

# Lighting & Sound INTERNATIONAL

June 2002

The Entertainment Technology Monthly

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## Catch the Fever

- Kylie Minogue's Fever Tour

## Technical Focus

- Previewing DMX512-A

## Doornroosje

- A fairytale from Belgium

## Horses for Courses

- All the Queen's Horses, Windsor

## Industry Standard

- Profile of beyerdynamic (GB)

## AES Europe

- Audio highlights





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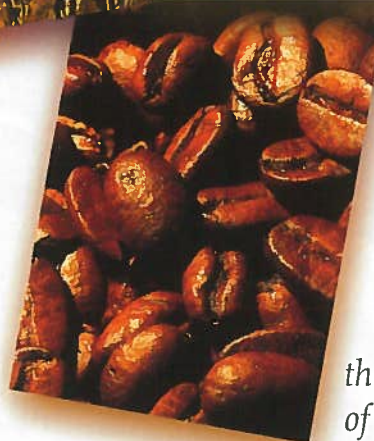
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# Lighting & Sound INTERNATIONAL

June 2002 Volume 17, Issue 6

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## Lighting & Sound INTERNATIONAL

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# International News Round-Up

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## Golden Jubilee Provides Showcase for Entertainment Technology

The Queen's Golden Jubilee Celebrations, held over the long weekend of 1-4 June, not only celebrated 50 years of Elizabeth II's reign, but also had the added bonus of providing a stunning showcase for the UK's entertainment technology industry, watched by television audiences worldwide.

The cream of the UK's design, production, staging, rigging, lighting, sound and pyrotechnics specialists combined to create a lavish display which has drawn praise from across the world and will be remembered for many years to come.

The BBC-produced Garden Concerts at Buckingham Palace and the surrounding infrastructure through central London included a roll-call of experts that would be familiar to any top-flight rock tour or major spectacular, including Mark Fisher (design), Robbie Williams (production management), Edwin Shirley Staging, XL Video, Screenco, Fourth Phase, VLPS London, Stage Electrics, Britannia Row, Owen Brown, Unusual Services, Orbital, Dobson Sound, RG Jones,



The crowds outside Buckingham Palace for the Jubilee

Wigwam, Stageline, Pyrovision, ETC and many more. Special thanks also go to the manufacturer of the microphone that allowed television audiences to hear some unwitting person (was it really David Dimbleby himself?) huffing, tutting and muttering in annoyance as the Queen waited to light the Beacon on The Mall - TV magic!

L&S1 will be pulling all the strands together to provide detailed coverage of the Buckingham Palace Garden Concerts and the surrounding spectacle in the August issue of Lighting&Sound International magazine - which also happens to be our 200th issue . . .

## Get Behind the Scenes at RAH and Tussauds

With an exclusive Behind the Scenes tour, PLASA Media is offering a unique opportunity for you to take a privileged technical tour of two of London's best-known entertainment institutions - the atmospheric and newly refurbished Royal Albert Hall, and the fascinating Tussauds Group Studios, the creative heart of the world-famous visitor attraction specialist.

*Behind the Scenes* will take place on Thursday 12 September, immediately following the PLASA Show. At the Royal Albert Hall, you will take a backstage tour encompassing the breadth of the venue's recently-completed £70 million refurbishment. The tour will take you through front-of-house and the historic auditorium, to the extensive state-of-the-art dimming installation and new loading bay. There will also be a chance for an informal chat with the technical crew.

This will be followed by lunch and a visit to the Tussauds Group Studios, where *Behind the Scenes* continues with an exclusive tour. This will include the demonstration of a wax model being created, followed by an opportunity to hear first-hand from the technical designers how the many different projects of the Tussauds Group are put together.

The cost for the day is just £75.00. We have limited availability for this tour, and demand is expected to be high. Full booking details will appear with the next issue - in the meantime, you can register your interest with Sheila Bartholomew at [sheila@plasa.org](mailto:sheila@plasa.org), or by telephone +44 1323 418400.



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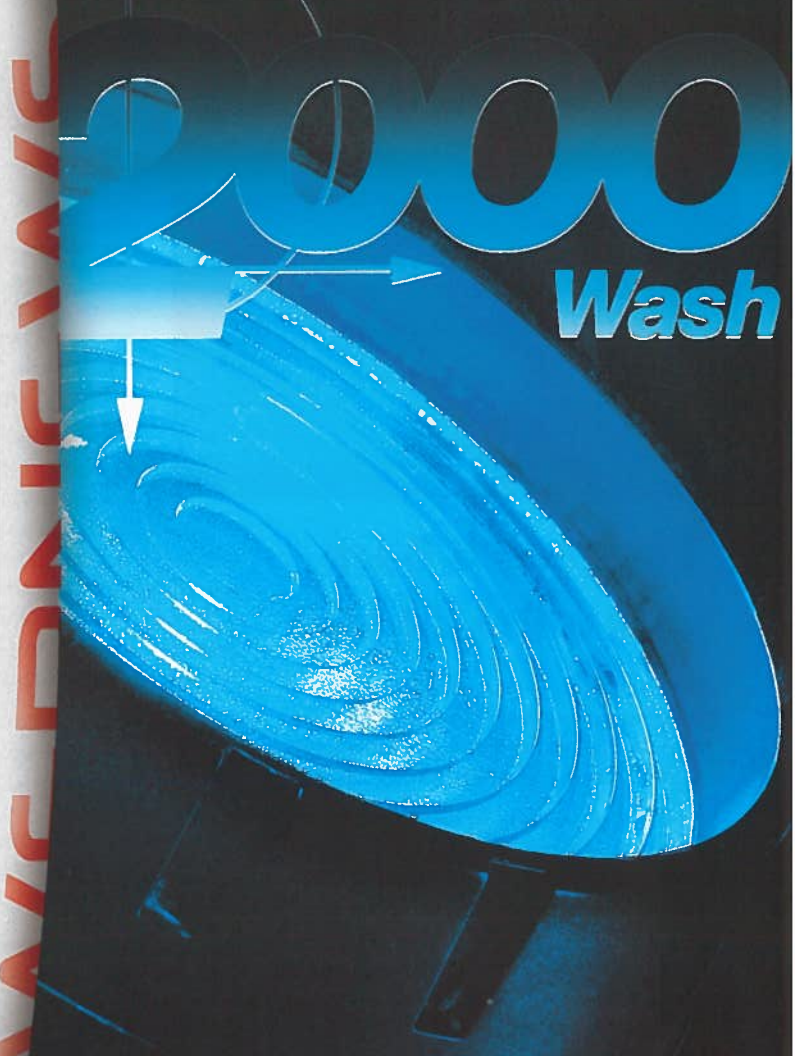
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## Thorjussen Back with a Bright Idea

Nils Thorjussen, co-founder of Flying Pig Systems and subsequently marketing VP at High End Systems until last year, has returned to the lighting industry with a new company.

Working alongside industry veterans Chris Varrin and Jeremy Hochman, Thorjussen has set up Bright Lighting LLC to market lighting products using Light Emitting Diodes (LEDs). As is well known, LEDs are proving highly popular in the market because they deliver long-life, minimal maintenance and high energy efficiency, while providing extremely bright colours.

Color Stream, the first product from Bright Lighting, looks like a fluorescent tube, but changes colour, generates patterns and moves them along the tube. "It's just like neon with pixels," says Thorjussen.

The effect is created by a linear array of LEDs housed in an IP66 weatherproof tube suitable for interior and exterior applications.

When multiple tubes are linked together, pre-programmed or custom effects cascade down the daisy-chained units. A variety of shapes, lengths and widths make Color Stream suitable for a wide variety of applications.

The product has been licensed to Bright Lighting by UK-based lighting designers, Wynne Willson Gottelier (WWG), who developed the system some years ago. "We had to wait for LEDs to become more accessible from a cost point of view before we had a viable product," added Tony Gottelier of WWG.

Color Stream was seen publicly for the first time at the recent Lightfair in San Francisco.

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## transtechnik

### Lichtsysteme Joins ETC

**ETC has purchased the German lighting company transtechnik Lichtsysteme from its parent company transtechnik GmbH.**

According to ETC CEO Fred Foster: "The combination of transtechnik Lichtsysteme with ETC will allow us to increase our range of products and services to the German, as well as global, markets."

Robert Sterff, managing director of transtechnik GmbH, comments: "transtechnik Lichtsysteme will profit from ETC's position in the international market, and transtechnik GmbH will now be able to concentrate fully on its own speciality of electronic systems for the transportation industry." ETC will maintain its current established channels of distribution in Germany: Lightpower will remain exclusive dealer of the Source Four line whilst Arcus will continue to handle WYSIWYG. As part of the agreement, transtechnik GmbH retains its ownership of avab transtechnik France and avab Scandinavia and transtechnik Lichtsysteme will continue its support of these products.

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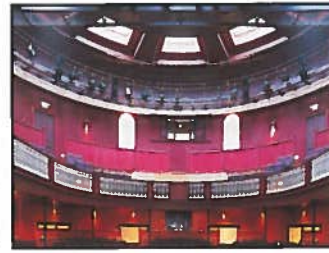
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## Rainmaker Focuses on Lighting Design

Rainmaker founders Jim Hepplewhite and Paul O'Brien have moved their base to Wimbledon, in order to focus on their lighting design portfolio. The duo are well known for their work as creative lighting designers for a myriad of clients.

Hepplewhite explained: "With our projects getting increasingly diverse and needing such a wide spectrum of gear, we decided to make some changes." As a result, the equipment supply for all Rainmaker's forthcoming projects will now come from Colourhouse Technical Presentations. Paul O'Brien adds: "We've used Colourhouse for several recent projects. As part of the White Light Group, they offer the quality of service and equipment we need, and are backed by one of the UK's biggest and best known lighting companies, so it made complete sense for us."

Part of this arrangement involved relocating the Rainmaker offices from Bolney in West Sussex to White Light's Wimbledon HQ. Despite this, Rainmaker will remain a totally separate trading company.

## Coe-tech Dons Robe



Coe-tech's Ian Brown (centre) with Robe's Ladislav Petrek (left) and Josef Valchiar (right).

Coe-tech has announced an exclusive UK distribution dealership with Czech lighting manufacturer Robe. Robe has been carrying out OEM manufacture for brands such as TAS, Futurelight, Sagitter and Movietech for some years. The announcement is the latest in a series of restructuring moves at Coe-tech following the formation of Coemar UK. Coe-tech's Ian Brown told us: "Our philosophy is to increase Coe-tech's new ranges and improve the breadth and scope of our existing product ranges, and also to ensure that all the moving light brands available through Coe-tech are readily accessible and represent great value for money."

## PALME for Mid East

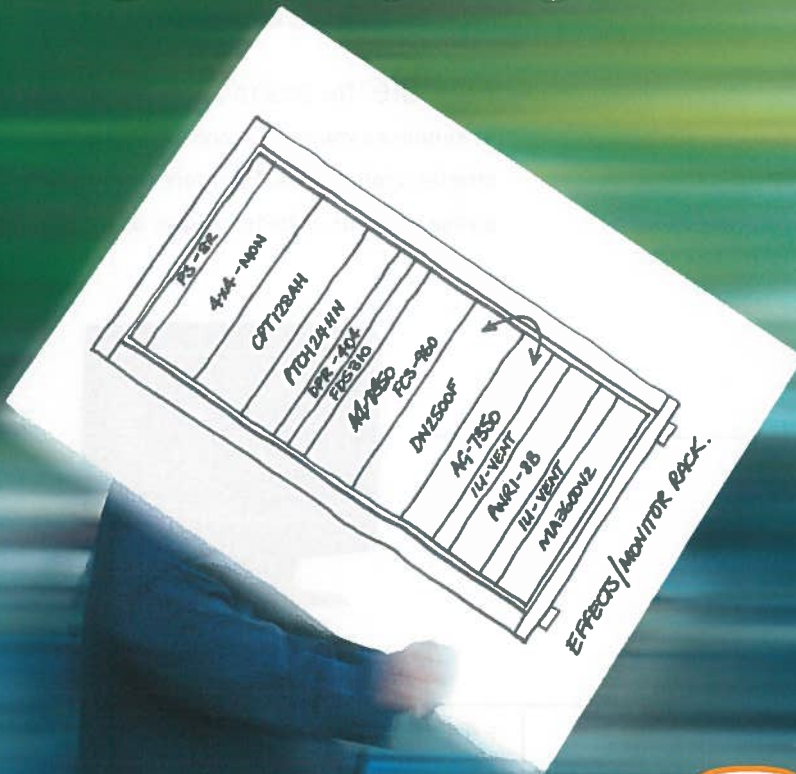
IIR Exhibitions is to launch Pro Audio Light Middle East (PALME) - the region's first dedicated professional sound and lighting showcase. It will run at the Dubai World Trade Centre from February 16-18 next year.

The show joins a strong IIR portfolio of exhibitions which includes PALA, PALMM Philippines and CALM China. Jessica Sutherland of IIR Exhibitions & Conferences. "In the past, the Middle East market was too small to justify the investment, but a huge surge in entertainment, tourism and leisure facilities ... has convinced us the region can now sustain this highly specialised exhibition."

IIR's Iain McLean added: "Much of this latest technology will not have been seen in the Middle East before. It also means professionals working within the Middle East will no longer have to travel the globe to discover the latest developments in their rapidly evolving industry."

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## SSE Launches New Sales Division

SSE Audio Group launched its new sales division at the ICC in Birmingham recently, at the same time as offering the UK market its first demonstration of the GEO Tangent Array loudspeaker system. Also on display was the range of Innova Son digital consoles for which SSE has recently been appointed UK distributor.

SSE has been selling equipment for many years, based on the sale of its large ex-hire stocks, and the new division - headed up by Julian Ward in the role of equipment sales manager - will capitalize on this, as well as undertaking key installation projects. Ward will also oversee the SSE training seminars for Nexo and Innova Son products that commence this month.

Invited guests at the ICC launch represented all sections of the industry and SSE used the full scope of the 3000sq.m hall to demonstrate the impressive coverage of the two tiny GEO arrays. Guests received a technical briefing from Group hire director Chris Beale, followed by a live performance from SSE's very own warehouse band, the 6u Rack-ettes. The team from Innova Son was well represented, and the company's Gerard Malvot demonstrated the beta release of the new version 7 software for the Sensory Console series, which will be available in July. Mick Anderson, Nexo's sales director was also in attendance, together with the team from Fuzion.



Platform 1 at King's Cross Station was recently transformed into Platform 9 $\frac{3}{4}$  for the launch of the Harry Potter and the Philosopher's Stone DVD/video. Copies of the coveted DVD arrived onboard the Hogwarts Express, and were handed out to Harry Potter fans by members of the top grossing film's cast.

## Hogwarts Express Arrives

When the idea of projection was thrown into the production mix, Ross Ashton, of projection specialist E\T\C, was approached by Chris Slingsby and Dave Hurd from Imagination. The brief was for over 100 different cross-fading images to be projected onto an arched projection surface, custom designed by Harkness Hall, attached to the wall at the station end of the platform. Since the rest of the station was to function normally, packed with commuters going home, the main challenge was to overcome the high ambient light levels. To address this, the 6kW PIGIs were located on a bridge 125m away, with two pairs of projectors lined up together to maximize intensity. At the start of the show, all four were overlaid to produce one single bright image, but as it got darker, the show switched to the two pairs and the cross-fading sequence started.

The get-in time constraints were tight. The only slots for the projection team to work were between midnight and 4am on the three nights preceding the event.

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# Association NEWS

## New Legislation will Impact on all Employers

Some of the following key announcements or changes will have an important impact on all employers. The Information Commission's 'Employment Practices Data Protection Code' is being published in stages over the next few months. The code will include ground rules on access by employees to any company record that mentions them including confidential e-mails, handwritten notes and personal files.

The Code is being issued in four sections, namely: general record management, recruitment and selection, monitoring in the workplace and genetic and drug testing of workers. Not all the Code will be binding, but it will outline what the Information Commissioner believes is best practice for employers wishing to comply with the Data Protection Act and/or avoid criminal liability. The part of the DPA concerning manual records including e-mail monitoring and the interception of phone calls came into force last year.

The snappily titled 'Fixed Term Employees (Prevention of Less Favourable Treatment) Regulations' commence on 10 July 2002. Amongst the key terms of the Regulations, employers will be prohibited (unless

objectively justified) from treating fixed term employees less favourably than comparable permanent employees in respect of their contractual terms, including pay and pensions, etc.

Unless it can be objectively justified or a collective or workplace agreement is in place, fixed term employees should not be employed on a series of contracts beyond more than four years (calculated by taking into account the duration of the first and any subsequent contracts). (Service before 10 July 2002 will not count.) After this the employment, on renewal, becomes permanent.

Workers will be able to present complaints to a Tribunal if they consider that they have suffered less favourable treatment and no cap on compensation will apply. Agency workers are excluded from the application of the Regulations.

Employers are advised therefore to undertake an audit of, for example, salary, benefits and pension access arrangements.

PLASA members can contact Clive Payne of CP Associates for further advice - call +44 (0)1582 755182.

## PA/VA 2002: Special Offer for PLASA Members

Employees of PLASA member companies can benefit from reduced fees at PA/VA 2002, a two-day programme, co-sponsored by the Chartered Institute of Building Services Engineers (CIBSE), aimed at anyone in the industry who would like to learn more about what is involved in specifying, designing, installing or certifying Public Address and Voice Alarm systems for safe public evacuation. The programme will run on 9 & 10 July 2002 at Regent's Park, London.

Visit [www.isce.org.uk](http://www.isce.org.uk) for full programme and discount details, or telephone Cathy Mackenzie on +44 (0)151 638 0181.

## Latest News on the Employment Bill

The controversial proposed reforms to the Employment Bill aim to substantially enhance areas such as maternity, paternity and parental leave, continue the reform of the employment tribunal system and make important changes to the law of unfair dismissal. All of these are expected to come into effect by, or during, April 2003.

Some of the key points in the proposed legislation and the new duties employers will face if enacted are:

Maternity, Paternity and Parental Leave and Pay.

Six months' paid and a further six months' unpaid maternity leave for working mothers.

Six months' paid and a further six months' unpaid leave for working adoptive parents.

Two weeks' paid paternity leave for working fathers.

A 60% increase in the rate of statutory maternity pay (SMP) to £100 per week.

Reimbursement of maternity, paternity and adoption payments made by employers.

Changes to the calculation of compensation awards, a widening of the scope of compromise agreements, and a fixed period of conciliation to promote timely settlement of disputes.

Regulations to implement the Directive on fixed term work.

While these proposals still have to be enacted employers should consider reviewing employment policies and/or contracts in all the above key areas earlier rather than later! Future articles will update progress on this Bill and other important changes or provide advice on key employment issues.

PLASA members can contact Clive Payne of CP Associates for further advice - call +44 (0)1582 755182.



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## Big Girls . . .

A blustery afternoon set the scene for an industry five-a-side football tournament in late May hosted by Fourth Phase London. Creative Stages, DHA Lighting, Vari-Lite, White Light and the Fourth Phase team were out in full force for the five hour session.

Fourth Phase were declared the winners, with Vari-Lite as runners up, followed by White Light, Creative Stages and DHA (clearly they're as good at football as they are at stoolball). The team from DHA however, didn't leave empty-handed, being 'compensated' with wooden spoons (presumably because they'll be better at making porridge than playing football). Louise Tester, UK & Eire sales manager at DHA, also received a plaque for being the only female willing to take part! Sadly, for all his pains, Nigel 'the cat' Sadler only got backache, having spent all day picking the ball out of the net!

Mad fool that he is, Fourth Phase's Alan Thomson has promised to repeat the event soon. Our picture shows the winning Fourth Phase team of Richard King, Kieran Crowley, Gary Ashford, Mark Howard, David Thomson and Stuart Ashford with his daughter, Charlie.



## Milos Expands European HQ

Czech Republic-based truss manufacturer Milos has completed its move to a new European HQ near Prague.

The facility has over 90,000sq.ft of production area, fully equipped with the latest manufacturing technology, including semi-automated welding processes. The new facility is one of the largest production centres in Europe, and enables Milos to substantially increase its production capacity and introduce new product lines scheduled for later this year.

## PA\VA 2002

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The conference will feature a series of presentations that will take a wide range of construction, insurance and regulatory professionals through the issues surrounding the use of voice alarm systems in emergency evacuation from buildings and stadia. The Standards that impact upon safety compliance issues will also be reviewed.

Detailed consideration will be given to BS EN 61508 for which a new sector specific version applicable to voice alarm systems is now under consideration. This could revolutionize the way insurance companies and underwriters deal with compliance requirements. The 'Total Systems (Risk-Based) Approach' to safety is set to radically change the obligations of building owners and their advisers.

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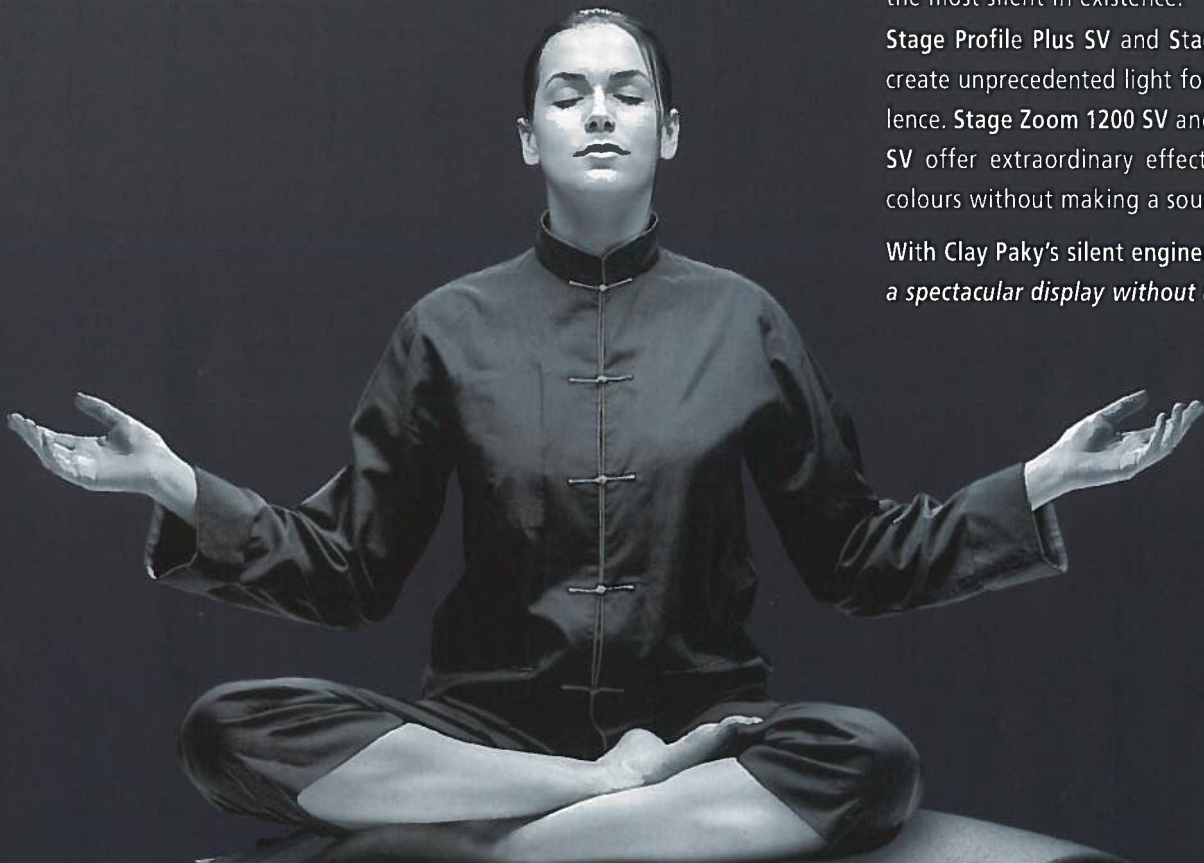
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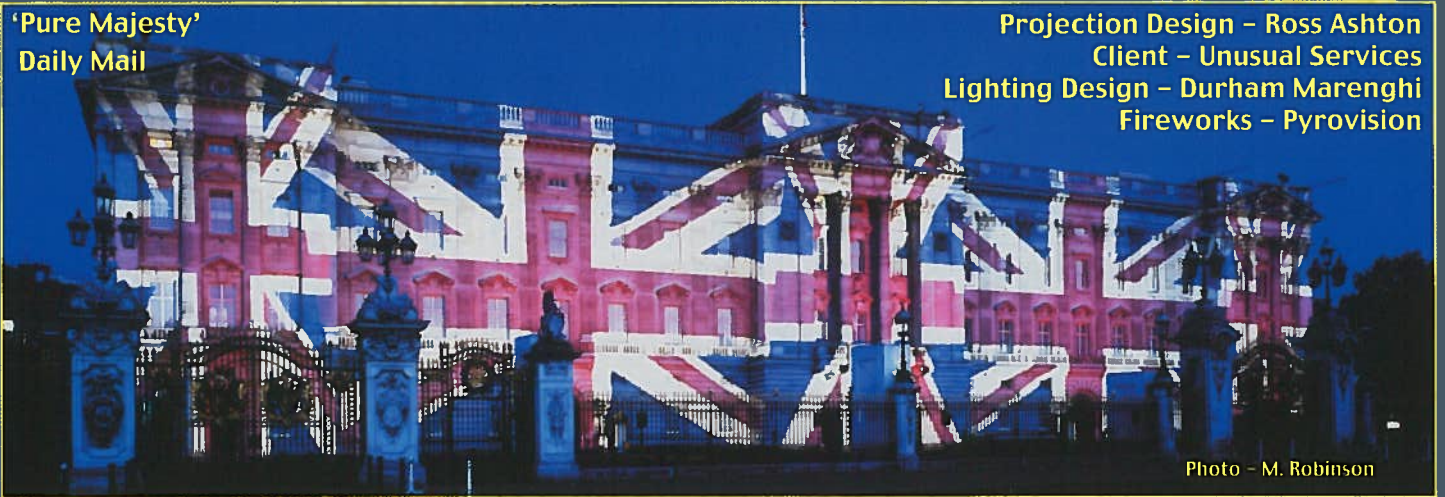


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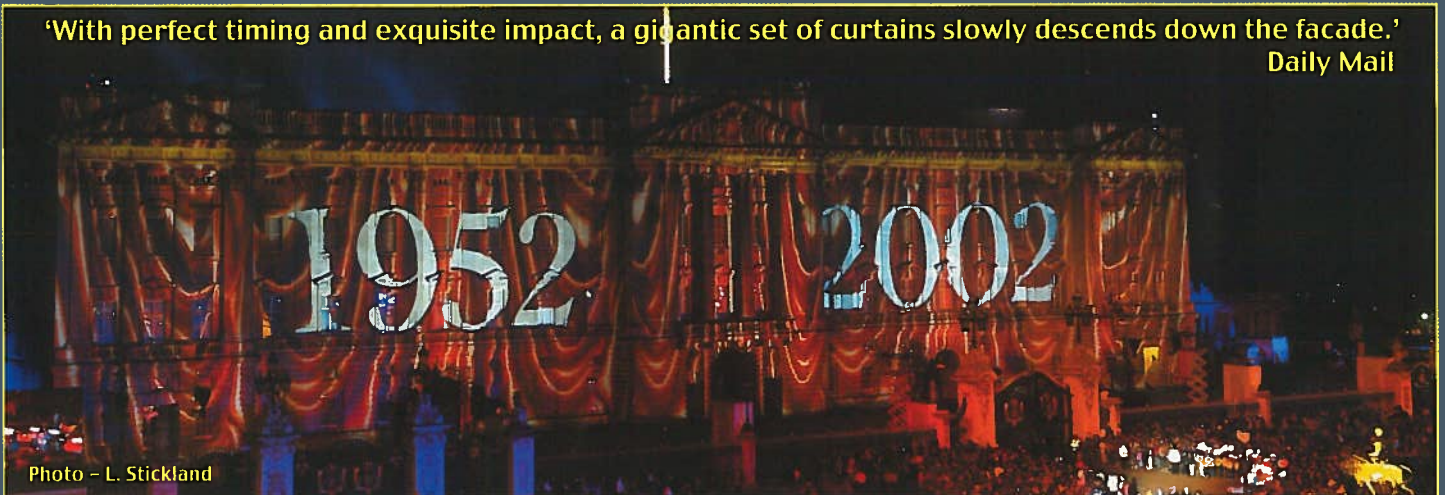


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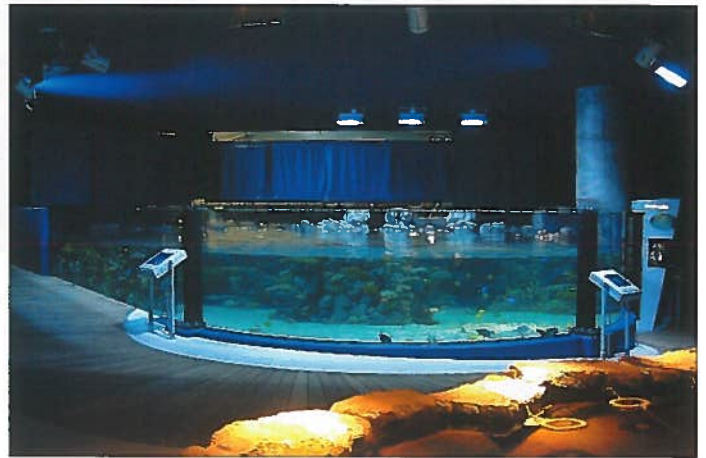


## Into the Deep

The Deep is Hull's £45.5m Millennium project and a central part of the city's regeneration programme. Supported by a grant of a cool £21.5 million from the Millennium Commission, the world's first 'Submarium' has been designed by Sir Terry Farrell and features various aquaria, a business centre, a lifelong learning centre and research facility.



Photos: John Csáky



The venue boasts the deepest water tank in Europe. This, and its 11 other tanks, are home to seven species of shark and thousands of fish. These tanks range in size from the 'Endless Oceans' tank holding 2.3 million litres of salt water to the smaller 'Jewel' tanks which hold just 1 cubic metre. The design consultant for the exhibition was John Csáky Associates, whilst the lighting consultant for the exhibition and exterior lighting was DHA Design Services, with Peter Fordham as project lighting designer. Lighting Technology worked alongside Waterman Gore to provide the 'above tank' lighting, and Electrosonic supplied and installed the complete audio-visual hardware and lighting control system.

The exhibition lighting luminaires spec'd by DHA Design Services include Light Projects ARIII spotlights, Syrett Neon cold cathode built into the networks (predominately brilliant blue), quite a lot of Encapsulite coloured fluorescent lamps concealed within the networks, Malham LED inground uplights, DHA Gecko gobo projectors, iGuzzini ARIII Peroquet spotlights, and a Howard Eaton fibre optic starfield recessed into the walls of the Introduction drum. In the ground floor interactive themed zone known as 'Deep Blue One', Fordham used Martin MAC 250 and MAC

300 moving head luminaires, ETC Source Four Jnr zooms, Light Projects' MRI6 birdie fittings and more of Syrett's brilliant blue cold cathode under a glass floor and in the seating steps. All metal and custom glass gobos were supplied by DHA Lighting. The exterior lighting included T5 fluorescents and a range of Sill Lighting floodlights (with Osram 400W blue metal halide lamps) and beam projectors.

For the 'above tank' lighting, Lighting Technology worked alongside Waterman Gore: in order to create an impression of immersion, an array of 'variable focus' fittings were selected from the Astralux range of marine searchlights. The luminaires range in size from 70W to 700W metal halide fixtures and ultimately 1k Xenon searchlights. Additionally, Lighting Technology supplied a Unison control system to reduce the light output into the pool and tank areas at 'night time'. If all the lighting were to be switched off after viewing hours, the sharks would simply eat all the other fish in the Submarium!

Across the exhibition a detailed roster of lighting, audio and AV equipment is deployed including Fostex 8-channel hard disc audio players; BSS Soundweb 9088s; audio amplification from Cloud and Crown and

Helvar's Ambience Lighting Control. The exhibits also make extensive use of plasma display panels (from NEC) and large LCD projection screens and touchscreens (from Sanyo).

Because of the nature of the environment, Electrosonic decided that the most appropriate system architecture was a central control room, where all source and interactive computer equipment could be housed. Thus, the central equipment is housed in eight rack cabinets within a room that is externally themed to be part of the exhibition. Visitors can see the equipment through 'portholes'. All audio-visual and computer interactive exhibits are networked and are under ESCAN (Electrosonic Control Area Network) monitoring control.

The majority of the exhibits are stand-alone: video programmes are either run continuously, or are provided with a push-button choice of programme facility. However, in the Deep Blue One area of the exhibition, there is a continuous show, which combines multi-screen video with programmed lighting effects. Electrosonic also provided the exhibition lighting control. With the exception of the lighting used as part of the Deep Blue show, all lighting is under Helvar Sceneset control.



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## Life in a Day

A stoic Welshman and a veteran of the road, Rob Collins arguably made his reputation mixing sound for Eric Clapton, but his accomplishments go way beyond Slow Hand.

### What keeps you out there?

"Over the last few years I've worked for bands who take it a little easier, they and the personnel have been really good, that's a big factor in keeping me out there."

### Some good Welsh psychology here.

"Subconsciously I think we all (the crew) help each other out on a day-to-day basis."



### Do you still get that little burst of excitement just before the band go on?

"Yeah, big time. And there's the unpredictability as it's happening. There's no repetition: it's not like a studio where you're working day after day on the same thing."

### After all this time and experience, is there any occasion that really sticks out?

"There's no one special show for me . . . well actually there was one in Paris, with Paul Simon on the *One Trick Pony* tour. Art Garfunkel was in Paris for some reason, and he ended up on stage with Paul. It was the first time they'd been together since the big split; the feeling in the hall when he came on was amazing."

### If that's not an explicit justification for attending live music shows we don't know what is.

"Yes, you're right, in fact now I think about it there's been lots like that. I've been very lucky, Andreas Bocelli, Eric Clapton, Dire Straits, The Who, how can you not have special shows from a list like that?" How indeed.

### And the crap moments?

"Easily as many, but there's one that stands out. I was doing an outdoor show with Dire Straits just outside Naples. Just before the band went on a huge storm came over and lightning struck right in front of stage - luckily no-one was hurt. Everything active on the desk got hit; out of 96 channels of XL3 I had 18 working at the start of the show. And what got hit at the desk wasn't necessarily what got hit at the stage end, so you could have channel 17 OK at the desk, but the corresponding channel on the stage box was bugged."

### Maybe because of his narrow escape from lightning (or lynching by the Italian crowd) Collins is quite philosophical about his work.

"Why am I still here? I didn't really think about it until about five years ago. I'd love to have learned to play the piano . . . and only last week I realised that I'm now too old to play for Wales." Judging by present form they might want to give him a trial.

### Ever receive any really good advice?

"No, but I did pass some on to a chap in the US. We were in a large arena somewhere with Clapton when this guy came up to me and said, 'Hey, I'm studying audio at College and training to be a sound engineer, what advice can you give me?' So I said, train to be a manager at Safeways."

### As you can see, Collins is a joker, but also a kind man who willingly indulges punters who approach the desk. Despite his advice, he's the first to admit it's a great job.

"Oh, actually Geoff Hooper, (one of Collins' contemporaries from his seminal days at Concert Sound), gave me some advice once, when all the new consoles came out. 'See all them knobs there? Imagine they're taps; little bit of water in, little bit of water out'. I often think of that when I'm scrambling for something."

Flippant? Maybe, but Collins is one of the sanest engineers we've met, and by universal approbation, one of the best. You don't acquire a CV like his with cloth ears.

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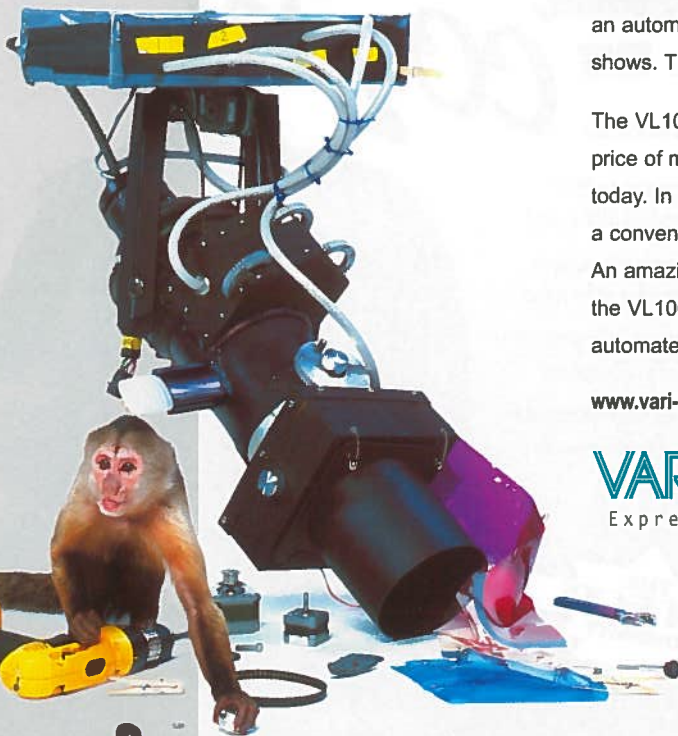
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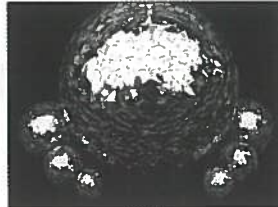
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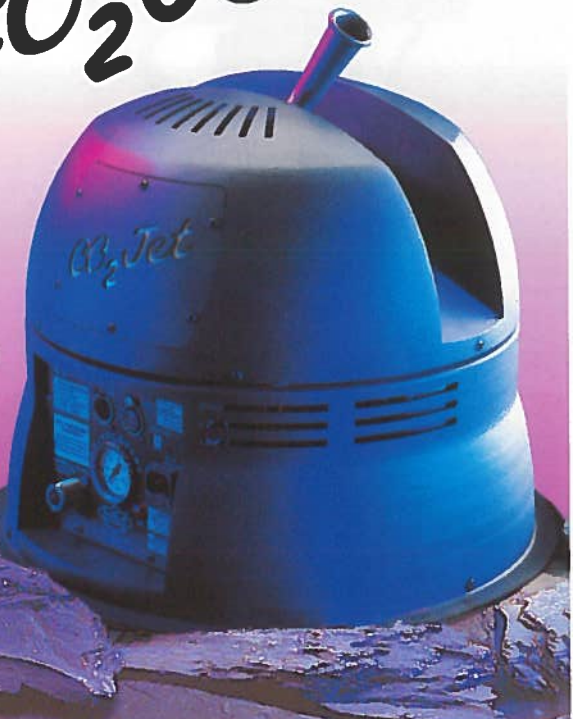
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## Blackpool Odeon Refurbs for Funny Girls

Audio Sound Advice of Blackpool have supplied a complete audio system for the new production of *Funny Girls*, which re-opened recently at its new home in the old Odeon Cinema in Blackpool. The *Funny Girls* concept is to entertain the audience with famous show songs and arrangements, all performed by men in drag.

The refurbishment of the art deco theatre - complete with gilt adornments and deep carpets - included work in the private members club, nightclub, restaurant, main bar and feeder bars.

Audio Sound Advice's Peter Bawden designed the theatre audio system and he and business partner Kevin Jones spent three months working closely with Phillip Holmes, project manager for venue owners In The Pink Leisure to ensure that it met all the venue's needs. (ITPL was founded over 20 years ago by Basil Newby and now operates many of Blackpool's most colourful venues.)

The new audio system is built around Martin Audio speakers, an Allen & Heath 12-channel



Peter Bawden (left) and Kevin Jones (right) of Audio Sound Advice, outside the new Funny Girls venue during its conversion.

mixing console and EV amplification. Martin's EM system has been installed in the bar and restaurant areas, whilst a Wavefront WT3 theatre system features within the main auditorium, with four of the arrayable 3-way compact enclosures at FOH, along with four WT UB compact under balcony enclosures and two WS2A dedicated ultra-low frequency sub bass systems. The WT3s, painted bright gold to match the architecture, have been installed in two pairs on each side of the main stage - one pair to cover the stalls and a pair to cover the balcony area. The WT UBs cover the lower circle and have been painted white.

WS2As have also been installed under the bar, in front of the stage.

Four Blackline F12 full range 12" + 1" multi-angled enclosures have been installed behind the line of sight above the stage, to provide seamless coverage for monitoring purposes. Control is from a Martin dedicated DX1 digital loudspeaker management system and an EMX1A system controller. A pair of F12s has also been installed on either side of the lower circle, to provide coverage between the stage, reception bar and restaurant. Finally, four EM15 ultra compact 2 x 5" trapezoid enclosures have been installed in the bar/restaurant area for low-level background music and announcements.

The Allen & Heath GL2200 controls the main WT3 PA, plus the set of under-balcony WTUBs fed from the group outputs. The GL2200's auxiliaries are employed to provide mixes for the Martin F12 on stage monitors.



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## Sound Dimensions at Expo.02

**Avesco companies Dimension Audio and Creative Technology recently joined forces to deliver one of the most challenging projects they have ever undertaken.**

Dimension provided the audio infrastructure for the giant automated themed pavilion at the Swiss National Exhibition, Expo.02 (May-October 2002), for production company Live Communication. Pip Campbell was lead producer and Adam Wildi was technical director. Entitled 'Empire of Silence', the adventure pavilion is sponsored by telecoms giant Swisscom.

The 'Empire of Silence' project highlights how essential communication has become in today's world. Soundscape designer and Dimension project manager Kevin Swain was handed the demanding audio brief back in July 2001. The solution was to automate the entire exhibit, with a Conductor show control system firing multiple audio cues via MIDI (and interfacing with the Wholehog Piglet desk to send MIDI Show Control signals to the lighting fixtures).

The central audio control device is the RSD AudioBox DSP engine from Richmond Sound Design. The AudioBox is a 16-in/16-out fully

programmable matrix with level and EQ control. Contained onboard is a 16-track, 20Gb hard disk, with eight analogue inputs for external sources - all controlled by MIDI commands. Dimension Audio have used two together, offering a combined 32 tracks - all of which are utilized, and all controlled by MIDI commands, as well as taking signals from external sources.

Included in the scope of the control are a cinema and a number of 28" video monitors, with MPEG2 audio and video databases encoded via Video Kiosk. Dimension take the soundtrack directly off the MPEG server, with all other sound effects triggered from the AudioBox hard disks. A film is shown in the cinema via two Christie Digital X6 Roadies, supplied by CT. As the scale of the requirements increased, a second AudioBox was configured with eight digital and four analogue inputs to run an animated 'silencing machine', with playback through EV S200s.

For Swain, the biggest challenges were timecoding and avoiding sound leakage.



Timecode was from the AudioBoxes' internal clocks: "We designed the sound based on 45dB attenuation between areas, and a huge amount of acoustic treatment ensured separation between rooms," said Swain - no

mean feat, as the cacophony of effects can peak at around 105-108dB. "The other difficulty was assigning sound feeds from the Audioboxes to ensure that we didn't run out of tracks," he said. "We had four tracks running on two MPEG2 servers, plus four live mics and 32 channels assigned from the hard disks - 31 running simultaneously." He adds it would have been impossible without the AudioBoxes, which were purchased from Aura Sound.

Dimension also purchased Martin Audio C516 high-powered ceiling speakers for the project, while from stock they pulled d&b E9, E3 and E18 speakers, plus QSC and d&b amps, Sony radio mics, JBL Control 1s and a BSS 9088 Soundweb, operating between the radio mics and AudioBoxes, for EQ, level control and compression.

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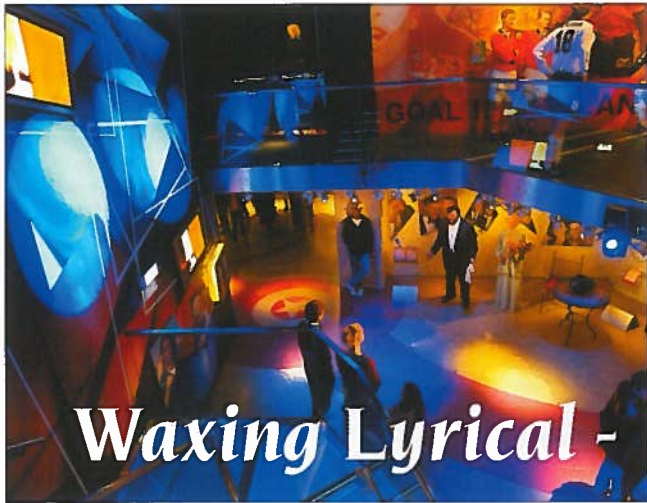
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## Waxing Lyrical -

The famous Madame Tussauds Waxworks exhibition in Amsterdam has reopened following a major upgrade. The £2.6 million project was the first major refurbishment work at the exhibition since it opened in its prime-site Dam Square location in 1991. The entrance area and the fifth floor of the exhibition were completely gutted, and a new mezzanine sixth floor was added.

The new exhibition build was divided into three separate technical areas - lighting hardware, AV and electrical installation (including lighting) - all of which went out to competitive tender. Lightfactor won the contract to supply the lighting hardware, whilst Dutch companies VHS and GTI won both the AV contract and electrical installation contracts respectively. Steve Wentworth - who designed the original lighting scheme in 1991 - came on board again in the same role, whilst John Leonard of Aura Sound created the audio design for the new exhibition areas.



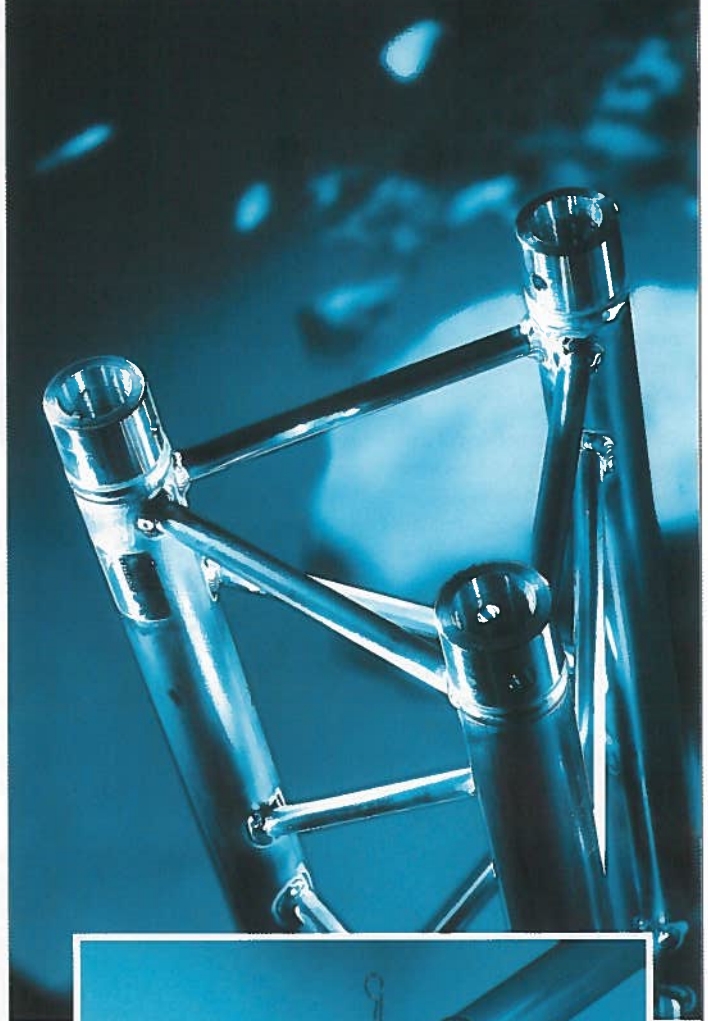
As the exhibition had to be closed for the work to be completed, the pressure was on to do it as quickly as possible, and only 11 weeks was allocated for the installation process. Suppliers, installers, designers and the client therefore all collaborated closely with Tussaud's technical project manager Tim Coucher who co-ordinated the technical specs.

Lightfactor Sales, for its part, supplied the majority of the lighting fixtures for the two new floors and the refitted entrance area. The supply included a wide variety of instruments - nearly 500 James Thomas MR16 Birdies with integral dimmers; MAD ITM moving lights; LDR Tempo fresnels; Optikinetics GoboPro fixtures; customised Thomas Par 36 and 46 cans. These latter are mounted on custom internally-wired bars, also manufactured by James Thomas.

Lightfactor also supplied AVR colour-changing down-lighters and special connection cables, surface-mounted UV fittings, chandelier bulbs and several hundred metres of three-circuit tracking. LightProcessor Power Station II dimmers powered areas where fixtures were not powered by the track. For the entrance area downstairs from the exhibition, Lightfactor supplied ETC Source Four profiles and Pars, mounted on specially fabricated curved IWBs - again supplied by James Thomas to the client's specification. One of the more offbeat touches is the admissions price list in the entrance. This is created by rear-projection onto a piece of frosted glass by an LDR Soffio profile, which uses the Phillips CDMT 150W lamp, containing a high-resolution glass gobo. A High End Technobeam is used for secondary imaging in the entrance, whilst another Power Station II dims the generic lighting in that area.

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## Cats Put to Sleep

The musical *Cats* finally closed its doors on May 11, exactly 21 years to the day after it first opened. The production earned itself a place in the record books, for being the longest running show in the West End.

Since that historic first night in 1981, when the performance was interrupted by a bomb scare and the theatre evacuated, *Cats* is generally acknowledged as the production that redefined the modern musical. It also provided the catalyst for Cameron Mackintosh and Andrew Lloyd Webber to revolutionize the way musicals were put on around the world.

The show was something of a milestone for the technical companies and individuals involved, none more so than Autograph Sound Recording. In 1981 Autograph found themselves purchasing - from new - the entire sound and communications system (something they have not had to do for any other theatre show since). The main components included a Midas TR series theatre console, seven Micron radio mics, which were moved from performer to performer throughout the show, an RTS communications system, Amcron amps, four Martin bass bins and 10 Meyer Sound UPA-1s - the first in Europe. During the course of the show, the sound system went through several overhauls: in 1990 the Micron VHF unlicensed radio mics were replaced with 18 UHF



licensed Sennheiser receivers and transmitters, and in 1994 the Midas console was replaced with a Cadac A-type. All these items remained on the show, along with many of the other original components, until it closed earlier this month. The birth of Autograph Sales is also linked to the opening of *Cats*. Andrew Bruce, now chairman of the Autograph Group, was so impressed with the Meyer Sound UPA-1 that in 1982 he set up Autograph Sales, who took on the European distribution of Meyer Sound.

To mark the show's final performance, live video was relayed from the New London Theatre to a giant screen in the Piazza in Covent Garden. Some 150 former cast members attended. *Cats* is now expected to do a UK regional tour sometime in 2003.

## Pecking Orders

The PSA newsletter recently carried a story to make grown technicians weep. Apparently, staff at Cardiff Theatre were furious to discover that a duck appearing in a play was being paid more than they were. Ming, a two-year old Aylesbury duck, appeared at the Chapter Arts Centre in "The mute who was dreamed". "Ming is getting paid more than our technician," marketing manager Carol Jones told the South Wales Echo, "and he is not happy about it". The duck's high wages have also led to allegations that it is not pulling its weight in the performance and that its acting is not vigorous enough. "When the show was put on in Scotland another duck was used," said Jones, "It was much more macho."

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(photo courtesy of Hugo Glendinning)



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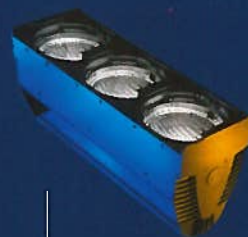
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## O2 is Brought to Life

LM Productions has just completed one of the largest brand launches of 2002 in the UK, in association with Edelman Public Relations.



LM Productions, in conjunction with EMF Technology, provided all the video, lasers, lighting, sound and pyrotechnics for the launch of the new Mobile Communications brand O<sub>2</sub> - the result of a merger between BT Cellnet, Genie and four European countries. The launch was also the first UK outing for Laser Magic's new StratoSphere system.

The London Eye was lit to represent the 'O' part of the logo, whilst EMF's 20m x 40m water screen was used as the projection medium for the '2'. The launch took place on the north side of the Thames, opposite the Eye. A 5W YAG laser beam was fired across the river to the hub of the London Eye; the waterscreen was in the centre of the closed-off Thames and a Barco R12 video projector was used to project the two parts of the logo onto the waterscreen.

Laser Magic's StratoSphere, also situated on a barge on the river, was used as a 360° projection tool for video, with EMF supplying three Barco R12s with a DVE suite for seamless video overlay. A 40W Nd YAG laser was positioned under the Eye, throwing beams up into the sky and across the river. 64 Vari\*Lite VL5Arc washlights lit the Eye in blue, whilst eight Sky Art Searchlights were positioned on both banks of the river.

In addition, LM supplied a live camera shoot with an OB truck and a whole host of other 'live' elements. The flight centre at the London Eye was used as a VIP venue and demonstration area, again kitted out with lighting and plasma screens, together with full edit systems. Live camera work was beamed to the flight centre via a microwave link so that the guests could see instant video replays. To follow this up, LM also had a video crew for live video transmission to all the plasma screens.

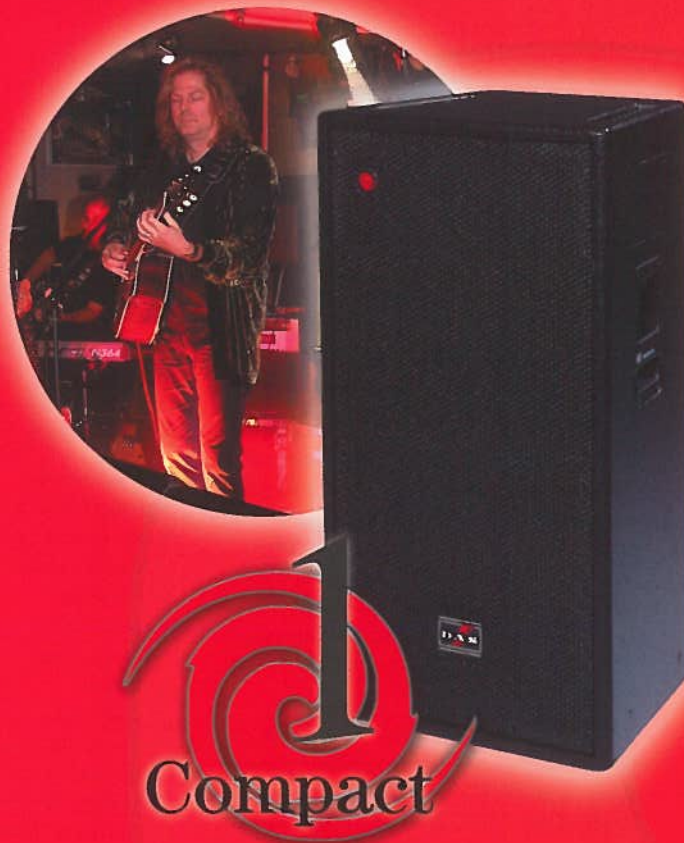
## Vari-Lite Signs Distribution Agreement with Lightpower

Vari-Lite Inc has entered into an exclusive dealer partnership with German distribution company Lightpower, which will allow the company to offer its German customers direct local access to sales, service and support of Vari\*Lite sales products.

Lightpower will offer customers an outlet to purchase the full line of Vari\*Lite automated lighting products, including the Series 2000 fixtures, as well as the recently-introduced VL1000 ERS luminaire, which has received accolades throughout the industry. "The German market is very significant for automated lighting in Europe," said Bob Schacherl, Vari-Lite vice-president of sales and marketing, "particularly with the VL1000 ERS luminaire lending itself to affordable permanent installations. Lightpower is one of the leading dealers in the region and has established a reputation for delivering exceptional service to its customers. The partnership was a natural fit."

The agreement completes a critical link in Vari-Lite's establishment of a worldwide sales distribution network. Partnerships are also in place in Benelux, Denmark, Finland, Italy, Latvia and Norway.

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## Osram Light Studio

Following its recent relocation to new UK offices in Langley, Berkshire, Osram invited L&S to visit its new premises and, in particular, view the new interactive showroom that is set to become the focal point of the UK headquarters.

This is not a 'showroom' in the traditional sense - though its intention is very much to showcase the latest lamp innovations from the company - but more of an interactive experience, hence the name 'Osram Light Experience'. Stretching across over 200sq.m and incorporating a café, light studio and auditorium, the venue can work as a single space or be split into two areas by a 'light wall', allowing different groups to visit the studio simultaneously.

It is clear that the design team from Furneaux Stewart, led by Jane Huggins and Keith Feeney, understood Osram's brief for something out of the ordinary all too well, and have applied their experience to demonstrating the full creative potential of Osram's lighting, based on applications and visual demonstrations.

As a result, the light studio features five totem-style displays designed by the Furneaux Stewart team and positioned within the studio to encourage visitors to interact with the products. These totems - covering Osram's Halogen, Fluorescent, High Intensity Discharge, Photo Optic and Automotive lighting - together with the various panels around the studio, address all the issues that consumers and specifiers care about, including lamp life, heat properties, colour temperature and light quality.

For instance, the Halogen Totem, with Osram's new Halopin lamp at its centre, succinctly demonstrates the trend towards miniaturisation in mains voltage halogen. The same display also features a Halotronic Mouse interface demonstrating the comparative heat distribution of different halogen lamp types.

The nearby High Intensity Discharge Totem focuses on Osram's Powerstar HQI. Using a Pepper's Ghost technique, and images of Huddersfield's McAlpine stadium,

visitors get a graphic demonstration of lamp technology being used to mimic daylight conditions at night-time.

These are just some of the many clever, but very simple, touches. Further product-based panels are integrated into the wall system, which shapes the overall graphic look of the studio. Within this are two rows of five portals offering an immediate comparison of the different colour rendering properties of Osram's fluorescent range.

A stainless steel frame balustrade, supporting custom-made LED edge-lit panels featuring technical icons that glow in the 'Osram' blue, provides the link to the café area. Here, a small lighting rig, supplied by Lighting Technology,



features a range of fixtures - ARRI and Martin Professional amongst them - which use Osram lamps.

For a company that has well over 2,000 different light sources, the temptation to try and communicate everything in the range must have been overwhelming, but to Osram's credit its approach has been deliberately restrained and the display works all the better for it. Likewise, the temptation to stray into 'museum piece' territory has similarly been resisted and the focus is very much on the future, an approach underlined by the displays dedicated to new technologies where the potential applications for the company's new Endura fluorescent lamp and its range of LED modules are clearly evidenced.

If you're interested in lamps - their evolution and their application - then next time you're on the M4 or M40, take a detour to Langley. It'll be an experience.



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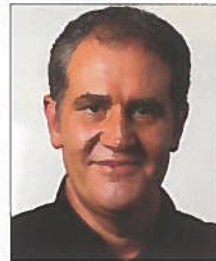


## People Making Moves . . .

The news that stands out this month is that of the departure of **Bob Doyle** and **David Webster** from the Klark Teknik Group. The two have been fixtures at the company for as long as we can remember. Very little information is offered in the official announcement, other than that the two "have left to pursue other interests within the professional audio field." According to Telex EVI's **Mathias von Heydekampf**, recently promoted to President of the Pro Audio Group worldwide, the pair will be missed. "Webby and Doyler certainly had a very charismatic approach to business, and long, successful careers within the Klark Teknik Group and the Telex corporation. Although we are very sorry to see them go, we are pleased to report a strong first quarter with over 30% growth on the same period last year."

On the lighting side, another well known industry figure is making the change. **Peter Brooks**, co-founder and managing director of Zero 88 Lighting, has announced that he is to pursue other consultancy interests and charity work. He will, however, remain as a director and shareholder in the group. In following his management consultancy interests, Brooks intends to maintain close links with the industry.

There have also been senior management changes at High End, with the company adding two new positions to its executive management team based in Austin, Texas. **David Parks** joins High End in the role of senior vice-president, product development. With his diverse background in engineering, operations and finance, Parks will focus on developing the company and its manufacturing processes, and will work closely with **Rick Thompson**, vice-president of operations. With Parks in place, HES R&D's vice-president of engineering, **Mike Wood**, takes on the new role of chief technology officer, focusing on the strategic planning, advanced engineering and selection of all new products and technology platforms. Wood will work closely



Bob Doyle and David Webster - who have left the Klark Teknik Group; Derek West of Rycote; Rob Robinson of Stardraw.com

with High End's Product Development Committee, which drives new product development. He will also maintain the Flying Pig Systems' organization and act as key liaison with **Richard Belliveau** on intellectual property strategy.

London-based sound, lighting and video installation and consultancy company, Live Business International, has just added a new member to its team and re-united the duo that ran the sound at the Millennium Dome. Almost a year to the day after completing his contract at Greenwich, **Gerry Logue** has joined technical director **Roland Hemming** to become Live Business International's technical project manager. Hemming has apparently been trying to get Logue on board for ages, but distractions such as consultancy for the Commonwealth Games and managing a large video conferencing project have prevented the pair from working together until now.

Following his departure from Tannoy last month, **Derek West** has joined Rycote Microphone Windshields as head of sales and marketing. The company, based in Stroud, Gloucestershire, together with sister company Lightwave Audio Systems, based in Vista, California, is a world leader in microphone windshield and shockmount products for both professional and semi-professional use. West will be heavily involved in research and development for both its Rycote and Lightwave brands.

News reaches us that **Richard Wear**, former director and general manager of Celestion International, is returning to the industry with a new recruitment consultancy - Interfacio. The company was formed in January this year to service the recruitment needs of the entertainment and media technology industry. In particular, it will supply the manufacturing, distribution, sales and marketing supply chain within the MI, pro audio, broadcast, live sound, installation and commercial sound industries.

Software provider Stardraw.com has promoted **Rob Robinson** to marketing director. He'll be developing the new business sectors which arise from the company's introduction of new internet-enabled tools and its custom development services which have already proved successful. Stardraw.com has also welcomed two new members to its team - **Frank Walker** has been appointed to handle technical sales in the US, whilst **Francesco Marcolini** takes on the role of web developer.

Lighthouse, manufacturer of giant LED video screens, has recently appointed **David Thilwind** as project sales manager for the Asia Pacific market. Thilwind will be responsible for a variety of areas including major project sales, sales promotion to both end users and architects, technical sales support for regional system integrators and project management. He joins the company from Pilkington Micronics Ltd, where he spent three years as regional sales manager.

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# Catch the Fever

*For a small lass, Kylie Minogue has a huge stage presence.*

*Steve Moles negotiates himself a rare backstage pass to talk with the creative team behind one of this year's biggest productions*



House-lights dim and the music begins. Dark, punchy, relentless, the rhythms swirl and the beat infests this huge arena. Despite the musical overtones, it's not post-industrial - the colours are too rich, the music not dark enough - but it's strong. Slowly, a sleek black chromium-clad phallus penetrates from beneath stage right; the crowd, already in a highly excited state, raise a cheer and clap so hard that for all the world it sounds like a typhoon on a tin roof. Perching somewhere between Robo-Cop and the Oscar figurine, the chromium cadaver (for now we can see it is a body) slowly, automatically, splits open to reveal the elfin figure of Kylie Minogue.

It's an absolutely fantastic opening; it could so easily have looked kitsch, laughable even, and by the end of the third number it's obvious to me there is only one reason why not. If Kylie's star has risen to the heavens in this past 18 months, and if her bank account now groans under the weight, she has spent it lavishly upon her audience.

It's an oft-repeated mantra - don't shoot your wad in the first few numbers, but on the concert stage, mantras, like rules, are made to be ignored. Here is two sustained hours of high-class wad-shooting.

You'll forgive the sexual aphorisms: if I were to draw comparisons, then an obvious choice would be Janet Jackson last year - similar Dance-imbued musical style, similarly sexy star, similar big budget production. What's the difference? One carries the show along, the other is carried along by the show. That Kylie is the former requires immense strength of personality and is a tribute to her.

There are big things here, too much for any one reader to embrace perhaps, but look to your sections below. There are firsts here for production, sound, set and video, and while there might be no new technology on the lighting, its contribution is also significant.

## PRODUCTION

Steve Martin is the man in charge of production - and he's working with an impressive line-up, amongst them Alan MacDonald/Willy Baker (design), Charlie Kail (set consultant), Chris Keating (video), Vince Foster (lighting) and Chris Pyne (audio). "I think we've got a good team. When we finished the last tour, Kylie came to me and said: 'Do you think there's any chance of getting everyone back together again for the next one?' To tell the truth, I didn't really expect to be able to get everyone - maybe it's a measure of the respect they hold for her that they all made the effort to be here."

Credit is due to Martin (and assistant Helen Smith) for running a tight rehearsal that paid dividends on the road. "I've got 30 moving points in the lighting rig alone," commented LD Vince Foster. "Then there's screens, traps, stage gags, not to mention the dancers flying in for the opening. Steve ran it all in sections during rehearsals - technical in the morning, dancers and band in the afternoon. On day one we prepared technical part one, then completed it in the afternoon. On the second day we prepared parts one and two, and ran both complete in the afternoon; day three saw parts one, two and three in the same fashion. It ran very well." So much so that Martin felt able to clear rehearsals a day early and give the production crew a day's break before embarking on the first show at Cardiff. That's a significant gain: so often crews arrive quite knackered at the first load-in, having had an intense rehearsal period followed by a slow load-out as they get their truck packs sorted for the first time.

I pressed Steve Martin further on the rehearsal plan that Vince Foster referred to. "Well, we had a very similar show last time around, just nowhere near as big. Whilst out on tour we realised that we'd rehearsed the band and Kylie two or three times a day with the

production as it built. That meant long periods when they were hanging around waiting for the technical stuff to come together. We determined that it could be done more efficiently with more time for technical rehearsals, whilst not boring the pants off her."

#### STAGE SET

As mentioned, Alan MacDonald is the set designer for the tour, though that slightly understates his role. Charlie Kail is in there too, in his role as set consultant. The set is built by Total Fabrications (TFL's Neil Darracott being the controlling force in getting from blueprint to set cart) while the various lifts and traps are from Brilliant Stages and Steel Monkey respectively - all three suppliers being marshalled by Kail.

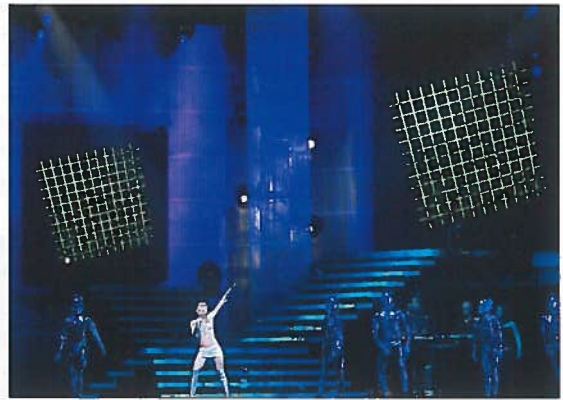
The stage is based upon an 18m by 15m platform, in this instance a rental item - TFL's Arena Deck, rolling version. "We've developed new extrusions," explained TFL's Darracott, "which means the stage can be configured in more complex ways, without diminishing the basic simplicity of what is a stage system comprising just four parts. We originally designed Arena Deck to be idiot-proof, hence just four parts to the system, and it's only possible to assemble it in the correct way. For Kylie, the multiple stage traps and Brilliant's excellent electro-mechanical lift need to be very securely integrated into the

*Alan MacDonald's set has drawn praise from all quarters.*

stage. Previously, that would have been achieved with custom parts, now we can do this with the new adaptable extrusions."

Which all sounds rather cosy, and maybe one reason why the rehearsals ended a day early, as Steve Martin commented at the time: "Alan's set looks fantastic, makes Kylie look fantastic, and it fits together a treat." Which makes a refreshing change from the usual production manager bleat of 'stage sets being completed in situ during rehearsals and causing delays.'

What of the design itself? Kail was effusive: "Alan MacDonald has done his first design - it's beautiful, it's abstract, and yet he hasn't broken any of the rules. This set hasn't been difficult to build, and it's well conceived for touring." In essence, the stage comprises four staircases that intersect asymmetrically, approximately mid-stage, and there's an enclosing back wall of perforated metal (more on this later) with sections of XL Video's Barco LED screen integrated to the wall upstage left and right. It sounds simple, but looks can be deceptive. 'Architectural' and 'minimalist' are two frequently over-used



adjectives which, for once, are not misplaced. MacDonald's simple canvas of stairs and wall gives him ample opportunity to paint and re-paint, image upon image.

"Willy Baker and I work together - we talk through ideas - and once we'd defined how the set would be in the seven different sections (Metropolis, Clockwork Orange, Crying Game, Street Urban, Death in Venice, Cybertronica, and the encore section), we looked to the choreography. Choreography is the big work; we wanted to make this a modern dance piece, more operatic than a rock show. Having the set pieces going up and down makes for an ant colony scenario." MacDonald's reference to the three flown LED screens on the front truss as 'set pieces' is accurate, in that he uses them as stage flats to

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redefine, to shape, or just influence the look of the stage. "That's all important as the stew for the show."

MacDonald's background is highly relevant to the character of the Kylie set: "I spent 20 years doing art and set design for Pop videos and more recently I've been doing that for feature films. Because I have no

enthusiasm hasn't waned. "Alan MacDonald produced a model of the set last November. I then created a CAD version in 3D which helped him and made it easier to edit." Being able to extrapolate 3D drawings from a photo underlines the essential simplicity of the set. "Fundamentally, little has changed since then, just the odd step taken out of the staircases. We - that's myself,



### ***Moles on Minogue***

***I'm a cynical old lag who visits maybe 4/5 concerts a month; this is a two-hour show and yet it was 90 minutes before I looked away from the stage to check the crowd reaction. Even then what I found was many still slack-jawed in amazement. Without question, this is the most visually entertaining show I've witnessed in 10 years of scribbling.***

background in rock, I could break certain rules, but I still understand the machinery. I'm not daunted by it." But with no previous history in rock, were there others who might be daunted? "Kylie's management didn't know me at all, so yes it was a great leap of faith on their part." But there were connections: "I'd been friends with Kylie and Willy for about five years, and they both thought I was right for it."

MacDonald is nothing if not modest about his achievements and he quickly acknowledges the co-operative spirit of the venture: "It's a combination of talents - myself, Kylie, Willy and Steve Anderson, Kylie's musical director. We started with many influences and drew up a list of songs and films that inspired us." MacDonald, it should be noted, filled the gaps in his knowledge base by assiduously visiting arenas to check view, scale and perspective. "We commissioned Blink to develop two hours of original video for the show as there is no live footage on the stage screens." There are, however, two live IMAG screens flanking the stage. Like everything else in this show, they too present something quite different in terms of 'live footage' - as we'll discover.

"The video is primarily scenery - it's moving wallpaper." Is there a good bit? "All of it, the fact that it works. The fantastic thing is that once you put Kylie in there she gives the whole a quality of mystery." It's a subtle distinction: essentially the Kylie set is not in realisation a great shift from many we've seen before, neither in terms of its mechanics, nor its form. But the complete integration of MacDonald's vision of set, scene, dance and music, and his inherent filmic vision, makes the whole greater than the parts.

### **LIGHTING**

I well remember Vince Foster waxing lyrical about the pleasures of lighting a Kylie show last time around. His

Charlie Kail and Steve Martin - suggested the 18m by 15m basic stage, and originally I did propose a 25m thrust into the audience, but the seat kills saw that reduced to 10m."

"Once we'd to'd and fro'd with the model, I began to play with the trusses. I wanted the option to light the set from anywhere so that lighting wouldn't be an issue. We discussed materials for the back wall - a chrome finish was suggested but it's my experience that unless you can light it straight on, it looks dull. With audience to the sides, front, and up high relative to the set, we'd have had to light it from every angle. The alternative brushed finish on the perforated metal sheets has worked perfectly." Foster also suggested UV paint treatment to the back wall, which was nixed, but UV did find its way onto the stage floor which has the potent effect of making the four staircases that define the stage really pop out.

"Being the show it is, and the shape it is, I decided early on to eliminate house followspots. I'm sick of house spots bouncing off the set, so I've got three 2.5kW Juliats about 35ft out from stage and 45ft up in the air." Foster gave a ringing endorsement for the Juliats, provided by Neg Earth, who service the whole rig. He singled them out for their power and brightness, "a relatively small lamp for its power, easy to truss mount. There are other advantages: you don't lose a man out in the house with a flotilla of Super Troupers and intercom gear for a day, so from a purely technical point of view it helps contain the show.

"The other big consideration is the dancers: I've lit a lot of dance shows recently and you need heaps and heaps of front light. I was determined that, if at all possible, I wouldn't do that with lots of Pars." Though he did have a substantial number on the front truss at rehearsals, he quickly found ways to dump them. "Fortunately, I have the luxury of using all the lamps out over the thrust, and they're at a 45° angle relative to the target, much less acute than the angle from the front truss.

"When I first pre-programmed the show proper I didn't touch the front truss or thrust lights at all; then when the dancers appeared at rehearsals I watched them while Rob [Gawler, Foster's show operator] ran the basic show. I noted all the dance positions and wrote a script for their lights; it was very apparent there was plenty of light to cover the dancers, I knew even then I could lose all the Pars."

Some elements of MacDonald's set proved a touch more problematic. "I had 10 Studio Beams on the front truss, and another 10 on the T truss above the thrust which was more than enough front light. But with three LED screens on the front truss dropping in and out throughout the show, there was obviously going to be some interruption to the beams from the thrust." Rather than lose all that thrust light when the screens are in, Foster surreptitiously dowses only those that will hit the screens; add in the classic dance light, shimmers with three Studio Beams each, and he's well covered. "For back light I have three six-lamp bars of CP61s in an arc mid-stage, all with Wybron changers - with over 20 colours they're the only ones worth considering."

One of Foster's trademark effects runs on this battery of Pars: "I ripple the colours through the lamps, using a variety of lavenders, reds, purples and greens," meaning a variety in each colour group, and in a tonally darkening sequence. I programme them all together at



first, then off-set them, lamp to lamp, to produce the ripple. It's easy to do with a Hog. To produce the colour changer sequences with a chase would require programming in maybe 60 to 70 steps to build, but with the Hog it takes seconds, and you can adjust the run in real-time. You can even do the same thing with the Studio Beams." Watch carefully, for he never overplays his hand, and you'll see these peel-off sequences appear throughout the show.

As noted earlier, there are seven major sections to the show. "With Alan having such defined ideas, sometimes colours too, I've tried not to over-power in any one department - the last thing this show needs is gratuitous lighting. Sometimes the

performance and dancing is so strong that I just light it, I don't feel compelled to prop it up with lights and effects, because very often it doesn't need any propping up." So it is that Foster's lighting is often static, though the viewer is still smitten by animation on stage, from the dancers, Kylie herself, the video most potently, and the set.

#### VIDEO

As already mentioned, the use of video in this show falls into two distinct and quite separate groups; the ineffable Chris Keating runs a live section, feeding stage action to screens either side of main stage, while Marcus Viner and Tom Colborne provide two hours of pre-recorded footage which feeds the five Barco DLite screens around and above the stage. It's important to understand the only unifying bond that ties these two is equipment, all of which is supplied by XL Video; that apart they exist as separate entities.

Viner and Colborne are from Blink TV and they were commissioned by MacDonald to produce the footage for the show. "The significance of what's been produced is down to communications," Viner informs. "Alan and Willy had a very clear idea of what was wanted."

The four men began discussions three months before the finished article was required, an immediate indication of MacDonald's understanding of the medium. "The deadlines were tight, but Alan's prior experience meant he knew what we were talking about. He had a realistic expectation of how long shooting and post-production would take. We had many meetings and all four of us got on really well - having that common language meant that there was instant trust. So often with a client they don't really know what it is they want. This, conversely, was absolutely gratifying because they had such a clear vision."

What's relayed to the screens falls into three camps: animation, what appears to be Kylie live action, and what Viner refers to as the John Mabury section. "The animation was all handled in-house. Jason Hartigh is our regular animator - we relayed the instructions from the brief to him, at the same time producing a storyboard for Alan and Willy. "The footage of Kylie is shot by John Mathieson (check the credits to *Gladiator*) and then lip sync'ed to the music. Again, we were very lucky, Mathieson is a friend of Alan's and was a joy to work with. He made it easy. Mabury is a video artist: he produced that classic video for Sinead O'Connor for the Prince song, 'Nothing compares 2U'. He produced the weird, abstract and funky visuals as used in 'I Feel Love', for example. This is where Tom and I really went to town on the editing side."

At this point it should be explained that Kylie's musical director Steve Anderson was also in the video loop. "Steve kept us constantly updated with live tracks as the band rehearsed and if musical arrangements

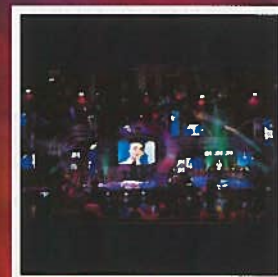
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Kylie was recording for a live album, a DVD and making a live WEBcast via the Microsoft Network (MSN) on the third and fourth nights at the Manchester Arena. In a measure of his recognized abilities, Chris Keating was given free rein and called in 15 cameras - obviously Keating is a stranger to fear.

changed, then he supplied new recordings. With the Mathieson 'live' footage lip sync'ed directly, and the rest of the video tied to the music, that source of accurate material proved essential."

Whilst that might sound a self-evident necessity, the end product, run directly to the live music via MIDI, points out how effective the link between the two can be. Watching Kylie on stage while the images on the LED screens show her elsewhere - but perfectly in time - is distinctly surreal. So too with the way the animations and Mabury's abstractions link to what's being played, the connection is emphatically visual but askance rather than obvious and direct. In essence, the viewer has to work harder to make the link, but in so doing is more engaged by the process.

Viner concludes: "If I could use one word to define why this all works, it's communication. And if anyone had the complete vision of how it would work in the context of the show, and could communicate that, it was Alan."



For Keating, the demands of the show were quite different: "This is straightforward IMAG for the audience in the far seats," he said, self-effacingly. Not that that has prevented him from producing something quite different from what we're used to seeing from such a role: "You should check out what Chris Keating is doing," said production manager Steve Martin without prompting when I first arrived at the gig. "To say it's reinforcement is an insult. It's beautiful to see." And Martin is not alone in this opinion.

"I've got a four-camera package," Keating explained, "feeding the same image to each

side [Barco 9300s paired on each screen]; one camera FOH, two in the pit, and one hand-held on stage. What makes it complex are the amount of shots going on on-stage." Meaning the amount of action that warrants attention from a lens: "That's why we're using four cameras; the shots come from everywhere. It was a good decision of Production's to bring us in from the start of rehearsals - often we're working as an extension to the dancers."

Once more that completeness of vision proving the key, as Keating admitted: "Willy Baker wanted to bring across that this is more than just someone singing. Although Kylie is the 'money shot' I'm making it more content-based." A factor that makes Keating's job simpler because of its liberating effect. "It's easier because I'm not having to constantly look for new ways to get that money shot: I said to the camera men, 'think of yourselves as dancers'. That way we produce more of a true representation of what's happening on stage." That's not to say that Kylie isn't frequently up there as the main image, but the way Keating and his team constantly find new ways to arrive at destination Minogue is refreshingly different from the more usual force fed close-ups that characterize concert situations. The visual experience has more in common with watching television drama, where information and understanding are pivotal to the shots we see: that's fun and different.

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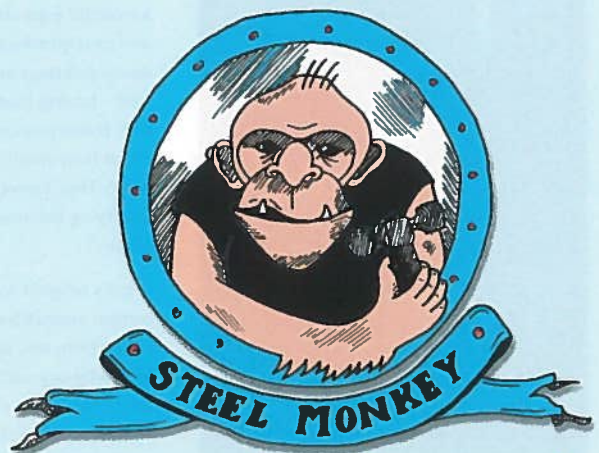
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## SOUND

Chris Pyne is a new name to these pages: a fellow countryman of Minogue's, he might be new to the UK, but he's by no means green. "After 23 years on the road she is without doubt the easiest person I've ever had to deal with," he said, by way of introduction.

Pyne is using a Meyer line array supplied by Capital Sound, composed of M3Ds with M2Ds hung beneath in the near down-fill role. This is the first time anywhere that this combination has been used, but more on that later - first of all, the artist and her music.

"The whole band are on an IEM system, and have been for the last two years," a factor Pyne attributes to monitor man Rodney Matheson's powers of persuasion. "Rod took them into the fold. He's technically fantastic, and he's diligent. It's one thing to get an entire band on in-ears, but to get them all to lose their back line as well . . ." a reference to all guitar and keyboard amps being firmly ensconced below stage in isolation boxes, "or foam-lined flightcases as we like to call them." Don't you just love Australian directness?

"This does mean you can crank it right up and there's no problem. Gain before feedback is huge." Pyne then goes on to explain just how lucky he is on that front. "For such a diminutive artist she is incredibly fit; she has a great voice, one of those things that's stayed with her since the old days [meaning Neighbours]. She's always invested time working with a voice coach and she sees it as part of the job, always has."

That said, she does have to dance a lot on stage - doesn't she lose some projection? "Hardly at all, it's usually at peak power. She's



particularly strong in the upper mid range which is one reason why I've chosen the Neumann condenser microphone. It's flatter and even, and, combined with the Sennheiser radio package, is the best." Pyne did admit the tour has a deal from Sennheiser, but his endorsement was audibly sincere - half-truths just don't feature in the Australian vernacular.

"There are eight channels of sequencer, as well as all the band sends. Couple that with the musical style - predominantly dance/club oriented - and it all sounds very dense. Steve Anderson and I spent a lot of time on balancing and EQ in rehearsals; truth is, there's not a lot of room in some of the songs so you have to get it right to make it work."

The tools Pyne alludes to in this role include the Drawmer Power Gate 501s: "These have an EQ channel so they're very useful, especially in lifting the kit when it isn't cutting. I've also got the new TC6000, the flagship of reverbs, four stereo reverbs in one device, great." No surprise to discover it's assigned to Kylie and backing vocals.

One unusual intruder to the rack is a Sherman Filter Bank: "It's an analogue piece of synth' equipment, mainly used by studio musos. For one particular song I patch the entire band through it, run a low pass filter across it, the effect is to slowly take all the top-end off." Used for the song 'Love at first sight', this peculiar treatment is exactly from that process Pyne outlined, where Anderson indicates a particular effect that keeps the live replay in line with what the musicians are trying to achieve on stage.

As for the system: "With this PA - and bear in mind this is only our fifth show - it changes venue to venue. New PA, and new

configuration. The thing I've particularly noticed is it's typical Meyer - what goes in certainly comes out. So there's an element of learning to control it all. The refining process is still to be overcome." In walking the hall there were indeed some very 'shouty' areas, though I found them in the minority. But this was a complex hang with a combination of M3Ds and M2Ds in two distinct hanging positions either side of stage, an acute off stage axis L-Acoustics Arc cluster, plus Meyer UPAs at the sides and UPM2s across front stage, and that's not forgetting the various subs.

## CONCLUSION

On balance, and although many strongly sexual allusions are made by the creative team to define the show, the overwhelming sense is one of glamour. And that's glamour as personified by fifties Hollywood, all lip gloss - lavish and lustrous. "Making this tour bigger was not a problem," said Steve Martin, "that's easy. It's making it better that counts."

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If you open up the following URL - <http://www.artisticlicence.com/appnote009.pdf> you will find an application note proposing an alternative method for controlling the intensity of LEDs by frequency modulation. In a message at the foot Wayne Howell of Artistic, says: "The purpose is to ensure that, through publication, this technique cannot be patented by others."

**IN OTHER WORDS**, Howell has most effectively established this technology as prior art, thus putting the technology firmly in the public domain. (Nevertheless, I am sure Wayne would be the first to suggest that you should seek clearance from your patent attorneys before committing to this system, especially if you plan to sell in the USA.)

**IN ESSENCE**, this is Howell's revenge, having partially lost the battle to prevent Color Kinetics from being granted a European patent for its hybrid application that combines the use of LEDs with control by Pulse Width Modulation (PWM). Following third party observations from

Artistic Licence, the claims have been amended in the European application so that they are restricted to: "Illumination apparatus that contains LEDs together with a controller that generates PWM signals". Of course, that was the core of the claim all along, although the changes do eliminate a whole host of peripheral claims that were previously allowed in America.

**THE APPLICATION** can now be expected to proceed to grant as European patent 1016062. I

am advised that once the patent is granted, any third party can file an opposition within nine months of the grant, though the patent will have been considerably strengthened by having survived this attack.

**THERE WAS CONTROVERSY** at LDI a couple of years ago when Color Kinetics, the US company that has built a business out of LED fixtures and control, used their US patent as a blunt instrument to prevent a number of exhibitors from going forward with LED-based products, alleging infringement of intellectual property rights. Subsequently, CK has become a serial patent applicant, raising millions of dollars from investment banks in the process. The question now is, will one of the big lamp manufacturers, with all their vested millions in LED technology, take up the cudgels?

**UNDER THE HEADLINE**, 'Boy Takes Swing at US Patents', I learn from the New Scientist of the boy who has been granted a US patent to protect a new method of moving a child's swing. The patent covers moving a swing from side to side or in an oval pattern. "Children can get bored by swinging back and forth, or by twisting the swing to make it spin," the patent says.

**"A NEW METHOD** of swinging on a swing would therefore represent an advance of great significance and value." The boy's idea is to pull on one chain at a time, so the swing moves towards the side being pulled. It is no surprise to discover that the applicant's father is a patent agent. This ranks alongside the toasted sandwich as one of the more absurd patents to be granted by the US Patent Office - no wonder it is overloaded.

Here in the UK, it is always slightly embarrassing to admit that you actually watched the Eurovision Song Contest. We tend to be very cynical about it, whereas elsewhere in Europe governments fall when their national entries do badly.

**HOWEVER**, this time round I had no option, with 15 Catalysts doing their stuff. Actually, I thought it was an excellent production (he would say that wouldn't he?), but then I expect John Watt is slugging it off in this very issue in his adjacent column. Anyway, here's a nice little anecdote courtesy of my mole in Tallinn . . . As you would expect, there was considerable stress getting the show together with the usual time constraints and everybody getting tired and emotional. Consequently, one of Spectra Lighting's techs decided to take a refreshing shower to perk himself up, or so he thought, until he awoke sometime later having flooded the entire bedroom. Apparently, a certain fleshy part of the anatomy was blocking the plughole!

Here's a good news story: Luminar Leisure, the discos-to-bars outfit that includes the Hippodrome and Camden Palace in its estate, is growing out of its boots. It is by far the biggest operator in the UK and turnover has grown 50% to £360.4m while pre-tax profits are up 58% to £69.6m. That's not bad going by any stretch.

**LUMINAR's** ebullient chairman, Steve Thomas, used also to be chairman of BEDA, the association that represents owners of night entertainment venues . . . which provides a tenuous link to the following. A couple of weeks ago, my company received a mailing which was an attempt to persuade us to exhibit at Leisure Week in Birmingham, under the pretext that this year it was being sponsored by BEDA. All I can say is, I know this show - whatever possessed BEDA to do that?

It didn't take Coe-tech's Ian Brown long to dust himself off after his company's rather unexpected parting from Coemar, which it had represented in the UK for many a long year. Brown plans to fill the gap by taking on the exclusive representation of Robe, the Czech company that has been an OEM maker of other people's products for some time, but has now turned from gamekeeper to poacher, with their own range of products. Robe previously made products for TAS, Futurelight, Sagitter and others. Coe-tech already sells Futurelight products as well as Studio Due.

Finally, a word to the wise (or should it be the unwise?) Bill Gates may give vast sums of money to charity every year, but that doesn't mean he is going to give any of it to the likes of you and I. So the progenitors of the recent snowstorm of Email 'It must be true, it was on the news', pay heed. Actually, I thought all of that had gone away months ago, but . . . wrong! Out of respect for one of our most highly regarded industry veterans, as they call them in America - I am naming no names.

"The question now is, will one of the big lamp manufacturers, with all their vested millions in LED technology, take up the cudgels?"

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# technical focus

technical editor:  
James Eade

Covered this month are various topics including the status of the self-employed, counterfeit lamps, new developments for tungsten filament lamps and new patents from Color Kinetics. The main review takes a look at the new standard for DMX512, due out for public consultation in the next few weeks.

## SELF EMPLOYED?

The PSA has been looking at the status of self-employed people versus what the Inland Revenue considers PAYE status. It makes worrying reading, both for those who are traditionally considered self employed and their employers.

There is also a note on terminology: Freelancers are classified as those who supply services to a number of different clients, and can be taxed on schedule D or PAYE depending on their circumstances. The self-employed are classified as follows by the Inland Revenue: 'The tax rules for self employed people are designed to reflect the day-to-day transactions of the true risk taking entrepreneur. Genuine self-employment is about being in business on one's own account and not simply applying a label of self-employment.'

Essentially, to be classified as self-employed you and the company employing you must treat you as a contractor, rather than a temporary worker.

As an employer, taking on staff on a daily basis at a fixed daily rate is pretty much tantamount to them being PAYE employees in the eyes of the Revenue. If they deem this to be the case, then employers will be liable for Employers NI, Holiday Pay and possibly statutory sick pay - backdated. The resultant bill has already sunk at least one company in the business.

One of the tests for proving self employment is whether the person in question can make a loss as well as a profit, and accordingly whether there is any element of business risk. Also, production companies must accept the right of a self-employed contractor to pass on the work to a third party, as well as their right to cancellation fees.

All in all, it is an uncertain situation, and one which is definitely ready to trap the unwary. Best advice is sought from the IR35 and IR56 regulations issued by the IR. The IR website has more information on differentiating between employed and self-employed and what it means to us all. As the PSA quite

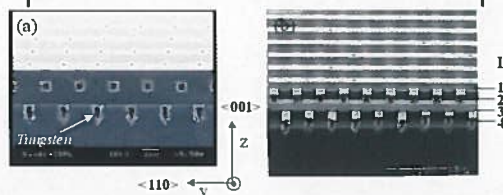
rightly points out, this has major ramifications for employment status within our industry, not to mention the potential tax burdens. To that end, the message is 'spread the word' and inform as many colleagues as possible. They also have a draft contract on their site for the use of freelancers to help ensure that a freelancer is classed as self-employed. Being sent a purchase order for 'X number of days at Y daily rate' is the quickest way to end up at the gaffered end of the Revenues fingers!

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## NEW LEASE OF LIFE FOR BULBS

With all the recent commentary on LED technology and their likely replacement of filament bulbs for many applications, it seems that a recent discovery may have given the humble old tungsten filament lamp a reprieve.

The invention of scientists at Sandia Labs in the US, Tungsten Photonic Lattice Filaments (TPLF) cut waste heat energy from 95% down to 40%. The filament structure acts as a bandpass filter, only allowing light in the visible spectrum to pass through. Infrared and ultraviolet wavelengths are trapped inside the lattice giving rise to higher energy levels. This higher energy gives rise to more light being emitted.



*Images of a Sandia 3-D tungsten photonic crystal, taken by a scanning electron microscope. The images taken with and without oxide are shown in (a) and (b), respectively. The 1D tungsten rod-width is 1.2 microns, the rod-to-rod spacing is 4.2 microns, and the filling fraction of tungsten material is 28 percent. The spacing of the rods acts to transmit certain frequencies of light. The structures show great promise for converting heat to light.*

SAD, BUT IRRESISTIBLE . . .

"Q. HOW MANY TECHNICAL SUPPORT PERSONNEL DOES IT TAKE TO CHANGE A LIGHT BULB?

A: WE HAVE AN EXACT COPY OF THE LIGHT BULB HERE, AND IT SEEMS TO BE WORKING FINE. CAN YOU TELL ME WHAT KIND OF SYSTEM YOU HAVE? OK. NOW, EXACTLY HOW DARK IS IT? OK. THERE COULD BE FOUR OR FIVE THINGS WRONG... HAVE YOU TRIED THE LIGHT SWITCH?

Unusually though, said scientists don't actually know how it works, they just know it does. Apparently, "It's not theoretically predicted. Possible explanations may involve variations in the speed of light as it propagates through such structures."

Should such technology finally reach bulb manufacturers the results would be well received within the industry - cooler running lamps would result in fewer burned gels and fewer burned fingers when focusing for a start!

## AND ON THE SUBJECT OF BULBS . . .

It's been brought to our attention that there is a growing market in fake lamps, with Osram and GE being the main victims. Apparently, some wholesalers are knowingly handling dodgy goods and could face legal action. The fakers have corrected all their typing mistakes on earlier batches and there is not much to tell the counterfeits from the genuine article in some cases.

Osram has admitted that affected brands include MR16 tungsten halogen bulbs branded Decostar. In addition, fake Osram HPI-T metal halides are now appearing. GE issued a statement in March for their blister-packed GE-branded Biax 2D CFLs, highlighting that they only use date codes starting with three, four or five dots and not six as used by the fakers. (The date code is found on the tube under the model information). However, this

mistake has been corrected and the perpetrators have even upgraded the packaging and GE logo. Apparently, the easiest (and most expensive) way to distinguish real from imitation is to break them open and look inside, where the differences are more obvious.

Suffice to say it is worth checking the authenticity of your stock, particularly MR16s, which are quite common.

## LIGHTING PATENTS

Color Kinetics are having a busy time with the world patent office (see also this month's No Comment on page 40). One of their latest brainwaves may be of concern to those who wish to control LEDs (light emitting diodes) via some form of audio input. Titled 'Method and apparatus for controlling a lighting system in response to an audio input', it is unclear so far what actual claims are made in the document, but suffice to say the abstract makes for interesting reading. In the first instance, it covers 'Methods and apparatus for executing a lighting program to control a plurality of light emitting diodes (LEDs) in response to at least one characteristic of an audio input'. It goes on to cover other embodiments, such as "... control signals for the LEDs are generated in response to a timer and/or input from a user interface, as well as in response to the at least one characteristic of the audio input.' In other words, don't program a chase to trigger off the bass line.

And so the embodiments go on. "... a GUI [Graphical User Interface] is provided to assist in authoring the lighting program," or "... the audio input is digitally processed to determine the at least one characteristic."

Not wanting to be really alarmist - at first glance this is bad enough - but for those who do synchronized shows, are not EBU and SMPTE timecode both digital audio based signals?

L&SI will of course keep readers updated on this situation, including the patent status which is unclear currently, but if you have a vested interest in LED control it might be worth bearing in mind.

## MORE ON IGBTs

Fairchild Semiconductor has released a new series of smart power modules in DIL packages. Compared to discrete IGBT designs, the integrated modules require less board space whilst providing low voltage control and high power outputs - up to 20A at 230Vac. Using a ceramic package, 27% higher power ratings can be achieved than with a conventional TO-220F package.

**"TO GET THE BEST RELIABLE INDICATOR OF DATA INTEGRITY ON THE CABLE, INVEST IN A DMX TESTER . . . BEWARE, THOUGH, THAT THOSE CARRYING OUT CABLE TESTS OFTEN ONLY CHECK THE CONTINUITY OF THE CABLE - AND DO NOT PERFORM A PROPER DATA TEST."**

➤ **QUESTIONS & ANSWERS - PAGE 44**

The high voltage control circuit allows the IGBTs to be driven from a single bias supply and eliminates the need for opto-couplers. In addition, the IGBT current sensing circuitry provides highly effective short circuit detection and protection.

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

## AUDIO ADCs



Cirrus Logic has unveiled a pair of analogue-to-digital converters targeted at professional audio applications. Offering analogue performance of 114dB dynamic range and 105dB total harmonic distortion plus noise, the devices have 24bit resolution and support sampling rates of up to 192kHz. Whilst the devices are compatible with the next generation audio formats such as DVD audio, applications are expected to include digital mixing consoles and multitrack recorders.

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

## DIGITAL VIDEO RECORDER

Those involved in CCTV will be interested in a new hard disc recorder from Stortech Electronics. The ruggedised colour video recorder was originally destined for such environments as commercial vehicles and buses.

Using high resolution wavelet compression, the 20Gb hard drive can store up to 12 hours of material at a PAL maximum of 25 frames per second. Other recording modes are available, including a slower three frames per second mode giving up to 100 hours of storage. The unit commences recording within 10 seconds

of power-up, and images are all date and time stamped at the top. Being hard disc based, it also retains all information when turned off.

[www.stortech.co.uk](http://www.stortech.co.uk)

## HARMONIC REDUCTION

Manufacturers of lower power equipment may be interested in recent additions to Vicor's product range. The MiniHAM and FARM3 are units designed to act as passive harmonic current attenuators, at powers of up to 600W.

With the addition of a few extra filtering components the designs provide full compliance to: EN61000-3-2 Amendment 14 Harmonic Current Content Limits; EN55022 Level B EMI limits and EN61000-4-5 Input surge withstand.

According to the supplier, the MiniHAM is a passive product specifically designed for EN compliance. It generates no EMI, reducing system noise filtering requirements. The FARM3 has been optimized for use as the AC-DC front end for the MiniHAM.

## BATHROOM TV

For those hardened TV addicts, or just those AV installers faced with providing TV in a hot steamy area such as a bathroom or sauna, help may be at hand. Marata Vision has introduced the TileVision, a 26cm TFT LCD in a 5cm deep box designed to replace a large tile. The novelty comes in a heater that keeps the screen from steaming up. Available in mirrored or standard finishes, and plastic or marble surrounds, the cost is a cool £1,695 or £2,145 for the 38cm version due out this month.

[www.marata.co.uk](http://www.marata.co.uk)

## **HEALTH & SAFETY/STANDARDS**

### EMPLOYER'S LIABILITY INSURANCE

The HSE has recently published two guides which concern Employers Liability Insurance (ELI). Of interest is that freelance production management personnel may require ELI even if they do not employ crew directly. In the first instance more information can be obtained from [www.hse.gov.uk/flist/flist7.htm](http://www.hse.gov.uk/flist/flist7.htm) and it would also be advisable to check with your insurance broker.

### ROPE ACCESS

A new British Standard has been published concerning those who work at height. BS 7985:2000 'Code of Practice for the use of rope access methods for industrial purposes' is available from the PLASA Standards Office.

# — DMX512-A - Wholesale change or minor revisions?

This month's feature is a slight deviation to the published schedule owing to the imminent release for public review of the new DMX standard - DMX512-A. There are a number of changes proposed by the ESTA working group and also those who contributed to the consultation documents; the aim of this article is to give an overview of the changes and how they are likely to affect the end user.

## HISTORY

The original DMX standard was developed back in 1986 by the Engineering Commission of the United States Institute for Theater Technology, Inc (USITT), and minor revisions were made in 1990. The main ethos was to ensure there was a standard communication protocol available for communication between lighting desk and dimmer; but with the level of functionality the protocol has, and its widespread adoption, it was rapidly deployed to control all manner of devices from ballasts to scrollers.

In 1998 it was decided to perform a complete review of the standard, and accordingly USITT issued a 'Call for Comments' on what changes should be incorporated. At the same time, USITT transferred the responsibility for DMX512 to PLASA's sister organization in the US, the Entertainment Services and Technology Association (ESTA).

One of the advantages of this is that ESTA is the secretariat for the ANSI Accredited Standards Committee E1, Safety and Compatibility of Entertainment Technical Equipment and Practices, thereby ensuring the new DMX standard gains a formal recognition with the American National Standards Institute. In the same vein, there is progress being made in gaining formal recognition with the International Electrotechnical Committee (IEC) that will afford the new revision international standard status.

Finally, DMX512-A is the moniker given to the more correct title 'BSR E1.11, Entertainment Technology - USITT DMX512-A Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories'. Essentially, when the public review is completed and the document is approved by the ANSI the 'BSR' part will be dropped and the standard will be known as just ANSI E1.11.

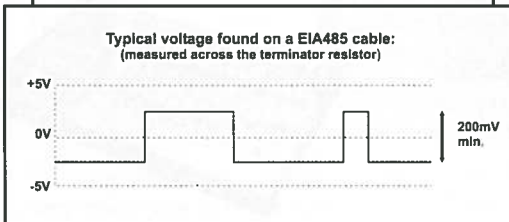
So, with the acronyms dealt with, what's in for the rest of us?

## NEED FOR CHANGE?

As one would imagine, there have been many suggestions for changes to the DMX protocol and a number of these have been fairly innocuous concerns (at least to the end user) over terminology and grammar. Whilst these do not affect most users, they are necessary to ensure the standard is tight enough not to be abused, and therefore suitable for issue as an international standard. Unfortunately, there is a fine line between generating a protocol complete with finery such as connector and cable specifications to aid uniformity within the industry, and actually upsetting manufacturers who want to 'deviate' for often genuine commercial reasons.

An example of this, without wanting to start another bunfight (for they do happen!) is the fitting of three-pole XLRs over the five-pole type specified in the original standard. Those who buy XLRs will know the price difference between the two can amount to thousands of pounds when buying in bulk, and manufacturers thus have reasonable grounds for trying to reduce costs.

Equally, with over 150 manufacturers of DMX products in 15 countries, it makes sense to try and get everyone 'singing off the same song sheet', otherwise the incompatibility issues that could arise would make for a real headache.



## NEW CONCEPTS

The main new concepts introduced are listed as follows. One of the main caveats for accepting changes was that the proposals made do not affect backwards compatibility of products conforming to the earlier standard, thus ensuring that existing equipment doesn't become obsolete overnight. To that end, there should be no concerns over partial upgrading of older systems or investing in new rental kit.

## STRUCTURAL CHANGES

As the new document is being written to become a recognized standard with the ANSI and IEC, the actual layout of the document requires alteration. One of these changes is the addition of a section of Annexes; these are

designed to augment the 'base' standard and actually form a part of it should a product require some of the more advanced features offered.

There are six annexes covering alternate topologies; enhanced DMX512 (i.e. use of the second data link on pins four and five); higher protection levels for transmitters and receivers, as well as three covering alternate start codes. It is possible to design a device that complies to the base standard but does not require reference to the annexes. Such a device may be a simple moving head luminaire that only needs a DMX signal and does not have any special input protection or availability of status reporting. A device that may need to comply could be a dimmer that can report status information such as temperature levels back to the lighting desk, and would use the secondary data link to transmit such information.

## INTRODUCTORY OVERVIEW

This has been added to help assist those unfamiliar with the standard to understand it. The main aspects of the overview include appropriate uses of the standard (i.e. it isn't designed to act as a complete show control protocol to include such things as scenery automation, or to be used in hazardous situations such as a pyrotechnic control system) and a brief on the actual signal structure of DMX. The electronic architecture, including transmitters, receivers and the actual signal itself are largely based on EIA-485-A (still occasionally referred to in its old form as RS485 which is a common industrial control protocol) and reference is often made to this.

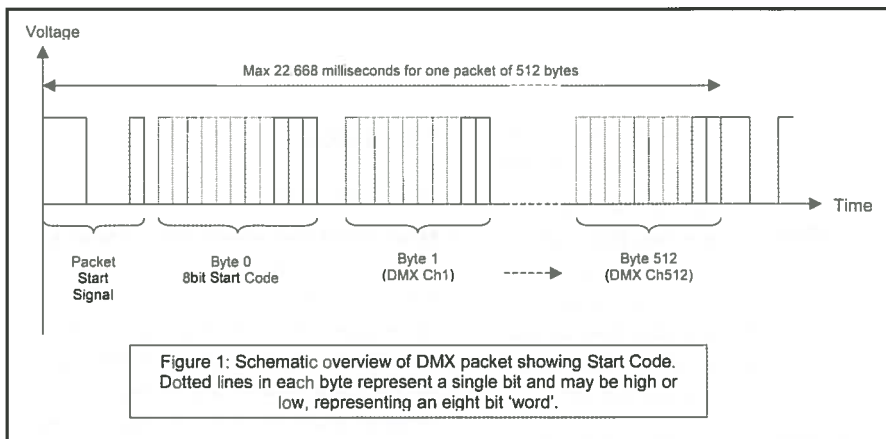
## DEFINITIONS AND TERMINOLOGY

As the name suggests, there is now a glossary section demystifying the geek-speak, from Asynchronous to UART.

## PHYSICAL LAYER DETAILS

This is where the more interesting changes begin to take shape. Most of it is dedicated to describing the basics of the electrical system and deviations from EIA-485-A, but it also has information on the use of the secondary data link on pins 4 and 5, which are to be used for compliant data only, not voltage to supply other equipment such as scrollers.

This was (still is) a contentious issue as previously the earlier standard was not so defining in this area, and there came several



variations on the pins 4 and 5 theme. These 'deviations' as they were seen, were hotly debated and the new standard has been far more defining in this area.

### PROTECTION

As stated earlier, DMX is based on the EIA-485-A standard, which essentially defines the electrical characteristics of the signals and how the balanced line transmit and receive electronics should be implemented. However, DMX512-A isn't a regurgitated copy of said standard with a few bells and whistles added on; there are a lot of changes that make it more suitable for our industry, and one of these is protection of the electronic transmit (TX) and receive (RX) circuits.

The very nature of temporary installations gives rise to the greater risks of damage to DMX equipment. Frequent connections and disconnections, faulty cables, long casual cable runs parallel to mains cables and so on, all add to the risk of misconnection, overloading and common mode voltages. Accordingly, the standard recommends greater protection than that afforded by the EIA-485-A so as to make the system more robust.

Notably, protection of up to  $\pm 42\text{VDC}$  between pins four or five and ground is required for compliance, which means that it would, in theory, be safe to accidentally connect a transmitter with low voltage power on the secondary data link to a receiver, although this is not to be recommended.

### CONNECTIVITY

There is a section dedicated to cable requirements, and it includes extensive detail on the use of CAT5 networking cables. There are advantages to using CAT5 if you need to supply low voltage DC power for any reason, such as powering DMX network outlet points; being four pair cable there are spare conductors, two of which may be used for this purpose.

Interestingly, there are no defined minimum or maximum cable lengths specified. Owing to so many unknowns such as cable characteristics, operating environment and signal quality, it is

not easy to take all these factors into account and come up with a finite figure. As such, it has been specifically omitted.

There are also sections relating to connector types. In essence, only five-pole XLRs may be used, unless it is physically impossible to mount one on the product. In this case, another connector can be used, so long as it isn't an XLR. The only exception to the rule is the use of RJ45s and punch-down terminal blocks. These may be implemented in situations that have restricted access and not intended for regular connection/disconnection. An example of such a location may be a locked control booth, or plant room in an installation.

In any case where a non-standard connector is used, the manufacturer must supply a suitable adaptor.

Whether this revision will result in the wholesale change from three- to five-pole XLRs remains to be seen; it's probably best to hold on to a few adaptors for a while yet!

### START CODES

The start code is the first piece of information sent in a DMX 'packet'. The data is transmitted first with a start code, and followed by channel 1's level (between 0-100%), channel 2's level, channel 3, and so on up to channel 512. (See figure one).

The new standard has a lot of changes to this start code system. Currently, virtually all DMX transmitters and receivers are designed to act on start code 0, so if a desk transmits a packet with a 0 start code all the receivers look at the following packet and pick out the level information on the channel(s) they have been set to.

With the new standard, all the start codes have been allocated from 0 to 255. The uses include unique manufacturers' identification, diagnostic reporting and system information. There are many advantages in this change - it would be possible to address only a particular manufacturer's equipment with data for situations such as resetting lamps, or clever buffers may be able to route signals intelligently.

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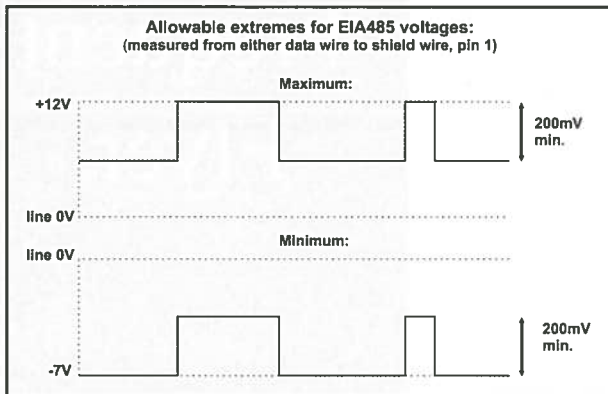
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It is, of course, open to abuse: manufacturer 'A' may make a buffer that routes everyone's data signals except their main competitor, manufacturer 'B'. Not that anyone would want to do that, would they?

## MARKING AND IDENTIFICATION

There is a section dedicated to the marking of DMX connections caused by the new variations of enhanced or regular DMX available.

Changes include the actual marking of grounding method inside a piece of equipment. This will make fault-finding of earth loops and the like easier, because compliant equipment will be required to state whether the inputs are floating, isolated or ground referenced.

There are also new standards concerning the marking of RJ45 connections, as well as XLR wall plates in installations.

## ENHANCED FUNCTIONALITY

Primarily concerned with the additional data pair on pins four and five, the standard aims to regularise use of the second data link. A lengthy Annex is dedicated to the marking and implementation of the different data schemes available (known as Enhanced Function Topologies). There are four available,

including bi-directional data on the primary pair.

Notably, the standard stipulates that receivers not requiring any connection to the secondary data pair must provide a passive link on any loop throughs.

This means that cables too need to have all five pins connected to ensure that any equipment using

enhanced functions will work. It is a very short time away before clever dimmers and lights using this extra data are commonplace in the industry; some already exist. This will be an expensive upgrade for some hire companies who save a few pence on their DMX links by only buying single twisted pair cable and connecting a five-pole XLR on the end. It may also herald the demise of the three-pin XLR that is quite common with some manufacturers. The reality though, is that it will take years for this to happen - if it does - as enhanced functionality is more widely adopted.

## MORE INFORMATION

The new standard is out for public review in the next few weeks and if you want more information it can be obtained either from the PLASA Standards Office, ESTA or USITT. When the review document is released, it will be available from ESTA's website.

It is also expected that there will be a revision of the booklet 'Recommended Practice for DMX512' written by Adam Bennette and published by PLASA and USITT.

- ▶ [www.plasa.org/standards](http://www.plasa.org/standards)
- ▶ [www.esta.org/tsp](http://www.esta.org/tsp)
- ▶ [www.usitt.org](http://www.usitt.org)

## STOP PRESS -

### LINE ARRAY UPDATE

Meyer Sound have recently been in touch to bring to our attention to a typing error that occurred in February's issue of L&SI. They rightly point out that the figure quoted for their RMS SPL level should read 142dB and not the 122dB quoted. This has been corrected in the online article (available from [www.plasa.org/media](http://www.plasa.org/media)) and if, like some we know, you have reached for the scissors to 'cut out and keep' the article, then you'll have to scribble the correction on by hand! Apologies to Meyer for this, as well our readers.

### BTEC COURSES BOOKING WELL

The AETTI-devised General Theatre Technician Intermediate Award is being offered in July and September by Loughborough College.

Leicester Haymarket is hosting the first from 1-3 July. This will be a composite course. PLASA, as last year, is including the course in the activities at the PLASA Show (8-11 September). At PLASA, the course will be structured as single-day modules. The schedule will allow candidates time to visit the exhibition as well.

This BTEC Award is aimed at those working as technicians in the theatre industry who wish to gain a formal qualification. It proves a useful introduction for those who may wish to move on to take a further qualification and prove their competence in specialist areas such as Lighting or Wardrobe. It also provides employers and freelancers an opportunity to fulfil obligations under the Health & Safety at Work Act.

As always, the courses are attracting a lot of interest. For further details, contact Chris Garner at Loughborough College - [garnerc@loughcoll.ac.uk](mailto:garnerc@loughcoll.ac.uk) or tel: 01509 618377.




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PROFESSIONAL SHOW LIGHTING

### LIGHTING TECHNOLOGY - A GUIDE FOR TELEVISION, FILM AND THEATRE

BRIAN FITT, JOE THORNLEY  
FOCAL PRESS  
ISBN: 0 240 51651 6  
PRICE: £27.50



*Lighting Technology* is a thorough guide to all aspects of lighting, primarily for camera. Coverage is extensive and includes the actual science of lighting through to electrical distribution and site safety. A true textbook.

Fitt and Thornley have both spent a lifetime working in lighting, encompassing film and camera lighting through to luminaire design for manufacturers. Accordingly, their knowledge is extensive and nothing has been withheld in this book, which is a complete guide to the technology, as well as the art of creative lighting. The authors guide the reader from the very basics of lighting a subject, the theory of light, its behaviour and generation, through dimming and rigging systems to safety and emergency lighting. Even chapters on studio design and an introduction to running a rental

business are included. On the whole, it is written in a jargon-free manner, making it easy to read and interesting; there are many lengthy introductions to chapters giving a potted history of the subject in question, as well as a thorough background in the technology. The explanations are thorough, encouraging an excellent understanding of the topics encountered, whilst also being up-to-date on the latest techniques. The combination of background information and personable style go to make the book an interesting read in its own right.

The book has a strong bias towards lighting for camera. However, many cross references are made to theatre, as well as concert lighting, and the principles are universal. There is a section on motorized lighting giving an overview of the nature of moving lights, but on the whole the coverage of concert and touring systems, including rigging and data distribution is not particularly extensive. It does, however, mention the latest in lighting and video projection and thus this second edition is quite up-to-date in that respect. Every aspect of putting together a temporary rig from the lighting perspective, both on

location or in studio is covered. Health & Safety procedures, electrical regulations 'in practice', mains distribution and studio suspension/rigging systems are all investigated.

The novice with some electrical experience is well catered for, as each chapter begins by explaining the basics and builds up to ensure that the reader has more than a 'working' knowledge of the subject. There are notes on likely problems and fault-finding, which also goes to help increase the reader's knowledge of the subject. For the more experienced practitioner, there are several appendices listing bulb types, luminaire photometric performance data, conversion tables and formulae, making the book a useful reference source.

On the whole, complete with its extensive appendices, glossaries and data tables, it is an invaluable reference guide for experienced practitioners and yet coupled with the clear, jargon-free introductions and explanations is an ideal textbook for the apprentice. In all, a true textbook well worth a space on the bookshelf.

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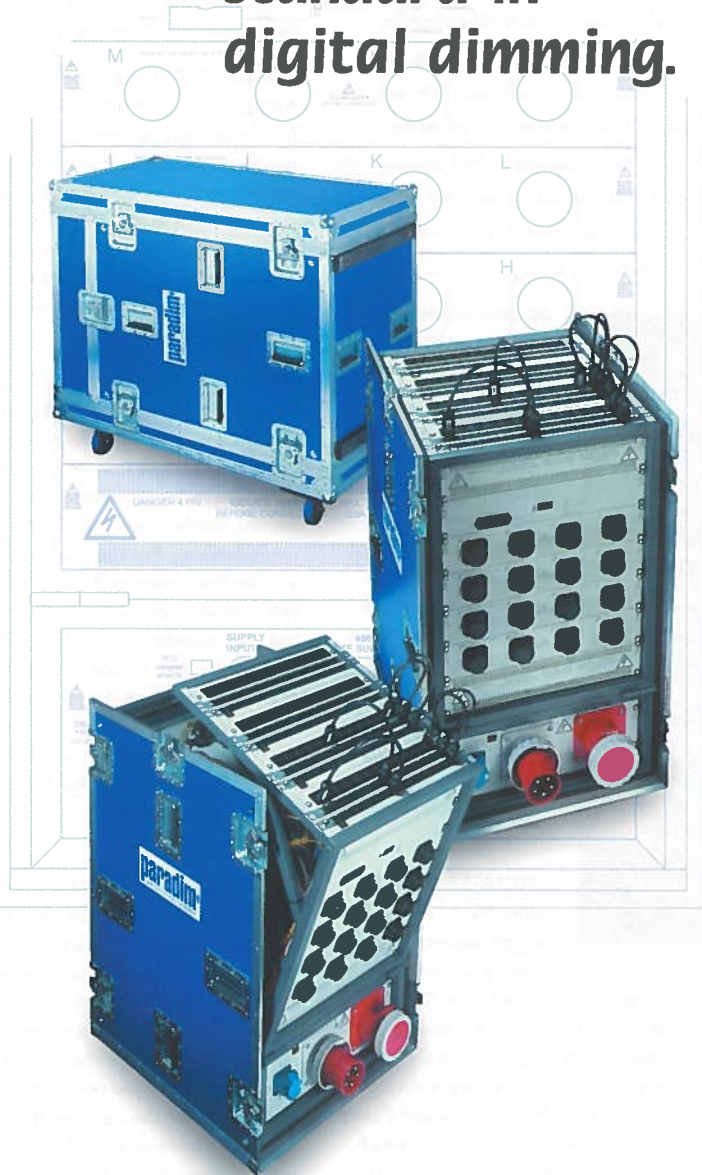


paradigm (pàr'e-dìm') noun - An example that serves as the pattern or model for the rest.

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# John Watt

## Second Take...

John Watt's view from beside the camera

**B**y the time you read this, the BBC's 'Test the Nation', which claimed to test our IQ, will be but a distant memory, with a claimed 900,000 viewers taking part it hardly represented most of us. Yes, I should have turned off, not only because I can't stand the sweet and sour of Anne Robinson and Philip Schofield, but because the massive set was the worst colour and worst designed of the year (or if it wasn't, it'll do until the worst comes along).

Dowser' (remember her?) for mechanically dimming HMIs by way of a special iris, would seem to remove that problem of all discharge lamps. The blurb says that it's available in large format sizes, but how big is big?

**I'M LESS HAPPY** about their adaptation of Autopilot to Videopilot. With this, a camera can follow an artist, Quote - 'theatres can tape performances without incurring the cost of a camera operator, opening the door to offering cost-effective videos of specific performances'. Oh come on! I guess it's a bit like a man I know whose dog plays cards. It's not so much that he doesn't do it that well, the fact that he does it at all is pretty amazing.

**I WAS GOING TO SAY** that it's a privilege to go to an old-fashioned style STLD meeting, particularly one hosted by the BBC training department. Now I'm not so sure, as the feelings of inadequacy engendered by the exposure to boffins, thinkers and busy lighting people are overwhelming. For those who may not be sure, yes the Beeb training department still exists and is still rooted at Wood Norton, though one can't help but wonder for how long. The evening was an introduction, for me, to High Definition television and some discussion of its recent history and its future. As with all new developments, the process of settling down into a standard seems to have taken some years and there is some debate as to whether the final compromise has produced the best.

**CERTAINLY A LOWER NUMBER** of lines than the old HDTV standard of 1150 has been the outcome, though the resulting picture quality at 1080 seems to leave little to be desired. Of course, in the UK there is no way the system can be transmitted to the home viewer, nor are there any plans to make this happen. 'Choice' has been the Holy Grail of the politicians, so the expenditure of the equivalent of four channels' worth of bandwidth is unlikely to gain favour. I was, however, interested to hear confirmation of a long-held belief that you inherit high quality

original images right down the chain, even to VHS. More relevant to its future, perhaps, is that countries which do transmit HD (US and Japan) have a dearth of material, so sales are buoyant for programme makers that originate on it.

**THERE SHOULD NOW FOLLOW** a few clips to demonstrate what I'm talking about, but you will have to take my word for it that it's difficult to tell the difference between HD and 35mm film. And that's not just my take on it - I'm in a minority of one in wondering what all the fuss is about regarding film - but that is the opinion of hardened film men. We saw a test conducted by Panavision which compared the two and it's nigh-on impossible to tell the difference. Apparently, the one remaining problem lies in the greater depth of field in the TV system which results from the smaller target area and related lens configurations. I do wonder about this depth of field issue, those soft/defocused backgrounds much beloved of filmmakers can be a bit of a distraction. If my eyes do it (and I suppose they must in low light conditions) then my brain plays the effect down. In good lighting, the brain decides where it's going to focus, but it seems to me that this is in the software, not the optics. Neither case is reproduced by those soft backgrounds, which often remain surprisingly (and distractingly) bright.

**MEANWHILE**, back in the real world, I've heard a tale of modern production methods which makes my purchase of a small boat seem the only salvation for my sanity. Although a proper lighting director was employed, the eight camcorders were manned by the production team rather than fully paid-up camera people! Two failed to push the record button and one pushed it 20 minutes ahead of time, producing interesting floor shots of sweet wrappers, dog-ends and the like.

**PERHAPS THE EVENT** I was most surprised by this month will seem inconsequential enough to some, but it warmed my heart. I had a call from a respected lighting man to say he had been asked to re-light a show which he thought I had originated, and was therefore worried about treading on my toes. You see there is honour amongst thieves after all! Well, it's true that I am one of a group of lighting men who have had a go at this long-running screen filler with its egotistical host. I guess we all take the money and run knowing that we're onto a hiding to nothing since the final picture arbiter is the man's wife who (like me) didn't have the benefit of a Wood Norton training! Yes, dear reader, tapes of the pilot were actually flown to her in Majorca for approval. Incidentally, the brief, amongst other quirks, was 'don't use blue'. I ignored that and stuck a circuit of 132 in the groundrow (and you think I'm not creative!) and, needless to say, that was the colour settled for in the end.

"I guess we all take the money and run knowing that we're onto a hiding to nothing since the final picture arbiter is the man's wife who (like me) didn't have the benefit of a Wood Norton training!"

**IN ONE RESPECT**, it followed customary studio practice in copying those cable guards that we are all used to as part of the design - the ones that turn relatively safe cable runs in to a real hazard. Mr Schofield tripped round the set, up and down over these things like an incompetent hurdler. No mention of the lighting, well what would you have done with it? I guess it wasn't an option to leave it in the dark.

**AMONGST ALL THE JUNK MAIL**, the odd nugget appears. Wybron keep up a relentless

barrage and quite a bit goes in to the 'interesting' box with a mental note to have a look at the next PLASA Show. They suggest I visit Lightfair in San Francisco, but seem to have forgotten to enclose my plane ticket. Their Light Wand (lousy name), an add-on moving mirror device, which can add many moving light facilities to a simple generic lamp, looks interesting. Similarly their 'Iris

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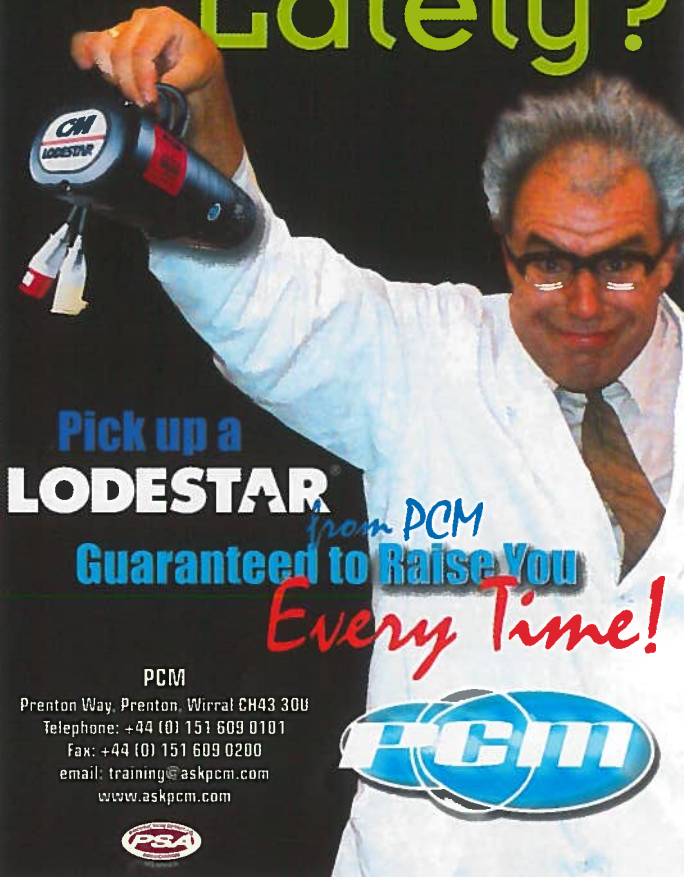
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# A FAIRYTALE

## PRODUCTION . . .

*L&S reviews a new Belgian production which is fully exploiting the latest technology*



Doornroosje (The Sleeping Lady) recently started its 42-week tour of Belgium and Holland at the 2000-seat capacity Elizabeth Concert Hall in the centre of Antwerp. The entire production will then up-sticks to travel round various venues in Holland - no small feat, considering the size of the various set elements.

Belgium-based Studio 100, founded over 10 years ago and a prolific producer of children's entertainment, is the show's creator and producer. The company was formed by children's TV announcers Gert Verhulst, Hans Bourlon and Danny Verbiest - inventors of the now enormously popular Samson and Gert, which they have taken from strength to strength with other projects - now including a theme park on the Belgian coast.

The schedule for the show is quite gruelling. "During the holidays we do six days a week," says Jan Florizoone, director of productions of Studio 100. "During term-time we have an easier schedule. For this type of audience you have to do it when the kids are free. All our productions are from existing stories, but they are different enough from the original to say that they are ours. This is the fifth one we've done. We started with Snow White, Cinderella, Pinocchio and Robin Hood last year and this is number five in this same hall."

The set, a giant book, has its pages turned by the actors to reveal different scenes. Witches appear out of nowhere, magic explodes onto the stage, an animated life-size dragon attacks a prince (who vanquishes it, of course) and good fairies appear to hover in the air. And it also includes K3, Belgium's favourite girl band. All the things that any good fairytale needs.

Working alongside Studio 100 is Flashlight/APR, one of Benelux's premier sound and lighting rental companies. Under the direction of sales manager Erwin Franck, Flashlight/APR have provided all the AV equipment necessary to put on this piece of children's entertainment. "We've been working with Studio 100 for a number of years and also in this particular venue," says Franck. "It's an unusual place to put on a production like this, as it's actually a concert hall, so we have to take that into account with the equipment we supply."

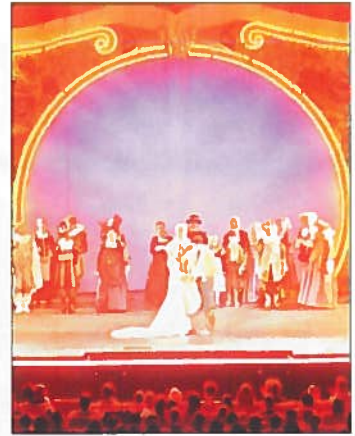
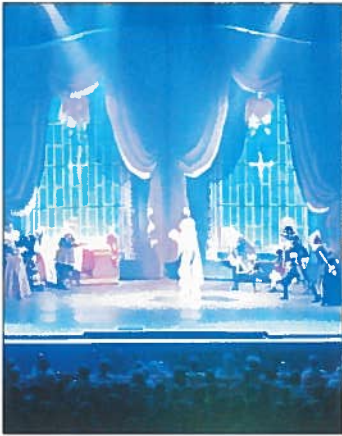
### AUDIO

Sound designer Walter Roothe explains how he has the system set up: "First of all, I consider sound design to be two elements: one technical, one artistic. For me, the artistic part is the most important. Technically lots of people can put together a

system. The artistic thing is very important to emphasize the dramatic thing happening on stage."

The system is based on Meyer MSL3s with 650R2 subs, supplemented with Meyer UPA1s in the centre - two for the orchestra to centralize the vocal image, plus eight front-fills to pull it down slightly, thus giving the impression that the voice comes from the stage. There are also surround speakers in place, only used at the end of the first half, and delay lines for the balcony, all controlled via a BSS Soundweb, which Roothe uses for input control, delays, equalizing levels and monitoring, and a Yamaha 02R at FOH. The most important thing for Roothe is that the overall level is equal throughout the hall. "MSL3s are very warm and smooth, but don't carry so well on the high end," says Roothe. "So in the surround there's a little bit of voice to keep the presence."

"We have almost total control orchestra-wise," Roothe continues, "which isn't always the case in small theatres with an orchestra pit. This year, we chose no speaker monitoring in the pit, but all headphones, which takes the noise level down. As far as possible the orchestra and vocals are on separate speakers so that I have total control of the mix. Here, it's quite easy, because 90



photos: Gasoline Media.

Opposite, sound engineer Walter Roothe views the performance from his position at the Yamaha O2R front-of-house mixing desk. Above, two striking scenes from *Doornroosje* and, centre, lighting designer Luc Peumans at the grandMA control console.

per cent of the orchestra is in line, so there are not so many mics. Also, the orchestra is well recessed and there's only a little opening under the stage, so we have practically no direct sound coming into the auditorium, which again helps give me total control."

The orchestra manages its own monitoring levels via the new APM series of hardwired headphone monitors from Garwood. The musician is sent a stereo mix from the FOH engineer, but can control his or her own monitor level, as well as two other mix elements as required, via a backpack with a local input. "The conductor has his own mixer, because he wants everything separate, with eight channels," comments Roothe. "It means that it's not necessary to have a separate monitor engineer. Also, because we have some dialogue with children who are very quiet and there is an underscore, I can really make the balance between the music and voice, which is not always possible in some theatres.

"The most difficult part was the three principal girls who have tiny voices - really very soft. They are very famous in this region, so they had to sound really strong. So we've reinforced their voices both by doubling them with other actors, and also with EQ and compression. I couldn't live without the BSS901, which is a dynamic equaliser. The problem with musicals is that you have a big dynamic range, and people tend to be very quiet or very loud. In frequency this can translate itself into annoying sounds when they reach high levels. This equipment compresses in narrow, selectable frequency bands and I don't think I could do this job otherwise."

#### LIGHTING

The lighting design for the show is simple, but enhances the atmosphere of the overall production. Lighting designer Luc Peumans, from *Painting With Light*, has used a combination of the new Vari\*Lite VL1000 TS with ETC Source Four profiles

and Pars with scrollers for side lighting, and back lighting from a DHA Light Curtain - all controlled via an MA Lighting grandMA desk - the first time that both the VL1000 and the grandMA have been used in Belgium. Both the Vari-Lite luminaires and the grandMA were provided by Candela, the new Vari-Lite Benelux distributor, under the supervision of Candela sales director, Olivier Emmler.

Peumans explains: "It's great to use the VL1000s for the first time. They have 110V bulbs fitted, which are not regular for Europe, but they were the only bulbs available at the time. In fact, the show uses a few technologies that are being used in a Belgian musical for the first time, like the Wybron Autopilot II system, which enables some VL1000s to act as followspots.

"The actors wear a receiver on their head or shoulders, and the computer picks up the signal from the lighting desk and overrules the pan and tilt values so that they follow the actors. We only have one regular followspot, and the rest are handled by Autopilot via the grandMA. It's a new experience for me because it's the first time I've used this desk, but I worked it out without any help because it's so user friendly, and it performed very well.

"My front lighting is one followspot and four High End Cyberlights in the roof, and all the rest is from the VL1000s, which take a huge amount of the workload here, because they are so versatile. We're using the shutter version, and where I would normally use a lot of profiles for extra details, all these things I can now do with the VL1000s. I normally use one luminaire just for that one thing, but with the VL1000s in the rig I don't need it anymore. Again, it's the first time I've worked with them and I'm really surprised by the results. It's exactly what we need for musicals. It's the first thing on the market that covers all these things, especially with the tungsten source."

Peumans has used tungsten bulbs for everything except the Cyberlights, to give a warm look and, he says, to "go back to the basics of theatre lighting." He adds: "We had some people from theatres in The Netherlands come to see the show because we are going there later this year and they said, 'What's happened? Did you skip the moving lights, because we didn't see any moving light action.' And that's actually quite a compliment, because it's meant to look like it was lit with conventional sources, but with the advantage of the new technology. So it's worked out really well."

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# Horses for Courses

*With all attention focused squarely on HRH Queen Elizabeth's Golden Jubilee and the incumbent celebrations therein, it's easy to make a direct connection and assume that 'All the Queen's Horses' is simply another facet in what has proved to be a dazzling display of national entertainment. Steve Moles finds otherwise.*

The Jubilee is unquestionably the stimulus for the event, but the truth is that something along these lines has been in the offing for some years now. When I visited the 'Horses' site just days before opening - and in the aftermath of the inevitable Biblical spring downpour (comfortably survived, I might add) - I found production manager Adam Wildi eager to present some plain facts.

"This is a partly-sponsored affair, with the rest of the costs covered by ticket revenue. Per se, it's not actually part of the Jubilee celebrations - it's in recognition of the Queen's involvement with the annual Royal Windsor Horse Show (RWHS). It's an association that has encompassed her entire reign."

The sponsorship element was deftly muted, without the usual blazoning of corporate logos across every available surface. Nor did it display the arrogance some sponsors have in the naming of events - the 'In Your Face Limited's unlikely association with an event that bears not even the remotest connection with our products' show. Do these marketing people think the public are imbeciles? As a result, the tickets for the show are not cheap. A fact that didn't prevent a sell-out three nights, which was obviously a small price to pay for those fortunate enough to obtain a ticket. More importantly, it means that the show is in no way paid for by public money, but is entirely self-financed.

One glance across the show arena is enough to convince even the casual observer that this is no small achievement: at either end of the 130m wide oval stand sit four huge scaffolding towers bristling with

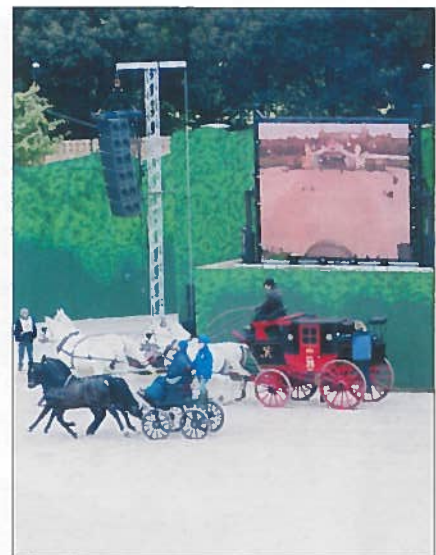
lights. Opposite the main grandstands (themselves four storeys tall above the long northern arena side), is a stage that would shame many a rock festival in a muddy field. Everywhere you look there are the familiar production values we associate with top quality events - big LED screens flank the stage, thin elegant strips of line array PA hang discretely to the sides. This is a pukka show, and being successfully financed begs the question of what other niche markets will eagle-eyed promoters find in the future?

Upon first examination, a large outdoor show featuring horses of all shapes and sizes as its main focus seems an unlikely candidate for the attentions of full-on concert-style production, but the same production values do apply. The horse, like the rock star, has little input to the process, but boy, those quadrupeds look good on the night.

## Production & Set

By definition, the right team to produce such an unusual event demands prior experience, but where do you find the matched skills of show production and horses? "We were asked to do this because of our work with Simon Brooks-Ward on the Royal Military Tattoo (RMT)," explained Wildi succinctly. Readers may recall the event, staged at Horse Guards Parade and extensively covered by L&SI.

"The RMT team was specifically requested and central to it is extremely talented site manager Jane Kelly. Her impact on the ground is profound." Wildi might be liberal with his praise, but make no mistake, when it comes to marshalling horses with people, site management is a crucial role. "The fence around the show ring, for example is nothing special on first glance, but it's actually designed specifically to take the weight of a horse should a mishap occur." As ever, it's all in the detail.



One of the four main lighting towers; stage manager Simon Garrett (centre top); lighting designer John Pope; The Barco daylight screens supplied by ARB.

"Site management is the backbone and we pursue it from the first instant," Wildi continues. "We meet with the Council, and other authorities involved, and look at the ground conditions. Jane draws up a trackway plan, and forms a grid and that's why, after torrential rain, we're not in a quagmire. If you ever encounter those conditions, it means the site's not properly managed. We also read through everything and ask the question 'how's that going to work?'. By doing it this way, we ensure contractor compliance. They know where they are and what's expected. It means we all have a firm platform to stand on."

Adding to this solid platform is the indefatigable Simon Garrett of Pandemonium, as master of ceremonies, a steady hand on the tiller if ever there was one. "The participant coordination is the key - it's what we've been planning since day one. Effectively, we are a ring-fence around the arena, controlling what goes in, what comes out, and when. Stage caller sans pareil, Sue Banner calls the show elements."

The familiar name of Major Sir Michael Parker (recently honoured with a Knighthood), is the driving force behind this show, as he was with RMT. Likewise Simon Brooks-Ward, as the director of the RWHS, is also a prime mover for this special event. Wildi defined their responsibilities: "Simon has combined his talents as a director with Sir Michael as producer - it's a formidable combination and has been a big advantage, since Sir Michael is very specific about what's required. Here's an example: the 130m width of the show arena is defined by a simple fact: it's the minimum area required for the Kings Troop of the Royal Horse Artillery to perform. Who else would know that before we even began planning?"

Who indeed? The marriage of horses to showbiz also produces other unique aspects. "It's very unusual to have such a large arena, and then place a stage on the far side of it, miles away from the audience." Which is one reason why the deft hand of Philippe Brandt was brought in to look after set design.

On cursory examination you'd think this a largely redundant role - Sir Michael had already decreed that the Royal Garter would surmount the stage, so why a set designer? "My job was fairly simple in that I had to draw up the Garter and match it in scale to the size of stage." Brandt is too modest: the stage roof needed to be lower than more conventional structures, one of HRH's requirements being that Windsor Castle should form the backdrop to the event, "so the low curving Superstructure roof from ESS was essential to keep sightlines clear."

But it's the bridging of that void 'twixt stage and crowd where Brandt's skills are felt. His means are subtle and you'd be hard pressed to see how it works until you look more closely. The entire stage set is built by Stage One (they even made Ms Kelly's horse-proof barrier) and it looks simple enough - the Garter is a painted rigid border applied to the roof edge. Beyond the main stage, and running out from backstage edge to the start of the seating at each end of the arena, maybe 40 metres each side, is a continuous length of 3m-tall flats painted with foliage. How does this work?

The foliage is obvious: by blending to the trees that surround the castle beyond, and then lighting both, it prevents the stage being swallowed by a black hole that would exaggerate its distance. The Garter is more subtle: the Lion & Unicorn are of forced perspective, so subliminally they rise towards the audience, pulling the stage forwards with them, figuratively speaking.

Certainly Brandt could have done much more, but he was asked by Simon Brooks-Ward "to make sure the arena setting was integrated to the day-to-day events of the regular horse show, and didn't overwhelm it." So it is that unlit during daylight hours, both the features mentioned above have minimal visual impact. "That's important," continued Brandt. "Much of the daytime audience will also be those who come for the show at night - they have to see something different, something special."

Wildi described the actual show as an episodic passage through HRH's personal experiences of horses. "It's her 50 years transcribed to themed elements: there's a WWII sequence, a horse racing sequence, a scene of coaches. The orchestra and choir on stage provide a live backing: it would have been easier to use simple playback, but as with so many things, Sir Michael was emphatic and felt that for a truly live experience the music should be live as well." Hear, hear.

The other unconventional aspect of this presentation is the presence of the previously mentioned daylight video screens. "We wanted to pick out the detail because with such a large floor area things can be missed. ARB is supplying the Barco DLite screens and four cameras, up on the roof of the grandstand and in the lighting towers." ARB contributes in other ways too, most significantly in providing the marshals to shepherd the performers from the stable quarters 75 minutes' walk away (see Stable Chatter). Obvious examples of the detail include a solo violinist on open Landau performing in the centre of the arena, but it's more the vignettes, the close-ups of coachmen in Georgian regalia, that bring the whole thing alive, and by transcription to screen, that little bit more intimate.

### Lighting

Retaining that intimacy, whilst simultaneously making the whole thing larger than life, are the conflicts within John Pope's job as lighting designer. "It started early on: I originally planned to have the four lighting towers much taller, to have a better angle down onto the horses, and not just to make better lighting for the cameras, but to keep the beams out of the horses' eyes as they turn on the far side from the lights." What has kept them lower than Pope would have liked, is that imperative not to overwhelm the daytime regular events of the WRHS, which in the bigger scheme of things seems a fair call, though the almost total absence of back light, forced by the unrestricted view of the castle, makes for a fairly flat field (pun unintended).



The Delta team of Martyn Ward, Paul Keating and Stewart Chaney

"Vari-Lite are the suppliers and I've got the magnificent Michael 'Oz' Owen running all the moving lights from a Virtuoso." Sounds like Pope takes his compliments from the same book of praise as Wildi. "In addition to Vari-Lites on stage, in the towers and on the huge lighting bridge above the grandstand, I've also got SkyArts each side of stage and Studio Due City Colors on the trees behind." The tree line starts some 40 metres behind stage. Hence the foliage flats of Brandt, and the need to light them, and the trees beyond, to frame the stage rather than lose it in the dark void.

"All generics are run by Paul Devine from a Hog II. And there are a lot: the front lights alone include 138 Pars on the roof, another 60 under the mid canopy," and that's not forgetting the 56 assorted VL6s, VL7s, VL5 Arcs and VL2416s he has squeezed in amongst them. "The front light is great, especially when the horses are up against the rail. Getting it right from 70 metres away each side was tougher." The side towers also feature copious quantities of VL movers and Pars. "Oz puts in a basic gobo layer for texture upon the surface: one texture for each of the 12 distinct segments of the show. In some ways this is much simpler to light than the RMT: much of the action requires just open white, but there are three real production numbers where I get to do something. Even so, we have tried to change each scene, even for the white light. For instance, changing the colour in the 2416s - it just adds highlights." That's in the lighting sense, as in subtle touches of colours to the edge of performers.

Pope's treatment of the arena from the sides deserves mention: this is not just 'muscle' lighting to cover distance. "We divided the pitch into nine areas, and working from each side we focused a set of Pars into each area. For uniformity of field, the addition of two more Pars to the set for the distant centre area was enough. We use the Pars at 60%, then for emphasis we pulse them up to 100% in time to the music, in a ripple chase across the arena floor.

"For the more dramatic sections I referred to Sir Michael's storyboard. For the Balmoral Castle sequence, for instance, I've used lots of greens and purples to evoke the colours of Scottish heather. For the dream sequence, I use a base wash on the arena in classic UV, then light the four areas of activity in distinct pools, ringing the horses in light."

Pope has a final piece of advice for any who might find themselves with an equestrian event to light. "It's important to remember these are horses, not people. They need to get used to the light; the first time they might spook, the second they're unsettled, but once they know it's going to be there they accept it." So you'll soon know if you've messed up a movement cue.



### Sound

With so much emphasis on setting and the actual horses, it's amazing to discover the sheer breadth of attention paid to audio. In technical terms, what Delta's Paul Keating and Jim Lambert (as his project manager) have put together is more complex than any other single aspect of the show.

"There are a lot of sound effects," informed Lambert, giving one clue to why the system might be so complex, "including sounds for WWII, and other things from archive stock. Ken Peers put it all together and worked with the Royal Marines (who provide the core band on stage). We set up a ProTools studio here on site, which simplified things enormously." Lambert also revealed that Parker "likes the effects ear-splittingly loud." Hurrah.

"All the music is live - string orchestra, the Marine band and a 60-voice choir from the London Choral Society. With 48 channels for orchestra and 12 for the choir, Martin Ward on a Midas H3000 does the main mix, while Stuart Chaney uses an H1000 to mix down the orchestra to manageable proportions for Ward. Martin also has the 12 tracks from a Tascam and eight radio channels from various soloists to deal with, so it's busy."

That's the least of his considerations: leaving the actual PA to one side for a moment, Ward is ensconced within the grandstand seating, directly above the transparent canopy that tops the Royal Box level. A magnificent view of the proceedings, it is an acoustical letterbox of a vantage point, making direct audible experience of what's occurring difficult.

"We have to bug the strings [Acusound] because of wind noise." Did I forget to mention the stage has no back wall to facilitate an uninterrupted view of the castle? "The choir have AKG460s with softies, again for wind, with 414s for the band."

Presumably the soloists present their own little conundrums? "Yes, the violinist in the Landau is isolated and positioned halfway between the main PA and the audience. The PA, of course, is time aligned to the stage so we've put the soloist on a Trantec in-ear system to blot out the PA and maintain time. We use a fair number of radio mic systems - Sennheiser and Shure - and the mix is down to licensing issues. We needed RF to work over the whole site, 100% from anywhere across the arena (see panel to right). L-Acoustics FM115 wedges,

### Radio Comms . . .

Delta's ShowNET-managed two-way radio system can provide instant comms coverage. The company's RF expert George Hogan expands: "It's a trunking system, it shunts radio around the site. You can page an individual, a department or all departments so no-one is constantly besieged by all-stations calls.

"For Windsor, we're using it to control several systems - production, stage management, the Arena Party, the Horse movement marshals, and also to provide a link to a Clear-Com hard wire system. We also provide the repeaters for the RWHS system - since we had to put equipment up on the castle, we took on their needs as well."

The advantage of the link to ARB's marshals proved particularly beneficial. "They operate independently during the daytime show, then in the evening switch channels and they're immediately linked to our system."

Wide area coverage across the whole arena for radio mics and IEM systems led Hogan to custom-design a head amp system. "There's up to 250 metres between transmitter and receiver; with standard receivers and belt packs the amps provide a no-signal loss environment anywhere in the arena. In fact, we have to pad it down." Something simply, if somewhat laboriously, achieved by sending a known signal down each channel, measuring and then correcting the pad accordingly.

A methodology Delta developed initially for the RMT show was to avoid using any of the standard rental frequencies.

"With that assumed, we come down to whatever given site we're going to be operating on, make a sweep analysis, daytime and night time, to see what's out there [RF], and then determine which frequencies are most favourable for us." No small undertaking, as Hogan revealed: "All the Sennheiser units are on custom chips, which we'll probably discard after the event. It's a high cost to Delta, but it pays dividends in the operation." And just for that belt and braces feel-good factor, all systems on the castle and around the site are on UPS back-ups, giving approximately one hour of operational time in the event of power failure.

Delta's Jim Lambert has the last word: "Most important to us was to have a team used to this kind of environment." Which just about sums it up - Brooks-Ward and Sir Michael made the right calls.

## Stable Chatter - Windsor style

- To bring horse and rider from Frogmore stables to stage, ARB installed 2.5 miles of cabling and Sun floods to light the route. Delta's special expertise in radio comms came to the fore here also . . . ARB also supplied the 200 or so TOA speakers spread across the 3.5 mile site.

- The stop/start of flow control with performers strung out over such enormous distances requires nerve and rigour. It could all so easily descend into chaos with long gaps between sequences, or catastrophic traffic jams of horseflesh and rider. Respect for Simon Garrett, the ARB Marshals and George Hogan of Delta.

- The lighting towers are neat and each one has its own silent generator within the scaffolding base, thus minimizing cable runs and providing essential ballast. The lighting bridge above the grandstand puts the lights at 13.5m above show floor. It, like the Lehrer scaffold system for the towers and the main stage, are all supplied and built by Stage One.

- 800 horses were gathered together for the event, the first time so many have been seen together in Windsor since 1929. 75 truck loads of sand and small aggregate were used for the arena floor.



run by Steve Lutley through a Soundcraft SM20, provide the stage monitoring.

The PA is a multiple system, more zones and sections than you might at first imagine. "Major Parker briefed us that he wanted it to sound like a radio play; he wanted the spoken word close, the music more remote, more in the background, but still live."

As such the PA lists like a Who's Who of manufacturers: L-Acoustic's V-dosc forms the main system, a hang of 10 per side hidden behind acoustically transparent panels in the Garter motif (Stage One structuring the scaffold walls that support the roof in such a way that no crossbar nor diagonal intrudes on the speaker projection area). Another six cabinets are positioned further out, suspended from what has become this seasons' tower of choice, the seemingly ubiquitous Summit Steel Smartmast. The stage PA alone is fed by four discrete sends from the desk so levels can be

2 x dV-dosc cabinets for vocals - 48 in total were situated around the perimeter of the arena

controlled individually, a bit of luxury considering the relative low impact of wind on line arrays, but they are affected, make no mistake, so it's an investment well made.

"We've got 28 dV-dosc across the front of the seating, d&b B2 subs beneath the seats and an EAW KF850 system on the towers for a stereo effects PA. Then there's EAW JF60s under the canopy roof to enlarge the vocals, and finally EV S40s to provide fill to the upper decks." Which, ironically, is the main system that Ward hears in his letterbox.

"For the side stands and hospitality areas we have a further system of d&b C6s, again for that close vocal information. The whole thing is controlled by a BSS Soundweb: normally we'd run this system local to amp placement and use CAT5 to connect, but we felt it too vulnerable in this situation so we've run analogue from the mix position." An approach that sees Delta running huge quantities of control multi - try 100 pairs running 260m from stage to desk - and then there's the tower amp positions. What was most revealing from this mixed speaker set-up was how little EQ was applied. "Just the lightest of touches. It's all about speaker placement and level. Choose the right box for the right job and it will do the work for you."

Photos: Mike Mann, Steve Moles

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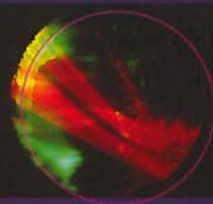
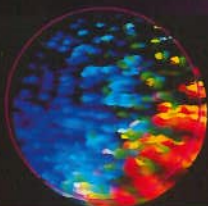
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# Phil Ward.

## ... Audio File

**A** PA system is not simply there to make a noise. The precise ways in which it can be wrestled into the venue are equally as important as its sound quality, and a successful gig depends as much on listening to the promoter as on listening to the band.

"But with this enhancement of ways of getting the ship of the PA into the bottle of the venue, comes a pressing need to keep up with installation techniques and regulations."

**SPECIFYING THE SYSTEM** has to take these considerations into account alongside the prerequisites of the music, and negotiating both known and unknown buildings - and the people in them - often comes a close second to EQ on the tricky chart.

I find this a better explanation for the rise and rise of line array systems than the acoustic arguments. In fact, many engineers openly prefer bigger, heavier boxes of varying denominations when it comes to grabbing the

air and launching it across the room with the kind of power and precision you really want - the kind that would get you an Olympic gold medal in the javelin.

**PARALLEL WITH LINE ARRAY** has been great evolution in the flexibility of the boxes themselves, and in the mechanics of linking, dividing and dispersing them. Chain hoists, and their motors, are an unsung miracle of the current market, and in tandem with line array the general technology of pouring sound reinforcement into

the cracks of malevolent architecture has made life a lot easier for everyone.

**BUT WITH THIS ENHANCEMENT** of ways of getting the ship of the PA into the bottle of the venue, comes a pressing need to keep up with installation techniques and regulations. This is especially true of flying systems, which of course all line arrays are. Groundstacking is also an underrated art, but compares with flying much as crossing the Channel by ferry compares with sailing single-handedly around Cape Horn.

**MANUFACTURERS** and sellers of flying hardware are liable for any mishaps that should befall the buyers and users of it, even though the equipment has changed hands and has become the immediate responsibility of the customer. For this reason alone, it is in the interests of manufacturers to educate the market in full about how to assemble their rigs safely, whatever their design prerogatives and wherever they have to go.

**ALTHOUGH ALL ASPECTS OF HANDLING** and operating PA systems carry risks that remain the concern of manufacturer and customer alike, flying is an obvious priority on the list. The acoustic niceties and incremental degrees of dispersion now possible with line array may be forgotten for a moment when a 108kg cabinet crashes to the stage because nobody read the manual.

**THERE ARE GENERIC PRINCIPLES** in rigging and flying, but there are also proprietorial differences from one system to another - another reason why manufacturers individually need to support their customers with training initiatives. It's one thing to supply documentation that the customer has to sign in confirmation of reading and understanding the kit's operational safety points - along the lines of 'terms and conditions' at the end of many an application form - but more can be done.

**IF IT'S NOT DONE VOLUNTARILY**, by the way, it may induce outside influence. Somebody with a clipboard from the Health & Safety Executive is entitled to pay you a visit at any time, and enquire into what you have done, in particular, to communicate the rules, regulations and techniques of safe handling to the staff, customers or contractors around you. If you don't have an answer, it might be a while before the next flown system is cleared for take-off.

Good to see Chrys Lindop at AES, nestling in the corner of Hall 3 with a new generation of Garwood monitoring and a - relatively - new UK distribution deal with Systems Workshop. At the show, attention focused on the new APM Series and the System 24, along with an RS link - a bi-directional data transceiver for Soundweb, MediaMatrix and other digital control networks, attachable to a laptop at multiple points.

**THE APM SERIES** not only provides orchestras and choirs with an alternative to battery-powered headphone monitoring, but it also opens up the scope of IEM itself, in that it dovetails into a distributed, wired audio circuit. The 'main station' of the APM Series provides power to all the RF transmitters along the audio line, including small stations that can be located anywhere you can get an XLR cable to. It also has all of the audio control, making the transmitters less expensive. These stations can therefore crop almost up anywhere - dressing rooms, FOH, even the foyer if the girl selling mints plays oboe.

**THESE TRANSMITTERS** can be used with any Garwood receivers, but there's the new System 24 to consider. It has 24 frequencies on board, across a 25MHz bandwidth, programmable to order according to country. Lindop claims it's a quantum leap forward in audio quality, while retaining the rugged build of the original Radio Station, so there's life in the old dog yet - or the old fire-fighting tiger, I should say, if the image that greets you on the website is anything to go by.

**IN-EAR APPLICATIONS** can be either wireless or wired, of course, but all wireless technology is about to face an interesting challenge from digital TV and radio broadcast. The frequency allocation for professional usage is generally regarded as inadequate, so companies like Garwood and its ilk are going to have to manage the frequencies available to them very carefully. A level playing-field again, as Lindop observes.

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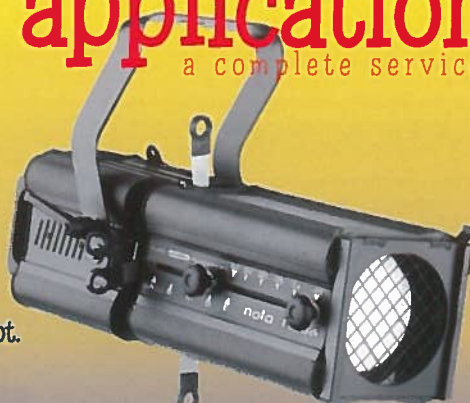
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# An Industry Standard

Though it is part of the larger beyerdynamic organization, Ruth Rossington discovers that the UK operation, under the guiding hand of MD John Midgley, is not afraid to make its own way in the world



Above, the team at beyerdynamic (GB) outside the company's offices in Burgess Hill; inset, managing director John Midgley. Following page, Fred Beyer at the company's HQ in Heilbronn, Germany.

beyerdynamic as a name is known the world over - and with good reason. Since its foundation in 1920s Berlin, the company has not just rewritten the rule book on the way we do things in the audio, broadcast and recording industries, it has thrown it away.

And with some style too, for its history is framed by numerous world firsts - the development of the first dynamic headphone - the DT 48; the introduction of the first dynamic microphone for studio use - the M 19; the release of the world's first wireless system - the Transistophone. And so it goes, through countless other ground-breaking recording and playback technologies right up to the present, where the recent introduction of the MCW - the world's first wireless conferencing system - has added yet another chapter to its history.

It's a legacy that has created a worldwide organization, which now employs approaching 300 people across offices in Germany, America and the UK, not to mention distributorships worldwide. Within this structure sits beyerdynamic (GB), the UK operation which, though relatively autonomous (GB doesn't report to GmbH, but it is accountable to the same set of shareholders) is a key part of the larger beyerdynamic group.

It's a platform that MD John Midgley and the team at beyerdynamic (GB) have exploited to the full, building a company that is now actively involved in all areas of sound equipment for live sound and sound contracting.



**Where it all began -**  
Acoustic engineer Eugen Beyer founded beyerdynamic in 1924, primarily to manufacture

loudspeakers for the then emerging technology behind talking movies. That quickly developed into loudspeakers for all applications and, encouraged by the growing demand for audio products in the recording and communications industry, led on to pioneering work in microphones and headphones, including the aforementioned DT 48 in 1937, and the M 19 just two years later. The latter made history as the standard microphone of the Reichsrundfunkgesellschaft - Germany's national broadcasting station.

As a result of the aftermath of World War II, the company relocated to Heilbronn in southern Germany, where it remains today. Spurred on by the rapid post-war increase in technological developments, Beyer continued his ground-breaking work and was soon recognized as a world leader in dynamic microphone and headphone design and production. He continued this legacy by revolutionizing the design and manufacture of ribbon microphones, with the introduction of the M 130 and M 160 - the first durable ribbon microphones capable of handling high sound pressure levels.

When Eugen Beyer died in the late fifties, the company passed onto his son Fred, who took up the baton from his father and still runs with it to this day. During his tenure, Fred Beyer has overseen the development of the legendary M 88 studio and touring dynamic microphone, the introduction of the M 500 ribbon microphone, the industry standard DT 100 headphone and DT 108/109 broadcast headsets, the world's first digital microphone (MCD 100), and the aforementioned MCW.

In the mid-sixties, the company began its expansion into other markets through independent distribution, and by the end of the decade had established a strong foothold in both the US and UK markets. However, it wasn't too long before its UK distributor hit the skids, and beyerdynamic had to move quickly to protect a growing client base (the BBC and the northern club circuit included). Not willing to risk a repeat performance, but aware that someone was needed who knew the market, beyerdynamic opted to launch its own UK operation, and put Stan Duer (from the former distributor), in place to run it. Perhaps not the strongest foundation on which to launch a new company, but the potential for the DT 48 - by now an industry standard worldwide - was huge.

beyerdynamic (GB) thus became a familiar name in the UK and started to build itself a

## Conference Calls . . .

beyerdynamic's new digital MCW-D Wireless Conference system features at the centre of a major refurbishment programme in Edinburgh's City Chambers.

Savilles of Glasgow won the contract and project manager Ian McNicholl was handed the brief of transforming a basic meeting room within the 300-year old, grade 2 listed building, into a modern debating chamber for the Council's Executive Cabinet meetings. This brief was further extended by Tom Aitchison, the council's chief executive, who instigated the call for a portable meeting system with audio-visual facilities, so that council meetings could also be held in local communities.

In a radical departure from standard meeting room design and to have full conference system capability on the 'Roadshows', McNicholl specified the beyerdynamic MCW-D Wireless Digital Conference System which was installed under his guidance by local installers, Avolution. Since the system is wireless, the rigging involves removing the units from the charging case, placing them on a desk and switching on. This also allows for

rooms to be used for other purposes without being encumbered with permanently wired equipment.

The MCW-D Conference System incorporates all the standard features such as mic switching, hierarchical request to speak and Chairman's override. In addition, a loudspeaker is installed into each station and negates the need for a PA system, whilst delivering audio in sonic clarity to the delegates. This facility also means that audio levels can be kept low, as its intelligent speaker switching automatically reduces the volume of units adjacent to those with open microphones to reduce the possibility of any acoustic feedback.

Released late in 2001, this is the first MCW-D system to be installed in the UK. Various additional systems features are available including 'Voting' and 'Simultaneous Translation'. These can be easily configured to operate with



Edinburgh City Chambers

alternative Media Control Systems including Cue, AMX and Crestron.

The RF system is digital, which, in addition to providing high quality audio performance, is significantly better at rejecting external interference, as well as facilitating full encryption, an important feature for the Edinburgh system. The presentation and conference system is fully integrated to, and controlled by, a Panja (AMX) Netlinx Integrated Control System. This gives the Chairman full control of both the conference system and the video presentations from a wireless touch screen.

profile in the growing hi-fi and broadcast markets. In the mid-eighties a new name was added to the UK team - John Midgley - a qualified electronics engineer and former customer of the company. His arrival as sales manager coincided with a boom-time for hi-fi sales, a momentum seized on by the company, who wasted no time in establishing its recently-launched DT 440 headphone as a central player in the market. Having come from the hi-fi side of the fence, Midgley recognized that the rapid advances being made by Japanese manufacturers such as Pioneer, Denon and Sony would soon impact on beyerdynamic's market share, so he began the process of steering the company towards pro audio.

Engineering such a market shift wasn't easy, but beyerdynamic (GB) was fortunate in having two things on its side: a product range that would translate well and, within that, a range of microphones which could open doors into other sectors. Being tied so closely to the product range of its manufacturing parent didn't prevent the UK company from recognizing that, if it wanted to develop its market spread (not just in terms of sectors, but expertise too), it would need to build a wider portfolio of products. Thus, beyerdynamic (GB) took on the distributorship of the range of Gallien & Krueger amps. Since there was a growing



interest in home studio recording, Midgley also struck a deal with the then infant Soundtracs to handle its range of mixing consoles.

It is a trend that has continued to the present day as further product lines have been added to the list: ASL's range of intercom products, XTA's DSP-based signal processing systems, Klein + Hummel's studio monitoring products, db Technologies' 100v line and low impedance amplification and speaker products, and Biamp's automatic mixing and noise masking products - have all begun to take the beyerdynamic name deeper into the worlds of pro audio, MI and conferencing.

The value of its widening brand base, and therefore its widening client base, has provided useful ballast when market fluctuations have pulled the rug from under others. More recently it has led to the

introduction of a new division dedicated to promoting the expanding range of products for the installation and sound contracting markets. Headed by Bob Harrison, the division's aim is to provide a full range of standard audio products and integrated digital audio systems.

The recent arrival of Biamp's Audia system will certainly help. This digital audio platform, which packs numerous audio components (mixers, equalizers, filters, crossovers, dynamics, routers, delays, level control, meters and generators) into a compact 3.5 inch unit, has already proved its worth in two 'beta' installations in Italy and The Netherlands. Added to that is the recent signing of a distribution agreement with Cue s.r.o of the Czech republic for its range of media management control systems. These allow for the centralized control of audio, video and any other electrically activated devices.

Despite the line-up of brands, it's the beyerdynamic name that remains the key asset, nowhere more so than in the conferencing sector. That established microphone and headphone lineage has stood the UK operation in good stead, and with beyerdynamic underscoring the trend from analogue to digital with the development of its first digitally-controlled conference systems - the MCS and MCW - it's no surprise that the





technology has caught the eye of several major institutions worldwide. The company's latest development - the MCW-D - has been at the heart of a major installation at Edinburgh City Council (see panel on page 66).



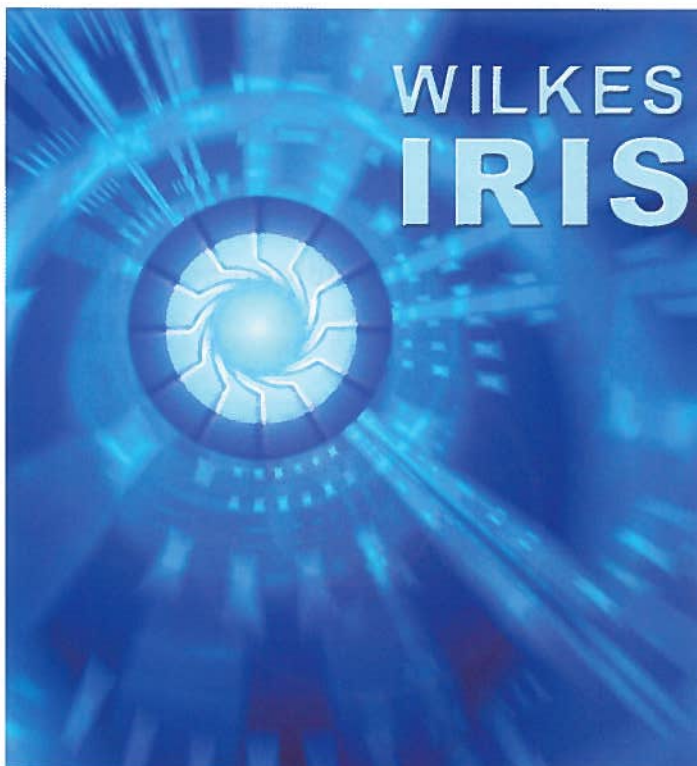
In emphasizing and expanding its product range, the company hasn't overlooked the fact that products don't work without people. At the company's base in West Sussex, Midgley has gathered around him a small but dedicated and highly skilled team of people who not only understand the technology, but also how to apply it to best effect. It's a formula that has won them contracts the UK over and which will be most effectively felt in the work of the new installation division.

Clockwise from far left - the DT 770 Pro closed studio headphone; the warehouse facility at beyerdynamic (GB); touch screen technology from Cue - the latest addition to the portfolio, which allows for simple control of a wide range of equipment.

With the markets growing ever more demanding (the nature of the business is that people now expect more for less), the challenge for the team at beyerdynamic will be to rationalize what they currently offer, whilst at the same time identifying new areas to grow into.

It's an ambition that will be helped by the research and development work still very much at the core of the parent company. It may also lead to other manufacturers' products being gathered under the beyerdynamic (GB) wing - who knows they may even fall outside the traditional boundaries of audio - but John Midgley is far too shrewd to allow himself to be drawn on this point. Wise man.

It's an interesting point on which to finish, because it indicates how little the company takes for granted and how much it is willing to do to ensure that it continues to develop its role in the UK market.



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## DigiMAX LT 8-channel mic preamp from PreSonus



The DigiMAX LT 8-channel mic preamp by PreSonus

is now available from HW International. Eight channels of high quality mic pre-amplification, inserts on every channel and an internal power supply set this unit apart from anything on the market, say HW. Each channel features the award-winning dual servo microphone preamplifiers with 48V phantom power, and -20dB pad, and each channel features a Neutrik connector which accepts line level or microphone input. DigiMAX LT digital synchronization is achieved by offering word clock in and out via BNC connectors. The sample rate can be set on the front panel to 48kHz, 44.1kHz and 32kHz, providing compatibility across multiple platforms.

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## SymNET upgrade from Symetrix

Symetrix's SymNet Designer v1.2 incorporates automatic mic mixers with master and slave modules in a 4-, 8- and 16-channel configuration, as well as room combining modules for up to 16 rooms, with and without automatic mic mixing. These often-requested features will increase the SymNet Audio Matrix system's versatility in a larger variety of applications. Another upgrade in SymNet Designer v1.2 is ARC-PS - a 1U rack-mountable power supply for up to 10 ARCs. The ARC-PS distributes power and control data via Cat 5 cable through 10 discrete outputs, or in daisy-chain combinations.

Also new is SymNet Designer 1.1, supporting two new basic hardware items: a CobraLink breakout box and an 'adaptive remote control' (ARC) box.

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## QSC's AcousticDesign

QSC Audio has introduced its new AcousticDesign Series loudspeakers, aimed at applications including hotels, restaurants, meeting and convention facilities to home theater and other multimedia environments.



The system incorporates QSC's new Intelli-Dock mounting system combined with Advanced Directivity rotatable waveguide. The units are weather resistant and are available in a range of colours.

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## HK Audio launches new Installation Line

With more than 20 years experience in designing and manufacturing sound reinforcement systems for the

touring and MI markets, HK Audio now enters the fixed installation market with a dedicated line of cabinets and accessories. The Installation Line is designed for all kinds of indoor installations, from bars and shops to theatres and live clubs. It features a total of eight different full-range and/or mid-high cabinets, from the compact 4"/3/4" IL 42 up to high SPL IL 12.2 (12"/2") and IL15.2 (15"/2") cabinets which can be run in stand-alone mode or in combination with one of the four different available subwoofers ranging from a single 12" to double 18".

All the CD Horns in the models are rotatable and for the IL 12.1 (12/1", IL 12.2 and IL15.2 there is an optional 90°x40°/40°x90° CD horn that can be exchanged with the standard 60°x40°/40°x60° horn without having to change the internal passive crossover network.

Tel: +49 6851 905210

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

## New LED Screens from Lighthouse

Lighthouse has released five new products: the ultra-high brightness LVP1050 (10mm pixel pitch, 5000 nits brightness) screen is the world's first outdoor SMD (Surface Mount Device) LED display, say Lighthouse, which will open up new markets to LED screen technology. The high definition LVP0630 (6mm pixel pitch, 3000 nits), is targeted at the indoor rental and fixed installation markets. The high resolution allows closer viewing distances and creates a sharp image. Both screens feature Lighthouse's new M4 Uniformity Control that brings TV quality images to the giant screen, the Quarter Bin sorting process and 13-bit processing displaying 16.7 million shades of colour.

Tel: +44 20 8380 9500

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

## Avo: free Pearl Simulator software

Avolites has launched Pearl Simulator, a free software download available from the website, which provides a virtual interface for the popular Pearl 2000 console. The photo-realistic software enables LDs, programmers and operators to begin programming a Pearl without a physical console, or to edit existing shows, saving data to a Pearl compatible floppy. Pearl Simulator is designed to work with the Avolites Visualiser emulation system - invaluable for situations where programming and set up time is at a premium. A fully

working Visualiser Lighting Rig is now bundled as part of the free Pearl Simulator download.

The Avolites Cache Builder is another free download which allows the user to load the consoles with just the fixtures being used, rather than being offered the full personality database. This is ideal if you always use specific types of luminaires, making patching and set-up even quicker.

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Italy: (+39) 035 42 85 401 • Singapore: (+65) 6842 3031 • Hong Kong: (+852) 2264 1500 • Japan: (+81) 3 5432 5249 • Middle East: (+961) 1651774

## Mackie launches ceiling 'monitor'

Mackie Designs has launched a high performance, flush-mounted ceiling speaker for the fixed installation market. The new SP400C achieves superior dispersion and pattern control over conventional coaxial designs, say Mackie, thanks to a high-frequency, exponential wave-guide originally developed for the company's studio monitors. The wave-guide combines with a 6.5-inch driver optimized for smooth frequency response and seamless transition through the crossover point. Mackie developed the SP400C to deliver sound which is more comparable to a studio monitor than a ceiling speakers - making it the ideal choice for contractors looking to produce a high-quality listening environment. The SP400C is supplied fully assembled, complete with a sealed zinc-coated steel backcan and cam-style installation clamps, as well as an integral 70/100V-line transformer rated to a maximum of 30W.



Tel: +1 425 487 4333

www.mackie.com

## Sunstar Fluorescents

Sunstar, leaders in tube lighting technology, have launched an improved range of 1, 2 and 3 tube tungsten and daylight balanced fluorescent light units for the film, TV and photographic professional. The lighting package includes a full range of accessories, including barn doors, intensifiers, eggcrates and remote and local dimming. The units are available from ACDC Lighting in the UK.

Tel: +44 1282 608400

## ARRI launches Pocket Par

ARRI's low-heat 200W and 400W Pocket Par system represent the latest development in ARRI's line of high-performance daylight lampheads. Both are ideal for fast and safe set-up and operation, and are ideal for lighting commercials, interviews or feature films - in the studio or on location - or where space is at a premium. Both models offer interchangeable accessories to make the one light source perform in a variety of ways. The 200W Par has a four-lens set and the 400W Par adds a fifth lens for greater control. Both systems utilize ARRI's Frosted Super Wide Lens, for smooth and even coverage.

Tel: +49 89 3809-0

www.ari.com

## Coemar completes Pro range

Coemar's ProWash 575 LX helps to complete Coemar's range of moving head fixtures.

The 575W MSD moving head fresnel offers 385° pan and 260° tilt movement and 16-bit beam positioning. With 14/16 DMX control channels, the ProWash 575LX features a built-in mechanical, electronically-controlled dimmer (0 to 100%), and a strobing effect, with adjustable flash rate (synchronized or random), fade pulse effect, blackout, programmable chaser effect with adjustable speed and CMY colour mixing. Six colours (plus white) feature on the additional colour wheel, which also provides rainbow and multi-colour effects, CTO and CTB filter. ProWash also boasts a progressive zoom - from 9.5° to 23° (half peak angle) and from 19° to 34° (1/10 peak angle) with a maximum beam angle of 44°.

Tel: +39 0376 77521

www.coemar.com

## CIE-Audio adds Armstrong 'i-ceilings' to range

CIE-Audio, the UK supplier of installation audio equipment, has added the new 'i-ceiling' from Armstrong to its portfolio.

A new concept in integrated acoustic ceiling systems, 'i-ceiling' utilizes flat panel speaker technology to provide a loudspeaker system to match Armstrong's market-leading

range of ceilings, to combine their existing aesthetic and sound absorption qualities with the acoustic benefits of NXT flat panel speaker technology. This allows for 'invisible' loudspeaker solutions which benefit from greatly increased sound dispersion, providing even levels of sound reproduction compared with the characteristics of traditional moving coil speaker technology.

The Armstrong i-ceiling system has further been enhanced by a range of electronics, which includes digital amplification together with a range of digital and analogue processors. The A2001 (analogue) and D2001 (digital) DSP-based, software-controlled processors provide a unique combination of music, public address and active acoustics such as noise spectrums and uncorrelated digital noise sources for custom-designed sound masking.

Tel: +44 115 977 0075

www.cie-group.com



Chris Edwards of CIE (left) and Stephen Collin of Armstrong with the i-ceiling speaker panel.

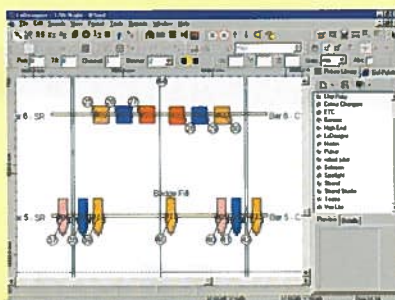
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## New firmware from BSS Audio

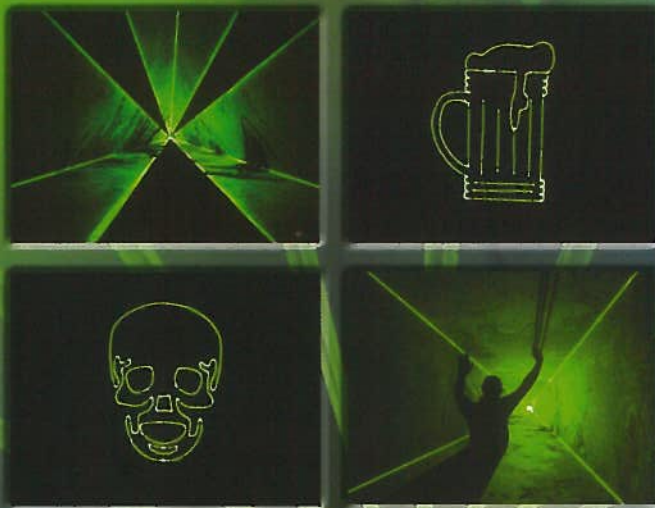
BSS Audio has released new firmware for the Omnidrive Compact Plus (FDS-366) loudspeaker management system. The new firmware, V1.10, features a new menu system with more functions on a single screen, which makes navigation and set-up much faster and easier.

Current FDS-366 owners may update their firmware for free via a software loader obtained online from the website below: [w.bss.co.uk/software/software.htm](http://w.bss.co.uk/software/software.htm)

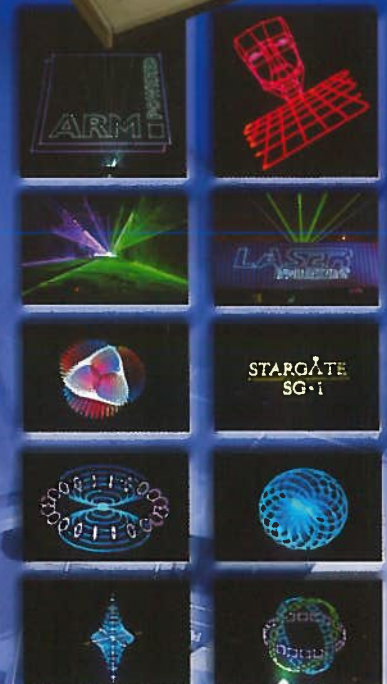
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# AES Europe

Phil Ward visits the 112th AES Convention in Munich



Left, the Convention Chair, Martin Woehr, welcomes a full house to the opening ceremonies; above, the Salzburg-Stagetec Group's Aurus; right, a visitor checks out the latest gear on the show floor.



It's been said before how much more holistic the American AES Conventions are compared to the European ones. Rightly or wrongly, this may conjure up a uniquely Californian vision: grizzled pro audio shamen burning incense on the exhibition booths, and harnessing nature's awesome and arcane powers in the pursuit of the ultimate sound wave.

Actually, it just means there's more loudspeakers. In Munich, despite the fact that it is the German city most suited to outdoor festivals and the like, the beards are as tidy as a studio floor manager's clip-board during a chat show on Zud-Deutsche Rundfunk about cycle paths. And Rundfunk - broadcasting - is the dominant theme of the AES, leaving the lion's share of the rest of European pro audio to Frankfurt and PLASA.

The American market is bigger and more cohesive, of course, so it's not right to draw conclusions about what's going on based on who's there over here, and who isn't here over there, and vice-versa till the goats come home. But just as EAW did not appear at the New York show in December - along with many other absentees, of course - Telex/EVI Audio gave Munich a miss, in spite of being a lot closer to it than EAW is to the Jacob K Javits Centre in Manhattan.

The last time the AES was in Munich, **EVI** general manager Mathius von Heydekampf was presiding over a new, pan-European regime following the merger of EVI Audio with Telex. The brands from EVI's base in Straubing in south-east Germany, especially Dynacord, were beginning a journey of cross-pollination with the matrix technology expertise within Telex, and many industrial products have germinated.

In the performance arena, we have indeed this year seen a compact line array system and the RE-1, a touring wireless system with up to 950 programmable channels. But the point is, we saw them in Frankfurt. And we saw them in Frankfurt along with a 20ft-high, bright green, smoke-spitting plastic cobra, promoting the

products with an adventure game based on the Indiana Jones films and culminating in a first prize trip to India.

Compare that with the Psychoacoustics, Perception and Listening Tests paper at AES, or Professor Manfred Krause's seminar on The Legendary Tape Recorder Magnetophon of AEG. I know, some of you can imagine another sequel starring Harrison Ford: Indiana Jones and the Legendary Magnetophon of AEG, and I too will celebrate when pro audio relics are as revered as the Ark of the Covenant. But the statement has been made by EVI Audio: all of its spring European cobra eggs in one banana-leaf basket.

Von Heydekampf has recently been promoted to president of the pro audio group worldwide, so the policies are clearly working. He was to be seen, anyway, briskly pacing the exhibition floor and thereby moving as much air as a compact line array system.

**Harman** sent out a lone batsman for sound reinforcement loudspeakers at this AES, wielding JBL's installation ranges. But that was it. The most telling Harman statement on sound reinforcement has been the relocation of most of Amek's resources to the Soundcraft site in Potters Bar, signalling the effective withdrawal of Amek from the live console market. The booth in Munich, therefore, contrasted Amek's broadcast and recording consoles with Soundcraft's new MH4, RM1D and 328XD, with the digital 328 highlighting its project studio/live versatility.

The MH4 addresses the new requirements for multi-functional desks seen across the market, in that it is configurable for front-of-house duties, monitor use or both simultaneously - a combination that makes it handy for both touring and fixed installation. The RM1D now has v3 software, while the 328XD features dynamics on every channel and every group.

**Innova Son** continued its comprehensive support of practically all the trade shows,

demonstrating once again the snap-shot-laden and curtain-call ready Actor Series of consoles. The company's Muxipaire connectivity squeezes up to 64 channels down one 150m co-axial paired cable.

**Behringer's** DDX3216 compact digital mixer may pick up some live support work of the kind its established competitors pick up, running submix and effects groups alongside the main console. It has three optional digital interfaces for ADAT, TDIF and AES/EBU, and all the usual claims of floating point DSP and 24-bit A-D and D-A.

But a big new kid arrived on the digital block from the **Salzbrenner-Stagetec Group**. Aurus is described as a "direct-access console", and in Munich joined the chorus of consoles advertising a return to analogue-style user interfaces - whether for live, broadcast or audio post-production applications. Aurus, a live desk, builds on the company's great success in central Europe and beyond with the Cantus mixer and the Nexus digital routing system, a kind of matrix expertise that's been a hit with not just broadcasters but theatres, conference centres and concert halls too.

Accordingly, it interfaces seamlessly with a whole range of digital routing, conversion, communication and stage management modules while giving the live operator up to 96 assignable channel strips and 300 channels laid out highly visually. LED fans combine with alphanumeric displays and switchable, hi-res metering across modular panels based on an 8-channel grid. Even the panel widths and TFT display dimensions have been calculated to prevent viewing offsets.

Stagetec's 'Geschäftsführer' Klaus-Peter Scholz described the market feedback that had gone into the development of the Aurus - which, considering the ergonomic priorities, could well have been called the *Vistius*. "Our experience with the Cantus gave us some users who asked for direct access to any functions," he said. "For

the last six or seven years, it's been common to use central channel handling, with only a few knobs to control everything. But many people need to find certain knobs and functions almost blindly, which really corresponds to the feel of an analogue console.

"So we built the console with, for each channel strip, 11 double-concentric, touch-sensitive knobs with push-button control integrated - giving access to 22 functions. It makes it much easier to access the functions, particularly for freelancers who'll maybe work for only three weeks with the console and then move on.

"Of course, also hidden in each channel is a lot of potential assignment and configuration for the experienced user. But the main design assumes you don't have time for rehearsals, you come to the event, it's hands-on, and it has to work."

You wouldn't find him in the Exhibitor Directory, but lurking in the corner of a friendly booth was Chrys Lindop, the man behind Garwood in-ear monitoring, in his new guise, Amber Promotions Ltd. The Garwood brand is alive and well, and at the show Lindop was demonstrating a new series called APM, designed for large-scale monitoring applications in which much of the system would in fact be wired.

"Basically, the main station gives you two output circuits," he said, "extendable to 10 which can run up to 50 local boxes - the APM12. Each box gives two musicians an individually controlled headphone output, and you can loop out of that box to however many you want.

"The advantage is that there are no batteries and no AC. The main base station provides stereo audio feed and power through a standard XLR cable, so you can create a system through multicores anywhere, cascading them all together."

The APM31, meanwhile, is a small 4:2 mixer giving the musician two auxiliary inputs in addition to the system input - one of which is adjustable between mic or line. A violinist, for example, could have his own instrument in the mic input, the string section in the other line input, and the overall stereo mix as the system input.

Audio-Technica showcased the Artist Elite series of handheld mics, two of which are condensers and two of which are dynamics. At the top of the range, the AE5400 cardioid condenser boasts a gold diaphragm which has been aged and vapour-deposited in the pursuit of a flat frequency response. Shure, meanwhile, added more DSP power and new software features to its P4800 system processor for installed sound systems, a kind of mix-and-match box of signal processors. And Sennheiser, by definition in partnership with Neumann, showed the hybrid wireless mics that combine Neumann's KMS 105 capsule and Sennheiser's own 5000 transmitter.

Following on from Digigram's announcements at Frankfurt regarding a new generation of OEM networking solutions for PA, representatives of Fostex Japan were in Munich to confirm that the Japanese company had become the first licensee of EtherSound - the standard Ethernet enhancement module. Fostex, planning to incorporate EtherSound into speaker and digital control technology, clearly sees it as part of a strategic move into new territories, as well as supporting existing ones.

This, together with wide-open interpretation of Digigram's new Xtrack OEM Editing Pack, VX442 multi-channel sound card and a mic preamp in two popular stereo sound cards, for example, merely hints at the technological possibilities for corporate and commercial sound installations.



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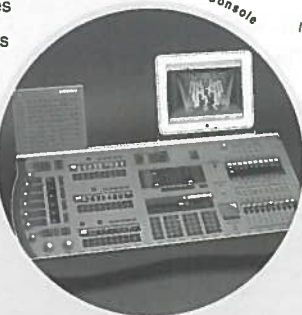

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# In Profile...

## L&SI Talks to the Industry Trend-setters

**T**he step from organizing sound and lighting for school productions to running a multi-million pound audio-visual company may appear massive. But for David Willrich, managing director of DJ Willrich Ltd, it's been a fairly natural progression from Oh What a Lovely War! ("the first school show where I designed

and operated the lighting") to establishing one of the world's most creative multi-media specialists.

Interestingly, it was his father's involvement with a popular UK visitor attraction that set him on the road.

"My interest in AV lies fairly and squarely with three people, all of whom were closely involved with the National Motor Museum at Beaulieu in Hampshire," he explains. "As projects

services manager at Beaulieu, my father was responsible for all the audio-visual shows at the museum and worked closely with both Ken Robinson, Beaulieu's then managing director, and of course Lord Montagu. Because I've always had a fascination for electronics, I spent my summer holidays helping out at the museum.

"In those pre-microprocessor days, the museum was fairly innovative in using AV on a large scale. It had over 100 slide projectors in seven shows - engineers used to regularly travel down from London to repair them. To reduce this, my father asked me to help with basic maintenance which got less basic as my knowledge grew."

Willrich junior proved himself such a valuable addition to the team that at the end of sixth form college, he started at Beaulieu - as its entire AV Department! Beaulieu's 'Wheels' dark ride project in 1985, at that time one of the biggest museum projects ever undertaken, proved to be the pivotal point for Willrich.

"When it was completed I started DJ Willrich Ltd as a separate company, though to this day we have continued to maintain extremely close links with Beaulieu, and have both offices and workshops within the estate." Since then, the company has gone from strength to strength, working on projects as diversified as The Millennium Dome, "memorable because despite the ridiculous timescales and all the politics, the volume of work that was achieved within six weeks (on our final zone) was just incredible . . ." and The National Museum of Wales.

Last year, DJW's contribution to the AV industry was recognized when the company won The Installation of the Year category at the 2001 National AV Awards. "We've been fortunate to work on some truly exciting projects," says Willrich, "including The Big Idea, House of Manannan and @Bristol to name a few."

Despite the company's continued growth (it has expanded through the opening of offices in Sharjah and a partnership with Mad Systems in the USA) life has not been without difficulties. Willrich comments: "For me, the big issue within our industry is the harsh payment terms that are often imposed. Obviously, it's not with all projects, but it does tend to happen on projects where management consultants sit between us and the client, and insist on quantifying every process. This can be a real trial, because you end up with a paper trail of bureaucracy throughout the life of the project.

"In this business, we're building shows or experiences, which is actually a highly creative process. Being forced to define that process is often impractical and unrealistic and all it really achieves is to push you into 'safe mode' - which obviously isn't the right environment for either excitement or creativity."



Willrich also has some fairly strong views on the lack of recognition for specialist companies. "I firmly believe that clients need to recognize that we are all specialist companies that are committed to producing the very best work possible. After all, our reputation, and our ability to attract future work, relies on our success. Specialist companies should be valued, trusted and given the flexibility to perform to the very best of their abilities."

When asked about his current favourite piece of equipment, Willrich says: "I'm a great fan of the BSS Soundweb audio processing and control equipment. We first used Soundwebs at The Dome and I'm particularly impressed by the flexibility it's given us. One very small box is able to mix a variety of great sound for a number of diverse areas and situations. In the past this would have been far too expensive, cumbersome and time-consuming."

Despite the successful businessman's external persona, it's evident that deep within David Willrich the 14-year old AV enthusiast lives on, for he admits to being a huge fan of AV and multi-media rides: "The only word for the Spiderman Ride at Universal's Island of Adventure in Florida is 'stunning'! It's a dark ride plus motion base and 3D film. A visitor experience that uses every gag in the book. I loved it!"

Finally, when asked if he could ever see himself doing something else, David was pretty adamant! "To be honest, I couldn't imagine working in any other industry. I'm still very excited by all that is happening and by the new technology that is being developed. The satisfaction of seeing a project through from conception to completion is enormous." ■

Lighting & Sound INTERVIEW

L&SI meets with David Willrich, the man behind one of the UK's leading AV and multimedia companies

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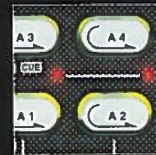
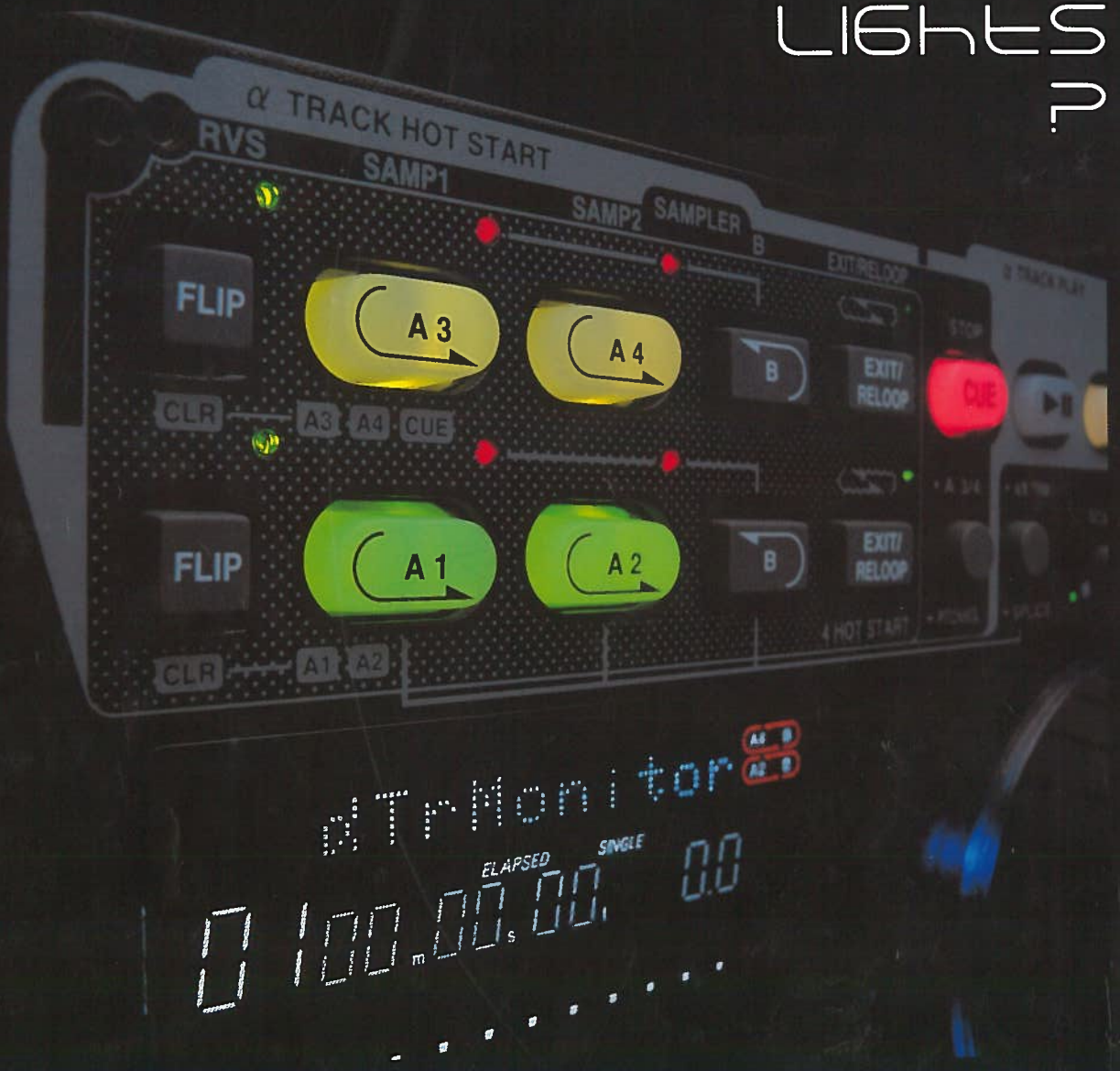
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