence that enables auto-configuration and calibration between tiles and also allows hot swapping of tiles without interrupting the display of the pictures.

[www.barco.com](http://www.barco.com)

but the same device would appear less bright against a light background. Such subjective brightness is termed luminosity, and when the brightness is measured photometrically in terms of candelas per unit area, the objective brightness is termed luminance. Luminosity and luminance are not proportional to each other, for instance a surface having twice the luminance of another surface may not appear twice as bright. The measurement of luminous intensity is the candela (cd), or more applicable to LEDs the millicandela (mcd, one thousandth of a candela). The actual measurement is based on how much light falls on a section of sphere and equated to 1/683W of monochromatic radiation in the green part of the spectrum. Suffice to say, a more comprehensible comparison is to consider the more 'standard' type of LED such as that in clock radio displays which have intensities in the region of 70-100mcd. Compare that with an ultrabright 10mm LED with an intensity of 15000mcd and the difference becomes apparent.

## LAMP LIFE

The often quoted figures of up to 100,000 hours for LED life are nothing compared to the Mean Time Between Failures (MTBF), i.e. when the device completely breaks down. MTBF values are in the region of one million hours or more, but the actual degradation of the light output happens a lot sooner.

It is difficult to predict the output of LEDs over a period of time as 100,000 hours is a long while to sit and watch an LED (over 11 years) but degradation up to 10,000 hours is established and output drops from 15% at 1,000 hours to 20% at 10,000 hours. Statistical interpolation gives a drop in light output of 25% at 100,000 hours - not bad when considered as a drop in efficiency of one quarter over 11 years. This is one of the reasons why LEDs are so attractive, especially

in situations where lamp changing is an issue - behind architectural fixings, or emergency exit guidance systems on boats and planes, for example.

It did not take long for innovators in the entertainment market to realise long-dreamed-for LED applications: massive video screens with no front or rear projection and pixels much brighter than CRTs; washlights with bulb lives in excess of tens of thousands of hours and pretty near limitless colour mixing; consignment to history of the trusty incandescent Maglite as LED versions become widely available . . .

Early examples were not too bright, the blue LEDs only had intensities in the region of a few mcd and so it was a little while before effective displays came about. Some of the first developments were colour message display boards, rapidly leading to LED video screens. By using red, green and blue LEDs it is possible to build up an array of RGB LED pixels, each one having individual control of the diodes themselves. For small screens, arrays of tiny surface-mount LEDs are used with intensities up to 100mcd or so, and for large outdoor versions there are much larger and brighter versions with intensities as high as 7000mcd for some colours.

The advantages of the LED over more traditional projection methods are many: brighter images over a larger area allowing daylight viewing, better evenness over adjacent screens, wider viewing angles and further viewing distances.

There are disadvantages though, on large screens the minimum viewing distance can be quite far from the screen itself and from a manufacturing point of view getting large volumes of LEDs all exactly the same colour is a hard task. Such displays are becoming the norm at large events with manufacturers such

Pulsar are relative newcomers to the LED market, though certainly no strangers to developing innovative lighting solutions.



In September last year, the industry got its first glimpse of the company's new ChromaRange - a family of LED technology lighting fixtures. Each houses 80 high efficiency red, green and blue LEDs to allow for the endless RGB colour mixing that has made these systems popular. Because Pulsar's fixtures feature fast-response electronics, they can crossfade slowly from any colour to another or strobe if required. Pulsar have also made available alternative clip-in diffusers for different beam angles and shapes allowing various effects to be achieved.

Included in the range are the ChromaLight downlighter, which can be ceiling or panel mounted and adjusted to various angles, and the ChromaDome spotlight, which can be hung and adjusted to any angle. Pulsar has also developed the ChromaZone controller which provides power and control for up to 12 ChromaRange luminaires. It offers built-in chases, various speeds and individually selectable colours when used in stand alone mode. For use with an external controller, the PMX/DMX digital input allows access to each luminaire and the pre-programmed internal effects.

[www.pulsarlight.com](http://www.pulsarlight.com)

as Barco, Unitek, Optiscreen and Lighthouse being accustomed now to the touring and event scene. Earlier developments were characterized by the 'strip' screen used on U2's 1997 PopMart tour. Here large strips with 150,000 LED pixels (a total of some 1 million LEDs) were hung across the back of the stage giving a cage-like appearance during the day until the screen was turned on - the result was a screen as wide as the stage itself (some 705sq.m) with no discernable gaps at a reasonable viewing distance.

## LUMINAIRES

As discussed earlier, the technology is finding its way into architectural lighting markets quite rapidly. The benefits of long lamp-life, rich colours, small size and low heat are all greatly beneficial in such situations and are being fully exploited by such companies as Artistic Licence, Color Kinetics and more recently Pulsar. Brightness is still an issue though; LED washlights are far off from competing with moderate discharge sources or

The history of the OptiScreen range of products dates back to Gearhouse Group plc, which led the way in the provision of video projection and videowall systems. The Group recognized that systems with true daylight performance were required and heavily promoted the use of OptiScreen to the touring and events markets.

The VP8 is the latest addition to the OptiScreen family. Thanks to its high LED density, viewing distances are greatly reduced compared to the company's other products and the increased resolution enables fewer panels to be used. Virtual Pixel processing is used to create an image that is sharp across a wide range of viewing distances. Horizontal viewing angles are in excess of 120°, with precision LED alignment designed to give a consistent performance across all panels



VP8 offers a very accurate dynamic range, and is capable of displaying a 1% black level with no crushing or sparkle. This means that even when used in low light conditions, the picture quality remains good. Brightness, contrast and colour controls are fully adjustable via the company's Genius PC controller.

[www.optiscreen.com](http://www.optiscreen.com)

# technical focus



US-based Color Kinetics manufactures a diverse range of LED lighting products and the company has been making a big impact with interior designers in the US.

Products include the C-Series, iColor Series and Blast Light Series. The iColor Series includes the iColor MR, the first colour-changing fixture to fit directly into standard MR16 fittings. The iColor Fresco range of IP65-rated fixtures in extruded aluminium housings is available in 4', 2' or 1' strips, while the lower-brightness, lower-budget iColor Cove is available as 6" or 12" lengths. Both are designed for what you might call architectural 'niche' markets . . .

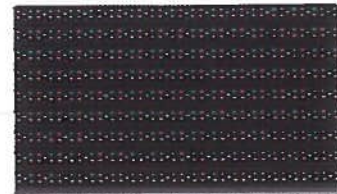
While Color Kinetics' C-Splash fixtures are suitable for underwater use, ColorScape is the company's range of colour-changing fixtures dedicated to the pool and spa market, for applications where the fixtures are likely to be sharing the water with people.

 [www.colorkinetics.com](http://www.colorkinetics.com)

filament lamps of a couple of hundred watts, but that is not to detract from how bright they are for such small and comparably low power devices. Also, depending on the LEDs chosen, beam patterns can be much more controlled - some LEDs have viewing angles as small as 8° to as wide as 60°. Whilst this is somewhat restrictive in that different lamps are required for different beam patterns, it's known that some are working on methods of focusing beams.

The developments don't stop at such fixtures either - long arrays of LEDs can be found in pipes giving long lengths of distributed lighting, the low voltage also means that they are finding themselves underwater and the low heat has found them lighting ice sculptures!

LEDs are very much here to stay, and will more than likely be playing a large part in the illumination technology of the future. As the technology develops, the prices will drop still further and products will become much more competitive: it will be interesting to see how much the price of a £30 UV LED today tumbles during the ensuing year.



Following its formation in January 1998, it took Lighthouse just 12 months to win its first award for innovation. In the few short years since it has grown to become an industry leader, has made Surface Mount Device (SMD) LED video technology a commercial reality, and has one of the largest ranges of indoor and outdoor displays available.

The company splits its LVP range across both outdoor and indoor applications. The LED video panels are all self-contained and the screen data is distributed using serial digital cabling. The LVP25, for example, sitting at the top end of the outdoor range, is a high resolution system suitable for long-distance viewing, which achieves brightness levels of 5,000 nits and a viewing angle of 140°.

 [www.lighthouse-tech.com](http://www.lighthouse-tech.com)

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# John Watt

## Second Take...

John Watt's view from beside the camera

**W**ith luck, Pop Idol will be but a memory as you read this, but at the moment we are saturated with coverage following the final. The programme has even featured on BBC 1's morning news, which is clever marketing. Why can't I stop double-checking that eight million phone votes, at say five pence, equals about four hundred thousand quid to the production company?

"So where's the need for lighting? Well watch for five minutes, and note the lack of balance in the pictures and tell me if you really like a burnt-out face against a barely-visible number 10."

**AT LEAST THIS WILL HAVE** helped pay Al Gurdon's hire bill. The lights predominated the set as is the fashion; in fact, the set came in third as another key element was a battery of, I suppose, LED screens which were nearly as "in your face" as the lighting.

**I ATTENDED A** demonstration of LED screens a couple of years back and I recall remarking at the time that someone would be daft enough to pay for a kit of them one day when the right show

came along. Anyway, the brief of move, flash and flare was fulfilled and more by Al. I remember him when he was Alex - wonder what happened to the 'ex'.

**OF COURSE AS I TYPE AL**, in my head it turns in to A one, my favourite stretch of tarmac which connects me with the big city. A recent trip south down the A1 found me taking a look at the

Robert Juliat range of equipment, care of White Light. Their product literature says "La Lumiere, l'art de l'ombre" - why does French always sound so colourful? If my informant is correct this means "don't be left in the shade", and there was me thinking l'ombre was a dusty Mexican smoking a cheroot.

**THEIR RANGE OF FOLLOWSPOTS** seems worth a second look to me, ranging from 2.5 HMI down to 1kW tungsten. Cleanly engineered to both look and perform well, they all have a place in the repertoire even though they do have peculiar names. It's probably no coincidence that the biggest and longest is the Cyrano. Further down the line come Foeie and Cricket, a bit anglophile for the new Europeans I would have thought. Maybe the Cricket only has a usable throw (or bowl) of 22 yards, but the others all look as though they could reach the boundary with one swipe.

**BACK IN THE SUMMER** I was visited by Paco Harleman, retired lighting designer from Sweden and an avid reader of this column (well, it is dark there for about nine months of the year). Ebbe Friman, another ex-lighting man, from Gothenburg, was with him, a big man of few words who now makes beautiful things out of wood and silver. We fell to musing about the state of our business, as you do, over a bottle of Glenfiddich he bought on the boat.

**I VENTURED TO SUGGEST** that now that everyone appears to be out of step except me, maybe I should review my attitude to all things lighting (the crowd murmurs "hear, hear" from the wings). After much lengthy consideration, and about halfway down the bottle, we jointly agreed that at least two of us would continue to rebel, and scouring the rest of the world we could perhaps co-opt Bill Lee to our team as well, in order that youth is represented.

**SO, SORRY, THE PRINCIPLES** to be followed remain unchanged, and in part at least, are based on hazy recollections of a BBC lighting handbook published in the early fifties. I have a copy somewhere, which said lighting should aim to achieve four things: illuminate, provide good portraiture, create the appropriate environment and create the mood. Are these all outdated, or do they remain unscathed by time?

**THE NEED TO ILLUMINATE** to achieve an exposure has largely gone, the damn things can see in the dark, so where's the need for lighting? Well watch for five minutes, and note the lack of balance in the pictures and tell me if you really like a burnt-out face against a barely-visible number 10 (don't they carry any ND?) or the silhouetted football pundit against the burned-out pitch (no, a 200W sungun isn't bright enough).

**PROVIDE GOOD PORTRAITURE;** well it's in the eye of the beholder I suppose, but at least can someone please return to at least considering the matter. Should flat be equated to flattering? Were the old cinematographers wrong in using a strong key to give shape? The screen is still two-dimensional after all. Are cameras and the transmission chain now capable of reproducing subtleties in the blacks and whites? Emphatically not - that little black dress just cuts a black hole in the screen. Is make-up now a fashion item or should it portray the human face, more or less, like it is? Are racks men now obsolete, except Shaun Moon who can tweak several shows at once? Pity there's not a new moon every month.

**THE ENVIRONMENTAL THING** was based on studio production where jungles, railway stations, builders' yards and the like were built with alacrity. Now it's cheaper and more realistic to go to the location, but is it really real to have blue fields through the window? Is it real to have alternating rain and sun on adjacent shots? Is it real to have the look change from shot to shot because of the limitations on the lighting imposed by location working?

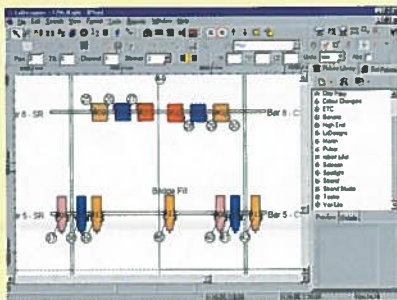
**MOOD** - an even more esoteric element, but is the art being lost in the quest for documentary-style 'realism'? Is the camera angle everything, or should we take a minute to make the knife gleam to hint at a horror to come, rather than a cutaway of the knife itself? The book said "shadows are important - it may be the shadow of a leaping tiger" or the production accountant more likely!

**COMMENTS** on a postcard please or E-mail [luddite@nogoingback.com](mailto:luddite@nogoingback.com)

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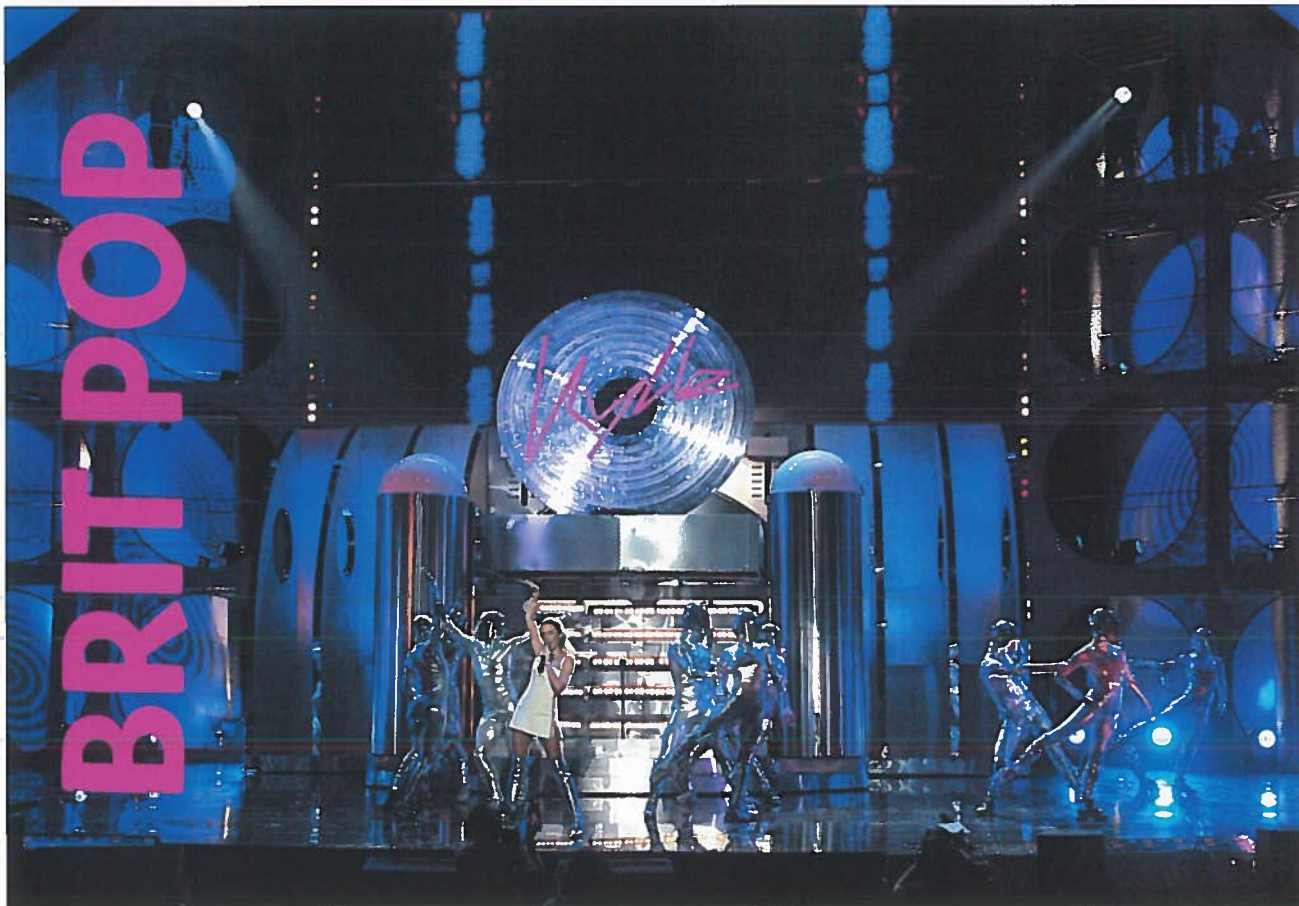


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**Though notorious in its earlier days, there's no doubt that the Brit Awards has now reached critical mass. Where once artists actively sought to be 'elsewhere' when the call came, now they positively queue up. So we blagged Steve Moles a backstage pass and shoved him into the fray.**

"We used to have trouble persuading them to play," confirmed production manager Mick Kluczynski of MJK Productions. "Acts are now waiting, and they're waiting with ideas about what they'd like to do." As Kluczynski himself admitted, this is to do with marketing and promotion - and why not? "It's also a quiet time in the season for music: January-February is a period when there are few new releases, not that many bands touring, so it's a great opportunity to put yourself prominently in the public domain."

It's no surprise to discover that the value of the show has sky rocketed as its reputation has improved. This is Kluczynski's ninth year at the helm, nine years of his dogged persistence to take this formerly sick patient to robust good health.

#### PRODUCTION

A warm avuncular Scotsman (Tartan unknown), Kluczynski's reputation as an organizer was already well established long before he picked up the Brits mantle. His formula looks simple enough, but requires a purposeful approach and the tenacity born of his cultural heritage. "It's people that matter - the kit is only as good as the man operating it. I'm loyal to the companies I use." He singles out Britannia Row and Vari-Lite specifically. "I specify the exact people I want." Not, it must be said, down to the last man on the set crew, but certainly way beyond just the lighting programmer or the house sound-man. "I need long-standing relationships between people across all the key disciplines."

Kluczynski's right-hand man, William 'Pitso' Piri, a legend in man and equipment management in his own right, confirmed this. "Between the TV people, sound, lights, everyone, they all know each other. There's none of that confrontation which was so common in the days when you and I toured; instead they all solve things together." It's a theme Kluczynski justifies frequently throughout our discussion, and it's one that's reinforced by all I interviewed, without any prompting.

"As far as I'm concerned, I'm producing a live show and TV happens to be covering it. The fact is we need the live atmosphere, so it needs to be as good as any other live show out there. The only essential difference is on changeovers which does force some compromises. We can now do four-minute changes during a live transmission. All right, it's not broadcast live anymore, but as far as the audience is concerned, it runs that way."

Seamless is his aim but modular is Kluczynski's approach. "We put together an initial running order, then after rehearsals we decide how things work, and if they don't work the way we planned, then we stagger them accordingly. For example, if needed, we'll make three or four awards in succession, so attention is on the presenters' area longer if that's what we need to make a change." This modular, pick and mix approach carries right through the entire assembly of the show, from first concept to final presentation. "It's done by round table discussion: the designer, TV director, producer, stage manager, Pitso, sound and me. How do we achieve that high speed on and off? Backstage we have what we call the M25, and from that concept it all comes out - we can't do this here - but we can do that there."

"Before we arrive at Earls Court, we know what's going to happen: the sets are built, even the specials. The main problem comes if the acts are on tour: first getting them, and then getting them to focus on the task. Duets are even worse, where we've got two different performers playing together." Judging by the relative performances of Anastasia with Jamiroquai, and Shaggy with Ali G, I have to assume this is a coded reference to the latter's performance, which was frankly only surpassed in its awfulness by the mediocrity of Frank Skinner's script.

"After Christmas it all starts: most importantly what we are actually flying needs to be locked down and filed for engineering and approval. Then it's build time. Blackfriars make the main set. I [MJK] contract a TV set designer, in this instance Bill Laslett, and in September, we develop, draw, cost, approve then build - no great secret.

Left, *Queen of the Brits*, Kylie Minogue; right, William 'Pitso' Piri (left) with Bryan Grant of *Britannia Row*; below, the infamous *Ali G* moment, made technically possible by AFX and PCM

"Working with Bill, we always develop an overriding set theme and this year it was the new Tonka-sized lights (more on this later). Al Gurdon is the lighting designer and I've always liked his work. All artists cover their own extras, their own set costs. Frankly, we end up with every set builder in the business contributing something to the show."

#### SOUND

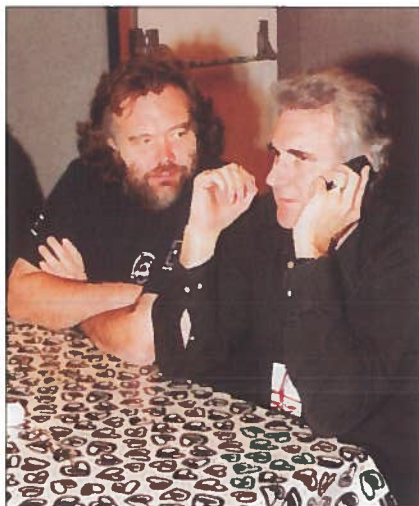
All the above is not to suggest that equipment isn't important to Kluczynski. "Decisions are gear-driven as well," he continued. "Take audio, for example: since I took this on we've gone through MSI systems, Turbo Flashlight and now we're using EV X-line. Being a sound-man, that interests me for more than practical reasons. This show has a combination of demands on the sound system - it has to be a live PA, a playback system and a highly intelligible speech system."

This multi-layered requirement has led to the use of mixed systems in the past, main PA and distributed systems, and with varying degrees of success. "The truth is, everyone is a critic at these things, but few of them are experts. This is a show on a stage over 100m wide - at some point during the evening the most expensive seat in the house is also going to be the worst.



"The X-line breaks new ground. I tried it at the MOBOs where we put hotspots around the arena for the speech system fills. This system does away with all that - saves a lot of rigging, a lot of time, and frees up a lot of weight capacity to rig other things. More importantly, once the terraces are in for the dinner tables, rigging options are severely limited, so putting in a simple system like this, which fulfils all three jobs, is ideal."

The PA is three simple hangs - centre, left and right. Eight cabinets deep, each hang comprises two vertical rows - one of subs, one mid/highs. Trimmed high, this is all there is, "bar just a few Turbo TQ440s tucked across the front of stage for pit fills," *Britannia Row*'s Bryan Grant joins in. "But the 40° coverage of the down-fill box at the bottom of the hang puts a lot of energy into the pit audience."



In terms of speakers, it's deceptively small. "Especially for the sort of music a group like *So Solid* produce, where you need a lot of bass end. To be honest, we weren't totally convinced flying the subs would produce enough energy, but there doesn't seem to be any difference. And the benefits to production are now doubled - not only is the array very small in spite of flown subs, the fact that we don't have to cram huge amounts of bottom end cabinets in and around the stage is of inestimable benefit to the TV people." While the PA may be small, the *Brits* requires a big commitment of control: five Midas Heritages on stage for monitors, four XL4s out front, plus a Yamaha PM1D.

So what about Kluczynski's people? "Well, we have a core of six guys who've done this show consistently for the last five years, then we bring in another four who have experience of this type of show. Putting a monitor man into a situation like this for the first time is a harrowing experience. There might be four minutes for the changeover, but until the new set elements are in place you can't do much about monitors and microphones. For the two hours of the show the pressure is relentless. The relationship our guys have built with Rick Benbow the stage manager is invaluable. It means we can do things in seconds - literally the moment the set's in place - and feel comfortable about it."

Derrick Zieba, master co-ordinator between *Britannia Row*, TV and the artists, is affectionately known by *Brit Row*'s crew boss Jock Bain as the 'peace keeper'. "He's always had a progressive outlook and been prepared to try something new," not least the PA system. "Trying it out on the *Top of the Pops* Awards convinced me," said Zieba.

"Our biggest problem is accurate information. Typically, artist requirements come from the record company, but the act might be out on tour and things have evolved, even in a very short space of time, so I always try and contact the touring engineer directly. Whether I succeed or not, they always tend to arrive with expectations that don't necessarily fit what's here. *Brit Row* has a spare everything on hand for me, every microphone in the book, all the latest inserts, and that's where I step in as the

## SIDE BARS

The wisdom of Kluczynski: "In normal touring circumstances you can prepare 80% in advance and pull off the remaining 20% by experience. The reality is here we're about 70% in advance, 30% experience. We get away with that because it's a fixed show in the best flat-floored room in town." With the added coda. "We've moved venue many times. Every time it's been a bigger space and every time we've filled it. How do we improve now without expanding? No comment." But he was smiling when he said it.

Aerial effects company AFX were presented with the challenge of flying *Ali G* in from the roof on a massive gold bed. They built their own flying track and winch system and combined it with VBG70 winches supplied by PCM.

The *Brits* at Earls Court 2 involves the use of loading doors 'M' and 'N' for equipment ins and outs. MJK's logistics meister William 'Pitso' Piri, a man oblivious to the fads and fashions of modern junior pop music, was last year approached by the representative of a vigorously rising young American star. "Oh yes, M and N, that's where to bring your equipment in," he said, pointing to the doors. Being a Scot, it's not unusual for Pitso to be misunderstood, especially by our American cousins. In no time at all a small crowd had gathered around the two men, watching, as their discussion became more heated. It's not recorded what the real Slim Shady had to say about this.

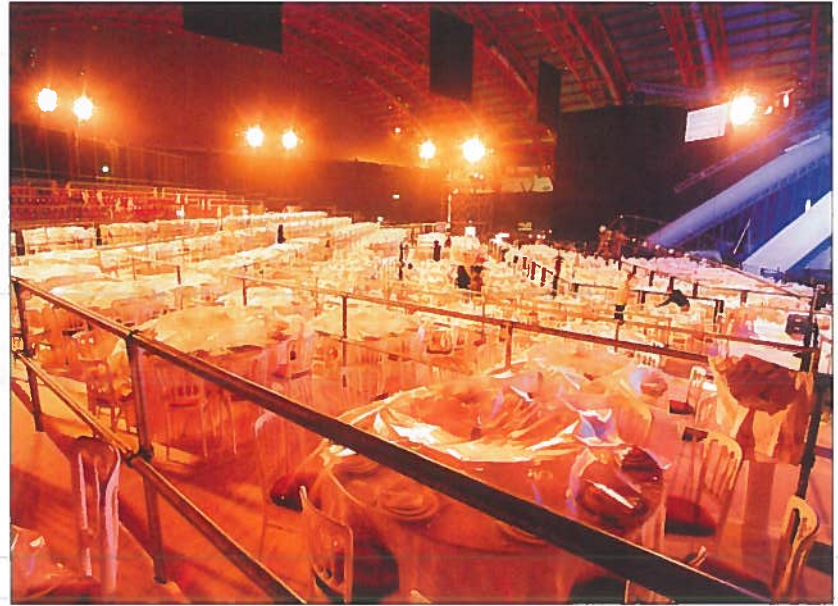
Favourite light of the show? By unanimous vote of the lighting crew, well Richard Gorrod (crew chief) and Scotty Duig (who has to deal with the beasts) "Sky Pans, or, as we call them, *Wok with a Bulb*." A big dish with a 5kW in it - sounds like a good name to me.

MJK told how, with Michael Jackson's notoriously ridiculed appearance, he didn't know what to expect from the Jackson entourage, in terms of set, mics, lights, anything at all, until the day of the actual show. "I came in that morning and there was the most enormous roll of fax paper on the floor with all the instructions," he laughs now, and sure he was expecting it, but it can't have been a fun 24 hours organising that lot.

If you watched closely you'll have noticed that TV (presumably Hamish Hamilton) now allow hand-helds mics to be used (for aesthetic reasons they preferred the two small stalk mics on the lectern. A tribute to the persistence of Derrick Zieba and Mick Kluczynski who finally persuaded them otherwise.



Above, Vari-Lite programmer Mark 'Pope' Paine; right, the scale of the Brits operation should not be underestimated - over 1500 people are working on the event on awards night



middle man. While the Brit Row guys are actually making the changes, getting that extra gear sorted, I'm there talking about it, calming, reassuring.

"There's also the dynamic between playback and live to cater for, and that can be within the confines of a single artist's performance. Mis-Teeq for example, descend the stairs singing. We knew that couldn't realistically be done well and sung live at the same time, so we worked a scheme to use playback on just that bit. Once at the bottom of the staircase they switched to live." Adapt or die.

"There are also fundamental differences between artists: there's no comparison between So Solid and Sting. However, the joy of the Line Array is convergence. This is the first time Britannia Row have not had to install a delay system or distributed system for speech, yet the sound is coherent, coverage perfect, and the PA can handle anything from Shaggy to a chamber orchestra."

#### LIGHTING

As with the sound, so too the lighting. "I do a lot of work with John Cadbury at Vari-Lite beforehand," said Kluczynski. "He gets hard parameters to work with: for example, we'll know where the PA will be hung, but won't necessarily have a fully developed idea of the lighting. Yes, there is core show lighting, and the practicals in the stage set are known, but the additional stuff the bands want, and how that might affect the main rig, will still be a grey area."

Budget-wise this sounds like one of two equally unlikely scenarios: either an open cheque for the supplier or a deal that the supplier can't back away from whatever the demands? "No, it's not that bad and we have re-jigged how we finance in recent years. There are some certainties - we need 360° coverage, the 40 by 40 performance spaces, the presenters' space, the architectural aspects of the set and the audience lighting. Then there are the desires of the artists and their LDs. What Al Gurdon ends up with is an

opportunity to draw from a basket of resources to apply as he wishes."

Gurdon first joins the process around September. "As soon as they know the initial concept I'm there, and as far as the main set is concerned that's all committed before Christmas for licensing reasons. Bill Laslett and the TV director Hamish Hamilton work it out, then I add my contribution to make it more 'lighttable', and more flexible." So far, so logical.

"In more general terms, I've always had to wait until I know the actual music for the specific band performances. The extra set pieces we try and integrate to the main set as much as possible, to blur those edges. Take Kylie, for example - that definitely looked like an extra piece to the bigger set."

And do visiting LDs contribute to that process? "No, not directly, but they have a more important role. For example, Vince Foster is Kylie's LD (also for Dido, Jamiroquai, and Anastasia - my nomination for a Lighting Brit, and not before time). He suggested the blue theme for Dido's performance, and I'm happy to do that. The decision to use the Dominators (the huge 6kW Space Flower-type split beam lights behind the band) worked well, and with very little other light in support. That's where an artists' own LD makes the biggest contribution, by telling them how things look, providing them with an authoritative assurance. It's the comfort zone thing; anything that makes an artist more confident on stage is to everyone's benefit, and that's an LD's role which should not be undervalued by any band."

In terms of the equipment itself, it's a pretty extensive list by any standards: nearly 200 Vari\*Lites of various denominations are controlled from a Virtuoso console. Complementing these are an artillery of Source Fours, Minuette Fresnels, Megalites, Molefay 8-Lites, Howie Battens, Egg Strobes, Rainbow scrollers, Par 64s, Wybron Mega Scrollers, Gladiators, Sky Trackers, followspots and Syncrolites. And that is just the start of

the list, enough for crew chief Richard Gorrod to have 17 Avolites dimmer racks dotted about beneath the terraces, plus thousands of feet of cable and stacking truss.

Which brings us to the 'Tonka Lights' referred to earlier by Mick Kluczynski - the Syncrolites, Gargantuans, Sky Pans - and how much he likes them. "These are big special effects: it doesn't matter whether it's TV or not, they're a powerful tool. When your stage set stops just two metres below the roofline and some of the lamp throws are around 100 feet, a Vari\*Lite or Icon is going to look a bit weedy in that position. I don't use them as lamps to light the artist, they're simply there as big beam effects. I chose that route because I'm fed up with lots of moving light gobos spread all over the set. I wanted to simplify the look."

If you watched the television broadcast, you'll recall that it's an ethos that Gurdon applied rigorously to several artists. On The Strokes for example, there were 10 Sky-Pans behind, and the partial fade of tungsten to provide an almost sepia wash across the musicians. "I get most satisfaction from a strong simple concept. Resisting the temptation to build lots of chases for the Strokes was key." That said, Gurdon doesn't discount the big look. "Oh no, I do need the 500-lamp look for some acts and this way all the bands have a very identifiable look."

Beyond actually lighting the performances, Virtuoso programmer Mark 'Pope' Paine has another serious charge. "A lot of my time is spent getting from one thing to another. From Frank Skinner and Zoë Ball at the presenters' rostrum to the stage is not just a matter of turning one look off and turning on another." A difficulty that emerges from programming all the separate band performances first. "In the course of that you might find you've got all the lights in a certain position," said Gurdon, "and you can't have them all whizzing off to another. That process involves going back through the whole show once you've programmed the bands." A chore not to be underestimated in terms of time.

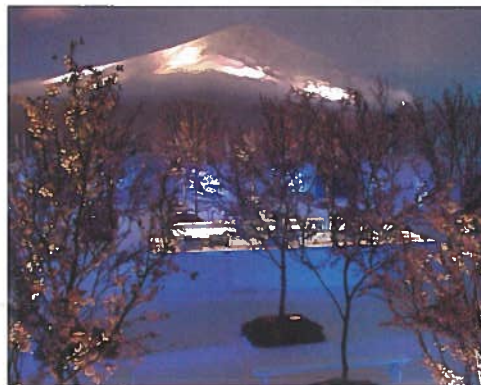
## VIDEO

The two huge central LED screens, supplied by Creative Technology and Screenco, were certainly the most extravagant video showing yet seen at a Brits event. Not least because these were combined with Barco screens pulled from Creative Technology's inventory - all of it requisitioned by Black Pig's Chris Saunders, the man who has been providing video facilities to the Brit Awards for the past eight years.

Since an ever-changing stage template doesn't allow for too many fixed parameters, the two central screens were rigged so they slid in-front/behind each other - a video sandwich of sorts if you like. Production riggers Outback worked with PCM's recently established Motion Control Division to design the system which facilitated the screen's movements.

On one side of the stage, further Barco modules, mounted on two revolves in the presenter's area, acted as a doorway, whilst on the facing flank, Saunders designed a static display made up of 66 modules of Barco's new i10 high-resolution screens, with a total of four 10,000 ANSI lumen Barco R10s firing onto the projection screens.

Black Pig supplied their own camera system and ran a pre-recorded library of material and effects. Feeds were taken from the television OB truck - four separate outputs operating simultaneously.



For Chris Saunders, and visuals director, Richard Shipman, the challenge was to maintain a consistency of luminance between the different screens, which involved constantly adjusting the levels to make sure they provided a good reading on camera.

## CONCLUSION

Cerys Matthews - on receiving a Q Award - commented that people in showbiz get enough perks and privileges without needing thanks as well. Maybe so, but this doesn't prevent the Brits from being good entertainment in its own right. With or without the actual Awards, it's a good show. As Kluczynski said it's a "live show and TV happens to be covering it."

Photos: Steve Moles; Gasoline Media; www.jmenternational.com

## After Show Party

Set designer Bruce French was called on to create the dramatic scenic environments for the Brit's After Show Party.

This was themed into two distinct areas: the main entrance and bar dazzled in brilliant whites and reflective surfaces, contrasting with the rich-red of the adjoining lounge, casino and dancefloor.

Blackout Triple E supplied 1200 metres of white muslin for the ceiling in the White Room, flown, big-top style, above 34 blossoming cherry trees sunk into the floor and up-lit. In the adjacent rooms, using over 900 metres of red muslin, Blackout Triple E suspended the ceilings, which also incorporated two circular trusses onto which the centrepiece lighting rigs were rigged.

Theo Cox's lighting design featured 426 fixtures, supplied by Neg Earth, combining High End Studio Colors and Martin MAC 2000s with a further 400 generics, festoons and decorative fittings. Encore provided the audio rig for the party.

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# ... Audio File

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**THIS DIMENSION TO YOUR TEAM** effort is called video and lighting. You stand there diligently in your cloth cap and gloves, keeping up your end of the bargain, while everyone marvels at the dazzling display put on by the star strikers. In fact, if there isn't one already, there ought to be a lighting product called 'Star Striker'.

**ANY TRADE EXHIBITION** - except PLASA, of course - that combines visuals and audio will feature a catalogue that has all the lighting and video stuff up the front, while audio languishes in a monochrome appendix.

**YOU HAVE TO BE MAD TO BE A GOALKEEPER**, they say. To get to Sounds

Expo, the new UK show that debuted at Wembley Exhibition Centre last month, you had to walk all the way through Video Forum - a sizeable stroll down Hall 1 - only to find a tiny annex at the end sheltering a quarter of the total number of exhibitors, like a penalty area.

**HAVING SAID THAT**, it was a David James of a show. If APRS was once a Gordon Banks, later to become a Gary Sprake, this was an exhibition of agile promise. With youth on its side, Sounds

Expo paraded every bit of kit for the modern recording effort, and was clearly appreciated by all. The scale may have been misleading, but the UK needs a forum like this if only to meet the new challenge of systems integration - just like England needs David James.

**FURTHERMORE**, the presence of Video Forum appeared to act as a significant catalyst for the audio shopkeepers and customers, with most dealers commenting on much traffic from multimedia, video and presentation professionals. OK, I admit it. You can't have one without the other. England needs Owen and Beckham to shine too.

This year could be the year of the digital FOH console, but it's been a long haul. I remember SSE Hire's Chris Beale saying to me, at V99, that the four Heritage 3000s debuting between the two sites that weekend could well be his last major investment in analogue. Since then SSE has become the UK's largest user of Innova Son Live desks.

**AT THAT PARTICULAR 'V'**, engineer Pete Russell pointed out the advantages of the Heritages even in a multi-act, dual-site festival application like that one - flexible matrix and groups, versatile I/Os - and this after the previous year's success with an Amek Recall, downloading the first night's settings onto disk and swapping them to the next.

**IN THE END**, it was preferable to have a good old hands-on control surface to the convenience of cut-and-paste, chiefly because, as Russell said, "There will always be environmental differences between sites."

**BUT V IS UNUSUAL**. Since then, a few contrasting productions in reputable hands have begun to change the landscape. Personally, once

I'd heard that Kevin Pruce was using Yamaha's PM1D with Björk (see L&SI November 2001), I was happy that the console had 'arrived' in the right circles. Pruce, who has been at FOH for the Icelandic diva for seven years, was faced with funnelling electronics, band, choir and orchestra in, and LR, surround, monitor submixes and discrete multitrack recording channels out. He also made full use of the desk's internal DSP effects.

**MEANWHILE**, the Smash Hits tour involving multiple mime-and-dance acts highlighted the other advantages of digital. Here, SSE's Innova Son Compact Live handled live TV transmission and a rapid turnaround of smiling faces with head-mics. Interestingly, although almost all the vocals were mimed to CD playback, FOH engineer Mark Ellis was obliged to make full use of the console's recallable settings because of the marked differences in quality and level between each CD. Who'd have thought that would become a significant and testing mix application?

**ANOTHER SIGN IS THE SUCCESS OF THE PM1D** in the recent TEC Awards, at which the maturing console walked off with a gong for Technical Achievement in Sound Reinforcement Console Technology. The point is, it saw off the Midas Heritage 1000, Crest X-VCA and Soundcraft Series FOUR consoles in its category - analogue mainstays all.

**EVEN SO, THIS IS THE HIGH END** - where the luxury of being able to dictate terms has its unique effect. Think of all those eisteddfods, fiestas and ceilidhs up and down Europe where the grass roots of mixing are as embedded in the soil as bindweed - this is where you'll find the Crests, the Soundcrafts and the Midases. You may indeed find them at V2002, as well.

**IT'S SURPRISING** that V has not yet fulfilled its cultural destiny: to become a televised event. Late night highlights of Glastonbury, when it happens, are one thing, but V's media-friendly, product-sponsored, gently sloping élan gives it all the ingredients for cosy domestic consumption.

**THIS, OF COURSE**, is where CAT5-connected FOH consoles come into their own, but that's a subject I've indulged before. For now, consider instead a small but significant event in the history of the digital FOH console, which took place at the beginning of the year. Chris Hollebhone, a very well-connected sales and marketing executive and graduate of Sony B&P, TimeLine and DTS, has stepped into a role guiding GLW's Harrison consoles into Europe - including the Live Production Console (LPC).

**IF THIS IS A PEOPLE BUSINESS**, which everyone says it is, there will be an enriching of the digital live console blend before the year is out. The long haul may soon be over.

"If this is a people business, which everyone says it is, there will be an enriching of the digital live console blend before the year is out. The long haul may soon be over."

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# Hall of Fame

London's Royal Albert Hall was conceived by Queen Victoria's husband as "the finest in Europe for seeing, hearing and convenience". Despite its shortcomings as a venue for 21st-century productions, the hall hosted 303 shows during 2001, and is looking to increase that number this year. As its seven-year refurbishment programme enters its last phase, L&S takes a look at the work so far

The paying public has already seen the benefits of the £70million project in the form of improved seating. The circle was re-seated in 1997, while the huge stalls area and choir were completely rebuilt during two three-week dark periods in 2000 and 2001. The needs of visiting productions have not, however, been forgotten. Access, power, staging and rigging have all been upgraded, and more is yet to come.

Rather than attempting to shoehorn more modern facilities into the existing space, the RAH development team (under director Ian Blackburn) took advantage of the fact that the hall is built on the side of a hill, and excavated a vast area to the south of the building in which to house all backstage areas. The 'South Steps' project is now largely complete, allowing access to the arena floor via an underground loading bay which can accommodate three 45ft trailers - a vast improvement on the original steep ramp from street level. A five-tonne, 6m x 3m lift has been added, which takes equipment to any of the three arena floor levels used for productions. Chorus dressing rooms, show management offices and technical workshops have also been moved into the new building, freeing up space in the hall itself for badly-needed bar space and public access to the arena. In fact, during the renovation, an ornate Victorian staircase was discovered - inside the electricians' maintenance cupboard!

The new development involved digging to a depth of 18 metres to provide three floors of accommodation, plant rooms and air handling space. With a Grade 1 listed building above it, and with a continuous programme of events during the refurbishment period, building

contractor Taylor Woodrow was initially faced with having to dig out the sub-arena area in true 19th century style - with pickaxes and wheelbarrows.

Unlike other recent major arts projects, the RAH is completely self-funding - and with a Lottery grant of less than half the development costs, it was necessary to remain open throughout the refit. This presented two departments with an especially hard task. For the housekeeping staff, the problem of keeping dust levels down and ensuring the builders removed all traces of their existence before the public arrived each evening was a major exercise. For the 13-strong show management team balancing the conflicting requirements of the builders and visiting production staff also proved a big challenge. "There has been something of a clash of cultures between the builders and show people," admitted Adrian Bray, deputy show department manager. "Anyone involved in live events can't understand the philosophy of knocking off at 4pm - and the builders are working under difficult conditions, caused by having shows in almost every night. Having said which, we haven't lost a single show." The co-habitation of the building has seen some unusual moments - such as Sir Cliff Richard's appearance from a trap-door during his 'in-the-round' performances at the venue. "What the audience didn't know was that underneath the trap, the whole place was a sea of mud and filth," recalled Bray, adding that artists had been very understanding about the project.

Completed in 1871, the Hall pre-dates electricity, and Bray reported that the installation team was faced with examples of wiring from the very earliest electricians. New users will find a rather more comprehensive infrastructure; though the Hall has developed an impressive in-house lighting service, it recognizes the fact that larger productions will expect to hook up full lighting production on arrival. "There are now three 400-amp three-phase supplies for show power, explained Bray: "One at the rear of the stage, and one on either side of the gallery. There's also a separate clean 200A sound supply in those locations."

## Lighting the Way

Mark Jones, senior technical show manager, has taken on responsibility for in-house production lighting - a service that allows the Hall to offer hirers a flexible solution to many electric requirements. For small-scale designs, such as school shows or corporate gigs, Jones says that the intention is to use the client's limited (and very fixed) budget to best effect. "We try not to have a 'standing rig' - although if there are small shows sandwiched between bigger ones that use the same LD or supplier, we'll get everyone together to see how an overall system could suit their needs."

Jones now has a total of 82 Source Four PARs, 120 PAR 64s, 24 Chroma-Q colour scrollers and an octet of Clay Paky Stage Zooms in his inventory. The Clay Paky units were chosen after having rented in almost every type of moving light from the likes of White Light, Entec, Essential and Vari-Lite. "Their standard of construction is great," he enthused, "and with details like mechanical end stops they are very reliable." Four 2.5kW Robert Juliat Cyrano HMI followspots are also kept on-site, on long-term hire from White Light. "They are very good to deal with," he commented, "and all the gear is clean, well-prepped and has its DMX addressing done before it gets here." Jones' experience of touring helped him determine RAH standards: "There was always a level of service that I wanted as someone on tour," he explained, "and I now I'm here, I try to look at things from the visiting company's point of view. If we make things easy for them, they'll thank us and come again."



Left, the RAH's Adrian Bray; below, the South Steps project; bottom, 1-tonne hoists among the Victorian ironwork



In addition, the Hall's houselighting has been upgraded with a 48-way ETC Sensor Unison dimmer rack, designed, supplied and commissioned by White Light, with the production system likely to follow suit in the future. In the gallery, repeated temporary installations of huge quantities of loose Socapex and TRS cables have been replaced by AC Lighting with a series of permanent facilities boxes, providing Socapex, multiple 16A sockets (the house standard), DMX and comms connections and 32A feeds for followspots.

On the floor of the arena, very little is permanent. The stage has benefited from having its exits moved to the outer extremities, and is provided with a new, permanent, 2m wide upstage 'rat-run' which offers invaluable space for dimmers, amp racks, video and the general clutter of touring shows. A Maltby Ambideck system allows the frequently-used orchestra tiers to be removed to increase stage space. The equipment lift, connecting with the new load-in area, has seen extensive use since its installation two years ago; only one production (Robbie Williams) has required the use of the old aluminium ramp to speed up load-out.

Above the auditorium and stage, the Hall's 19th century wrought iron superstructure provides enough capacity for a total of 85 1-tonne motors, as well as four 2-tonne Lodestars for PA hangs. The motors, mainly Verlinde 104s, but including Verlinde's new Stagemaker, are controlled by a custom system developed by Unusual Rigging to an RAH spec. Five permanent trusses are installed, each with two or four Socapex multicores fitted to inertia drums to

allow them to drop to stage height. "The domed shape of the roof is almost ideal for flying," explained Bray: "As long as the load is symmetrical, the harder you pull down on the roof, the stronger it gets!"

Flying is also possible from the corona - the centre ventilation point of the dome, a dizzying 130 feet (40m) above the arena floor. Bray pointed out that, unlike many venues, the RAH does not charge separately for flying points: the motors, he says, are there to be used by everyone.



Being a highly photogenic building, the Royal Albert Hall is frequently visited by broadcasters. Before the refurbishment, the BBC had installed (and retained ownership of) a complex infrastructure of audio, video, lighting, control and comms cabling. This has been replaced with a new system which, although specified by the BBC, is owned and managed by the RAH itself. Audio provision for live events is not yet an in-house facility, though Bray aims to change this in the near future. For the moment, Surrey-based Sound By Design are the most regular suppliers to the Hall of anything from a single mic on a lectern to full-scale pop production. Acoustically, the 135 much-maligned 'mushroom' diffusers will remain, following a few adjustments, and the mighty organ, last rebuilt over 70 years ago, undergoes a £2m reconstruction next year.

The Royal Albert Hall is unusual in being governed by its very own Act of Parliament, and has, say the management team, no artistic policy. Being able to house the widest possible range of productions is the key to the venue's long-lived success and independent status. The new-look Hall and its 21st century technical fit-out should ensure that visiting companies can make the most of this unique and elegant setting.

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*Tony Cottelhar*

# No Comment...

**W**ither Light Network? You could read wither as a spelling error, but actually it's my smart-arse, double-entendre which you may also read as whither if you wish. The question is, where will it go, or will it wither away? The reason for the question is that unless there is a change of host, users may have to pay a subscription in future. And, if that happens, how many will actually stump up?

without restricting the right of free expression, which is, often, not such an easy task.

**NOW DELPHI**, which is the forum host, has mailed all participants indicating that they can no longer rely on advertising revenue to maintain their service, though this was done in such obscure language and curious analogy that it was tricky to work out what it was that they were actually saying. (It included an attack on the entire precept of advertising on the web. Quote: "Our community does not click on the banner ads that we attract, not that we blame you. Our community does not open or respond to e-mail marketing. Advertising on the Internet has evolved into a bad idea." So, that's the end of that then!) It seems, consequently, that Delphi want users to switch to their premium service, called DelphiPlus, for which the subscription is \$40 per annum. If enough people do so, they hope to stay afloat and, presumably, Light Network with it. If not, who knows?

**THE OLIVIER AWARDS** turned up few surprises in theatreland and this column's congratulations go, once again, to Mark Henderson for best lighting design (though it should be designs, as there was quite a list of credits). By the way, since there are also Oliviers for costume (Jenny Beavan) and set (Tim Hatley), why are there no awards for sound design? It is after all an integral part of the theatrical experience these days.

**THE BAFTAS WENT SMOOTHLY** enough, apart from the foaming red-carpet which could, no doubt, lead to a string of dubious Afghani jokes from which I shall refrain in the interests of maintaining some sense of decorum. In any event, compère Stephen Fry will have already capped any of my poor efforts. The Grammys seemed notable only for the sainting of Bono and the usual round of attention-seeking disputes.

**IN RESPONSE TO QUESTIONS**, Richard Meade, one of Light Network's moderators, posted the following message: "It is clearly a matter for everyone individually to decide whether they want to respond to this appeal. If enough do, then Delphi will probably continue as is, with paying members getting premium services. If not, then indications are that Delphi may be closed down." So, while it seems that it is not necessary for Light Network users to put their hands in their pockets right now, this would be a good time to think about what should happen in the event of the demise of Delphi, or indeed to use this moment as a catalyst to determine a more robust future for the forum.

**SADLY, THE HIGH QUALITY** of the Fry presentation was lacking in spades at the Brit Awards (see feature, pages 60-63). However, just for once, the lighting was something else! The Brits is the industry's annual opportunity to wow a TV audience and, previously, without exception, this has consisted of frenetic and uncoordinated flying beams from massed ranks of moving lights. The consequent camera bleach-outs were legendary, all of which contributed to very poor television - by and large, a dismal effort all round. This year's was a true exception, both exciting and excellent viewing. Great credit goes to lighting designer Al Gurdon and to Vari-Lite London who provided the mixed rig. The video material was also impressive. The production company was MJK Productions of London, and production manager Mick Kluczynski. Respect to all.

**PERSONALLY**, I would like to see Light Network survive in some form. There should be a debate about what that form might be.

**I NEVER THOUGHT THAT** I would find myself saying this, but the Queen's Jubilee may turn out to be a blessing, as a point of focus for our beleaguered industry. The two concerts that are planned for the back yard of Buck House, despite a geriatric cast of dinosaurs, have created quite a stir. Those service companies involved in providing the technology and the logistics will no doubt get a decent turn of the Queen's shilling and hopefully, a trifle more than Maundy money. This may encourage other promoters that similar events around the country could also prove worthwhile.

**WE ARE NOW NEARING** the end of the hectic ego-pumping, 'performing arts awards' season, at least in the UK, but with the Oscars still to come.

Finally, I would like to add my voice to the general welcome for James Eade's Technical Focus, which debuted in the January issue of L&SI. I am particularly relishing the possibility of the mooted technological challenge to a certain US 'toasted-sandwich' patent. A toasted sandwich patent is this column's nomenclature for granted patents that seem lacking in the 'inventive step' department.

It included an attack on the entire precept of advertising on the web. Quote: "Our community does not click on the banner ads that we attract . . . Advertising on the Internet has evolved into a bad idea."

**FOR THOSE OF YOU** who don't know it, Light Network is the on-line discussion forum for the entertainment lighting community. It started out as a really good idea when instigated by ex-Flying Pig Nils Thorjussen and lighting designer Arnold Serame. Light Network provides an interactive forum for discussion, a help platform and an opportunity to gossip, network, exchange ideas and socialise with one's peers without the limitation of geographical distance.

**SADLY, IT QUICKLY DEGENERATED** into a virtual bear pit as a handful of people with strong passions, and often irrational opinions, dominated the interchanges. As a consequence, the number of people actually participating in those exchanges has diminished to a resolute few, though the site is still closely monitored by those whose products, services and corporate policies get routinely and publicly savaged at the sharp end of a mouse. The poor moderators do their best to maintain a sense of decorum,

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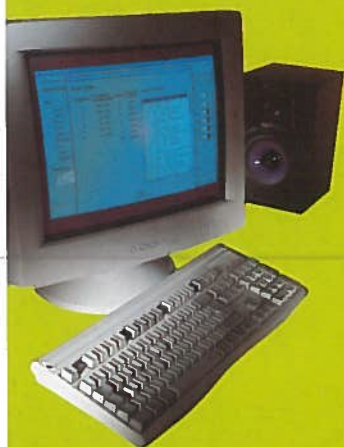
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# MIXING SOLO

Allen & Heath's much-publicised management buyout from the Harman Pro Audio group has raised the profile of the Cornish console manufacturer - and as Mike Mann discovered, the traditionally reticent company is beginning to enjoy its new-found fame



Allen & Heath's management line up of Glenn Rogers (managing director), Dave Jones (finance director), Bob Goleniowski (sales & marketing director) and Tony Williams (operations director)

"I suppose it's all meant to feel very different now," commented A&H managing director Glenn Rogers, "but in truth we were in the happy position of being fairly autonomous within Harman. We benefited from the good bits - like financial backing - and became very good at avoiding the bad bits."

The cynic would say that this independence was allowed because of the comparative remoteness of Allen & Heath's facility, which lies only a few miles from the westernmost tip of Cornwall. Rogers, however, believes that the professionalism of the team and its close links with specifiers and users led its corporate masters to leave well alone. "Everyone here has always been very interested in our customers and what they do with our equipment. For our own people as much as for our users, we wanted an image that they would be proud of."

Rogers is unusual in leading the company from an R&D background - in most outfits of this size (turnover for 2001 was £12m) the MD is either of a sales or financial disposition. He is still deeply involved in day-to-day issues and is equally devoted to the organization's three target markets. "I've been dabbling in electronics since I was 11 years old," he reminisced, "and like most technical people I always want to drive things beyond the point that they've reached at the moment. I think that if I was a sales or financial person and only into numbers I'd be no good at this."

Rogers says that his primary interest lies in making products that he understands intimately - but that commercial success provides a certain professional satisfaction. "What you can't afford to have is too many brilliant products that go nowhere!" he added.

## Bridging the Gap

One name that is certainly going places is Xone - the DJ and club brand that was tentatively introduced at Frankfurt Musikmesse in 1999. Andy Rigby-Jones was the originator of the project, and is now Xone product manager. "I had worked as a DJ since 1980, and there was a clear gap in the market at the time. No product fulfilled the need for a good quality club mixer." Other mainstream manufacturers, he asserted, looked at DJ mixer design from a PA console perspective. "They thought that live engineers and DJs worked in the same way - so the features were not DJ-oriented at all."

Rigby-Jones was working on the MixWizard project (a small-format mixer intended for the live market) and pushed the company bosses to give him some time to experiment. On previewing the rather uncool-sounding ClubWiz, users were impressed, but it was clear that the model was still a compromise. The next iteration became the Xone 464, closely followed by the smaller Xone 62, which has been the most successful product in the range, selling to mainstream clubs and individual DJs. The newest product in the

line, Xone 02, is destined for the scratch DJ - and hence for the vast US dance market.

The Xone name first started to come to people's attention when the mixers found their way into famous clubs like Fabric in London. Working DJs got to know them in an installed environment and were soon buying them for their personal set-ups. An impressive roster of top DJs now use the Xones, including leading lights such as Ritchie Hawtin and Sasha. Allen & Heath's traditional customers, and many of their distributors, were initially sceptical about the damage that a lower-cost range could do to the company name. "In fact, there is no difference in component quality between this and our live boards," pointed out Rigby-Jones. "We use exactly the same parts much of the time, except where a specialist DJ component does the job better."

## Pandora's Box

Despite the recent popularity of 'systems in a box' led by the BSS Soundweb, Allen & Heath were one of the very earliest companies to market a DSP matrix, the DR128 - and it's still going strong, having since been joined by the smaller DR66. "The DR really was a pioneering product," claims Rogers, "and we have learned a huge amount from it. Audio networking and remote control are becoming so much more important than they were a few years ago, but the problem is that most systems are very hard to set up. We're keen to spend our support time developing new ideas, not

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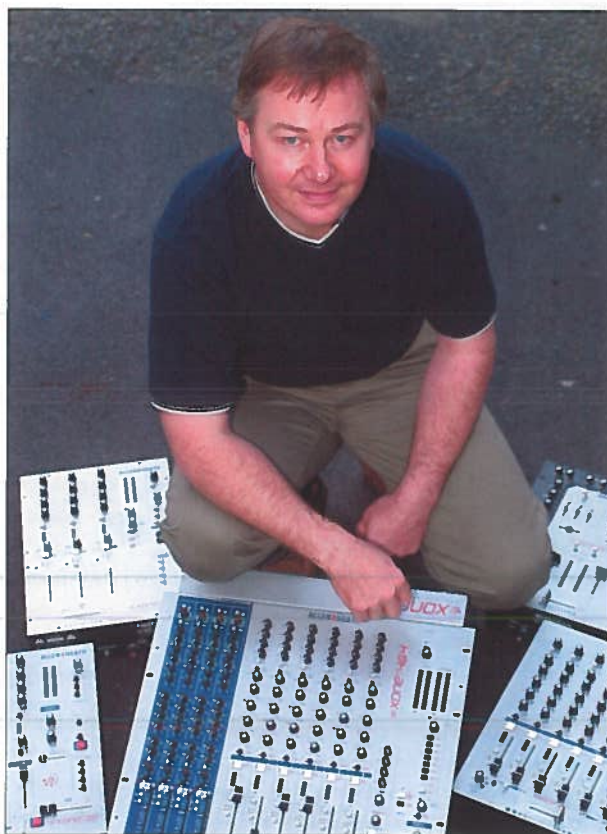
The existing matrix products will be complemented later this year by the introduction of a second-generation DSP unit, the iDR. This will incorporate several years' feedback on the existing Allen & Heath designs, as well as criticisms of other competing designs. In the meantime, the existing range continues to be developed, with additional control interfaces allowing custom user panels to be designed into an off-the-shelf digital audio system.

### Digital Dilemma

Although the installation and club markets are both growing apace for Allen & Heath, sound reinforcement continues to provide the bulk of the company's business. Glenn Rogers admits that, prior to the buyout, investors 3i (who hold a stake in the newly-restructured organization) were seriously concerned that Allen & Heath was not known as a leader in digital live mixing. "They went away and did some research, and came back completely reassured. People who rush into digital are not making any money."

Which is not to say that the design team is resting on its analogue laurels - there are several concepts under scrutiny at the moment that show a typically maverick take on the process of mixing in the digital domain. "You have to start by asking why analogue mixing desks look like they do," suggests Rogers. "This is where the industry is stuck at the moment; no-one has come up with a surface that allows the engineer to work quickly under pressure."

Carey Davies is Allen & Heath's overall design manager, heading up an R&D team of 22. His argument that analogue has a long way to go is borne out by the company's latest products, the ML range of live desks. Introducing the VCA-equipped ML3000 at last year's PLASA show, Davies pointed out that introducing important facilities on entry-level products is vital to ensure that the pool of talent in the industry does not dry up - and that this is every bit as true of the analogue domain as the digital. "VCAs are a good example of how engineers have been learning from each other - but facilities like this have to be made more affordable so that people can get into a more advanced way of working earlier in their careers." Davies says that this is not merely a case of training users to operate a particular piece of equipment, but involves a wider view - and that the benefits of more rounded



Left, Andy Rigby-Jones with his babies - the range of Xone mixers; below, an inside shot of the ML3000

DR series, the core of a digital mixer is more or less developed. "The control surface is now the biggest issue - and the benefits have to be brought to the affordable middle market so that more people can gain experience earlier."

Davies agrees with Glenn Rogers, pointing out that the current accepted analogue layout with its fiddly little knobs and buttons is a function of the electronic layout underneath, rather than being an ideal worksurface. "Of course, one of the problems with digital is that, while we're trying to make analogue products look as modern as possible, digital designs have to be retro to be accepted."

education for engineers will be enormous in the long run.

### In All But Name

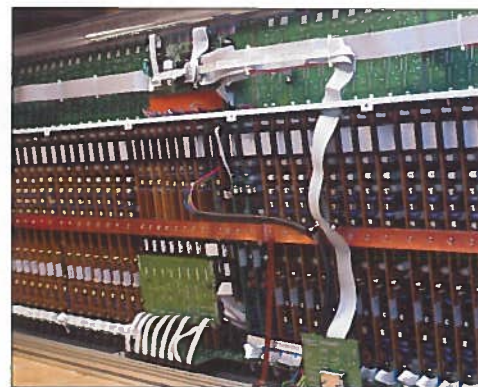
While Allen & Heath is not seen as a Rolls Royce name by the live fraternity, the company's flagship console, the ML5000, has found friends in some very high places - including heavyweight touring and theatre rental companies. Described by one user as 'a Midas without the badge', the ML5000 seems to have finally broken the argument that a 'proper' console should be completely modular. Davies believes that this is an outmoded view - and that the design of a semi-modular mixer with individual high-grade circuit boards (rather than the 'pancake' approach favoured by budget manufacturers) is inherently more reliable than traditional products.

The savings in metalwork - both in terms of cost and space - allow more facilities and higher quality components to be used, which, he says, explains the exceptionally warm reception that the ML5000 has received. Work continues apace at Allen & Heath's Penryn factory to push the analogue concept further - possible options include a foray into dynamic processing and more sophisticated automation.

Like every other console manufacturer in the world, Allen & Heath are working on a 'digital project'. Davies claims that, given the plethora of good DSP products on the market and the experience of several years with the

### Worldwide Web

With product sales in over 70 countries, Allen & Heath's commercial side relies heavily on its overseas partners. Managing these is the task of sales and marketing director Bob Goleniowski. "We've got a very strong core of



distributors who have been with us for a long time," he pointed out proudly, "and part of my job is to take them by the hand and explore opportunities." The introduction of the Xone range might have been used as an excuse to form an entirely separate sales chain, but Goleniowski stuck to his existing partners. "It's true that in more mature markets people do tend to stick with what they know - and that the DJ market is almost considered vulgar in pro audio circles - but I would far rather help to develop the people we have than get into some mad pricing war with new and old distributors and dealers." On the subject of pricing, Goleniowski is philosophical. "We're in some very



Carey Davies, Allen & Heath's design manager with the GL series of desks - the 4000, 3300 and 2200

### The Right Mix

Glenn Rogers has seen Allen & Heath through the Harman years and is determined that the company should now prosper on its own merits. "We're anything but copy-artists," he explains, "we love to use our grey matter and to see if we can approach old problems differently. If we can marry circuit developments with mechanical design and a cost-effective way of doing something, we can produce a whole package that people will really be able to use. At the end of the day, though, it's the human interface that counts the most. Most of the people that we deal with are passionate about what they do - and they relate to a company where everyone they meet is equally passionate."

So does Allen & Heath's new-found freedom mean a more visible public presence? "Well, we quite enjoyed being one of the industry's best-kept secrets. It's a big thrill to have the company back as our own baby - but I guess now that we're an independent company, our heads are above the parapet!"

competitive markets, but we need to maximize our returns so that we can invest in R&D for future projects."

Goleniowski claims that there is no ceiling to the company's future expansion - Xone has already added 15% of incremental sales and his target for the next three years is to double Allen & Heath's turnover. A tall order perhaps? "The interesting thing about this company is that we are people people - and with the right personnel you can achieve

almost anything. You need all the correct professional elements such as financial brains, a sales team, production knowledge and so on, but even with the best product in the world, if you have crap people nothing will happen. We all listen to each other - and to our partners and customers, and we often have very different viewpoints; but we're all prepared to leave our egos outside the door and meet in the middle. Glenn, especially, is a bringer-together - very unusual for a technical guy, but he will always pull us in."

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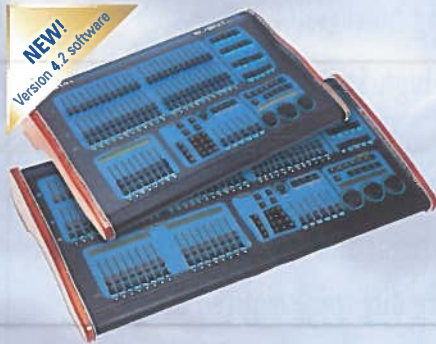
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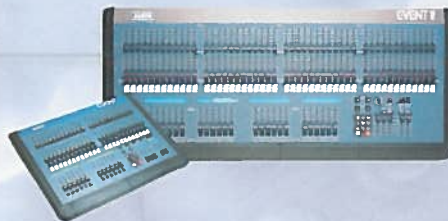
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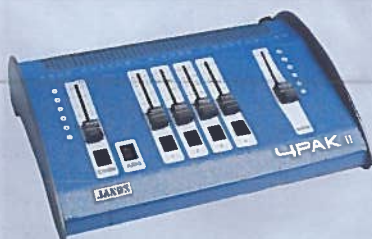


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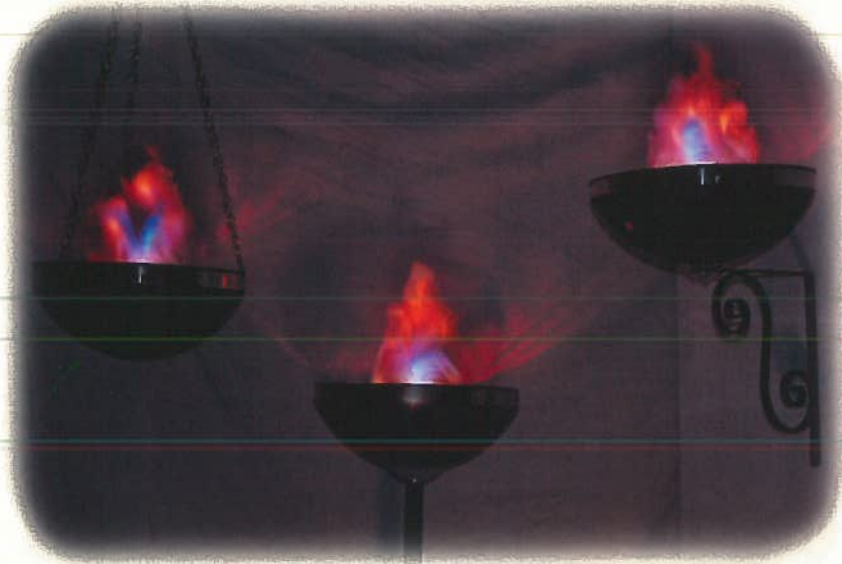
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# SPUN GOLD



*Gold* is not the obvious choice of production for a mainstream venue like Frankfurt Schauspiel, but the theatre's artistic director, Elizabeth Schweeger, was keen to incorporate Boddeke's challenging work into the venue's programme.

The set's white 'stone' floor - designed by Florian Parbs - is a giant shower basin, surrounded by nine video screens. Past meets present immediately the auditorium is entered. Nine actors, nine suitcases, nine screens, all telling stories with movement, words, melodies, images, expressions and ideas.

Unlike other forms of theatre, the experience actually starts in the foyer, with an installation involving 92 suitcases - each with its own story - some told by actors, some with objects, others by video.

Each of these fictional stories revisits something that happened - or could have happened - in the holocaust. *Gold's* central thread winds around the story of Lieutenant Gustaf Harpsch, a Nazi SS officer who falls in love with a Jewess and with her produces a daughter. The daughter is declared a Jew, and all are separated by the war, politics and persecution. Father and daughter then commence a search for one another.

Video is a vital element in the collages of Boddeke theatrical works. For *Gold*, she collaborated with many artists and technicians, starting with filmmaker and director Peter Greenaway, who wrote *Gold's* vivid, pictorial text. For those wondering where the '92' came from, this is the atomic number of Uranium which Greenaway believes is the gold of the 21st century. The 92 suitcases also all exist, fully developed as stories in their own right as part of another major Greenaway interactive project - The Tulse Luper Suitcase - which started in January and

will be three years in the making. Suitcase number 46 of this project happens, conveniently, to be filled with gold confiscated from victims of the Third Reich. This suitcase created the circumstances for the Greenaway/Boddeke work in Frankfurt.

Boddeke selected 14 stories to form the underbelly of *Gold's* action - trying to incorporate all 92 would have been slightly impractical. These fell quite naturally into dialogue form, and she used an almost filmic concept of inter-cutting to avoid making openings, closures and compartmentalising. All along, the audience is left anticipating what might happen next. This autonomous form of direction is part of Boddeke's oeuvre; she wants people to think for themselves.

Running for two hours without a break, *Gold* demands full attention from its audience - video is an omnipresent medium for 90 per cent of the show - across all nine screens. The experience - primarily in German save for a few snippets in English - is compelling viewing. Boddeke pushes her actors and technicians to the limits. It's a highly physical performance, and for the final 30 minutes, the actors are all soaked to the skin, as the stage gets drenched in 10,000 litres of water, dispensed from highly symbolic shower heads in the ceiling.

Video is only one layer of *Gold*, but it's the production's essence. "The projected images are carefully chosen," explains Boddeke, "so as not to reveal too much information." However, the video is used to connect the stage action with the story of Harpsch and his quest for his lost daughter.

Boddeke recorded all the film material - on location and in the studio - on DV. This was edited by Elmer Leupin, who has worked with her and Greenaway on previous productions, and who also designed *Gold's*

**Creative risk taking  
comes naturally to**

**Dutch director**

**Saskia Boddeke. As**

**Louise Stickland**

**discovers, her**

**imaginative**

**energies and her**

**technical boldness**

**are laid bare in**

***Gold - 92 Bars In A***

***Crashed Car.***



sound. Early in the work's evolution, Boddeke decided on nine video screens in a circular arrangement around the stage. She called on UK-based video director Peter Wilms to design and source the video system. Again there is a working history between the two, and Wilms has also worked on several Greenaway productions.

Wilms needed a very flexible control system that would output different material easily onto the screens. After considering different options, he decided on using a staggering 10 Doremi hard drives for storage - one per screen and a tenth for cutting between them. There's an Extron 16x16 matrix switcher to



send the sources from any hard drive to any screen, and the show is run live, cue-by-cue, via a Dataton Trax system, programmed and operated by Wilms, then run from a Mac Powerbook. The equipment is hired from Creative Technology in London and remains at the Schauspiel for the duration of the show's six-month run.

The Dataton system enables Wilms to have manual or remote/programmable control of an RGB fader on each projection channel for very precise regulation of fade-ins and outs on the screens. They can be operated simultaneously or individually. With the Dataton set up, Wilms can also quickly grab an image from one screen and route it to another in the rare event of a picture dropping out. Most of the time, sound for the video sequences comes from the Doremis; however, on some occasions he uses Dataton to send timecode to another Macintosh running Pro Tools in the sound booth below with its own Yamaha O2R console.

The video material arrived direct from the editing stage, and as it was loaded onto the Doremis in no particular order, Wilms runs an Excel spreadsheet to keep track of what's where with over 250 video segments!

For the projection elements, Frankfurt-based MEP Meidenhaus GmbH came up with the latest Sharp XGP20 XE LED units, which were just on the market. "They've proved fantastic," states Wilms. One of the many features he likes is the contrast ratio. This is so high they don't need dimming shutters in front of the machine to eliminate the renowned number one annoyance - the grey glow.

Right, the creative force behind Gold, Saskia Boddeke. Below left, the foyer installation and centre, one of the more intensely lit moments

Seven of the projectors are mounted on custom-built metal towers on wheels, constructed by the theatre crew, located in the Schauspiel's ample wing space each side. They rear-project through letterbox slits in the black surrounding drapes. The screens are sourced from Harkness Hall. They're identical, although inevitably there are some texturing anomalies between those that are front and rear projected. Luckily, this is virtually imperceptible!

Despite the scale and impact of the video on the show, technically it's been a relatively straightforward process, says Wilms. The Greenaway/Boddeke production *Writing To Vermeer*, which premiered in Amsterdam in December 1999 (see L&S! January 2000) proved far more ambitious. Having ridden the learning rollercoaster there, although *Gold* is multi-layered and contains over 18 hours of video across the nine projectors, it's gone very smoothly.

The biggest challenge for the video department was actually a physical one - getting the two tall Doremi rack

flightcases up to video central on the FOH lighting balcony. This entailed house video tech Felix Schmalz and Wilms block and tackling the units across the auditorium.

Naturally there were also other idiosyncrasies. Boddeke wanted Fidelia (Harpsch's daughter in the story), to have a live video screen incorporated in her suitcase. After some research, Wilms came up with a Sharp TFT flat screen mounted into the case lid and a Panasonic DVD player with good anti shock features, plus a battery pack, attached inside. It also needed to withstand being submerged in six inches of water! The latter was left to the props department, who came up with some plastic wrapping and sealing technology - as only prop departments can!

*Gold's* sound is also an interesting mix. Music was composed by Borut Kr išnik whilst Elmer Leupen created the soundtrack. Leupen's idea was feature film in approach. With the text being such an emotive vehicle for storytelling, it was vital that the music was atmospheric and didn't conflict with the action.

Leupen worked on the soundtrack using Pro Tools in his own studio. The initial editing took three and a half weeks. Not all the atmospheres and sound effects he created worked in context when they reached



rehearsal stage in Frankfurt. However, after spending many long days and nights in the run up to the opening, by the time press night arrived, he was familiar with virtually every audiological nuance of the space. He used the theatre's own Pro Tools system, which proved a lifesaver in terms of offering the flexibility of editing right to the last minute.

Acoustically, it was a delicate balance between keeping it intimate, sounding un-amplified and natural, whilst simultaneously ensuring that the music wasn't lost. Some spot effects - trains, cars, whispering, etc - were pumped up and panned around the room via the Schauspiel's surround system, with Leupen all the time conscious that the sound should not become too extreme or distracting.

*Gold's* sound is divided into directional groups utilizing different sets of speakers around the theatre. The actors' onstage voices come from the stage. The spoken words from the video sound like they're coming from the screens - with an emphasis on rear projection, banking on the theory that the majority of viewers will concentrate their gaze on the centre screen. The side wall speakers are used for the more pervasive and atmospheric effects.



The Schauspiel's resident sound engineers are

Philipp Batereau and Thomas Noll-Hussong. They worked closely with Leupen to get his design working in the room. The theatre's house system (both speakers and amps) is Klein & Steck - a mixture of T3, T4, TX, CPA 2 and CPA W enclosures, arranged carefully to cover different areas of the hall. Klein & Steck is renowned for hand-built components, attention to detail and producing very high quality audio in exacting environments. Although not widely known in the UK, the company has been highly successful in Europe over the last 20 years.

*Gold's* soundscape and relevant video soundtracks run from a DHS hard disk playback system and Pro Tools, via the Yamaha O2R in the sound control room, out to the auditorium and a new Yamaha PM1D. Mixing with the PM1D and the KS speakers -



which also contain plenty of onboard processing - the need for outboard effects is minimal. *Gold* utilizes 40 channels on the desk, and the different groups of voices, effects and music are channelled to the speakers via the PM1D's matrix. Delays and settings are changed within the desk, allowing them to utilize the same speakers - producing completely different images - for the different sound groups.

In terms of it sounding 'natural' they've pulled a big coup. Ninety-eight per cent of the time, even the trained ear of the most anal ampliphobic purist would be hard pressed to hear *Gold's* sound as anything other than authentically acoustic.

The sound department's biggest brain teaser has proved to be sustaining the Sennheiser micropod radio mic system worn by eight of the nine actors. These receive some severe abuse due to the intense physicality of the piece, in addition to getting totally drenched. Water-resistant though they might be - this is a soaking of diluvial proportions! Lateral thinking, the scrambling of some ever-useful heavy-duty plastic and sophisticated packaging techniques to completely encase the micropods seems to be doing the business.



Video director Peter Wilms (left) and lighting designer Frank Kaster

The Schauspiel's head of lighting, Frank Kaster, arrived in the early autumn from his previous post at the Munich Bayerisches Staats-Schauspiel Theatre. Coincidentally, he has also worked before with Greenaway and Boddeke. His role is largely one of lighting operator, director and consultant, and Boddeke herself is the designer.

Lighting for *Gold* is very much dictated by the needs of the projection. Most is therefore overhead, high up in the grid, to cause minimal interference. Approximately 140 fixtures are used in the show, over half of which are profiles. The theatre has a good stock of all the usual theatre lanterns.

For *Gold* they have additionally hired in eight Martin PALs, which are used to highlight

different spots on the stage. Overall lighting is predominantly low, moody and monochromatic, juxtaposed with some intense bright spots outlining props like a bath and a pasta making counter (which also features naked gas flame). The one scene where everything turns dramatically electric blue is stunning in its contrast - the stage bathed with industrial blue

fluorescents. Special low voltage underwater lights secreted in the floor send dramatic shafts snaking across the water towards the end. The straightforward 65 cue show is run from the house Transtechnik Prisma NT console, operated by Mirko Zeman.

The water itself physically changes the space during the performance. With it comes a mercurial quality that transforms lighting, acoustics and perceptions and introduces another ambient dimension.

The critics have loved it or "killed it" - as Boddeke succinctly puts it, but she'd rather have them hating it than feeling indifferent to it.

Photos: Louise Stickland

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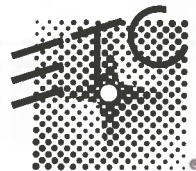
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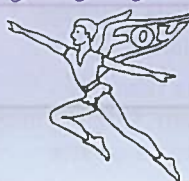
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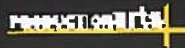
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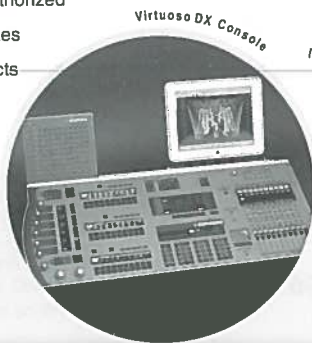
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# In Profile...

L&SI Talks to the Industry Trend-setters

In a career that has spanned over 50 years, Peter Smith has brought a high level of professionalism to theatre production, and to the training of those who practice it, in Australia. Although now retired, his influence is never-the-less set to continue for many more years when his stage management textbook, now in final draft, is published.

When in 1951, the 19-year old Peter Smith decided that he was interested in getting into theatre, there were no theatre schools in Australia. Instead, while continuing to work at



his clerical job during the day, he attended weekly acting classes at Sydney's Independent Theatre.

After attending for a couple of months, Smith volunteered to help out backstage. Of course his very first job, as befits someone who was to spend over 20 years as a stage manager, was to sweep the stage.

For the next four years he juggled his day job with his work at the Independent. His break came when he was offered the job of stage manager on a

national tour of the play, *White Cargo*. When performing the play at His Majesty's Theatre in Perth, the weather was so hot that theatre management had opened the theatre's famous sliding domed roof for ventilation. Part-way through the performance, the weather changed and rain fell into the auditorium until the mechanists could get the roof closed. This event so affected the young Smith, that he instituted what was to become a lifelong practice: the preparation of contingency plans for every production.

In Sydney, he landed a six month engagement as assistant stage manager on the Old Vic's 1955 Australian tour. It was while walking the stage for the weekly lighting changeovers, that Smith

also began to pick up an understanding of the lighting process.

At the end of the Old Vic tour, Smith did what seemed to be required of all young Australians and boarded a ship to the UK. In London he found himself a job on the lighting board at Sadlers Wells. His next engagement was as stage manager for the original production of *Romanoff and Juliet*. During the six-week tryout in the provinces, it fell to Smith to relight the production at each venue. By the time it eventually got to the West End for its world premiere, the lighting designer, Nat Brenner, was happy to let the young Aussie try his hand at setting the lights.

Smith was next offered a stage management position with the Old Vic. Over the ensuing five years, the 30-odd productions that Smith worked on spanned three London seasons and tours to North America, Western Europe and the USSR. It was during this period that he developed his hallmark fastidiousness for complete and accurate notation of every aspect of a production.

On his return to Australia in 1961, he spent a couple of years stage managing musicals. From there he went to the Australian Elizabethan Theatre Trust (AETT), Australia's first large-scale organization to publicly fund the performing arts. During this time, he introduced the professional practices which he had developed from his observations of work practices in the UK, North America and Europe. He also began to design the lighting for an increasing number of works in the opera repertoire.

There then followed a break from the AETT to manage the brand new Alexander Theatre at Monash University in Melbourne. However after two years, he was lured back to the AETT, as a production manager for the Opera company. Later he became production manager for AETT workshop operations which built all sets, props and costumes for both the opera and ballet companies. During this time, he started hosting workshop visits from Technical Production students at the National Institute of Dramatic Arts (NIDA), and was soon invited to join the NIDA board of studies.

In 1973 he became New South Wales branch manager for Strand Electric, a position which he held for five years. He then took up a full-time teaching position at NIDA. In the process of developing the curriculum for the technical production course, Smith wrote himself a small pamphlet which he called 'Duties of Stage Management'.

He taught at NIDA for the next seven years, before moving on to the Darling Downs Institute at Toowoomba in Queensland for three years. Once again he restructured the course, before moving on to the Western Australian Academy of Performing Arts (WAAPA). At WAAPA, where stage management was one of six specialist technical training courses, in the Production and Design department, he once again set about defining its place in the curriculum. After three years, Smith finally decided that it was time to retire and turn 'Duties of Stage Management' into a textbook. However, he was cajoled out of retirement to teach part-time at NIDA and it is only since leaving in 1995, that he has been able to complete his final draft.

Published by WAAPA, the book is not a stage management primer for those with a passing interest in theatre. There are no chapters on lighting, sound, props etc as Smith believes that these areas are covered thoroughly in the many specialist books on the subject. This book is intended for use as a stage management reference by students, or fledgling professionals who are seeking a rounded insight into running the rehearsal room and the stage. ■

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Few people have had as big an impact on theatre production in Australia as Peter Smith. Andy Ciddor reflects on his career

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