

Lighting & Sound INTERNATIONAL

April 2002

The Entertainment Technology Monthly

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Waters' Edge

- Roger Waters in Cape Town

Technical Focus

- Review of LCD Screens

Sounds of Frankfurt

- Pro Light & Sound, Germany

Winter Olympics

- L&SI reports from Salt Lake City

Clear White Light

- Profile of the White Light Group

History of Lightshows

- The untold tale of the Lightshow



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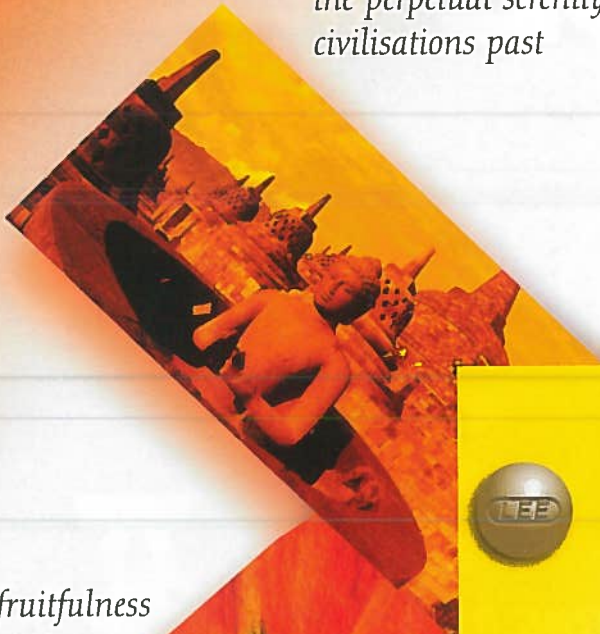
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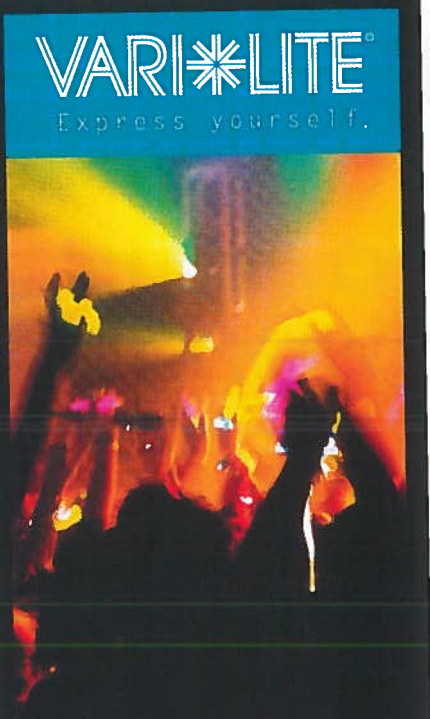
Lighting & Sound INTERNATIONAL

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International News Round-Up

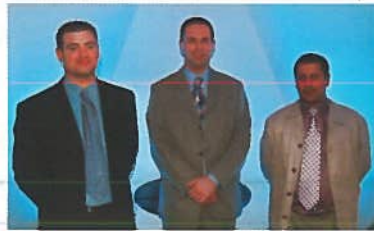
log on to www.plasa.org/news for daily news updates

Coemar US Restructuring Coincides with Launch of Coemar UK

It's less than six months since Florida-based Coemar USA (formerly Tracomar) acquired Italian lighting giant Coemar SpA. In that short time, the company has put in place a much more streamlined production, marketing and distribution system, aiming to make Coemar more competitive in its traditional markets.

Chief executive Gerard Cohen confirmed that while expansion of Coemar's production facilities in Belarus will enable the company to bring commercial luminaires to market faster and more cost-effectively, the handover of administrative responsibility will provide more creative freedom for the company's inventor, Bruno Dedoro, as head of Coemar's R&D and production operations. "Over the past two decades, Coemar has designed ground-breaking products such as the Robot, NAT and CF series of luminaires, and this will continue. At the same time, we are looking at ways of improving the global distribution network to create better market penetration."

In a move that signals his determination to expedite this process, Cohen announced at SIB in Rimini that the company has set up a UK operation - Coemar UK. At its helm is Ian Kirby, who was instrumental in establishing Martin Professional in the UK and setting up the



company's original base at the end of the 1980s. He left Martin to build an internet portal, G.E.T.com, but more recently has been working with wife Julie at recruitment specialists Taylor Phillips.

Kirby becomes the major shareholder in the new privately-owned operation, with Coemar US taking a minor stake. The new facility will offer full warehousing and distribution and will assume all warranties and service for the products sold by Coe-Tech, Coemar's previous UK distributor. Joining Ian Kirby will be Ashley Lewis, as sales manager of TV lighting and Chris Hale as product manager, with a further sales appointment yet to be finalised.

Our picture top right shows (left to right) Jens Horneman, Gerard Cohen, Bruno Dedoro, Marcel Fairbairn and Ian Kirby. Our second photo shows Ian Kirby (centre), flanked by product manager Chris Hale (left), and sales manager of TV lighting, Ashley Lewis.

Apologies

Apologies to all those readers who received the March issue late - circumstances beyond our control resulted in the mailing being significantly delayed. We're sorry if this caused problems for any readers, and would offer a reassurance that the problem won't arise again. Thanks to all those who took the time to tell us they still hadn't received copies - at least we know we're missed.

This also provides us with an opportunity to remind readers to return to us the reader registration cards mailed with the January issue. If for any reason you've parted company with yours, you can call us on +44 1323 418400 and we'll fax one to you. Alternatively, there is a version on our website which you can download.

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Rave is the new addition to Compulite's acclaimed line of lighting control consoles.

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Rave allows you to control up to 40 Moving Lights, 100 Channels, and 20 Extras thru one, integral DMX512 standard output. It supports advanced features such as Ethernet, Sound-to-Light, SMPTE, and MIDI, making it easy to sync and communicate with the outside world. **Rave** also features an internal Auto-Saving Flash Disk protecting you from any data loss, and allowing on board storage of numerous shows.

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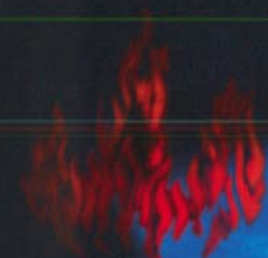
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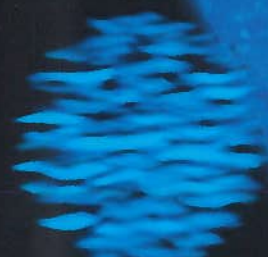
Everything you need in a **special effects** luminaires, this latest edition to the MAC 2000 Series is the ideal illumination **framing** tool for theaters, television, or any application that demands ultra **low noise** levels. The framing profile is fitted with the proven **HMI 1200 W** lamp and features a 4-blade beam framing system. Useful for accurate illumination coverage of stage props and scenery, the **precision** adjusting, fully automated framing system transforms the beam into a multitude of different shapes. A unique, **gobo animation** wheel creates extraordinary theatrical effects such as **fire**, **sky** and **water** imaging. The entire animation wheel pivots to allow for **horizontal** and **vertical** animation. But that's not all. The MAC 2000 Performance is also equipped with the highly advanced features that have made the MAC 2000 Profile a **success**: CMY color mixing, variable color temperature correction, 5 slot gobo wheel, additional effects wheel, extreme brightness, variable frost, focus and zoom system, iris, smooth dimming and hot lamp restrike.



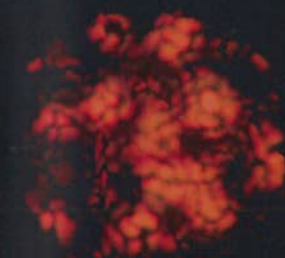
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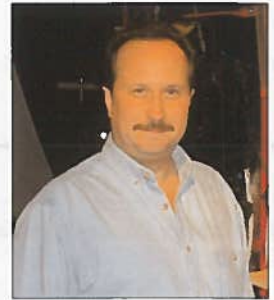
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News Round-Up



People on the Move

Audio-Technica has appointed **Stuart Russell** as area sales manager for central UK. Russell joins the company following a five-year spell with Soundcraft, taking on responsibility for sales and customer support in the Midlands and Wales. A-T has also promoted **Tony Cooper** to the role of market manager for the UK, with responsibility for overseeing the UK sales team.



Left, David March who joins PSL's Concert Touring Division; above Stage Electrics' Bill Jones

Bill Jones has joined **Stage Electrics** as business development manager, based at the company's Birmingham branch. His career began at lantern manufacturer CCT, after which he took on the role of pro-sales manager at Harman UK. He then moved on to the position of sales manager with Lightfactor, before moving to Cloud One in Birmingham.

AC Lighting has announced two new staff appointments. David Neal has been appointed to the position of lighting and audio sales executive in the UK sales office. Working for the past 17 years at Westsun Vancouver Inc, Neal has wide-ranging experience of lighting and audio projects. The second new recruit is **Peter Humber**, who joined AC in March as UK sales executive. Previously employed by Stageteck UK, Humber's career in the industry spans 15 years. In addition to his knowledge of lighting, he is also something of an audio specialist.

US-based **Total Structures** has added **Peter Hind** to its team in Ventura, CA. Hind is a professional structural engineer of some note and has 20 years' experience in the entertainment industry. For the past six years, he's been employed by sister company Total Fabrications in the UK, and has been a to the ESTA Technical Standards Committee, as well as contributing to the development of a number of British standards.

ETC has appointed **David Gray** as field project manager for the Southern Region. Based in Rome, Gray will be working with Fulvio Cotogni, ETC's manager for Southern Europe, providing on-site project support. Since joining ETC in 1997, David has played an important role in establishing the company in the global cruise and entertainment markets.

Established audio-visual systems installer and music and media production company **tsg** - home of the Candy Rock programming arm - has recently employed **Neil Law** as sales manager for its pubs, bars and restaurant division. This is part of an ongoing strategic expansion at tsg, which will see other key positions filled during the coming weeks. Law has a wealth of experience from his previous roles at both Tascam and Tannoy.

Entertainment lamp specialist **MGC** has recruited **David Cartwright** to its expanding international sales department. Cartwright has over 16 years' experience in the entertainment lighting industry, ranging from hire, design and production, through to sales and marketing. Most recently he was group marketing manager for the Lighting Technology Group. One of his first priorities will be to develop new products and services to complement the existing range of lamps supplied by MGC.

BSS Audio USA has recently appointed **Denny McLane** as regional sales manager. Based in the Los Angeles area, McLane will work with consultants, contractors and end users, as well as conduct product training. Prior to joining the company, McLane spent nearly four years as the director of sales and marketing for Level Control Systems (LCS).

Martin Professional Inc has announced that respected lighting designer **Joe Zamore** has joined the company as an application and integration specialist. Zamore's main role will be to assist architects, lighting designers and Martin dealers in applying and integrating Martin equipment into their lighting projects.

PSL has appointed **David March** as business development manager of its Concert Touring division. Marking his return to the live entertainment industry after a spell in the architectural lighting sector, March was previously European operations manager at High End Systems, prior to which he was general manager at Vari-Lite Europe. March will be working closely with Stephanie Jefcoate and Scott Russell, who are currently providing video and projection services for the Supertramp European Tour, the UK tours of *Godspell* and *Sunset Boulevard*, *Lord of the Dance* and the upcoming *Gabrielle* UK Tour.

After 20 years at the **BBC**, 17 of which were spent in the lighting section, **Andy Dobbs** is finally leaving to work in the freelance sector as a designer/operator. He's not entirely a stranger to work outside the BBC, having spent some considerable time working closely with companies to get various fixtures and desks to communicate.



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New Manchester Stadium

When the City of Manchester Stadium heralds the start of the XVII Commonwealth Games on July 25, public information will be broadcast to the maximum 38,000-capacity seating via a sophisticated new sound system.

Built by contractor Laing, Arup's design of the £77m stadium is based on an eight-mast and cable structure, ensuring that all seats have uninterrupted views of the pitch. Every part of the stadium structure is used to support the 600-ton undulating roof which covers every seat.

Its acoustics have been cleverly tuned to enhance the crowd noise by using the underside of the roof. Arup Acoustics has provided this design service, as well as the building acoustics and overall sound system design, in addition to an environmental noise impact assessment on residences in close proximity to the site.

Blackburn-based Romers successfully tendered for the entire Public Address/Voice Alarm installation contract, drawing on the TOA catalogue to fulfil Arup's document specification. John Caton, managing director of Romers revealed that this is the largest single project the company has ever undertaken. "The stipulation was that we had to use a branded speaker for the speech reinforcement, and TOA MS1s fully meet the requirements," explained Caton, adding that the enclosure is also in use at Manchester City's Maine Road facility - and the football club insisted on continuity in the new ground.

The TOA MS1 speaker was designed for sports stadia use and incorporates their touring driver - the twin-magnet sub-woofer (2 x 12" and horn) - with the 2" compression driver looking after the HF. TOA supplied EASE data, enabling the designs to be fully optimized, and the wide dispersion, heavy midband characteristics of the 56 distributed MS1 to be fully utilized.

Fed by emergency/mic and programme sources (via the DJ station) the system is distributed to four terrace zones. Run in biamped mode, two lines of MS-1s respectively feed the upper and lower tiers, with TOA VP-1240 amplifiers powering the top tiers.



Above, the City of Manchester Stadium. Left, Brett Downing of TOA with John Caton of Romers



Thus in the north and south stands, the flares are rotated to alter the dispersion characteristics. In order to accommodate that flexibility, TOA needed to enlarge the enclosures, while specially-manufactured brackets accommodate the precision angling of the boxes. The temporary stand is served by 12 90° x 40° constant directivity horns.

All the HF signal is carried through mineral-insulated cable while the bottom end runs through 4mm cable. Each speaker line has its own channel assigned to TOA's DP-0206 DSP device - a 2-in/6-out expandable DSP engine which is entirely reconfigurable. John Caton has been a big fan of the DP-0206 since its launch. "We don't need to look for alternatives because the human interface is just so easy," he says, "and it looks and sounds analogue. We can put EQ and compression on the input - but because of its

expandable reconfigurability we can also have it on the output." With so many 47U racks housing the raw amplifier power, any saving of real estate is a blessing, and John Caton acknowledges that using conventional analogue devices, he says, would require another processing rack.

The publication of Lord Justice Taylor's report following the Hillsborough tragedy led to the publication of the Green Guide, by which stadium specialists such as Romers now have to conform. John Caton's company will provide three days' training on a system on which the only accessible settings are on the mixing desk (the DP-0206 presets being safely locked away).

As to the future, within days of the Games' closing ceremony on August 4, the temporary stand at the northern end of the stadium will be pulled down and a permanent structure built to adjoin the rest of the stadium. The athletics track will be removed, and replaced by seating, bringing fans as close to the action as possible and raising the capacity to 48,500. The Stadium will then become the permanent home to Manchester City FC, commencing with the 2003/2004 season.

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Association NEWS

The Networking Event for the Industry

PLASA's Industry Day will take place on Friday 14th June at Down Hall Country House Hotel in Hertfordshire.

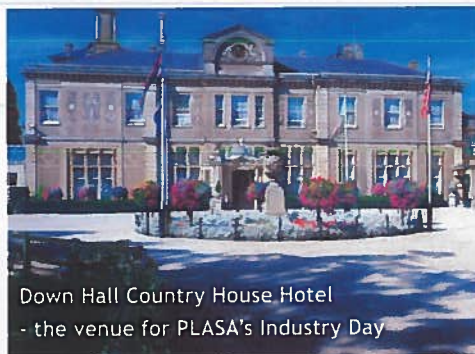
The day, which will be built around the Association's AGM, will offer plenty of opportunity for members to network with others in the industry, as well as giving them a chance to discuss key issues in the Break-out Sessions which follow the AGM.

The day starts with a buffet lunch, with the formal business of the AGM beginning between 2 and 3pm. This will give members a chance to hear about the Association's year and learn about future objectives.

Building on the success of last year, the Break-out Sessions will focus on issues such as Standards, Health & Safety, Human Resources, Employment Law, Training and Membership Services.

The Industry Dinner will complete the day's activities, beginning with pre-dinner drinks. As in previous years, two after-dinner speakers have been booked for the event - Paul Fletcher and Kevin Connelly.

Paul Fletcher is one of a handful of professional footballers that has made the successful transition from team sheet to balance sheet. Following a 16-year career as a professional footballer, he



Down Hall Country House Hotel
- the venue for PLASA's Industry Day

then started a second career that saw him become chief executive of two of the finest football club stadiums to be built in this country. More recently he was appointed director of commercial affairs at the new £400million Wembley Stadium redevelopment in April 1999, walking away from it 18 months later, three months before the project collapsed.

Kevin Connelly is an impressionist who has a number of television and radio credits to his name. He has been a major contributor to the last four series of BBC Radio 4's Dead Ringers and his TV credits include the BBC's Sports Review of the Year, The Full Motty and It's Just Not Cricket with Rory Bremner.

As in previous years, favourable rates have been negotiated for the Industry Dinner and overnight accommodation. Booking forms, detailing all the prices and options, will shortly be sent to all PLASA Members.

Take advantage of grants for PALA, Hong Kong

PLASA has negotiated significant discounts on the cost of exhibiting at PALA (Pro Audio & Light Asia). The Association has also obtained UK government funding for this event and eligible UK companies can make further savings on costs.

The PALA show features exhibitors covering pro audio, lighting, club, broadcast and music. Exhibitors can expect to meet potential buyers including agents, dealers, distributors and end-users from across Asia. Hong Kong is considered to be the gateway for trade to China, and with PALA being held here for the first time, more visitors are expected to attend from Taiwan, Korea, China and Japan, in addition to regular visitors from India, Singapore, Thailand, Malaysia, Indonesia and the Philippines.

The DTI's SESA (Support for Exhibitions & Seminars Abroad) funding will re-imburse eligible UK companies 60% of stand, construction and freight costs, up to a ceiling of £2,300. Those sharing a stand with a distributor may still receive support for the portion of the stand that they occupy. As Hong Kong is deemed a separate region from mainland China, those who have already claimed their maximum SESA support for exhibiting in China can still apply for support for the PALA show.

Applications for SESA support must be sent to PLASA by 3 May 2002.

For full details contact PLASA on
Tel: +44 (0)1323 410335 or e-mail
trade@plasa.org

Industry Directory Update

PLASA members Shuttlesound have asked us to point out that they are no longer the UK distributor for Altec Lansing.





The better it behaves, the more punishment it gets.

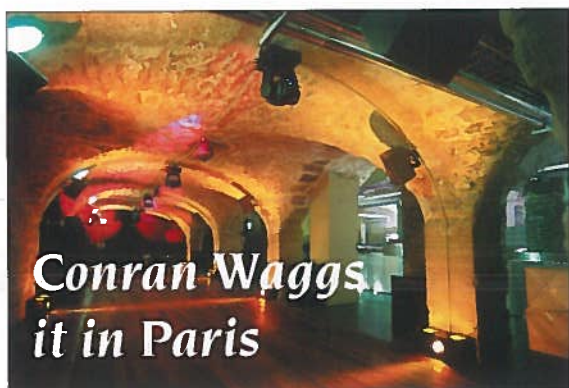
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Conran Waggs it in Paris

The famous Paris site where the legendary Jim Morrison said farewell to the world has been converted into a nightclub by Sir Terence Conran.

The former Whisky-A-Go-Go, underneath his celebrated restaurant Alcazar, had been empty for some time, and when it was excavated for the refit, artworks from the legendary Doors frontman were found. The site has now reopened as the Wagg - with the sound and lighting specified and administered by Fabric of London. Technical consultant Dave Parry (of Most Technical), who last year turned famous London club Fabric over to Martin Audio sound reinforcement, with the use of

Blackline and Wavefront components, this time opted for Martin's EM architectural range. Sound over the main basement dancefloor - a long tri-domed corridor - is delivered through a distributed Martin Audio system comprising 14 EM26s, reinforced by six Blackline S15 subs, while the DJ will be able to reference the music, mixed on an Allen & Heath mixer and delivered from Vestax, Technics and Pioneer playback devices, through a pair of EM26 monitors and a Blackline S15 sub.

In the club's bijou second room, the music is relayed through four tiny EM15s and an EM120 sub. The entire system is powered by a combination of nine Martin Audio MA1.3 amplifiers, a pair of MA1.6s and an MA900. As with Fabric, the system will be tuned using three BSS 9088 Soundweb DSP devices and utilize the OutBoard Timax ImageMaker. Each speaker has its own separate EQ programmed into Soundweb, and then sent out to Timax.

Parry's lighting specification uses the new Pulsar ChromaDomes at floor level to create solid blocks of moving colour. Martin Professional moving yokes and strobes are also controlled from a ShowCAD MIDI controller.

BECTU Members Accept New Pay Offer

West End theatre members of BECTU have voted to accept a pay rise worth 11.3% on average.

In a ballot of BECTU members throughout London's commercial theatreland, 71% voted in favour of the offer. Members are now set for a further pay rise in October 2002, worth 4%, or inflation plus 1%, whichever is greater.

The two-stage offer put to members was tabled by employers, the Society of West End Theatres, in response to an earlier ballot in which 96% of union members in the sector had voted in favour of industrial action. "This is a significant first step in the union's campaign to end low pay among theatre workers," BECTU organizer Mark David-Gray told us. Originally, the employers had tabled a pay rise of only 1.6%, prompting a determined campaign by BECTU to fight low pay in the West End. Since then its membership in theatreland has increased by more than 30%.

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New Digital TV Facility at the Barbican

The Barbican - one of London's landmark performing arts venues - has a new technical production facility.

This makes it the only live venue in the UK currently offering a permanent broadcast facility. The digital broadcast system is a joint venture between the BBC and the Barbican. Simon Prior, the Barbican's head of planning and production, sees the move as a positive step forward in the interactive stakes. He highlights the advantages of easy transmission between the Barbican's numerous spaces, instant live relay of images from auditorium to screen, and the ability to prepare footage for broadcast, web streaming, CDR and DVD production.

As with all other elements of the new system, the control room spec is comprehensive: it includes a Philips D10 mixer, a Radamec camera control system and a BNCS custom-designed remote system for the four VT machines, which can also control the cameras and audio. Recording devices include two DV cam recorder players and two VHSs. A monitor stack and RTS comms system complete the picture.



Above, the new digital facility. Right, the Barbican's Simon Prior (left) and Simon Wingfield flank the BBC's David Allen



The Barbican also purchased a 48-channel Sony DMX-R100 digital sound console (supplied via Total Audio Solutions). This will be worked in conjunction with a Yamaha 01V desk. There's also a permanent DPA microphone set-up for the orchestra in the roof of the recently-refurbished Barbican Hall. One end of the control room is currently configured with the Sony desk and racks of standard DSPs and outboard gear for when they want to record a straight concert from the Hall.

Eskimo Noise Comes in from the Cold

The New Year has brought better news for Eskimo Noise, the company set up by Neil Johannessen in 1987 to supply sound systems to the dance music industry. At the close of last year it was forced into voluntary liquidation "due to an unforeseen accountancy error".

Within weeks of the announcement, Systems Etc, the company founded by Bernard Mani in 1996 and now a successful provider of AV systems to London's club/bar scene, made a bid to take over Eskimo. That bid was accepted and Mani and his team have spent the intervening months amalgamating the technical expertise, resources and client bases of the two. As part of this, Systems Etc has moved to Eskimo's old HQ in Elephant and Castle, South London.

Only two weeks old, the new company pulled off a massive coup when it landed the New Year's Eve Ministry of Sound Party at the Dome for 50,000 people.

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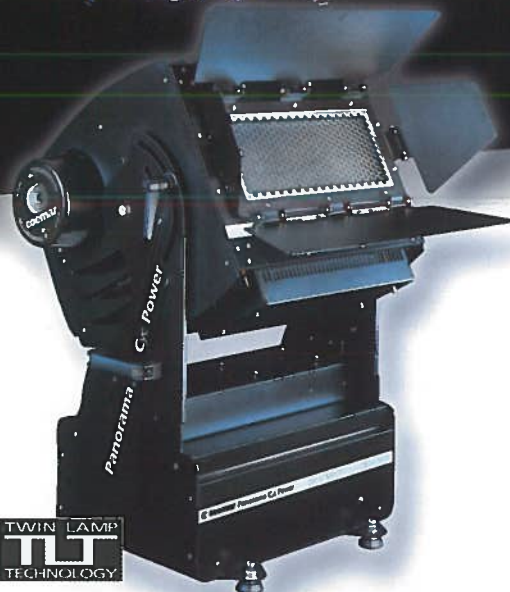
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Dream Theater

Dream Theater is an interesting mixture of 'prog' rock, metal and mayhem; they have a cult following and are enjoying great success with their latest album 'Six Degrees of Inner Turbulence'.

We've not yet figured out quite why it is six degrees, but there must be a reason.

Led by drummer and impresario Mike Portnoy, DT have just completed the European leg of their current world tour, before heading to Mexico and North America. It's a high energy show, and this is mirrored by lighting designer Benoit Richard. The lighting for the whole tour is supplied by Bandit Lites, handled for the European section by their UK office.

The front, back and two staggered middle trusses, are scattered with a mix of fixtures - from Martin MACs to High End Cyberlights and ETC Source Fours with scrollers. There's also a copious contingent of floor-based fixtures. However, it's the 12 4-lites with scrollers which are the basic building blocks of the rig.

Richard uses these expressively to create big blocks of colour that he overlays with beams, gobo texturing and sharp highlighting pick-ups from other fixtures. A row of upstage deck-based MAC 600s is utilized for rear lighting and to produce dramatic silhouettes for the moments of respite during what is a pretty intense show!

It is Richards' first tour with Dream Theater, and he is also a huge fan. Portnoy and he had crossed paths a few times over the years, but



he was offered the job after Portnoy caught one of his Yes Symphonic shows last Autumn. "I see things very differently, being a fan," says Richard, and explains how he 'plays' the lights in a similar way to a musician with an instrument.

Richard has over 2000 show cues - theatrical style - in his WholeHog 2 desk, and he rides various fixtures 'live' on top of these - particularly the 4-lites. The intricate cue structure reflects the band's complex musical composition - which would be impossible to busk. They also alternate between three equally intense set lists, so organizing his show as a balance between pre-programmed and live axes gives him maximum options. He has the basic underpinnings in the desk, onto which he builds the improvisational aspects of each performance.

Richard worked with Bandit on the Yes world tour last year, and wanted them to supply equipment for DT. He specifically wanted a company that could provide worldwide continuity of equipment, crew and service. "Bandit pays so much attention to the details," he observes, "the rigs are always immaculately prepped, and you know you can rely on being able to walk into rehearsals or pre-rigs and get straight down to programming and being creative."



Above left, Ian Bond, FOH Engineer and right, lighting designer Benoit Richard.

FOH sound engineer Ian Bond has worked with Portnoy on other projects, so it's not surprising to discover that Portnoy gives Ian plenty of audiological input at the outset.

The stage is completely clear of backline and monitors - the amps, cabs and other bits are all upstage of the band in iso-chambers, the band are all on IEMs and the keyboards are DI'd - a situation that's great for sightlines, and for the lighting department to expand their territorial claims. "That's why I took the tour," states Bond. "Apparently on the last tour, the backline was louder than the FOH. Luckily they decided to do it differently this time!"

Tour sound is supplied by Sound Image, and in the UK and Europe by London-based Major Tom - an EV X-Line (array) rig. Bond comments that it's a good system, but wasn't ideal for this European leg where it only fit about four gigs - excluding this particular show in Bologna!

His FOH Midas Heritage 3000 was rammed full of inputs. For system control he used three of the new KT DN9848s, all linked with Stardraw for PC, allowing system parameters like EQ and crossovers to be set without having to look at the devices themselves. His standard outboard effects rack out front set-up was joined by another rack onstage that includes an Eventide DSP for some vocal effects, and contributed to the trend for valve compression using two Summit DCL200s, one side on the acoustic guitar and the other on the lead vocal, plus two Tubetechs inserted on the BVs.

The Shure IEM system is overseen by monitor engineer Mark Miles, who chose to use an Innovason Grand Live digital console, which he loves. It's his first time with the desk, but he found it intuitive and learned fast during production rehearsals - where it turned up late, leaving him just five hours to get to grips with it!

He's found its various features "life-savers" on many occasions, and because it's digital, he can set up total recall scenes for every song in the set with plenty of control over all the mixes. He also likes the dynamic processing on each channel, which eliminates at least a couple of racks of outboard gear and allows a highly versatile monitor set up to be accommodated on a small footprint.

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Aura Champions New Technology



Aura's Fergus O'Hare, Orbital's Drew Mollison and sound operator, Jon Clarence.

The past year has seen a close working relationship develop between two leaders in the field of theatre sound design. Aura Sound Design and Orbital Sound have collaborated on a number of high-profile West End shows, including Mahler's Conversion, Private Lives and the highly-acclaimed revival of George and Ira Gershwin's My One and Only, which recently premiered at Chichester Festival Theatre and is now playing to packed houses at The Piccadilly Theatre in London.

Aura director Fergus O'Hare wanted to incorporate a number of new products into his sound design for the show, and turned to Orbital to provide the solutions. "By championing new technology, we're able to offer producers, directors and cast technically advanced solutions which improve a production on several levels," he said. "From enhancing sound quality through to helping productions to be more profitable, technology can push the creative boundaries of sound design to new limits."

The show's system centres around the Yamaha PM1D digital console and incorporates some notable firsts such as Sennheiser's miniature SK5012 wireless transmitters, the RTS Radiocomm BTR700 wireless intercom system, and eight Meyer MM4 speakers. O'Hare explains: "I'd noted the use of the PM1D on a number of musical productions and the recent software upgrades, particularly the Recall Safe mode, have further enhanced its performance." The off-line editing facility also proved very useful, allowing scenes to be edited during rehearsals.

The desk's capacity to create multi-dimensional sound effect placement is also extraordinary and greatly increased the dramatic effect of certain scenes. In addition, the PM1D's small footprint meant only half the number of seats had to be removed compared to a traditional analogue console." Orbital's Drew Mollison and associate sound designer Crispian Covell were on hand to deal with the programming and installation and worked alongside O'Hare and the show's operator, Jon Clarence.

My One and Only presents a particular challenge to the sound design team as one of the major song and dance routines, 'S'Wonderful', takes place in the sea off Staten Island. The two key actors end the number immersed in water, still singing, the musical director conducts from under an umbrella and the front row of the stalls are issued with plastic raincoats. Tracey Campbell, the show's wireless microphone supervisor, overcame the issue of waterproofing by protecting the transmitter packs with self-sealing plastic bags and unlubricated condoms. The Countryman B3 microphone heads withstand their nightly soaking without any further protection. The small size of the Sennheiser SK5012 transmitters has made them a favourite with the cast and they have proved extremely effective in use.

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Return of the Thorndike

The Thorndike Theatre in Leatherhead, Surrey, was opened by Dame Sybil Thorndike in 1969. Designed by Roderick Ham, the theatre was built and funded with enthusiastic support from local theatre groups, and went on to become an ambitious and high profile producing theatre. Its manager and founder, Hazel Vincent Wallace, was able to woo well-known actors and directors from London to create some remarkable productions.

At its height, the Thorndike Theatre's club had 12,000 members; it was described as 'a jewel of a theatre'. But despite the fact that houses were largely full, the economics of regional theatre meant that there was a dependence on subsidy and local grants. Inevitably there was never enough, and it was eventually closed down in 1997. Only the building's Grade 2 listing saved it from demolition.

But late last year, following six months of refurbishment work, the Thorndike re-opened as a working theatre under the ownership of a Christian organisation, Pioneer People, who took out a 15-year lease in April 2001. Now called simply 'The Theatre', the venue will play host to a mixture of performances and community projects, as well as conferences, corporate events, cinema and worship.

LIGHTING

PP's technical manager, Michael Forestier-Walker, found a theatre that had suffered leaks and an infestation of pigeons. The clean up was no small task. For the replacement of the lighting installation, he turned to experienced lighting designer Richard Horley. Horley's design work includes visitor attractions such as the Jorvik Viking Centre in York when it received its 10-year makeover in 2001, television work with MTV and live touring - he is just about to hit the road as LD with girl band Atomic Kitten. Horley recalls: "I went in to look at the existing equipment, which was the original 1960s Strand system (80 channels), but with numerous additions and changes over the decades."

On top of this, there was evidence of some work abandoned half-way through: "The hard wiring was hanging out of a number of places that it clearly shouldn't have been and a whole new patch and plug system had been half-fitted and then left, just to make it more interesting!" Under the circumstances, the first step was clear: in Horley's words: "We ripped the whole lot out and started from scratch."

Budgets were tight, and Horley was quick to settle on a suitable dimming system. He



explains: "I specified three new Anytronics Contractor 24 dimmers as the best value for money dimming system available. I've used them on a number of other venues - they're easy to install, with a clever initial hanging bracket system and lots of room to terminate your cables! The MCBs plus the RCD option are a nice finish!"

Horley then went on to design and specify Andolite Ceeform and Socapex break-out box layouts to distribute the dimming feeds via the existing box trunking around the venue. When it came to lighting fixtures, Horley and Forester-Walker had to look for the best possible deals on second-hand equipment. Horley says: "I sent Michael off to Entec and he came back with three Clay Paky Golden Scan HPEs! Cerebrum LTG [Lighting Technology Group] supplied budget Italian Pars and all the Andolite gear, plus all those useful items such as Ceeform plugs, lamps, DMX cable, etc.

"Point Source's Ben Marshall used to work at the Thorndike and was a mine of useful information. He had obviously been following the auctions and supplied a large number of Sil 30s and Patt 743s, which Michael is a fan of (showing his age! Sorry Michael!) I wanted to put in Source Fours but you don't see too many of those available second-hand yet!"

The issue of lighting control was more involved, as Horley explains: "Michael wasn't sure exactly what he wanted. I put him in touch with various suppliers, sent him a host of brochures and had a series of very long phone calls. I finally packed him off to the PLASA Show with a list of stands to visit and there he made the final decision to buy an ETC Express 24, while my existing Pulsar Masterpiece 108 served for the Golden Scans."

AUDIO

Pioneer People sourced their sound system from Reading-based Sound Foundation, a specialist lighting and sound production company who had previously carried out conference work for the group, and had also provided tour sound for three recording artists who are also members of the church.

The system was based around Sound Foundation's ex-hire stock of Shermann Audio speakers - a flown main cluster of two B1802 bass bins and two D650 top cabinets, plus a pair of D301s for front-fills and another pair for rear-fills. Amplification for the whole system is provided by Chameleon Audio 2750DP2 power amplifiers, also Sound Foundation's ex-hire stock. The company's Mark Payne explained: "For our touring work we've recently switched to using d&b audiotechnik, which freed up our Shermann stock for sale to Pioneer People. This enabled them to purchase a good, professional quality system at a very reasonable price."

Elements of the audio installation were carried out by installer Ian Almiston, with other elements, as well as video projection and cabling, carried out by Geoff Boswell of AudioPlan. Boswell began his career at the Thorndike as an Arts Council-funded apprentice electrician when the theatre first opened. Boswell recalls the Rank Strand lighting installation, with its 80-channel board, and various Patten lighting fixtures. Since those days, he has worked in studio sound, live sound, television and theatre, before eventually setting up AudioPlan. Boswell proved an indispensable guide for Pioneer People. "When we first went in, they asked me if I knew where the main electrical intake was. Funnily enough, I knew



exactly, because I had watched my father, who worked for Seebord when the theatre was built, install it!"

In the refurbishment, Boswell installed a comprehensive multicore system with ample tie-lines; a Yamaha DME32 DSP engine to control the configuration and equalization of the Shermann system, and an Allen & Heath 40-channel GL3300 at FOH. The video projector was a Sanyo PLC XP30, a 3000 ANSI lumen projector with long-throw lens.

RIGGING & STAGING

Fortunately, Forestier-Walker found that the fly systems, safety curtain, orchestra pit lift, prompt systems and tab systems were in fairly good order, requiring little more than a service. Harkness Hall, the manufacturer of the original cinema screen, found the material for it gathering dust in a storeroom, and were more than happy to give it to Pioneer People; a screen frame, although not the original, was still up in the flies. The only notable absentee was the cinema projector, which was never found. Drapes, apart from the main tabs, were non-existent and had to be renewed. Forestier-Walker comments: "I was looking at an old



scrap book about the building of the theatre - they needed about £400,000 to build the entire thing from scratch. We've spent well over that just to refurbish it."

The first production to be staged at the re-born venue was a West End Musical Tribute.

Lee Baldock

IAG (Deutschland) Debuts

The International Audio Group (IAG) has created a new German operation - IAG (Deutschland) GmbH.



The company, which currently has subsidiaries in the UK, Australia, Hong Kong and America, opened the German facility to serve the German pro audio market more efficiently. The office, based in Korschenbroich near Dusseldorf, serves as the HQ for Wharfedale Professional, Wharfedale Systems, Soundtracs Topaz and Solo brands, as well as hi-fi brands also owned by IAG.

Heading the operation is sales and marketing director Johnny Kluten (pictured), who until last year was in charge of the Professional Division at Taiyo (Ramsa by Panasonic). "With our newly developed Wharfedale-Pro range, it's great to be able to inject something fresh into the deadlocked pro audio market," commented Kluten. "The development of the MI business in the last year is now steadily defining a whole new value of product."

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Stade de France Comes Alive in International Production



Nuit Celtique was an ambitious, large-scale production staged at the Stade de France sports stadium in Paris. Featuring approximately 500 international performers, this two-day event was watched live by 90,000 people.

French rigging company Alliage, based in Rennes, and lighting rental house NAT, based in Paris, supplied much of the rigging and lighting equipment for the event. Additional equipment was fed to these companies by Lille-based Sonoss, the French distributor for Columbus McKinnon, James Thomas Engineering and Coemar, whose equipment all featured heavily in the show, and co-ordinated by UK-based PCM, European distributor for CM Lodestar Motors.

Alliage's Jean Hervot managed the rigging elements. He designed all the show's production rigging, employing 86 Lodestar motors, each with 40m lifting chains, and nearly a kilometre of James Thomas trussing - featuring a variety of types.



Left to right: Pierre Louis (NAT), Jean Hervot (Alliage) and Vincent Dechaene (Sonoss)

To achieve the desired lighting positions around the lip of the arena's roof, Alliage rigged 20 x 15m length trusses made from Thomas 52cm. It also hung four smaller ones at each corner of the stadium to accommodate Space Cannon moving lights.

There was also a giant 60m wide x 30m high projection screen rigged at one end of the stadium. For this, Alliage used an 80m span of Thomas Supertruss, with a customized sub-truss hung beneath. The Supertruss was suspended by 10 Lodestar motors and the special truss by 16 further Lodestars - ensuring a fast descent if the wind conditions became unfavourable. The screen was held in place and kept straight by six angled 13.5 metre trusses running top to bottom - four bracing it one way and two the other, also made from Thomas 52cm. These were weight-loaded at eight tonnes, and the whole screen structure and trussing support was constructed to withstand wind gusts of up to 50kph. The screen - made out of sail cloth - was also supplied by Alliage.

The lighting was supplied by NAT, a company headed by Gerard Schallier, also one of three lighting operators for the show, working under the direction of lighting designer Rock Segovia. Segovia's lighting rig featured just under 200 Coemar fixtures of various types - including CF7

and CF 1200 wash and spot fixtures, Panorama 1800s, Pro Wash 250s, some special long-throw profiles and some MMS long-throw mirror fixtures custom-built by Coemar for NAT. As well as all the lighting in the roof, the arena floor was covered by fixtures dotted all around the pitch perimeter and stage, some on the floor and others on custom-built scaff towers.

Other fixtures included 10 Syncrolite 4ks and 12 7k Xenon Space Cannons, eight of which were around the arena floor and four in the corners of the roof. Also pressed into service were 10 xenon Lycian SuperTroupier spotlights, complete with expert operators. Ten MDG smoke machines worked hard on the arena floor - filling a football stadium with smoke is no easy task!

The arena floor covering which protected the pitch also acted as a huge projection surface for colour, gobo and beam effects. Segovia's lighting design bathed the performers, who often spread out across the whole width of the pitch in intricate patterns, and rich, saturated pools of colour.

The screen was filled with a stunning projection show, supplied by Cote Cour, rear-projected by three ETC PIGI projectors with double scrollers. During the second half of the show, a video inlay 'window' was cut into the screen created by masking the projections - which then 'flowed' around it. The team of three operating the lighting used three Compulite Sabre consoles for the show, which was recorded and broadcast by Brittany TV station Breizh TV.

The audio for the event was supplied by Paris-based Siwa, with the main rig being built around an L-Acoustics system.

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Big Day Out



Above, the twin main stages. Right, Matt Dougherty in the production office

Now in its 10th year, Big Day Out is an Australian touring festival that visits Auckland, the Gold Coast, Sydney, Melbourne, Adelaide and Perth every January. It is unique in its design, scale and complexity and attracts many headline acts - the 2002 event featured The Prodigy, Garbage, New Order and Basement Jaxx.

This year, security was tightened following the tragic death of 16-year-old Jessica Michalik last year: organizers West & Lees made changes to audience safety provisions and introduced volunteer safety teams, increased audience lighting and erected a new, alcohol-free, D barricade area (from Mojo Barriers) in front of the main stages. The audience was given free water bottles and sun-block, and crowd surfing was banned. "We also carefully considered the time certain bands take to the stage," explained Matt Dougherty, one of three production managers on the tour. "The crowds are getting bigger (52,000 in Sydney) and some music makes them boisterous. Consequently this year we put System of the Down on at 4pm rather than late in the night. Darkness just exacerbates any problem we've had in the past."

Other measures include new agreements with artists to stop performances if requested, and paramedics working in the pit. Whilst necessary, all of these extra measures have added to the management's problems. The added difficulty of unusually tight turnarounds between shows was met with two identical sets of staging, although only one production team and set of equipment was available.

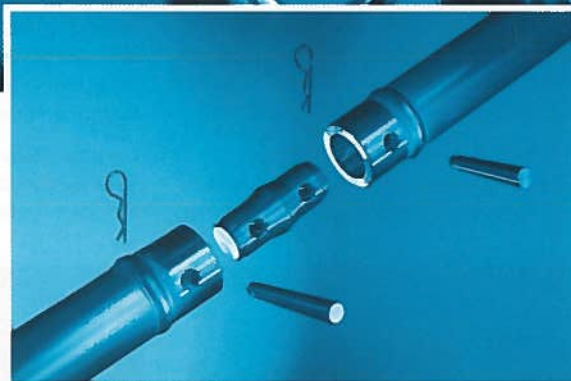
Jands Production Services supplied the audio, in particular a V-Dosc system, for the twin main stages. Following the sale of Jands' lighting business to Bytecraft last year, it was the latter who supplied the main stage equipment. Peripheral stages and venues used local production companies with six different PA companies employed in Sydney alone. "We always try to split up as much work as we can and so there are a lot of companies involved," explained Dougherty. "It makes for a paperwork nightmare, but we feel that the show has to give something back. It's a good earning time for the production companies."

Unlike other festivals, The Big Day Out is quite unique in that every act on the main stage has its own set and lighting rig, thus there is no reliance on a standard festival rig. Dougherty explains: "If Silverchair take to the stage, it looks like Silverchair at any venue on one of their tours, not playing a festival set. That's what makes this show different. However, the changeovers are an immense headache... but it's a good thing because the kids get value for money and get to see the show that the band wants them to see."

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Major Dubai Event is Built from Ground Up

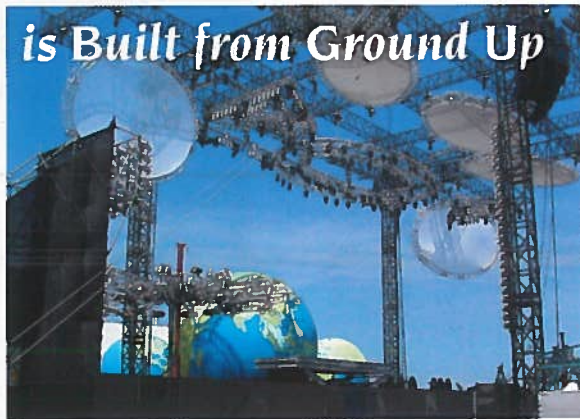
The opening ceremony of the 2002 Dubai Shopping Festival was one of the most spectacular and technically complex shows ever staged in the Middle East.

Dubai-based ProTec handled all the technical elements, and the whole project - literally from the ground up - was managed and co-ordinated by the company's Stephen Lakin, who collaborated closely with Damien McGurn, Hares Shehab, Rick Wade and Jason Strange.

Lakin's involvement with the event began in the summer of 2001, following an approach he made to the Government where he presented his ideas to Sheikh Mohammed. In October he was awarded the contract, without it going out to tender. Then began a race against time to make the show happen for 1 March. No venue capable of staging a show of this stature existed in Dubai, so Lakin's first job was to find a site and build from the ground up.

McGurn hired local contractors to build footings for the stage and for an 18m high x 140m wide protective windwall wrapping around the backstage and stage areas, constructed to withstand destructive winds of up to 200kph. They dug down five metres to accommodate the bases for the stage hydraulics. Being well below the water table, the concrete had to be 2.5 metres thick at this point.

Over 18,000 cubic metres of crushed rock roadbase, 15,000sq.m of Tarmac and 900 cubic metres of reinforced concrete were used to build



the arena. McGurn also organized the building of five electricity generation sub-stations on site. The final piece - the stage roof - was supplied from StageCo, air-lifted to Dubai from Belgium in a specially chartered Boeing 747 freighter.

For the event itself, lighting designer Nick Jones created a 'circular' lighting scheme with seven elliptical trusses - all of which moved - five with scrim surfaces stretched across for projections. He then added eight triangular lighting trusses, two at each corner of the roof - which also moved. Each side of stage, Lakin designed two surreal lighting 'spiders', each with 12 jointed legs, made from Total Fabrications' XO truss. A VL5 was placed at the tip of each leg, with Par 56 truss toners and banks of short-nosed ACLs mounted inside. The total lighting fixture count reached well over 2,300, including 340 moving lights deployed onstage and across the site. Six Pani projectors with AMD-12 slide-changers were used for the backdrop projections onto the wind-wall.

Lawrence Heron from PAI co-ordinated the over-stage truss motion control, utilizing 64 Columbus McKinnon Lodestar fast runner motors and a new

72-way Ibox computer-controlled system. Lighting control was looked after by an Avolites Diamond II console operated by Jones and three WholeHog 2s, one with an extender wing, operated by Phil Cole. There were also 11 racks of Avolites ART 2000 dimming on the show.

Audio for the event was designed by ProTec's head of sound Nick Chapman. The aim was to make the 'reinforcement' sonically 'invisible', a goal achieved with 30 Sennheiser MKH 416 rifle mics and assorted radio sets for enhancing the solos. Chapman and

Greg Pink mixed the 86 inputs using two Midas Heritage H3000 consoles.

Time aligning was done via a Fostex D16 24 hard drive, which also stored all pre-recorded material. The speakers were a mix of Turbo Flashlight and Floodlight. Two central clusters, six-wide and four-deep of Flash for the top two rows, and the same configuration of Floods on the bottom. These were joined by another 10 stacks of Floodlight on the floor.

The colourful two-hour show also featured five large automated scenic globes, all used by performers from the five dance companies involved (the latter also researched and sourced by Lakin and Shehab) to enter stage at the start of their individual shows. Before the finale - with all 250 performers onstage - the globes were 'swallowed' into a massive sixth globe amidst a dramatic lighting and pyro sequence.

This was followed by a seven-minute fireworks display, designed by Mike Jones of Pains Fireworks, the biggest show Pains have produced since the wedding of Charles and Diana in 1981.

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Life in a Day

Robin Coles is the managing director of event management company SPS. His first job was as assistant stage manager at the Theatre Royal, York in 1969. He worked in numerous theatres before ending up at the New London Theatre as master carpenter. Unusually for the time, the theatre hosted trade shows as well as theatre productions, and Coles suddenly realized that there was an entity called conferencing which was just like theatre, but paid a wage. He left the theatre to take a role as assistant staging manager for Caribiner, before moving on to Hamilton Perry. From there, he joined Samuelson Sight & Sound, thence to Viewplan, and subsequently to co-found



Creative Technology. 12 years ago he co-founded SPS and hasn't looked back.

What's the best memory from your current job?
Seeing the face of one of our people when they were awarded the Employee of the Year award, which was totally unexpected.

And your worst?

Having to tell a staff member that they were being made redundant.

What's been your favourite place to work?

The Excelsior on the Lido in Venice.

And your least favourite?

The Café Royal, because it's a nightmare, and likewise the Natural History Museum - the rules and regulations seem to have been designed to dissuade any supplier from wanting to work there ever again.

How do you view yourself - technophile or technophobe?

I guess I'm a technophobe to the extent that my daughter has to programme the video at home.

If you could fix one thing about the industry, what would it be?

Training - or rather the lack of it. Training is often disregarded and when it isn't, it's sometimes not handled very well.

If you weren't doing this, what would you be doing?

Drinking wine. As a job and a pleasure!

Did you have a mentor?

Yes, but he doesn't know it. It was Richard Murray, chairman of Avesco. He taught me that you can succeed in business without being unpleasant and nasty.

What was the last piece of technology that really impressed you?

Ah. I discovered, after owning it for three years, that my Dualit toaster also toasts sandwiches.

What are the best and worst aspects of your profession?

One of the best things is the teamwork and the adrenalin buzz. The worst is the lack of loyalty. You can do 20 jobs for someone really well and still lose the 21st by being undercut by 2%.

What was the last live show you attended as a punter?

The Royal Family at the Theatre Royal, Haymarket.

How do you feel the industry has changed?

It has moved from being very much a commodity market to being incredibly service-oriented, which is a good thing.

What advice would you give to anyone wanting to be successful in the industry?

Whatever task you are set, and I do mean whatever task, get your head down and do it.

What future trends have you identified?

End clients having an increasingly greater influence in how and what they buy.

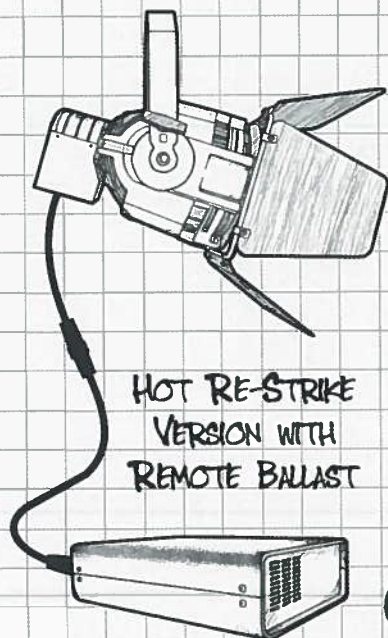
Where would you like to see SPS and yourself in 2005?

I'd like to see SPS being the industry's recognized leader in excellence with regard to live event staging. And as for me . . . drinking wine!

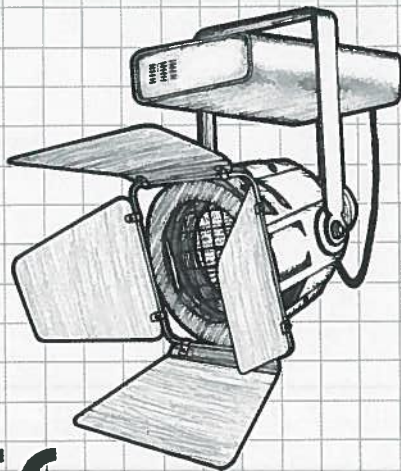
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New Installation Company Launched

Clockwise from rear left - Tony Day, Darrin South, Steve Nicholls and Damian Brunetti.

DIVAS is a new company, specializing in the design, project management and installation of visual and audio systems to all areas of the professional entertainment business.

The DIVAS team consists of four individuals - Tony Day, Damian Brunetti, Darrin South and Steve Nicholls - all highly experienced. Tony Day spent many years as a service and installation engineer, and more recently as a consultant and project manager. Darrin South has worked as a lighting programmer, operator and engineer, specializing in moving lights. Damian Brunetti has an electrical engineering background, and is qualified to test and inspect premises and

installations, whilst Steve Nicholls handles DIVAS' busy logistics department, plus the administration and scheduling, a role in which his former Army training will prove invaluable.

The company will design, specify and install lighting, sound and AV schemes, either working directly with end users or working under the umbrella of large sound, lighting and AV companies. DIVAS has already been working in a variety of environments: one recently-completed project was the sound and lighting systems spec and installation at Flicks club in Sleaford, Lincolnshire. The club is housed in a former cinema, retaining many original features. Working directly for owner Phil Broughton, DIVAS designed and installed a Logic Systems sound system, a Coemar, TAS and MAD moving light system and kitted out the DJ booth with Denon and Technics gear. They also specified the first ShowCAD Artist system in a club environment.

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Scam Reappears with a New Twist

Over recent years, we've drawn readers' attention to the worrying number of letters emanating from African countries, principally Nigeria, which are blatant attempts to rip companies off.

Previously the scam has involved close relatives meeting untimely deaths, but not before they've managed to siphon off large amounts of government money. However, useful as this formula has been in the past, it seems the tactics have now changed. In a recent letter to a PLASA member from Abba & Abba Trade Distribution Industry, the company's Frederick Moore has asked to see price lists on the basis that he is looking to place an order for nine 40' container loads of product. The financing, he claims, will come from money diverted from under the noses of the Nigerian government.

As so often in the past, PLASA members are being targeted heavily and we have taken numerous calls on the subject. Whatever else you do, don't fall for it. It's a long way down.

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London Hospital Theatre

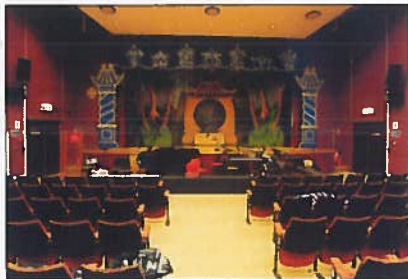
The Royal Free Hospital in Hampstead, north London, is the proud owner of a brand new sound and lighting system for its in-house theatre, installed by Live Business International.

The massive teaching hospital has a 330-seat theatre deep within its bowels. The hospital's Trustees wanted to make much more use of the theatre, but its ancient sound and lighting system, with no component less than 25 years old, was a major stumbling block.

Live Business won the contract to design and install a completely new lighting and audio system, with director Roland Hemming designing the installation. He specified a Turbosound-based audio system, with TCS59 cabinets and TCS108 bass bins, along with TCS20 delay speakers and a pair of the new TQ310 multi-purpose speakers for foldback.

The system is controlled by two BSS Omnidrives and powered by Yamaha amplifiers. The control room, which doubles as a basic pre-editing suite, boasts a Soundcraft LX7 console, with the system completed by Trantec radio mics.

The new lighting systems comprise 24 channels of Botex dimming, eight channels of switching, and a variety of fixtures including Par cans, profiles and fresnels and a Jands control console. Hemming notes that a lot of work was put into the infrastructure, in terms of sockets and cabling, so that equipment could be used where needed and extra lights installed at a future date without the requirement for further wiring.



Rage

Readers of L&SI may recall a piece we ran last year on Rage, the West Midlands-based professional theatre company, which works with various groups in the community.

The company has recently supported the Radiation series of youth events at Christ Church, Lye, where it handled the lighting design, arranged the technical elements and managed the get-in and get-out. Equipment for the event included Martin MX 1s, NJD Datamoons, Rainbow Colour Scrollers, DHA Animation Units, Strand SLs, ETC Source 4 ParNels and an Arc Line Strobe. Conventional lighting was controlled by a Zero 88 Elara Lighting desk with the intelligent lights run through a ShowCAD system.

Each year, Rage offers an opportunity for young people to work alongside professionals on three productions. The company is looking for people in the industry to help develop its work by either donating equipment or expertise. To find out more visit www.ragetheatre.org.uk or e-mail ragetheatre@yahoo.com

Halo Live Launched

Halo Live is a new company, launched by Yann Guenancia and Steve Marley, set up to handle all aspects of visual production and lighting for live tours and events. The new company will operate alongside sister company Halo Lighting, an established lighting sales, rental and installation house.



Halo Live will focus on the specific requirements of the live industry - from music tours to corporate presentation and everything in between. This will allow Halo Lighting to concentrate fully on its traditional core businesses. "We'd reached the stage where we needed to separate the production projects from the straight hire and sales ones," explained Steve Marley. "We're offering a fully integrated visuals package." Other production areas embraced by the company will include video production and moving image and large format projection - where it intends to supply equipment, engineers/designers and expertise.

The new company will carry the latest technology, including moving light fixtures from High End Systems and Martin Professional, consoles from Avolites and Flying Pig Systems and effects from OPTI and Anytronics. Additionally, it will have a full rigging department with Lodestar motors, numerous trussing and metalwork options and a Thomas ground-support system.

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Renault Roars Back to Pole Position

Renault's return to Formula 1 - its first full-blooded assault on the F1 world championship since 1985 - was marked by a spectacular high-tech launch of its new car for the 2002 season.

The event, attended by over 1,200 VIPs, including the world's press, sponsors, special guests and Renault employees, was staged in Renault's massive Technocentre in Guyancourt, near Paris.

UK production agency Sprout turned to drapes and materials specialist Blackout Triple E's Paris subsidiary to assist in the realisation of its design for the launch, with Blackout France's Dominic Peissel in the role of technical manager for the launch and Fabrice Le Floch overseeing the rigging aspects of the installation.

Peissel's first logistical challenge was to overcome the sheer size and construction of the Technocentre. As rigging had never been hung from the 30m high atrium ceiling before, Dominic and Fabrice liaised with local structural engineers to establish safe weight loadings. Working to incredibly tight deadlines and even



From left to right, crew member Thierry, Blackout France's Dominic Peissel and Stephan Santoni and crew member Jean-Jean.

stricter French safety laws, the crew skilfully installed all the points and safety mechanisms to suspend over 40 metres of A-type truss, used for the lighting fixtures, as well as the points to fly the sound rigs.

Blackout France also hung 19 5.5m x 2.65m banners, rigged strategically in the Technocentre's 6,000sq.m atrium walk-through, used as a lead-in to the launch area. The 200 lantern lighting rig was designed by Martin Locket of Essential Lighting. With the near

daylight conditions of the glass-roofed atrium to overcome, his design incorporated over 50 high-impact intelligent fixtures, including Martin MAC 2000s, MAC 500s, Coemar CF 1200s and High End Studio Beam PCs. Another 110 generic fixtures completed the line-up.

The launch area posed numerous acoustic problems, thanks to the reflective glass and steel surfaces. Delta Sound's Jim Lambert designed the main rig, using 20 L-Acoustics V-Dosc enclosures flown in two clusters and BSS Omnidrives for speaker management.

In view of the size of the building, the stage and set needed to make a major impact. To address this, set designer Steve Kilburn designed a 12m high set for which Stage Co Paris provided the stage structure, blacked out by drapes supplied by Blackout France. Renault's impressive blue and yellow R202 speed machine was concealed behind a 5.38m x 3.14 LED screen (constructed from Barco Dlite 7 daylight modules) supplied by French rental house Perfect Technologies.

For the reveal sequence, a Stage One Q-Motion control system lifted the screen and other scenic elements out as the car was pushed forward on a tilting, revolving platform.

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Catalogue Collection

To obtain the latest catalogues and product literature from any of the companies advertising on these pages simply post or fax the slip, indicating your choice(s) by ticking the relevant numbers.

A number of these catalogues also appear on PLASA's website. For direct ordering visit

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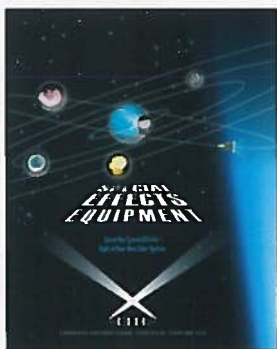
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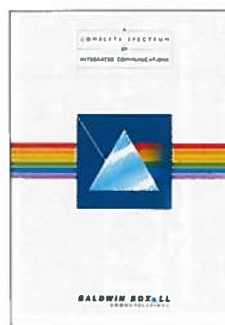
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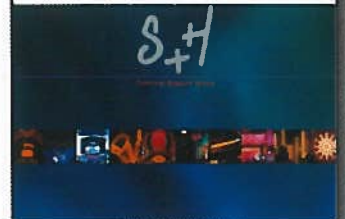
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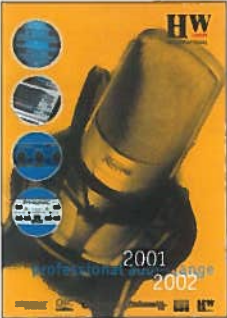
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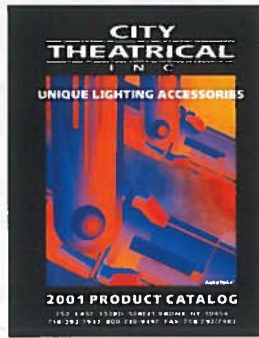
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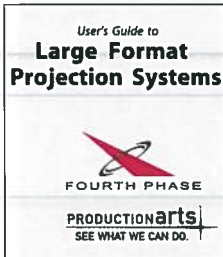
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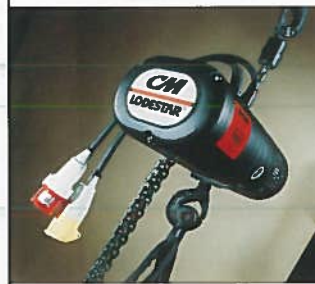
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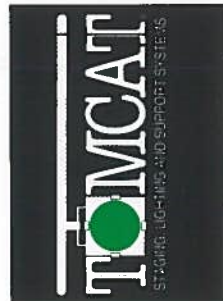
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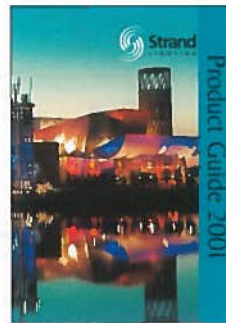
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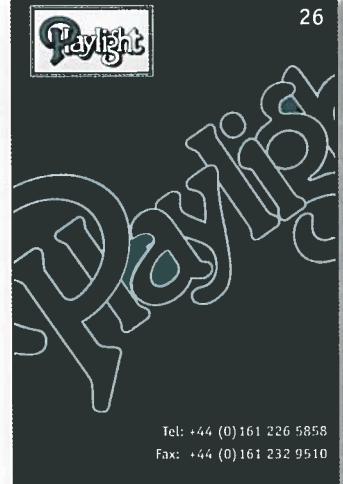
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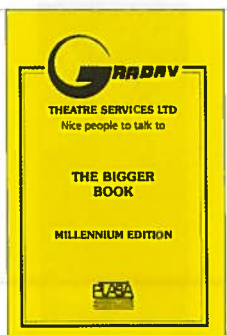
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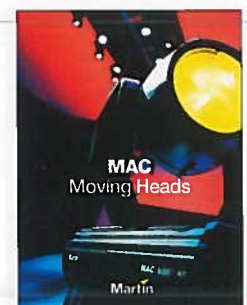
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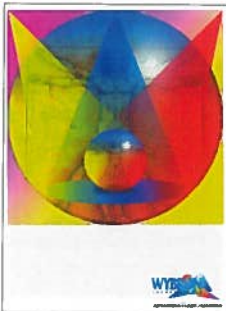
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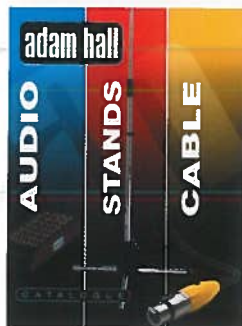
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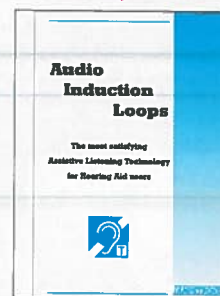
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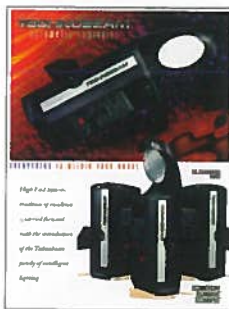
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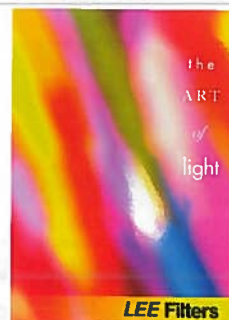
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47
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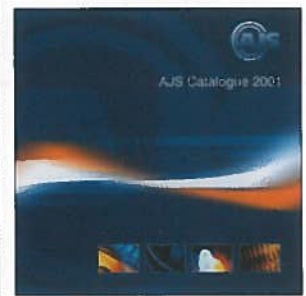
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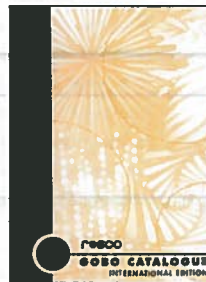


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Phil Ward.

... Audio File

It is not insignificant that Alesis was rescued by Numark. It shows how much the market has changed: the company behind the ADAT, which revolutionized home recording, overtaken by a DJ supplier.

AS SOMEBODY SAID IN FRANKFURT, hits are being made by people who have the know-how, not by the people who have the big consoles. In fact, mixers are just getting smaller and smaller, if you allow the humble DJ mixer into the frame.

THERE WERE SOME fabulous DJ products in Frankfurt. Witness Allen & Heath's sumptuous Xone:V6, all thermionic valve and Penny & Giles

rotary faders - more posh outboard than six-channel mixer. A bit of an indulgence, but it shows what can be done and, I'm sure, is intended to drive the market forward. A truly accountant-led company, of the sort everyone keeps complaining about, would not have had the imagination.

THIS WAS ALSO the Frankfurt when digital scratching arrived. All scratching is digital, you might say, but

"This was also the Frankfurt when digital scratching arrived. All scratching is digital, you might say, but Stanton's Final Scratch and AlcaTech's BPM Studio have nothing to do with dermatitis"

Stanton's Final Scratch and AlcaTech's BPM Studio have nothing to do with dermatitis. Final Scratch uses timecode-impregnated vinyl to act as a familiar DJ interface to the computer, wherein most file formats can be played, mixed and, indeed, scratched. BPM Studio is more akin to a hard disk broadcast jingle machine, like 360 Systems' Instant Replay, except that it's optimized for music playlists and, via streaming, can make you an MP3 jukebox out of the internet. The

story goes that the technology behind these breakthroughs was invented by students and then simply pasted on the web, leaving the door open for different interpretations. I'm not sure if that's entirely accurate, but it's another one in the eye for accountant-led entertainment.

LIVE SOUND, INSTALLATION, general public address and broadcast are converging through common technology. Digital technology companies with radio experience are targeting PA; sound reinforcement companies are interested in sound cards and networking. There is a great deal of new business to be had in the realm of archiving and logging. Courts of justice, business meetings et al - installation companies are gearing up now to use automated recording systems for these applications.

THE IT MODEL fosters OEM partnerships in both software and hardware. Audio is merging into architectural infrastructure for the first time as an integral part: no longer a bolt-on extra. CobraNet and EtherSound are the key technologies. Broadcasting will expand to encompass intranet-style channels with the technology leased by corporations and the content 'contract-published' by them. Chains of shops, museums, convention centres, restaurants, bars - all will create branded programming integrated with local PA and security.

AZTEC RADIOMEDIA'S HITPLAYER-L, for example, lets you stream and store content to taste. Using IP, you can adjust the playlist remotely and inject voiceovers at will. Media supply and licensing issues notwithstanding, the technical framework is now in place.

THE BIG STEP for live sound is the issue of a networking interface between brands - not unlike MIDI for keyboards in the 1980s. The interface must be neutral in every way: it must be third-party; it must not affect individual branded sounds; and if it can be 'retro-applied', like MIDI was, even better. More of this next month...

SINCE MARANTZ disentangled itself from Philips, it has been able to make autonomous decisions. 2001 was the company's first year of independent trading, and it was profitable. Both Marantz and Denon are marketing front-ends for technology that is developed by separate concerns. The two companies are in broadly similar markets, and much of the R&D will have pursued along parallel lines. About a year ago, Denon was part of a takeover of Nippon Columbia by a US venture capital company, Ripplewood - Denon being a profit-making pocket within the then unprofitable Nippon Columbia, whose Japanese record company operations were letting the side down.

THE AMERICANS, looking to increase Japanese business, and add to the bank, the record company, the golf course et al, agreed that Marantz was a good candidate. Accordingly, Ripplewood is likely to take over the remaining Philips interest in Marantz and form a new company called D&M Holdings. The brands will be managed independently, while the merger engages at the highest administrative level.

ENTIRELY JOINT R&D IS PROMISED, along with full integration of the IT infrastructure and manufacturing services. Interestingly, it gives the large-corporation platform back to Marantz, including investment from Ripplewood, joint R&D and shared overheads. But the brands are to remain within their respective domains, and remain competitive. In this way, the argument goes, room for expansion is preserved for each brand, while R&D combines to sharpen overall competitiveness. Of course, the pro divisions are a minor consideration compared with the consumer business. There are knock-on effects, but the professional sector is less influenced by corporate ownership than it might at first appear.

TRADITIONALLY, Marantz has been better known for esoteric, separate-component types of hi-fi, while Denon has been strong in the more compact, all-in-one lifestyle types of hi-fi. On a professional level, Marantz has a heritage in portables, especially digital portables, while Denon remains a household name in radio. Expect some big moves into the commercial-consumer sector, where Marantz's recent collaboration with Imerge's music supply technology, for example, has been significant. It would be surprising if the Denon brand didn't reap parallel dividends from that investment.

EXPECT ALSO A REFLECTION of the global change in delivery platforms towards IT-based solutions, from the PC itself to cable and satellite networks. D&M Holdings will be well aware of the CAT-5 household, and further collaborations are highly likely.

My thanks to Mark Perrins of Marantz Europe for his insights.

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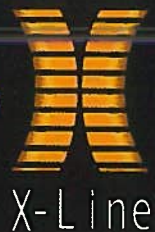


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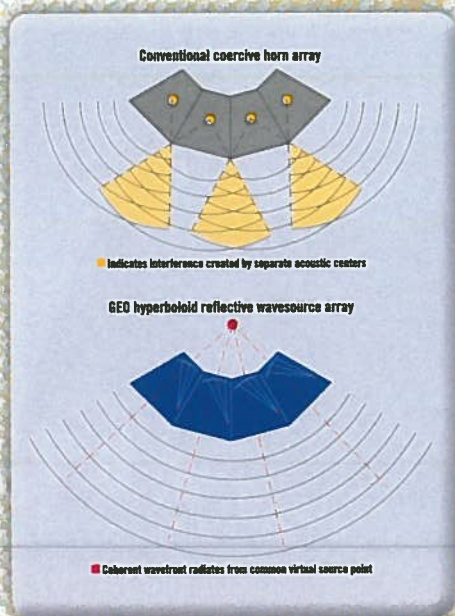
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Winter Olympics

L&SI looks at the opening and closing ceremonies, and the nightly medals presentation, of the recent Winter Olympics in Salt Lake City

Openings and closings . . .

On the evening of 8 February, Utah stepped onto the world stage in grand fashion. Nearly 3.5 billion people worldwide watched the opening ceremony of the Salt Lake Winter Olympic Games - an ice-based spectacular featuring a parade of all the competing nations' athletes, together with performances by Sting, Yo-Yo Ma, the Dixie Chicks and the Mormon Tabernacle Choir.

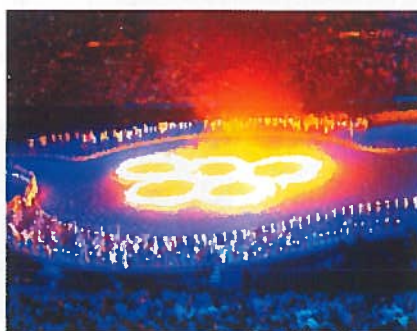
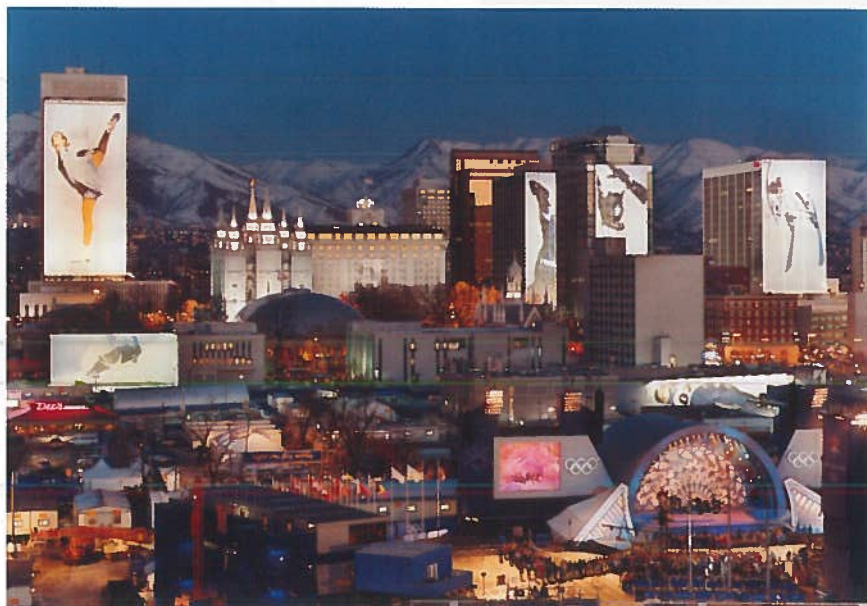
Sixteen days, 126 medals and several scandals later, the closing ceremonies brought one of the most controversial Winter Olympic Games to an end, with a spectacular show featuring ice-skating champions Dorothy Hamill, Katarina Witt and Scott Hamilton, with performances by Bon Jovi, Harry Connick Jr, Earth, Wind & Fire, Gloria Estefan and Christina Aguilera.

Both ceremonies were staged at Salt Lake's Rice-Eccles Stadium - a gleaming 45,634-seat structure (temporarily expanded to 56,000 seats for the Games), lying in the shadows of the towering Wasatch Mountain range. Despite snow and bitterly cold conditions (down to -60°F at times), the technical crews for both events performed flawlessly.

Veteran audio engineer Patrick Baltzell of US-based Baltzell Audio had the challenge of delivering clear sound to the spectators packed into the Rice-Eccles stadium. Fortunately, he's been in the Olympic shoes before: this is the second audio design Baltzell has penned for the Olympics, his first came for the 1996 Atlanta Games. Drawing also on his experiences from the Academy Awards and the US Super Bowl, Baltzell created a sonic blueprint for the Games marked by clarity and a survivalist's knack for withstanding the snow and cold.

Thus, sound reinforcement for both events was provided largely by 13 ground-mounted clusters each housing a trio of V-Dosc cabinets from L-Acoustics supplied by Audiotek of Burbank, California. Approximately 150,000W of QSC PowerLight amplification powered the rig, the latter packed into 15 racks housing a single PL 9.0 and a pair of PL 4.0s apiece.

"If I was worried about anything before the opening show, it was the fact that early on, I had spec'd house clusters utilizing four V-Dosc



enclosures per stack, as opposed to the three-per-stack we actually installed," Baltzell explains. "We lost the fourth cabinet in each because of sight-line considerations. Applied across the board, that also meant we lost one-fourth of my intended amplification. Our moment of truth as to how it all would work came during the first night of dress rehearsals, when, with a crowd in the stands, the producer came back from a tour of the house and said it was 'a tad too loud'. I was thrilled, because the amps still had three or four dB of headroom left. When he said take it down a notch, I knew I could operate a full five dB below my headroom limit. At this point, I felt fully confident we could weather the ceremonies intact."

Also part of the Baltzell spec were Shure UHF wireless systems, used to catch everything from President Bush's opening remarks to the singing of the national anthem through to the evening's closing moments. In total, 10 channels of Shure U24D/Beta 87A wireless were custom-built to his specifications by Shure's engineering department to operate within bandwidths normally excluded from public use, but granted special authorization on this occasion by the FCC (Federal Communications Commission).

Lighting designer Bob Dickinson is equally no

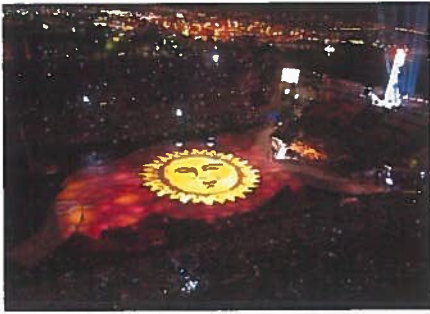
Above, the Medals Plaza dwarfed by the skyline of Salt Lake City (photo: Angel Art Ltd). Left, the impressive opening ceremony (photo: Mark Klopfer).

stranger to the big event - and especially not the Olympic event - since, like Baltzell, his name was on the credits for the Atlanta Games.

For both ceremonies, multiple small stages were set up on the central ice field with walkways, pathways and stages positioned around them. Working with a massive Vari* Lite system (204 VL2416s, 146 VL5s, 238 VL5Arcs, 54 VL6s, 52 VL6Cs, 126 VL7s and two Virtuoso control systems), lighting directors David Grill and Andy O'Reilly (both of whom have worked with Dickinson on numerous projects) handled logistics and scheduling, as well as some of the design work.

In the past, stadium shows of this scale have traditionally relied on large, high wattage, 7k moving lights, but Grill and O'Reilly found that, with a number of minor adjustments, they could achieve the same levels of brightness on the ice with a 192-strong rig of VL2415s. "We pulled the diffusers out to make them brighter and more collimated," O'Reilly explains. Lighting programmers Laura Frank and Christian Hibbard ran the two Virtuosos, Frank concentrating on the ice, Hibbard on just about everything else.

While the same system was used throughout the events, the lighting crew did have to adjust the positions of the VL7 automated luminaires for the closing ceremonies. "For the 'Great Moments of the Games' segment, we had 20 VL7 automated luminaires projecting high-resolution gobos onto chiffon cloths that were skated around the ice," Grill explains. "The rest of the rig remained as designed, since it was basically a good repertory type of plot."



The central ice floor for both ceremonies provided a ready-made projection surface and Fourth Phase Image Systems provided the PIGI large-format systems that were used in the ceremonies. These were particularly evident in the closing ceremony, when, as is traditional, images relating to the next host city are projected. Thus, the TOROC (Torino Olympic Committee) of the 2006 Winter Olympic Games gave a six-minute presentation, during which scenes of popular Italian culture scrolled across the ice before the 2006 Winter Olympics logo was finally unveiled.

The Olympic Torch Relay

The 2002 Olympic Torch Relay is a major production in its own right. During its 65 day-run, it crossed 46 states, stopped in 125 major cities and covered 13,500 miles.

Richter Scale Productions was contracted by the Salt Lake Olympic Committee to provide the turn-key technical production for the Torch's handover in each city, providing two mobile hydraulic stages, complete with sound, lights, power, technical crew and trucking, which literally 'leap-frogged' across the country.

The hydraulic elements of the stage system were provided by Stageline's SL250 systems. The audio rig was built around a combination of JBI VerTec speakers and TTM149 monitors with Crown providing the amplification, Shure, Sennheiser and AKG mics providing the pick-ups and the processing rack carrying BSS Varicurves, Drawmer compressors, Behringer gates and a Denon CD system. Both Yamaha PM3500s and Allen & Heath GL2s handled the audio mix.

The lighting rig was almost exclusively ETC with 112 Source Four Pars across the two rigs, supplemented by further Source Four ERSs. These were run through ETC Sensor dimmers and ETC Express consoles.

Of course no Olympic ceremony would be complete without pyrotechnics and some stunning effects, fired from both the stage floor and surrounding buildings, were produced by The Alliance 2002, co-ordinated by Kevin Kelly.

Gongs...

Unlike the Summer Olympics, where the medals for each event are given out at the event's location, all the medals were presented, each night, at the Medals Plaza. Once the official presentations were concluded, the turntable stage would rotate and the headline act for the night would perform.

The staging elements were constructed by PRG company Scenic Technologies. Handed the task of constructing the scenery, podiums and signage, including the large, back-lit Olympic Rings logos and the giant 2002 Winter Olympics 'crystal' logo, the ST team spent four months preparing the scenic and mechanical elements at its New Windsor and Las Vegas facilities. A set of nested 16ft round and 56ft ring-shaped turntables, from Scenic's huge rental equipment inventory were built to form the stage floor.

The company was also responsible for building the Hoberman Arch. Named after its designer Chuck Hoberman, this was a curtain-style structure that framed the stage of the Medals Plaza. Constructed of sand-blasted structural aluminium and 96 Lumasite panels held together with approximately 30,000 hand-placed rivets, the 36ft tall Arch was first erected in Scenic Technology's

on-site testing facility in New York, before being transferred to the Salt Lake site. The power for this massive 35,000 pound structure, was provided by two 30-horsepower motors connected to eight separate cables. Its mechanized movement was managed by Scenic's Stage Command System, a motion control system first introduced by the company to handle the automation of complex scenic effects on Broadway productions.



Left, PIGI projection was supplied by Fourth Phase for the closing ceremony; above, the Medals Plaza - which became the focus for a nightly concert (photo: Angel Art Ltd). Below, pyrotechnics provided by The Alliance 2002 light up the night sky (photo: Angel Art Ltd)

The overall lighting scheme for the nightly ceremony was designed by LD Bob Barnhart with lighting directors Matt Firestone and Paul Sharwell handling the lighting operation for this area. To lend the ceremony a theatrical-feel, the team drew on a huge Vari-Lite rig (VL2402 automated luminaires, 172 VL5s, 70 VL5Arcs, 122 VL6Cs and 2 VL7s), again operated through a pair of Virtuoso Consoles.

Because the lighting crew had to maximize the limited amount of time available to prepare for each evening's headline act, Barnhart decided it would be better to have two people programming rather than one. Almost every band brought its own lighting designer to the Games. "It was a lot of work to build from scratch each show every night - so we came up with a system where we created about 25 different separate blocks of colour for each verse/chorus/bridge. Then the LD would come in the night before and we'd put the looks up and have him assign a song to a particular block. If we didn't have anything that fitted, we'd build something special. Then we put all the effects on the outboard expansions and ran the effects manually."

As with the opening and closing ceremonies, an L-Acoustics system was used for the Medals Plaza, this time provided by ProMix Electrotec. The rig was built around L/R arrays of 16 V-Dosc systems, plus two LL/RR arrays of eight V-Doscs each. Three delay towers, each built around six dV-Dosc arrays, provided coverage to the stands, whilst two off-stage arrays of 10 dV-Doscs provided reinforcement for the other areas. Two additional dV-Dosc systems were used as near-field monitors for the mix engineers at the front-of-house production tower.





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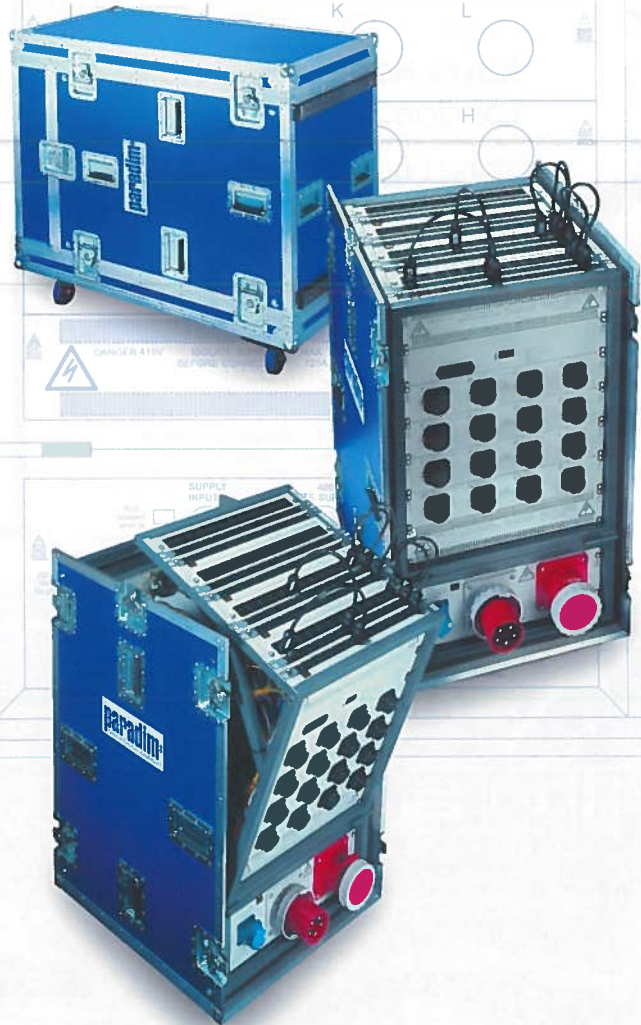
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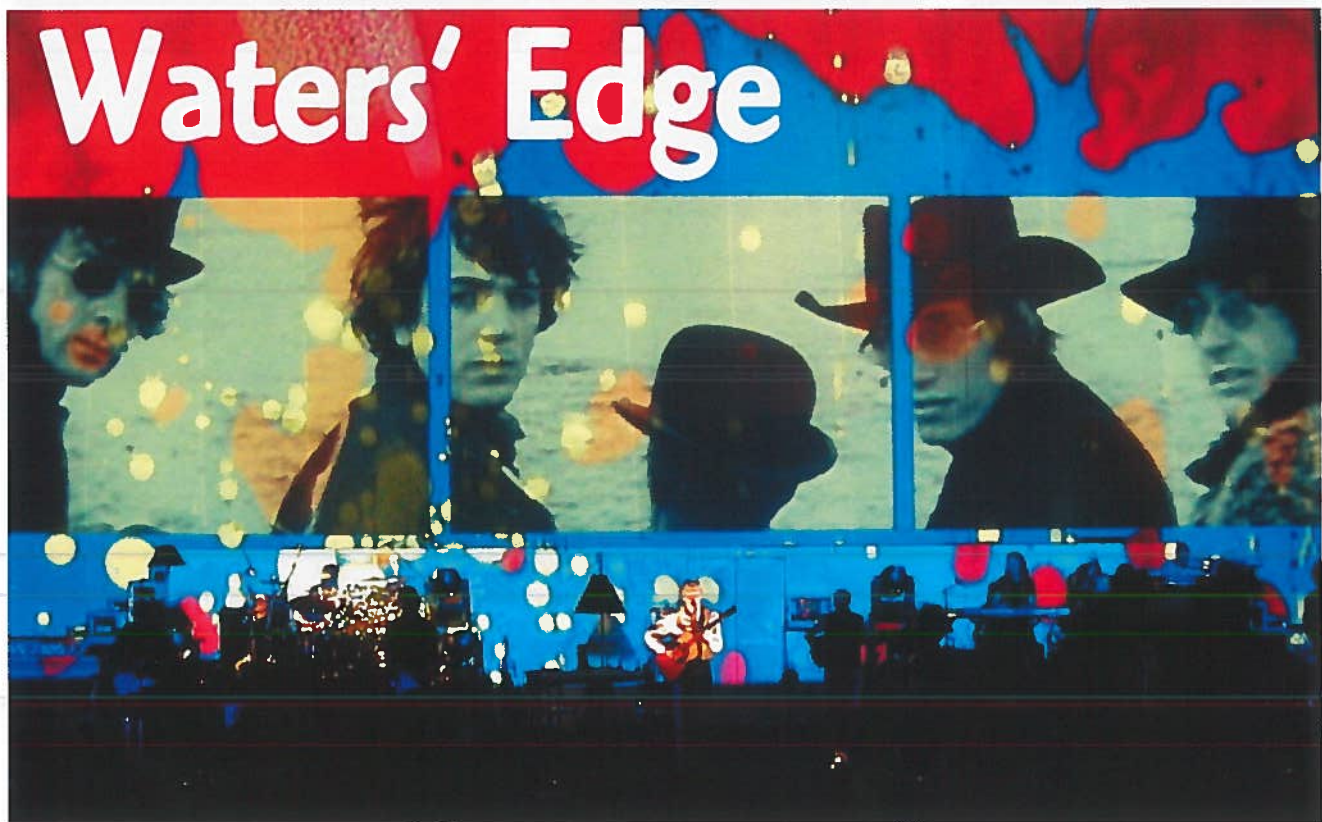
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Concept photographs by Louise Stickland



When Pink Floyd founder Roger Waters brings his historic 'In The Flesh' show to the UK, it'll be the end of a 15-year dry spell for UK fans.

Steve Moles flew to South Africa for a sneak preview . . .

Roger Waters is a man not universally recognized in his native England. For whatever reason, UK audiences sided with Gilmour and the rest of the band when the Pink Floyd split came - partly, I suspect, because of our cultural dislike for the unseemly process of litigation. Waters was thus excluded from the cult Floyd boom of the nineties, so while Gilmour and crew rode the colossus, Waters quietly put his rattle back in his pram and ambulated around the USA, where he remained as much the embodiment of Floyd as the band he deserted.

For British audiences it may now be time to join our US cousins and fête this man with the recognition he deserves. Dave Gilmour has made several public pronouncements in the past 12 months to the effect that we'll never again see him and the other two remaining members perform as Pink Floyd. Whatever your loyalties on this score, it's important to remember that Waters was the muse from whence most things Floydian emerged.

Based on what I witnessed in Cape Town and Johannesburg, he's still capable of presenting a mighty show steeped in the traditions established almost 30 years ago when screaming Spitfires careered across Earls Court.

AUDIO

Shy and retiring house engineer Trip Khalaf is inadvertently as famous as his employer. That said, I just wish I'd been there on his debut world tour when he first encountered

Australian Immigration officials years ago. Quizzed if he had a criminal record he replied: "I didn't know you still needed one to get in."

Blessed with an agile and lucid mind, Khalaf is an accomplished engineer who switches between a ready wit and a taciturn reluctance to say anything about the job he performs so well. Fortunately for us, it's the former on this particular evening. From a man renowned for his cynicism, his obvious reverence for this particular artist is clear. "I love this music - it's so well thought out, and it's fun to sit in front of. He is a wonderful creator."

Those who know Khalaf might mistake this for his trademark bathos, but he means it. Having established his motivation, Khalaf slips easily to the job in hand. "Well it's a lot like mixing Steely Dan. I take a lot of the credit for how good it sounds, but the band does the job for me. Good music is easy to make sound good." A maxim worth remembering for all you poor turd-polishers out there.

"There's none of that funny hard disk stuff here," he continued. "And, these are not chemically-enhanced vocals," which is surely a reference to less happy experiences at the console. Considering he's just emerged from rehearsals in the UK, where he's been using a fairly complex mix of tripartite surround-sound and on-stage stereo, I asked him how he found the service in South Africa? "For first shows this has actually been great. It's a [Turbosound] Flashlight system - everything works and everything sounds good. The most

interesting thing is that this is going to be about as good as it gets. When I arrive in South America I'm going to get some systems driven by squirrels in a cage." The Khalaf truculence is finally beginning to appear.

Fact of the matter is, Khalaf's an experienced and confident enough engineer to wring something out of nothing, so in a way I suspect he really means it - the challenge will excite him. "South America will be whatever it is, and it's not all bad. I know we're getting a V-Dosc system somewhere in Brazil. I've got Bob Weibel [a Clair Brothers systems man of cask conditioned vintage] looking after me out front, so it'll be fine."

Gearhouse South Africa (see panel on next page) is providing this rather unconventional PA. The stereo system is nothing unusual, but the surround PA differs from the norm in that all three clusters out in the audience radiate a full 360°. Thus, instead of being remote 'quad'-style stations way up in the nosebleeds, these are clusters flown from small circular trusses positioned within, figuratively speaking, the confines of the hockey dasher. With one cluster each side of the FOH mix position, the third further behind on centre, they might not produce the same spatially directive effect of true quad, but for the effects demanded of this show, they are more than adequate. Sounds and voices played out in the house move around with a frequently disquieting result, as intended. Weibel mixes and balances for these three stations on a



GEARHOUSE CHANGES

Gearhouse South Africa, who serviced the tour in South Africa, has recently emerged from the Gearhouse Group, the service company that so spectacularly crashed two years ago. I could go on about how this industry is littered with the remains of collisions between corporate governance and the presentation business, but Tony G does it so much better in his regular No Comment column.

In a manoeuvre that should be a beacon to us all, Gearhouse SA, led by its founder Ofer Lapid, reacquired all the assets of the company, and all its outstanding debts, rather than relinquish all responsibility and wait for the winding up and asset disposal.

Call Lapid and his management foolish (their lawyers advised them to do the latter) their decision was an honourable one. Can they afford such grand gestures? "Well, we will have cleared all the debts to suppliers and users by the end of March," said Lapid. "Including the ones dumped on us from the UK. Money owed to the Revenue and other government bodies should be cleared by August." No doubt the value of goodwill far exceeds the pecuniary. It's disturbing to recognize that some in the industry think it's acceptable to do the opposite and leave others to pay for their commercial ineptitude.



Yamaha 02R, whilst Khalaf steers the global panning from a device by his Midas XL4.

But it's the core music that matters, so effects and signal processing-wise, are you doing anything different? "Not a damn thing." Without prompting, Khalaf then volunteered more: "The PM1D is two years away for me - I'll let someone else figure it out first. This is an analogue band; I'm using an XL4 and it's got just enough automation to keep me out of trouble.

Robin Fox's monitor system is indicative of the whole approach to Waters' world tour. "Because air freight is the key to this tour (Andy Zweck of Sensible Events be upstanding and acknowledge your tightness - sorry, 'budgetary prowess'), I've got three 12AMs for Roger, two for Graham the drummer, and they generously allowed a pair for me so I've got some form of reference. "The rest of the band is on whatever we can get, so I need 20 wedges above and beyond these at every gig." Doesn't that bother you? "Well, any monitor man worth his salt ought to be able to get something out of anything." You can tell that, like Khalaf, he's actually looking forward to the day when wedges turn up freshly removed from the parcel shelf of a Volkswagen Golf.

"I've got a Heritage 3000, but I'd prefer an XL4 for the automation. There are big changes between songs - there's 11 people up on stage, and I have to pay attention to levels for all of them, plus the twelfth member of the band, the hard disk." But Trip Khalaf told me it wasn't that kind of show . . . "No, not in that way, but keeping the band on time is a big job for me. Because timing is such a critical element, we have Sennheiser in-ear systems: the musos pull them in and out as they need them. Stage levels are not an issue, quality is what is needed. You could converse with Roger on stage during the show, without shouting, so my job is just watching cues." And for Fox, as with Andy Gibbs on lights, there are plenty of them.

"Two keyboards, three BVs, three guitars, drums, sax, Roger on bass and vocal, and the

hard disk. As such, and with everyone taking a pretty full mix, I'm using all 24 outputs, plus all eight matrix sends - that's where an XL4 would be brilliant, I could have it all Post Fade and route everything to the Matrix for level." Simple.

LIGHTING & VIDEO

Like all things Pink Floyd, this is a show riddled with complexity, not least the changes wrought since Roger Waters last toured. The change at the top, in the form of new lighting designer Andy Gibbs, is indicative of two things. 1) Waters has never been afraid to make hard choices if he isn't getting what he wants. 2) For a musician he has a remarkably complete vision, one that embraces all aspects of stagecraft. As you'll see, he's just the sort of megalomaniac the movie industry reveres.

Gibbs' rig is essentially a hockey stick of truss each side running up/down stage. Gibbs uses LSD Icons and High End's Studio Colors - 24 and 18 of each respectively - LSD being the primary worldwide contractor, though here Gearhouse South Africa has supplied x-Spots and Studio Colors. "I'm carrying an Icon console and have programmed for all the leading High End and Martin fixtures, as well as Icons. Aside from the movers and three 10kW colour washes from Par 64s each side, all I have is some little 500W uplights on the floor around the band. Frankly, they hate them and tend to kick them around." Not as you'd notice.

One of the reasons Gibbs secured the job is that he makes sensible decisions for a tour that travels out of a virtual suitcase. His design will hardly tax the inventories of South America or Australia, though Beirut might prove a little tricky. More importantly, Gibbs has given the artist exactly what he wants. As Waters' long-time set designer and show director Jonathan Park said: "Waters is exacting." Gibbs then described a perfect example. "Snowy White, the new guitarist in the band, made a suggestion one day about how he might play something. "NO", said Waters emphatically, "you stand here

Title page and left, Roger Waters 'In the Flesh'

Far left, the publicity-shy house engineer Trip Khalaf. Right, lighting designer Andy Gibbs

photos: Steve Moles/Jonathan Park

and play it like this - that's what you're paid to do." There's a line in a Waters song that goes, 'God gets what God wants'.

Gibbs then waxed off into an even more enlightening anecdote. "Waters has an amazing mind. In rehearsal one day we were discussing a cue right at the end of 'Machine' when the animation is swallowed up by the descending sphere. There's no-one playing, just this buzzing noise followed by a closing door. We were having difficulty matching the blackout and the video sequence to coincide with the door slam. Roger thought about it for a few seconds - you could see him working his way through it in his head - and then said, 'it's on the down beat of the 53rd bar' and fuck me, he was spot on."

Gibbs is fortunate in having graduated secondary school in music, and to have studied French Horn to a higher level, "not that Roger knows that. But it certainly helps." No question there, and of course Gibbs also spent his first five years in the business working at an opera house, so he knows all about linking cues directly to the score.

"Roger is willing to look at stuff," Gibbs continued, "and he'll take advice. He constantly came out to look at the balance between the lights and screen during rehearsals, and had me dim all the looks. I explained to him that all the lighting looks we created would look dim relative to the screen when we played arenas."



To qualify that statement, dimness of lighting scenes was a product of the right lenses not being available for the 100ft throw of the rehearsal room, which, in turn, compromised the projector output by -30%. And now you're in an arena? "He [Waters] agreed."

Unlike the bulk of the lighting, the four Barco ELM G10s travel with the tour. Supplied by XL Video in the UK, Barco technician Alistair MacDiarmid had no problem contemplating the rigours these machines might experience getting thrown on and off planes, or being subjected to the inhospitable conditions of equatorial South America. "I've pretty much covered the same territories with Depeche Mode using the same model, and they were fine. Sure the odd bit falls out, as happens with all gear, but nothing breaks."

XL Video also supply a Grass Valley Profile server, running on NT v4.0, "equally reliable in my experience," said Diarmid, followed by a revelation from the video director Andy Joyes that, "during Depeche we saw it roll off the back of stage in Munich and crash to the

floor, and it still worked," which I'm sure XL's UK supremo Chris Mounsor will be interested to learn.

Between video and lighting the stage is shrouded in some pretty dark images (in the artistic, not lumens, sense) for much of the show. For example in 'Dogs' a montage of distorted and hand-coloured tower blocks tracks imperceptibly across the screen. Out of context they're inoffensive, but viewed here, their passage is relentless and bleak - we're all ultimately 'dragged down by the dogs'. There's something operatic in its rendition and Gibbs obliquely lights a static show of statuesque musicians while Park and Waters' symbolic images punctuate the narrative of the songs.

It's dark, inasmuch as you must recognize the inherent darkness in Waters' muse. He is intensely serious - and intensely committed. Just witness his attention to detail and timing - and of course the experiences he draws upon are frequently unhappy. Curiously, the fact that musically this moves us makes the whole experience acceptable, enjoyable even.

For me it was like being at Earls Court again at the first Dark Side show. I was 17 and had just started working as a roadie for Charisma Records. There was some sort of roadies' guest block in the upper tribunes house left. I recall this, because my elder sister was down in the stalls and could identify where I was sitting by the way the whole block was constantly lit throughout the night by the large red glowing ends of our combustibles.

When 'Machine' started on that hot summer's evening in Capetown, I was transported back through time and space, across 28 years and 8,000 miles. That might sound trite, conceited even, but for me it evoked everything of that initial experience. Wide-eyed and awestruck, it's an evening that's never left me.

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This month my column comes from sunny, but cold, Rimini and is effectively a diary from SIB.

IF THIS PIECE HAD A HEADLINE it would surely be: SIB Loses its Sting. Housed in a splendid new exhibition centre which would be the envy of anywhere in Europe, or the world for that matter, all the fun and excitement seems to have been strained out of the event. 'Anodyne' is the word that comes to mind. It's just another bloody exhibition. No freaks, no erotica, no grace, no beauty. Only the same old traffic chaos in the evening - one and a half

hours back to the Viale Amerigo Vespucci - to remind us of the good old days. And it is too far to walk back, now.

STILL, SIB is now a deadly serious and professional show, which I am sure is what the exhibitors prefer, (though without the traffic). However, I am not so sure about the visitors: numbers looked down to me and I saw few of the contingent of Brits that were traditional at this event. But then, I didn't go to the Rose & Crown.

LAST JUNE I PROMISED to lambast any service company that was seen to conspicuously rip-off members of our industry on their travels (or should it be travails?). This month, it's the turn of the airlines and most specifically British Airways, our drooping, so-called flag carrier. Everyone who departed from London Gatwick to Bologna was confronted with the BAnal queuing system on the concourse, devised by those same BA'stards (sic). Suffice to say, if

Disney had devised this system, instead of their own which is emulated across the globe, they would have been bankrupt long ago.

SO IMAGINE HOW A PARTY of some dozen or so assorted PLASA members and Italian travellers felt, after queuing for one and a half hours, when confronted at the check-in desk with the alarming information that the flight was oversold. Not only that, but that BA wouldn't be able to get them out to Italy until the following day. The answer, in lighting speak, is incandescent!

TO COMPENSATE for this inconvenience they were offered the princely sum of £125 each. Next, the unfortunates discover that there are indeed seats, though only in business class, but no-way-BA are not going to upgrade them - better to travel with empty seats! What kind of logic is that for an airline that sold its no-frills subsidiary just a few months ago to preserve its exclusive image, but now behaves like a no-marbles carrier itself? Then, despite the protestations to the contrary, our pals discover that there are indeed other flights to Italy, Bertie Apple just don't want to bother to switch them to other flights - the classic case of the passengers getting in the way of the smooth running of the airline. BA humbug.

EVENTUALLY, the bedraggled party were dumped in Florence at 11pm, none the better for the experience - 12 more passengers who will move heaven and earth never to travel with the airline again. Next time, go Ryan Air to Forlì - it's by far the nearest airport to Rimini and as Ryan don't pretend to offer frills, you won't object when you don't get them.

WHILE EVERYTHING SEEMS very efficient in the new exhibition halls, nothing happens on time, including the train departures, or even the taxis, it seems. I hitched a lift from Bologna with Luc LaFortune, star speaker at SIB, and Cirque du Soleil lighting genius, in a taxi that was one hour late to pick him up.

I ALSO ATTENDED his presentation, where he shared the platform with Pepe Morgia, ubiquitous Italian lighting designer and director. I arrived one minute prior to scheduled kick-off exactly as the necessary presentation technology arrived. Half an hour later . . .

LUC'S TALK, which was marred by the constant changing of the lighting states of the three small profiles on either side of the stage by an over-excited operator (where have I seen that before?), focused on the challenges he faced in designing the extraordinary lighting for 'O' in Las Vegas. However, his hidden agenda was to convey the message to the world of lighting design that too much technology can be a cop-out and isn't necessarily design at all. The feel and the look comes before the means of delivery, was Luc's point, and that has to be right, doesn't it?

FOLLOWING THE MAKE-OVER AT COEMAR, the Italian battalion is fast becoming a haven for ex-Martin people. Perhaps unsurprisingly. The newly revitalised and now international Group, incorporating that wily old fox, Gerard Cohen's Tracom, has achieved a coup in persuading Ian Kirby to come on board, albeit at the cost of a majority interest in Coemar UK. In itself, quite a result for Kirby. Now, Cohen has cap'ed that by enticing Jens Horneman to come on board as European sales and marketing director. Kirby is well-known, and well-liked, as the ex-, and founding managing director of Martin UK, while the multi-lingual and charming Horneman had been running Martin France for some time. More recently, he left to join an investment bank but, subsequent to 11 September, that move went pear-shaped rather rapidly. Perfect timing for Gerard, and partner Marcel Fairburn, to entice Horneman back into the industry.

TRACOMAN was the original distributor of Martin in the USA, and successfully established them as a substantial brand on that Continent. Coemar always lacked marketing muscle in the past, but the injection of this new talent and funding from the Florida-based Group will redress that shortcoming. Expect great things, as long as everyone gets on together.

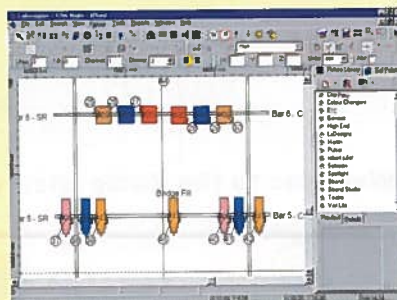
A COUPLE OF ISSUES AGO I wrote about the proposal to create twin towers of light as a temporary memorial for the 911 massacre in downtown Manhattan. A little bird told me this week that, now that the columns are a reality, not even Xenotech-Strong or Jack Calmes knew about it beforehand. Consequently, the business went to Space Cannon. Now, I'm not a nationalist, but in these circumstances I do believe that an American company should have got the business. I am sure that they could do with it.

"Coemar always lacked marketing muscle in the past, but the injection of this new talent and funding from the Florida-based Group, will redress that shortcoming. Expect great things, as long as everyone gets on together."

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Sounds of Frankfurt

Lee Baldock and Steve Moles report from Germany on the latest audio developments from the Pro Light & Sound exhibition . . .

This year's Pro Light & Sound exhibition seemed even busier than usual, perhaps partly due to the PL&S halls being rearranged to spread virtually the length of the site, so that what once took 2 or 3 minutes now takes 5 or 10. There were probably many who missed the relative ease of the previous layout, but the point, of course, is that the visitors turned out in force and went home satisfied - albeit in more pain than usual. So to business . . .

Acoustic Line, part of Seeburg Professional PA Systems, presented the TSMSat+ to augment the TS series. This is a highly compact 'fill' speaker built to go with the TS Mini Sub+ and is based around a 10" mid driver with a 1" compression onto a very compact horn flare, making for a small cabinet capable of delivering 300W rms from each component. The horn is the same as that used in the TSM10, with a 60° by 90° coverage pattern that can easily be rotated through 90°. Too small for a disco, this could be a nice little unit in a jazz club.

A couple of innovations from **Adam Hall**: their successful Rack Lamp launched at last year's PLASA (LED source combined with 10mm side-emitting fibre optic), has been taken a step further. The idea of using a simple LED powered light source for low level rack lighting has been extended by the addition of a gooseneck device for use over control surfaces. Supplied with built-in spring-clip for easy mounting, and battery holder, this also comes in at a significantly reduced cost thanks to competitive component suppliers.

It may be mundane, but Adam Hall's cable ramp has been modified to satisfy user demand. The cableway lid is now hinged rather than removable, the hinge designed to hold the lid in the open position when laying in the cables.

AKG presented no less than eight new products, and though some are mere detail improvements, there's still something to please everyone. The CK55L is a tiny condenser tie-clip mic with a similarly-sized price. Cardioid patterned, with a low-end response down to 150Hz, this is a very usable little item. The well-regarded C 477 WR mic is now available with Lemo connector for use with most body-pack transmitters, enabling sound engineers to upgrade to a better quality mic without disposing of expensive radio



Clockwise from main picture: the new Xone:V6 from Allen & Heath.

d&b audiotechnick's Werner Bayer with the C3.

Duncan Fry and Colin Park of ARX International with the MSX-32 8-channel mic/line splitter.

Gareth Davies of Audient with the Aztec console.



systems. Less exciting, but also useful, is the new white version of the CK 77 head-worn mic.

The CS 2: is a fully modular conferencing system, a complete kit with seven main components; a choice of five microphones (cardioid, omnidirectional, and choice of three hyper cardioid); CU chair station (mobile or install); DU delegate station (mobile or install); BU base station for up to 200 microphones; choice of two PSUs (80 or 200 microphones); two lengths of gooseneck; and five standard cable lengths for what is a simple to build single cable system.

Other products include the PSU 10, which replaces the old PSU 01: a range of introductory microphone packages - Specials 2002 - for the aspiring amateur musician. Each kit has a little bonus aspect, such as the drum pack containing a pair of Terry Bozio signature drumsticks. Also receiving much attention was the C 451 B launched at the recent AES show. This mic features the same transducer as the CK 1 but permanently fixed to the metal body in order to eliminate mechanical weaknesses of the C 451 EB + CK1.

UK manufacturer **Allen & Heath**, gave a preview of a striking new rotary mixer prototype. Codenamed Xone:V6, this has been designed with the aim of providing 'the best audio quality of any club mixer, past or present' according to A&H. Designer Andy Rigby-Jones told us: "This is all about absolutely pristine audio quality, so it won't go into production until I am 100% confident that it sounds phenomenal." If you'd

like one, be aware that a single Penny & Giles rotary fader can cost about as much as some entry-level mixers . . .

A&H also showed a new 24-channel version of the ML4000, developed to cater for customers who need extensive control and output facilities for conferencing and installation work, but not necessarily a large footprint console with lots of inputs. The ML4000-24 can be connected to up to two 24-channel sidecar units, providing useful flexibility for rental companies. Also new is the ML5000-C variant. Instead of the four dual stereo channels offered on standard models, the ML5000-C provides eight dual stereo channels in each frame size, allowing up to 16 stereo sources to be mixed.

Apogee introduced a new line of self-powered speakers, having previewed the prototype at last year's show. The self-powered line consists of seven models - four full-range loudspeakers and three subwoofers. Three models of full-range powered loudspeaker are presently available: the APL-800, APL-500 and APL-220, with the APL-110 scheduled for release in April/May, 2002.

Both the APL-800 and APL-500 feature dual 400W amplifiers and are fully arrayable, for use alone or as the building block for a large system. The APL-220, also with dual 400W amplifiers, is designed for high SPLs with tight directional control. The APL-110 features a 300W LF, plus a 150W HF amplifier. Apogee's self-developed switching amps use a patented system that

reduces the distortion levels. For the subwoofers, the APL-12 and APL-10 feature dual drivers and dual amplifiers, while the APL-SB uses a single driver and single amplifier; 2000W and 1000W rms respectively. The subwoofers utilize class AB amplifiers powered by switching type power supplies. The quality of the class AB design is small in size and weight thanks to 'tracking rail technology' which tracks the audio signal, adjusts the rail voltages, and in turn reduces the heat.

Australian manufacturer **ARX International** introduced the MSX 32 8-channel mic/line splitter, offering eight channels of 1 to 4 mic/line splitting. All channels are linkable up to 1 in, 32 out. Other features include ultra low-noise design, 'SilentSwitch' Phantom Power switch, -20 dB pad switch, +20 dB gain switch and headphone monitoring (PFL) switch. Also new is the MSX 8, offering two channels of 1 to 4 mic/line splitting. All channels are linkable up to 1 in, 8 out. New to the company's SPL (self-powered loudspeaker) range is the SPL30, which features a 15" (380mm) reflex-loaded LF driver, a horn-loaded 8" (200mm) mid driver with integral phase plug and a 2" exit compression driver coupled to a 60° x 40° horn, for the HF. Frequency response is given as 50Hz - 20KHz +/- 4dB.

Audience Delight Systems showed the new Neo system, a PA not dissimilar in concept to the JBL HLA, in that it's framed in a truss-like aluminium structure, though physically it's much, much smaller. Claiming a 33% weight reduction over a comparable wood-boxed system, the Neo features 2 x 10" mounted on a 30° horn with a 1.4" compression driver mounted at the horn centre. Pattern is 30° by 30°, handling 500W rms. All drivers are neodymium. With its own processor, flying system and drivers well protected from the elements, this system looks well thought out for use as an install system for football stadiums, as well as a touring rig. ADS are seeking a UK dealer.

Audient debuted an interesting new front-of-house mixing desk, the Aztec, which uses a strong but lightweight aluminium housing mounted in a welded aluminium truss frame (made by LiteStructures). Inside this sits a high-spec FOH desk designed by Gareth Davies and David Dearden - the duo behind DDA. The Aztec is available in 32-, 40- and 48-input channel frame sizes, with fully modular channel strips. It has eight audio sub-group buses, eight mono and two stereo auxiliary buses, 12 VCA sub groups with VCA Solo, 12 x 8 Matrix, Left, Right and Centre Main outputs, stereo ambience input on master section for in-ear monitoring, peak reading LED meters for groups, matrix and auxiliary outputs, and scene automation - not to mention some highly-praised new pre-amps. The end result of all this is a powerful, high-spec FOH desk which not only looks great, but comes in at half the weight

of a comparable high-end console and is very easy to handle, thanks to its tubular aluminium frame. Aztec has already debuted with Groove Armada, at the hands of live sound engineer Sam Parker, who declared it "a pleasure to use."

Audio Technica introduced a series of four hand-held microphones (two condenser, two dynamic) aimed at bringing premium sound quality to a wide range of live applications. The flagship in the Artist Elite Series is the AE5400 cardioid condenser microphone, which features a true condenser, large-diaphragm element design. The AE3300



Clockwise from top: Paul Houlden with the Chameleon amplifiers. Neil Vance with Cliff Electronic Components' innovative new Optifade system. BSS Audio's Rik Kirby (left) and Davey Smalley (right) with Matthias Exner of German distributor Audio-Vertrieb Peter Strüven GmbH.

cardioid condenser microphone is designed for live applications both large and small and, like the AE5400, has a switchable 80Hz high-pass filter and 10dB pad. Other models are the AE6100 hypercardioid dynamic microphone and the AE4100 cardioid dynamic microphone. All models in the Artist Elite range have improved anti-shock engineering for low handling noise and include the new AT8470 Quiet-Flex stand clamp.

beyerdynamic launched the Opus 200 wireless microphone system. Built in half-rack size, each module offers 16 switchable UHF frequencies, digital coded pilot tone, adjustable output level, and detachable antenna for placement in more open reception areas. The receiver will also automatically mute when the output device is switched off, and displays battery status of the transmitter. Microphones available for this system include three hand-helds, two dynamics, and a single condenser - the Opus 59, 69 and 81 respectively; plus headset mic or lavalier with belt-pack transmitter. Two new super cardioids - the Opus 39 and Opus 59 - are both designed for live vocal use.

Latest news from **BSS Audio** includes the addition of video switching to the Soundweb platform. The SW9016 8x4 Matrix Switcher features eight broadcast-quality composite video inputs (on BNC connectors), which can accept CBVS or SVideo signals of NTSC or PAL standard. These can be matrixed to four output zones (again on BNC connectors). Alongside the video inputs, 16

balanced audio inputs can be matrixed to eight balanced audio outputs (which can then be fed directly to the local Soundweb 9088 DSP unit), and are programmable entirely independently of the video matrix. This means that zones can be programmed to show a news channel while music is playing in the background.

Also new from **BSS** was the first showing of the new ProSys PS-8810 fixed-path digital processor. This offers eight inputs and 10 outputs, each with a dedicated processing path which includes EQ filters, gates, compressors, auto-mixers and delays, as well as other processing objects. This is also the first in a new generation of Harman Professional "partnership" products utilizing the IQ communication protocol from Crown. It also provides audio networking via CobraNet.

Camco showed the latest versions of its Vortex range of amplifiers - the 4-channel Vortex 3 Quadro and the Vortex 2.6, the baby of the range offering 750Wpc into 4ohms. The Vortex 3 Quadro is aimed at high-power, multi-channel applications, and gives 4 x 450W into 8ohms/4 x 750W into 4ohms, all from a lightweight, 2U package.

Carver previewed its new ZR Series amplifiers, the production versions of which should be available in June. A spread spectrum switching amplifier - they switch at 700kHz - the amp creates no inter-modulation in the audible spectrum, and, at 90-95% efficiency, this puts them in the field of a class D amplifier. The ZR Series is currently made up of the ZR 500, ZR 1000, and ZR 1600 - wattage as denominated, into two channels at 2 ohms, e.g. the ZR 500 provides 250W per channel into 2 ohms. This series is pitched primarily at entry-level users and will be enlarged next year with the addition of a ZR 3200.

Chameleon Audio's Paul Houlden seemed pleased following Britannia Row's order for 200 more Chameleon power amps to add to the 100 ordered during the PLASA Show last September. Houlden also revealed that he is looking for strategic alliances with loudspeaker manufacturers, and that a new range of lightweight power amplifiers, which will have a new brand name "by Chameleon" is in the pipeline and should appear later this year.

Three new products were in evidence from **Chevin Research**: with the A Series, the company continues the ethos of lightweight and compact with Q1004, a 1000Wpc into 4 ohm, 4-channel amp weighing just 18kgs. This is aimed squarely at the pro end of PAs and installations. The QB1000/600 is designed for bi-amp applications and gives, as the name suggests, two channels of 1kW and two of 600W, again into 4 ohms. For the more budget-conscious comes the new EC Series, the first two models being the EC 600x2, a twin channel 600W amp and the EC 450x2, similarly conformed to 450W delivery. Both amps come in 2U packages and weigh in at just 6kgs.

Cliff Electronic Components had one of the talking points of the audio side of the show - the Optifade system. This clever 45mm crossfader uses an optical system to track movement, thereby doing away with the problems associated with wear on electrical contacts, particularly useful for units which take a hammering at the hands of energetic DJs. The Optifade has 64-step resolution to provide a responsive analogue feel, and has a user-adjustable friction control to suit individual tastes. It also comes with a long-term performance guarantee and will appeal to many manufacturers of high-end DJ equipment.

Crown introduced the first members of its CTs series of installation amplifiers - the CTs4200 (4-channel) and the CTs 8200 (8-channel). Both offer low impedance (4 and 8 ohms) and direct constant voltage (70V and 100V) outputs to accommodate a wide range of applications. The number of channels makes them well suited to surround sound uses, and channel pairs may also be bridged to accommodate mid-power passive systems and low-frequency enclosures. Crown also announced future plans to include a CobraNet digital audio input option to enable the CTs models to support digital cinema applications. The next four models in the series, the two-channel CTs 600, 1200, 2000 and 3000 amplifiers, will be launched at NSCA in Denver this month and will ship from mid-May.

d&B audiotechnik launched the E0 system and the C3 loudspeaker. Firstly, the E0 (E zero) is the company's smallest ever loudspeaker at just 234 x 145 x 170mm, but boasts a 116dB peak SPL with a conical 100° dispersion pattern. The housing includes 5" and 1" drivers, coaxially mounted. This should bring the d&B badge to a whole new range of applications.

At the other end of the scale, the new C3 has been designed as a long-throw addition to the C4 system. Its two 10" horn-loaded mid drivers are accompanied by a vertical array of three 1.3" HF drivers loaded on a cylindrical wave transformer which provides a nominal dispersion pattern of 30° x 5°.

D.A.S. Audio's new Compact 2 system follows directly from the Compact 1. Intended for the high end user, this is a self-powered system, four way, using 2 x 500W ICEpower amp modules in the mid/high box. Low end comes from the previously seen Compact 18 Sub, also with built-in amp, 1000W Class D. The Compact system is about efficiency and D.A.S. claims the amps deliver 93% of energy to the speaker with relatively little loss in terms of heat. This is the second collaboration between D.A.S. and Bang & Olufsen whose technology defines the amplifier construction.

D.A.S. also chose Frankfurt to introduce its first entry-level PA system aimed at the MI market, and appropriately named the MI Series. The design includes an asymmetrical enclosure for the MI-112 and MI-115, which allows the systems to be used either as pole-mounted front-of-house cabinets, or as monitors. The double 15" MI-215 is a high power cabinet for those applications requiring high SPLs. For HF all of the MI cabinets



Above (l-r), the Funktion One team of David Bruml, Benedict Koch (Funktion One Deutschland), Tony Andrews, Ann Andrews, John Newsham and Dave Powles.

Above right, the ZMR-243 zoner mixer from Formula Sound, offering remote music selection and volume control.

Right, Mark and Neil Barnes of Eminence Speaker Europe with the new Magnum driver range.



use 1" exit compression drivers with 2" titanium diaphragms coupled to a horn. Driver protection is provided by D.A.S.'s Active Safety Circuit (ASC). D.A.S. also showed its recently expanded range of high-quality OEM driver units.

dB technologies is an Italian loudspeaker manufacturer headed up by Arturo Vicari, previously Mr RCF. Among the new models is an upgraded version of the Opera Series, now called the Lyric Opera and boasting improved acoustic efficiency, linearity, dynamic range and LF reproduction, along with the latest addition to the family, the Opera 110. Also new were passive models of the Stage Opera series, plus additions to the existing active Stage Opera range launched last year. Reporting around 40% growth per year for the company, Arturo Vicari also let it be known that he is actively seeking alliances with other manufacturers in order to increase the company's market share, whether by acquisition, merger or other means.

New from Eminence is the Magnum range of drivers, featuring a new cone and suspension system, plus other enhancements. The range includes the 18LF for professional high-power bass applications in 4-10cu.ft. enclosures, the 18HO for high output in smaller (4-10cu.ft.) enclosures, the 15LF for 3-6cu.ft. enclosures and the 15HO for 2-4cu.ft enclosures. Eminence also introduced the NeoTec range of transducers: these use neodymium magnets to create a series of very lightweight drivers which use advanced heat dissipation techniques to avoid the tendency of neodymium to lose magnetic strength under high temperatures. The series has been designed to allow for existing enclosure designs to be easily converted to NeoTec.

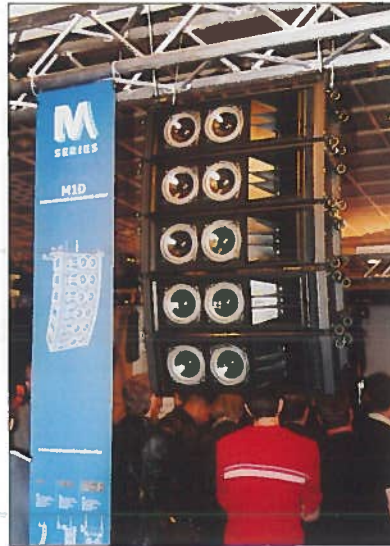
Focusrite's new OctoPre follows its tradition of mixing style with technology - who'd have thought an eight-channel mic pre-amp could look sexy? The OctoPre uses the same amp as the Trackmaster, and also sports eight independent

compressor/limiters, the choice of using the first two inputs for instruments via TRS jack inputs on the front panel for DI free plug in. Output can be either analogue or digital (up to 16 digital outs at 24bit 48Hz), and there's even a facility to input Worldclock via BNC connector on the back.

Formula Sound gave the first showing of the new rotary fader version of its popular PM-100 mixer, designed in response to varying customer demands. The chassis of the PM-100 can be fitted with a combination of rotary and linear faders and the layout of the mixer can also be tailored to suit individual requirements. Also new from Formula Sound was the ZMR-243 zoner mixer, offering remote music selection and volume control. The ZMR-243 has two low-impedance balanced mic inputs, four stereo music inputs and three stereo zone outputs, packaged in a single 19" rackspace.

The Funktion One team was providing impressive demonstrations of the very wisely-named Resolution speaker system, in conjunction with their new distributor for Germany - Funktion One Deutschland. The performance of Resolution, which has been touring with Jamiroquai, was quite superb and offered a small taste of why Jamiroquai's FOH engineer Rick Pope calls it "the best sound experience" and Jay Kay himself calls it "the best sound I've ever heard."

GAE have managed to produce nine new products for Frankfurt: the DSC24 is a digital sound controller, two in, four out; a system database for GAE loudspeaker configurations, with all system parameters, is available as a download. Unrestricted configuration is via an MS Windows interface and features include six parametric EQs, limiter and noise gate for each output, and delay. The eight new speaker cabinets include the Panorama 61; a passive two way (6.5" and 1") mounted in birch-ply with a recommended power input of 50W-150W in 16 ohms. At just 38cm x 21cm, this looks like a good



Clockwise from left: Martin Audio celebrated substantial sales of their new W8L line array system. Our picture shows Patrick Lau of Dah Chong Hong (Hong Kong), Martin's David Bissett-Powell, Lars Wern of DM Audio (Sweden) and Martin's Bill Webb.

Meyer Sound's new M1D ultra-compact line array. Clive Kinton of Matrix with the MZA zoning amplifier.

contender for a home cinema system. System 12 is a higher power box utilizing a 12" with a 1.4" neodymium HF compression driver; its partner, the System 15, uses a larger 15" driver extending the low end from 65Hz down to 48Hz. Similarly, BR218 and BR118 (2 x 18" and 1 x 18" respectively) are sub-bass cabinets intended for use with any of the cabinets above. Both reach down to 37Hz. Also new are the Director Single Bass, the System BR115 and System BR215, and the Pro Stage PS4476T. All these cabinets make good install candidates.

The **Klark Teknik Group** showed recent additions including the Legend mixing console from Midas, along with the Heritage theatre Control Software which now allows users to make on-line changes to scene set-ups via a PC once on-site, as well off-line editing. Midas gave the first showing of its 16-channel extender module for the Heritage 2000 console, which gives the option to extend upwards to 64 channels, providing increased flexibility for rental houses.

Lab Gruppen introduced the Iron Power (iP) range of high efficiency power amplifiers, which supersede the current conventional toroidal models in the company's range. The new design incorporates the latest semi-conductor technology, plus the proprietary 'copper cooler' system and improved magnetic shielding - offering more power in less space than the 300, 500 and 1000 models they replace.

L-Acoustics announced an upgrade to its LA amplifier range, with the four models being re-designated as the LA15a, LA17a, LA24a and LA48a. Apart from a slight weight reduction in the LA15a and LA17a, changes include improved power output under low impedance for the LA15a and LA17a, and increased power output at 2ohms for the LA24a and LA48a. Input connectors are now compatible with both XLR3 and stereo jack 6.35.

Mach introduced the compact, lightweight M-Flex range of loudspeakers, featuring built-in DSP circuitry and switch mode amplifier technology. These are aimed at applications including live

sound reinforcement, AV, stage monitoring or speech. The range consists of the M-Flex12 and 15 models, both offering 45Hz - 20kHz frequency response, 100° x 100° dispersion and peak SPL of 125dB and 110dB respectively, along with its low-end accompaniment, the M-Flex Sub.

In a move described as a "natural evolution" of the company's product line, **Mackie** announced a licensing agreement with Peak Audio, creators of CobraNet digital audio distribution technology, which will bring CobraNet capability to all current and future products from Mackie, EAW and RCF.

Martin Audio gave the first full European debut of the new W8L line array system, and welcomed to the stand Lars Wern of Swedish rental company DM Audio and Patrick Lau of Hong Kong-based Dah Chong Hong Ltd - both of whom have already made substantial orders of W8L. DM Audio's system sees its first use on this year's Eurovision Song Contest in Tallinn. The W8L is a three-way, fully horn-loaded design with a single 15" LF driver, twin 8" mids and triple 1" HF units providing a consistent 90° mid and HF horizontal dispersion. Other features include a fast, integrated rigging system, predictive software and laser pointers to assist with targeting.

Matrix Audio Developments showed their latest amplifier models, including the Vector 350 (175Wpc into 4ohms, 100Wpc into 8ohms), the ACT500 (250Wpc into 4ohms and 150Wpc into 8ohms) and ACT800 (400Wpc into 4ohms and 240Wpc into 8ohms). Also on stand were the UKP1600 and UKP2100 models, with power ratings of 800Wpc into 4ohms/480Wpc into 8ohms for the 1600 and 1050Wpc into 4ohms/630Wpc into 8ohms for the 2100. The MZA zoning amplifier provides full zone control and signal routing with up to 8 stereo 100W amplifier zone modules. It allows four stereo music and two microphone sources to be routed to any of the eight independent zones.

New from **MC2 Audio** were the T1500 and T2000 power amplifiers for the fixed installation market. Offering 750W and 1000W per channel respectively, the units feature monitoring of temperature and load, proprietary control and protection circuitry, low noise vary-speed fans, new 'Ultra Cool' heatsink and 'side-chain' clip limiter.

Meyer Sound managed to attract much attention with two new additions to its M Series line systems. The M2D 'Compact Curvilinear Array' is a mid-sized version of the M3D, designed with the large concert hall/small arena in mind. Using a pair of 10" and an HF compression driver with 4" diaphragm (c/w Meyer's Ribbon Emulation Manifold), all the advantages of its bigger cousin are there, with slightly lower frequency range and SPLs, commensurate with the smaller drivers. To maintain the power and frequency range requires close consistent coupling at the delivery end of the cabinets, so the familiar (and very clever) eccentric cam to set angles, is now located at the rear edge of the box.

One good thing leads to another: the M1D is an Ultra-Compact version of the above, not dissimilar in size to a certain continental small line array speaker. John Meyer tells us the M1D is suited to "sub 4,000-seat theatres, and industrials" (more specifically small business conferences). Two 5" and three neodymium HF drivers into a 100° horn (but note, this width will only be achieved when four or more boxes are coupled). The M1D still achieves 123dB at 1 metre, and covers the same frequency spectrum as the M2D, namely 60Hz-18kHz.

Nexo have turned many heads with the arrival of its innovative speaker system Geo (see L&S1 January 2002). Four cabinets have already been installed at the Stade de France (where Nexo provided the main system for the World Cup) outside the main entrance and reportedly achieve uniform intelligibility at 80 metres - no small achievement for a box barely larger than a home hi-fi cabinet.

Production Services reported a successful show, with the launch of a number of new products including the LS1LA line array system, the compact LS6 system and the new LP5000 lightweight amplifier, offering 6000W bridged at 4 ohms. Substantial orders were taken for all three products at the show.

Renkus-Heinz gave the worldwide launch of the ST-STX Series, designed to be "the most advanced sound reinforcement system in the world" according to R-H. The ST and STX ranges incorporate Complex Conic horns loaded with the patented CoEntrant Driver, a wideband high output point source, and the TRue Array Principle (TRAP) design allows designers, installers and operators to assemble 'tight-packed' arrays with the minimum of mid-range and HF interference. But the biggest news is in the power and networking technologies: ST-STX is the first range of pro loudspeakers to feature a built-in CobraNet input option, allowing audio signal transmission over CAT-5 cabling, offering vastly

improved signal quality, minimal data loss and precision remote control over long distances. It also makes it compatible with devices from other CobraNet licensees. The ST (self-powered) models use third-generation Class D amplification, with 3200W of peak power for low frequencies, 1600W peak for mid-range and 800W peak for high frequencies.

Other announcements from R-H included the new TRX Series, a line of passive, compact two-way loudspeaker systems, several models of which are offered in fully integrated Reference Point Array systems, and the launch of EASE 4.0, the latest version of the sound system simulation software for which R-H is worldwide distributor.

DIGIspy by Schmid Electronic is a neat little digital audio transmission analyser which, for £1,200, will give any installer or studio engineer everything they need to know. DIGIspy combines IEC 958 protocol analyser, level meter and vector oscilloscope in a hand-held meter little larger than the average PDA and weighing just 125g - ideal for detecting 'The Weakest Link'.

Sennheiser presented the EM 550, part of the Evolution series. This twin diversity receiver features a switch mode PSU and an integrated active antenna splitter, allowing several receivers to be cascaded without extra equipment. Also in the Evolution range, the 664 is a wired condenser mic for use as a drum kit overhead. Low self noise, cardioid pattern, with a frequency range of 40Hz - 20kHz +/- 2.5dB. Being seen for the first time in Germany, the SK5012 is a very small body pack transmitter that, while tiny, loses none of the functionality or robustness of larger models.

Shure debuted their latest line, PG (Performance Gear), an entry-level range of mics. The range includes PG48 and PG58, both cardioid vocal mics, the 58 (named after its illustrious professional model) having the tighter pick-up pattern and an internal shock mount to reduce handling noise. Similarly, the PG57 is modelled for instrument capture; the PG52 and PG56, with integral swivel mounts, are designed for drums.

Also new from Shure was the ULX Wireless, a mid-tier wireless system featuring Automatic Frequency Selection (AFS) which scans to find a clear frequency between 554 and 865MHz, with up to 1440 selectable frequencies available, programmed into groups of 20 compatible frequencies. A ULX Professional version can also scan all groups and select the group with the most available frequencies. Other features include frequency and volume lockouts, RF signal strength indicator and rack mount hardware.

New from Sony was the DM BK-R109 MAD1 card for Sony's DMX-R100 digital recording console, which expands to 108 the number of audio inputs available on a single DMX-R100, and allows an integrated 168-input, 112-channel, 48 fader digital mix system to be created from two cascaded DMX-R100s. Also new was the MB-8N networkable receiver base unit - the latest addition to the flagship WL800 Series, which is expandable up to four channels. Software for full set-up and monitoring, including a real-time RF spectrum analyser, is provided.

Also new was the WRT-8B belt-pack transmitter - 13% smaller than its predecessor, features a mic/line level selectable input to enable transmission of line level signals, and a selectable RF power output of either 50mW or 10mW. Finally from Sony, the new SRP-X700P AV matrix switcher, which provides powerful video and graphics switching with digital audio mixing, sound processing and multi-channel amplification, plus integrated wireless capability and a PC-based GUI and remote control program.

Soundcraft launched the new 328XD and MH4 consoles. The 328XD features dynamics processing on all input channels, groups and mix outputs, comprehensive dynamic automation, 16 mic/line and 5 stereo inputs, 16 digital inputs (or tape returns) in ADAT Optical and TDF formats. Up to 42 inputs, plus 8 groups, and 16 direct outputs.

The MH4, meanwhile, can be used for FOH, monitors, or monitors from FOH, with a new bussing system that gives maximum flexibility, whilst retaining an intuitive user interface. Other features include snapshot automation and MIDI control, up to 48 channels and integrated control of dbx DriveRack and BSS Varicurve.

SoundTube produce installation speakers for public buildings, theme parks, hotels etc, specializing in both highly directional and omnidirectional devices. Their latest product, the RS65i is typical of their output. Aesthetically pleasing, this two-way plastic unit features a 5.25" and 1" drivers and is designed to deliver a full range (55Hz to 19.7kHz) across 140° pattern thanks to SoundTube's patented BroadBeam dispersion technology. Not the highest levels, but good HF response above 10kHz well off axis.

Stage Accompany showed a pre-production version of its latest high power speaker system, the Director D36. Capable of 145dB at 1 metre, the company says that two of these per side coupled with an equal number of XL-bin subs will give an 8kW PA. The D36 comprises 2 x 12", 2 x 8" and 2 x SA 8535D Ribbon Compact Drivers. This latter is a derivative of the Philips-developed Ribbon diaphragm, which SA claim delivers a very high transient response, lengthening the high end throw over a 30° by 36° pattern. As well as fan-assisted cooling for all drivers, the D36 also features DDC (Dynamic Damping Control), whereby effects from the speaker cables and connectors are eliminated, producing a damping factor of 10:000 at the speaker terminals.

Stardraw.com presented its full range of 'shrink-wrapped' off-the-shelf CAD design and documentation software packages, in conjunction with German distributor Audio Network. The range comprises Stardraw Audio, Stardraw AV, Stardraw Lighting 2D and the soon-to-be-released Stardraw Radio, aimed at the broadcast market. The applications are based on the same powerful Stardraw engine, which allows designs to be produced and modified in minutes. Stardraw also announced a new development in conjunction with panel manufacturer RCI Custom, whereby Stardraw's software will drive a custom control and connection panel design service via the internet.

Tannoy launched the new V Series of point source, dual concentric sound reinforcement systems. The



From top, Ralph Heinz of Renkus-Heinz with the TRX Series.

Markus Overath of Audio Network and Guy Lewis of XTA introduced the new Series 2.

Johnny Kluten and Thomas Schroll of IAG Deutschland, the new German operation for Wharfedale.

Tannoy V Series features a modern cabinet design which provides unrivalled installation flexibility for use in a wide range of sound reinforcement applications. Also new was the Ellipse 8, the first of a new generation of time-aligned, three-way active studio monitors featuring Tannoy Wideband Technology and housed in a striking elliptical cabinet. Applications include music, broadcast and post-production, as well as AV and mobile recording. Finally, there were three new models in the Reveal nearfield monitoring range: the Reveal X - designed as a dedicated centre channel surround sound monitor, or as a re-mix monitor for DJs - and two active sub-bass speakers.

TSA (Techno Star Audio) introduced the TRC 215 full-range cabinet, a direct extension to the established TRC System, a fully-fledged professional PA in the Skeletal form, utilizing coaxial drivers and a non-metallic, polyethylene horn. The 215 is a three-way unit combining the basic TRC horn design within an integral low end twin 15" cabinet. There are pros and cons here: the original TRC is designed for use with a separate TSG sub, the skeletal mid-high cabinet

Right, the latest addition to Yamaha's range of digital consoles - the O2R96.

providing a variety of coverage options depending upon how it is arrayed, an option not so readily available with the 250. However, this is a potent three-way box with 40° by 40° coverage in the mid/high end, with a frequency response of between 42Hz and 18.5kHz.

Turbosound gave the first showing of its QLight TQ-300 Series of multi-purpose systems. The first two models in the Series - the TQ-310 and TQ-315 - both feature a rotatable high-frequency waveguide, allowing use in vertical or horizontal orientation, while the multi-angle geometry also allows them to be used as floor monitor. Since their launch in December, nearly 300 TQ-300 Series systems have shipped worldwide.

Uniton is a Swiss manufacturer of voice alarm systems. Its latest SLS 1000 monitoring and logging system already conforms to the EU Norm 60849, featuring microprocessor control, full monitoring circuits, priority management and monitoring for the Fire Call paging desk. The system is designed for modular upgrade, so management of auto switching to spare amplifiers, monitoring of speakers and control lines and individual speaker monitoring can all be easily added on. Uniton also makes a range of very professional-looking compact speaker cabinets, including wedges, indicating wide ranging experience in audio.



Warfedale, on the stand of its new German operation IAG (Deutschland) GmbH, was showing the new Twin-12 and Twin-15 two-way full range loudspeakers. Both boxes are compact point source systems aimed at demanding sound reinforcement applications, with a coaxial design which also offers low-profile stage monitoring use in nearfield situations. The multi-angle construction of the cabinets also makes them suitable for low-profile under-ceiling installation.

XTA Electronics extended its product family with the Series 2 range of digital processors - essentially constituent modules of the award-winning SIDD (Seriously Intelligent Digital Dynamics) processor, offered in response to great demand. The new models are the C2 (Dual/Stereo Compressor), D2 (Stereo Dynamic EQ), E2 (Stereo Parametric EQ) and the G2 (Dual/Stereo Gate), and have been designed to offer greater flexibility to users.

According to XTA's Guy Lewis, the reaction to the Series 2 at PL&S was extremely good at Frankfurt.

Yamaha made another high-profile introduction to its range of digital mixers with the launch of the O2R96 console. Not just a simple 96kHz upgrade to the original O2R, the new console incorporates many new features including surround monitoring, studio manager for on and off-line editing, and DAW control.

The O2R96 offers full functionality at 44.1kHz, 48kHz, 88.2kHz or 96kHz - 96kHz resolution with 32-bit internal processing and 58-bit accumulators is the standard. There are 56 channels of transparent 24-bit/96 kHz audio plus comprehensive effects and processing. Yamaha has included a comprehensive selection of 96kHz compatible stereo effects with 32-bit internal processing in the O2R96 - plus several designed specifically for surround sound. Yamaha project that the O2R96 will have a significant impact on the commercial production market, bringing benefits to a broader range of facilities.

And finally, the Exhibitor of the Show Award goes to: Always Honest International Enterprise (Hong Kong Ltd) in Hall 4.0 for the most brazen commercial name in audio history.

We'll be catching up with the latest from the lighting world in the next issue with our SIB International report from Rimini . . .

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Last year White Light passed its 30 year milestone, so it seemed appropriate for L&SI editor Ruth Rossington to catch up with the company's managing director John Simpson and general manager Bryan Raven to talk about the past, present and future . . .



The White Light Group's new home includes 35,000sq.ft of equipment space and 10,000sq.ft of office space. Inset, managing director John Simpson

If you're unfamiliar with the White Light name let me tell you two key things about the company - it employs a team of over 100 people and has an annual turnover of £9million and rising.

That's a big operation by our industry's standards, by any industry's standards, and yet White Light has never given the impression of size having gone to its head. There's no sense of a large corporate structure at work, no imposed hierarchy in the office, no parking spaces allotted to directors. Instead, White Light thrives without all these formalities in place, it doesn't waste time on non-essentials (rumour has it a yellow card is shown to anyone in the office who starts bullshitting), and actively promotes the fact that it is not a one-stop shop (though it is more than capable of being so), but a collection of companies each with their own individual identities.

Central to this are the two lighting hire operations in London and Yorkshire - White Light (Hire) and White Light (North). From these two bases, numerous lighting hire projects are managed, ranging from a small-scale school production right through to a major West End run. Whilst the London end tends to secure the larger projects, the Yorkshire operation is by no means an outpost - under the direction of John Anderton, it has grown to become a significant operation in its own right and from its 10,000sq.ft facility at Sowerby Bridge provides a gateway for White Light to the North of England and Scotland. The success of the two hire operations led to the formation of a thriving sales arm - White Light (Sales) - which last year did £3millions' worth of business in its own right.

From these three radiate out a network of associated companies - The Moving Light Company (specialists in automated lighting), The Service Company (offering service and support on a wide range of products and projects), Colourhouse (a relatively recent addition to the Group which works in the highly demanding corporate and exhibition sector), Enliten (which takes the skills and technology of

the theatre sector and adapts them to the architectural market), Co-Ordination (a theatre and live event management company), Technical Insight (an architectural practice), and finally Modelbox (the pioneer in applying computer aided design to set and lighting design). As separate companies they're highly effective, as a combination probably unequalled in the industry.

This 'pool' formula has provided a ready mechanism for meeting head-on just about any project the industry can throw the Group's way. At any one time it may have a roster of upwards of 250 projects on the go - ranging from lighting and stage control systems for the Hard Rock Café in Manchester or a new lighting system incorporating Strand and Wholehog consoles for the Churchill Theatre, Bromley, to supplying new moving-lights to the Royal Opera House or lighting the 1940s House at the Imperial War Museum.

Though in recent years, thanks to the inroads being made by Colourhouse and Enliten, it has spread into the conference and architectural sectors, theatre remains the central feature of the Group's portfolio. White Light's connection to some of the major theatrical productions of the last 30 years has been well documented and its experience in this area continues to show in its order book. The current West End productions of *Chitty Chitty Bang Bang*, *The Full Monty*, *My Fair Lady*, *Kiss Me Kate*, *Chicago* and *Daisy Pulls it Off* and the touring productions of *Grease*, *Sunset Boulevard* and *Miss Saigon*, are all using rigs supplied by White Light. As too are a number of international productions, a Canadian production of *Oliver!*, the most recent to be added to the list.



Above, general manager Bryan Raven.
Below, various lighting fixtures on test in the company's on-site test facility

The current profile of White Light is a far cry from the company's roots some 31 years ago - a fragile start that perhaps explains why today the Group has positioned itself across several markets, and why the emphasis is on building a portfolio of complementary services.

John Simpson, the only remaining member of the team of three who founded the company (Andy Phillips and Rory Dempster having left to pursue other careers) comes from a background immersed in theatre arts. His early career coincided with a huge increase in arts subsidies - and thus a role working for the Arts Council as one of the country's first arts administrators. It took him all over the country, learning about various theatres and arts organizations and eventually through the doors of the Royal Court in London, where as manager during the late sixties and early seventies, he met with Phillips and Dempster, then resident lighting designers at the Court.

As an apprenticeship for a future career in lighting hire and supply, it proved formative. It made Simpson aware that it wasn't just the technology that mattered, but also the service



that came with it. The Royal Court galvanized the trio into addressing this by forming their own lighting hire company, and it also provided its name - White Light - a nod to the theatre's reputation for often stark, almost exclusively white, lighting schemes.

The early days were touch and go: despite injections of cash from all three founders and theatre impresario Angela Fox, it was several years before the company was in a position to pay any of them a proper wage. In the meantime, Simpson, Phillips and Dempster continued with their separate careers - Simpson, for his part, taking on the management of *The Rocky Horror Show* for

Michael White, overseeing its transfer from the Royal Court Theatre Upstairs to the Kings Road Theatre. It was a role that lasted six years and came to be regarded as White Light's first job.

In time, the company began to gain momentum, building its hire stock, its opportunities and its workforce. As if to illustrate the point, Simpson pulls out a ledger book, almost Dickensian in quality, where carefully written script details the various hires of those early years.

Significant growth came in the eighties, largely on the back of a boom time in theatre, particularly London's West End, where Andrew Lloyd Webber and Cameron Mackintosh were opening up theatre to much larger audiences. By the end of the decade nearly 40 people were on the payroll, the Modelbox computer aided design service had been added to the portfolio and the turnover was tipping £2million. Bryan Raven was also on board as hire manager, with a brief to continue to build the hire side of the operation - which is exactly what he set about doing.

Over the next few years, further growth followed, further companies were either acquired or launched, and the nineties came to a close with the Group turning over in the region of £6-7m a year. An impressive run for a company that started with very little. Now, a £10million turnover is within sight.

That the growth has been organic, rather than part of some grand master plan, is not denied. "We're not in it because we all want

yachts and a place in the Med," explains John Simpson. "We like the job, and we want to do it well." "Doing it well" means offering the best technology and service possible and acquiring the means to do so - hence the expansion of the last few years, fuelled by two things - the ever-increasing range of lighting technology available and the ever-increasing range of markets for lighting outside theatre.

In the last six months, the Group has moved from its former Fulham base (and associated offshoots) to a new facility in Wimbledon - where 35,000sq.ft of equipment storage and preparation space and 10,000sq.ft of office space has allowed all the Group members to

be brought together under one roof for the first time. It's also, as Simpson wryly admits, a chance to leave old habits behind.

According to Raven, the move has also allowed for some consolidation and re-investment in the Group's massive stock inventory - a line-up which includes Strand, Martin, ETC, Robert Juliat, High End, DHA, Tomcat, Lite Structures, Wybron, Zero 88, Avolites, Smoke Factory, MDG, Lee Filters, Rosco, Le Maitre and Jem.

In the last year alone, the company has added over £1million's worth of new equipment: part of that has gone into developing existing stocks, purchasing additional Robert Juliat



Just a small part of the White Light team pictured outside the new Wimbledon HQ

followspots and ETC Source Four Profiles and Pars. The remainder has been invested in new equipment - the new framing shutter version of the Martin Mac2000 spotlight, Wybron's CXi colour mixing scroller and Avolites' ART touring dimmers. A considerable investment has also gone into equipment that satisfies various regulations; for instance, the Group has recently added fully adjustable LOLER rated ladders to its list.

It's a cycle of investment most hire and service companies will be familiar with - money earned is channelled into the next generation of technology. Along the way, the company has also found time to develop some technology of its own, notably the VSFx Optical Effects System - a combination of a flat-field projector, drive unit and effects disc, the success of which has led to the development of the WaveFX unit, a slimmed down version of its originator which, as its name suggests, creates wave and ripple effects.

There's also a pretty impressive range of architectural fixtures from Enliten, the Calisto and 575W MSR Exhibition Par having done much to open up the architectural market for the Group.

As developments in technology call for a greater skill base amongst end users, both Simpson and Raven feel that industry-wide



training is essential, but currently undervalued. "White Light gets paid by the industry," explains Simpson, "so we should put something back - both to lighting, as we do with our Training Initiatives and Student Lighting Bursary - but also to the larger arts world, as we do with our support for the Soho Theatre and the new writing it nurtures - it is new writing, rather than the latest technology, that is actually the driving force of the industry."

Whatever shape the next 10 years take, the White Light Group seems well positioned to respond effectively, but there's no complacency here. Everybody at the company is well aware of the challenges that lie ahead, particularly in the theatre market, where the profile of live performance is changing. The days of the long-running musicals, which did much to bankroll



many companies, are beginning to be but a distant memory. The trend now is towards much shorter runs (the average West End run is now 12 weeks), not a good direction for service companies who traditionally don't see any return on their equipment investment until perhaps a production's third or fourth year. And despite the shorter runs, it seems the client still wants to pay the long-term rate.

As Simpson and Raven acknowledge, there are also more companies now pitching for the business, and a buyer's market always drives down prices - not a bad thing in itself, so long as companies bidding for contracts don't end up locked in a price war.

Just about every major lighting, staging, trussing and effects manufacturer is represented in the White Light stockholding. Below, the latest range of Robert Juliat lanterns (for which White Light became distributor last year) are put through their paces

"The only way to address all these changes is to get your efficiencies in and find ways in which you can reduce your costs without compromising the quality of service you offer," explains Simpson. "The industry is putting huge pressure on manufacturers to produce cheaper products. But there are consequences - to keep prices down they have to cut back on R&D - hence the lack of any major new developments for some years now."

It's clear that this is a road White Light is only prepared to travel so far down. Whilst it recognizes

that its prices have to be competitive, it also believes strongly that you get what you pay for, as a quote from John Ruskin on the company's website illustrates only too well.

"It is unwise to pay too much, but it's worse to pay too little. When you pay too much, you lose a little money - that is all. When you pay too little, you sometimes lose everything, because the thing you bought was incapable of doing the thing it was bought to do. The common law of business balance prohibits paying a little and getting a lot - it can't be done. If you deal with the lowest bidder, it is well to add something for the risk you run. And if you do that, you will have enough to pay for something better."

Photos: Chris Toulmin

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John Watt

Second Take...

John Watt's view from beside the camera

In desperate need of a fix we went to an ice show yesterday, it being potentially the quickest and cheapest source of un-cut concentrated pure colour around these parts on a wet Sunday.

PRODUCED BY the Holiday on Ice production team in The Netherlands and lit with considerable style by a Frenchman, Alain Lonchamp, it satisfied my craving and then some. A fairly modest kit of Cyberlights and some Martin stuff

did the whole job with nothing as old-fashioned as a conventional lamp on the rig. I sat there, sans light meter, wondering what the levels were really like. It felt bright enough with the Juliat spots putting in the emphasis in all the right places. If the show had been duff I would still have enjoyed my evening just watching how the spots were called: sad isn't it? A Martin automated followspot control was used to great effect, not controlling followspots, but some floor gobos which travelled with the skaters. The damping worked really well with

"What is the world coming to, or what is lighting coming to, that we are booked as a last-minute afterthought? I've enjoyed plenty of fire brigade jobs, but it's a good policy to only accept those where you have a fighting chance."

no hesitant hunting but just clean, sweeping, sympathetic movement. Yes, people like me say it will never work, but it does; wrong again, my life has more wongs than a Chinese telephone directory.

IN WHAT TURNED OUT TO BE a comedy routine, a Cyberlight crashed to the ice with a sickening thud within six feet of a skater. A fellow LD and I were stunned and out of our seats

before realising it was a put up job, whilst the rest of the audience just took it in their stride. I don't know what the moral is, but I spent the rest of the show feeling a gullible twit (nothing new there) and checking that there were safety bonds on every last lamp (there were).

HAVING ASSUMED FOR WEEKS that the phone was faulty, I picked up a job last week. Well I'm not sure it's a real job, but it will make a change from shelf filling - once you've seen one can of beans and pork sausages you've seen them all. I guess it's a ray of light (only visible in a dusty atmosphere), because one major outfit has realised that they have a lot of multi-skilled people whose 'multi' does not embrace lighting. Now there's a surprise, they'll be discovering bears crap in the woods next.

SO, COULD I DO MY 'LIGHTING IN A DAY' ACT, preferably without the use of a safety net? Well dismissing the old adage of "them as can, do, and them as can't, teach" in the face of enough money to buy the industrial size can of Grecian 2000, I said yes. True freelancers always say yes, and only consider their qualifications for the job once the receiver is firmly on its rest. We all have a fund of after-dinner stories arising from the application of this principle - I'll do a book when Focal Press run out of ideas. I assume the client had already tried Alan Bermingham, Mike Baker, et al, who no doubt had asked for the national minimum wage or something outrageous, before getting to page 27 in the contact book wherein lies my entry.

SO NOW I'VE GOT TO DO IT, which will result in me learning a hell of a lot more than the students do. Don't you know all that stuff? Well suddenly I'm not sure, for the first 30 years I was absolutely certain that a) a key was the foundation stone of any set up and b) I had a pretty good idea of where it ought to go. Now watching all those channels I seem to be in a small minority, so is it worth perpetuating these notions that are patently not essential to the

business of putting moving images on to a screen? I'll get some stick I suppose, from students and fellow designers alike, but I'll bang my head on the wall once more. They do say it's nice when you stop, but if you are thinking of doing so long term, better remember that lighting is the exception to the rule.

I THOUGHT I REALLY OUGHT TO KNOW a bit more about WYSIWYG to stand any chance of retaining any street credibility, even if the opportunity to use it is a bit remote. My heart has been uplifted more than I can say by a reply to my request for an idiot's guide from the man himself, Gilray Densham. You will know that Gil is one of the inventors of the system and happily an old friend who understands my funny (peculiar) ways. I quote - the true idiot's guide to WYSIWYG is the WYSIWYG Backup pencil (unsharpened); it comes with the wording "in case of WYG software failure please sharpen". So perhaps it would be premature to dispense with the coloured pens? After all, a Roger Duncan stencil is nearly as useless without a pen as a pen is without a stencil.

I GUESS THE MODERN LOT will have to live without the satisfaction of removing wax from their ears with a newly-pointed HB, or without the fascination of watching the warping effect a hot cup of coffee can have on a stencil. I've digressed again, "what, you? never!", but before I die (and I've no plans to play the Glasgow Empire), I'll produce just one plot in the modern way. It may take some time if it shows all the potential errors with the design in graphic form. I doubt one would ever dare set foot in the studio in the certain knowledge of what is going to go wrong.

OH, AND THE PHONE HAD RUNG ONCE before, but I missed the call - never try to lay a four metre square screed with quicksetting concrete unless you want a lumpy effect and very stiff boots. I got to the answer machine next day to find the production manager had called at 4.30pm for a job 150 miles away at nine the next morning. What is the world coming to, or what is lighting coming to, that we are booked as a last-minute afterthought? I've enjoyed plenty of fire brigade jobs in the past, but it's a good policy to only accept those where you have a fighting chance. The post mortem will only register that the lighting was rubbish - not that the LD was booked late, didn't take part in the planning and didn't pick the kit or crew. I thought I was going to turn this into Watty's Guide, rule 15, but there is an alternative postscript to this scenario, i.e. they're so relieved to have anything visible on the screen that you'll earn brownie points no matter what it looks like. You'll lose no opportunity to tell them that given a bit of notice every frame would have been a Rembrandt, and they might even believe you.

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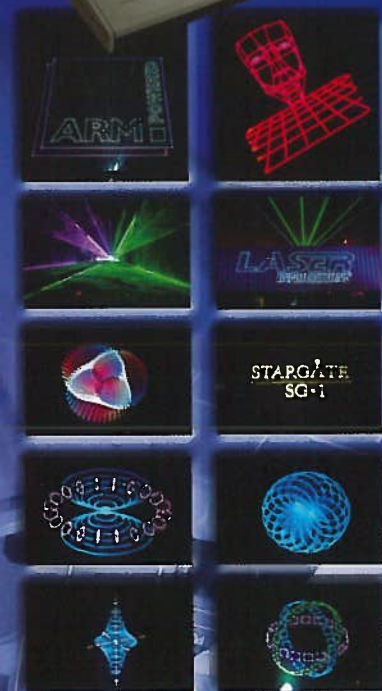
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technical focus

technical editor:
James Eade

This month in technical focus the main review looks at LCD technology. There is also news on a new method of digital signal processing, easy ways to get quotes for circuit board manufacture and new safety regulations proposed for pyrotechnics.

HELP FOR CURRENT HARMONICS

If you are affected by European legislation governing mains harmonics (this will affect dimmer manufacturers, for example) you can find new information from the National Physics Laboratories website. Included on the site are guidelines for following the standards and an explanation of the use of sampling systems to analyse non-sinusoidal waveforms. More information can be obtained from: www.npl.co.uk/npl/cem/dclf/harmonics_flicker.html

MORE ON LEDs

Further to last month's article on light emitting diode technology, it seems that the developments in ultra-violet devices are steaming ahead. As mentioned in last month's L&S, by using UV LEDs in combination with red, green and blue phosphorous material, virtually any colour can be achieved. Advantages include long life, colour unaffected by temperature, low power consumption and, being low voltage, they can also run off a car battery. Convenient, really, as Toshiba is advertising just that: infinitely coloured dashboards for automotive applications. Next stop we'll probably see BBC1 on the glove compartment, ITV on the back seat and Sky in the ashtray! The entertainment world will probably be pretty quick in coming forward with multi-coloured stages and a resurgence of the colour-changing dancefloor . . .

SINGLE SPEAKER SOLUTION

Another new style of flat panel loudspeaker has hit the market - well, almost. Cambridge-based company 1 Limited has introduced a speaker that can replace all the speakers required in a surround sound system. The single flat panel contains 254 drivers about 30mm in diameter arranged in a hexagonal array approximately 1m across. Furthermore, no psycho-acoustic tricks have been used to fool the brain into believing it is hearing sound from elsewhere.

The device is a single slim panel that connects directly to a line level source (7+1 or 5+1). By producing tight, focusable beams of sound, the unit projects the separate sound channels around the listener's room. By reflecting these beams off walls and ceilings they finally come to the listener from left and right, front and rear.

Installation and set-up is apparently simple: once the single unit is in place, the sound projector can be 'tuned' to the acoustic conditions of your room using no more than a remote control. It also has a 'Granny Beam' - the ability to focus a portion of the sound directly at the listener with a higher SPL; ideal for those with hearing impairments. Quite how 'simple' the set-up procedure is remains to be seen, similarly how well it copes with soft furnishings and other obstructions.



Whether the technology will make serious inroads into entertainment uses also remains to be seen. The ability to hang a single speaker panel above a stage has great potential, but the setting up procedures would probably inhibit any widespread up-take - not to mention its unsuitability for outdoor situations. Such electronic phasing techniques already exist in some line array systems, so that aspect of the device is not particularly new. However, one can be assured that the unit is pretty clever: the phased array generates convergent, flat and divergent wavefronts from 3-4 Gigaflops of processing, 1.2 'Megagates' of logic and 254 power amplifiers.

CHEAP MAINS DISTROS

Olson Electronics, manufacturer of various mains distribution parts, has introduced a new catalogue and is also having a limited period sale of 19" rack distros with up to 50% off. More information can be obtained from www.olson.co.uk

PORTABLE APPLIANCE TESTING

Seaward Electronics has recently introduced a new hand-held PAT tester for simple manual 'go-no-go' checking of class I and II electrical appliances. The PAC500 performs insulation and continuity tests at the press of a button, comparing test results to pre-set pass levels and displaying an immediate pass/fail result on the screen. Being of a small and portable

"THERE HAS BEEN A DEBATE
RUMBLING FOR A WHILE
CONCERNING THE PHYSICAL AGENTS
(NOISE) DIRECTIVE THAT WILL
REVISE THE LIMITS FOR EXPOSURE
TO NOISE AT WORK."

> SEE 'NOISE' - PAGE 70

nature (about the size of a multimeter) the unit could well find uses on the road to aid rapid checking of extensions and other equipment.

AUDIO DIGITAL SIGNAL PROCESSING

If you are involved in manufacturing and prototyping audio processing equipment and speakers, help may be at hand from Surtech, who have introduced a DSP-based system for filtering and conditioning audio bandwidth signals. The device, called Signal Wizard, allows designers to produce a filter in seconds without any knowledge of the algorithms required in DSP.

The filtering functions are specified by a software interface that allows the user to adjust various parameters such as roll-offs and frequency response. The parameters are then downloaded in to the unit which creates the corresponding transfer functions.

Operating in real time, the filters are expressed as a set of Finite Impulse Response (FIR) zero phase distortion coefficients or taps. The system's gain and sampling rates (up to 48kHz) can be adjusted while the filter is running, enabling the user to switch between filtered and unfiltered signal. Filters with up to 1024 coefficients can be downloaded into the device via standard RS232 communications and the Windows software also allows frequency and time domain plots to be generated.

Operating in single-channel mode, sampling rates are up to 18kHz, or 16kHz in dual channel mode. Input levels of up to 4V peak allows plenty of headroom at line level.

Being a bare-bones card, the system may well be a cheaper (list price £499) alternative to expensive audio processors for fixed installation use, where frequent adjustment of the system is not necessary. More information can be obtained from: www.surtech-ltd.co.uk

Much is often written about plasma screens and the many available on the market today. They are worthy of such coverage, but the humble Liquid Crystal Display (LCD) tends to get a little overlooked in the entertainment world and so this month's review will take an overview of LCDs and outline the differences between them and their plasma counterparts, which are not wholly unrelated.

LCDs follow a different set of rules to cathode ray tube (CRT) displays, offering advantages in terms of size, power consumption and flicker, as well as 'perfect' geometry. They have the disadvantage of a much higher price, a poorer viewing angle and less accurate colour performance.

LCD vs. CRT

While CRTs are capable of displaying a range of resolutions and scaling them to fit the screen, an LCD panel has a fixed number of liquid crystal cells and can display only one resolution at full-screen size using one cell per pixel. Lower resolutions can be displayed by using only a proportion of the screen. For example, a 1024 x 768 panel can display at resolution of 640 x 480 by using only 66% of the screen. Most LCD monitors are capable of rescaling lower-resolution images to fill the screen through a process known as rathiomatic expansion. However, this works better for continuous-tone images like photographs than it does for text and images with fine detail, where it can result in badly aliased objects. The best results are achieved by LCDs that resample the screen when scaling it up, thereby anti-aliasing the image when filling in the extra pixels. Not all LCDs can do this, however.

Unlike CRT monitors, the diagonal measurement of an LCD is the same as its viewable area, so there's no loss of the traditional inch or so behind the monitor's faceplate or bezel. This makes any LCD a match for a CRT 2 to 3 inches larger.



LIQUID CRYSTALS

Liquid crystals were first discovered in the late 19th century by the Austrian botanist, Friedrich Reinitzer, and the term "liquid crystal" itself was coined shortly afterwards by German physicist, Otto Lehmann.

Liquid crystals are almost transparent substances, exhibiting the properties of both solid and liquid matter. Light passing through liquid crystals follows the alignment of the molecules that make them up - a property of solid matter. In the 1960s it was discovered that polarising liquid crystals with electricity changed the alignment of the molecules, and consequently the way light passed through them, which is a property of liquids.

TECHNOLOGY

So how do LCDs work? Well, the name liquid crystal is a slight misnomer - liquids are liquid, and crystals are solid. In this case liquid crystals are actually nearer to a liquid than a solid state. Generally, it takes a fair amount of heat to change a substance from a solid to a liquid state, and it doesn't take much more to turn it from the semi-liquid (or crystal) state to total liquid. This is the main reason why LCD screens behave slightly oddly in cold weather or hot sun. There are many liquid crystal substances, and depending on their nature and particular temperature, these can be in several distinct

'phases' - the actual molecular state between solid and liquid. The type used in displays are invariably in the Nematic phase.

Most liquid crystals are organic compounds consisting of long rod-like molecules which, in their natural state, arrange themselves with their long axes broadly parallel. It is possible to precisely control the alignment of these molecules by flowing the liquid crystal along a finely grooved surface. The alignment of the molecules follows the grooves, so if the grooves are exactly parallel, then the alignment of the molecules also becomes exactly parallel.

LIGHT BENDING

The construction of an LCD is made up of a sandwich of liquid crystals between two finely grooved surfaces, where the grooves on one surface are perpendicular (at 90 degrees) to the grooves on the other. If the molecules at one surface are aligned north to south, and the molecules on the other are aligned east to west, then those in-between are forced into a twisted state between 0-90°. Light follows the alignment of the molecules, and therefore is also twisted through 90° as it passes through the liquid crystals. When a voltage is applied to the liquid crystal, the molecules 'straighten' out, allowing light to pass through untwisted.

POLARIZATION

Natural light has random polarization; the photons vibrate in all directions. Light can be polarised by filters that only allow light orientated in a particular direction through, either in the vertical or horizontal plane. If two filters with opposing polarization are sandwiched together, no light would pass through until one of them is rotated through 90°. By inserting the LCD between two opposing filters, the amount of twist in the molecules determines how much light escapes through (figure 1).

This blocking also gives rise to one of the less attractive aspects of LCD technology: when the crystals block the light passing through, they must then soak up that light energy. In common low power applications this is of no great concern, but when designing LCDs in to high-energy light sources such as those used in projectors, this excess heat build-up creates a serious thermal management issue.

In some types of LCD the two polarizing filters have identical orientation characteristics so that the cell is black for zero drive voltage and transparent for full voltage. The voltage versus opacity characteristic for a cell is nearly linear: as the voltage increases the opacity increases (or decreases depending on the type) until saturation is reached. The drive voltage

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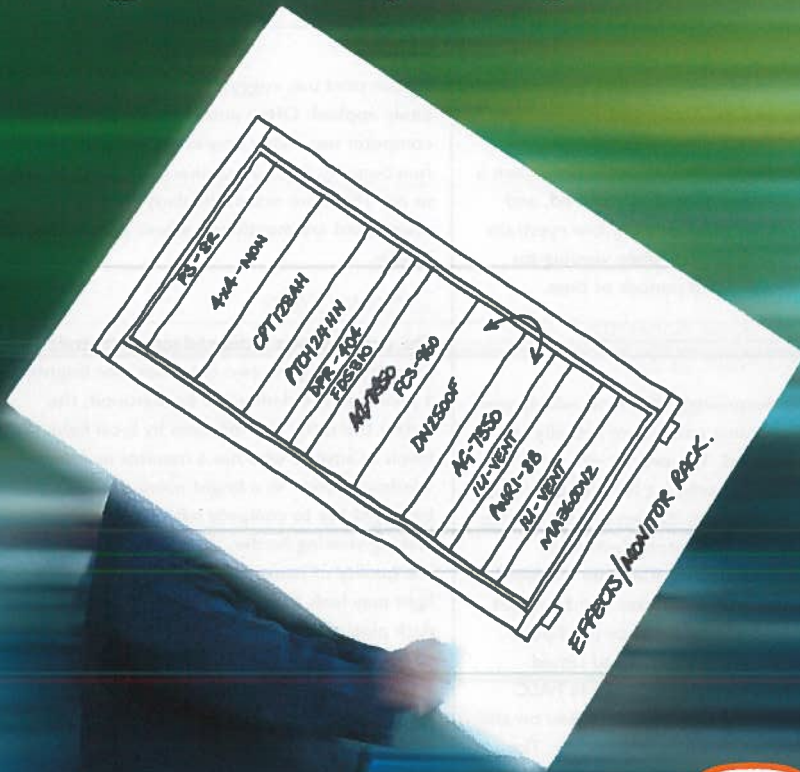
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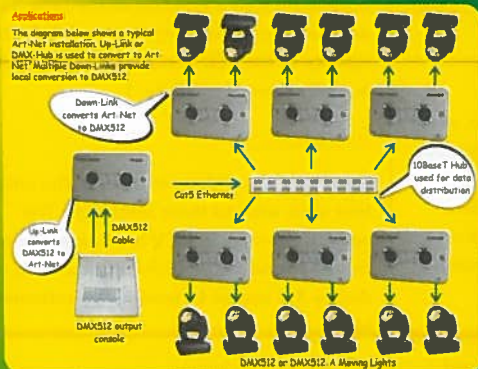
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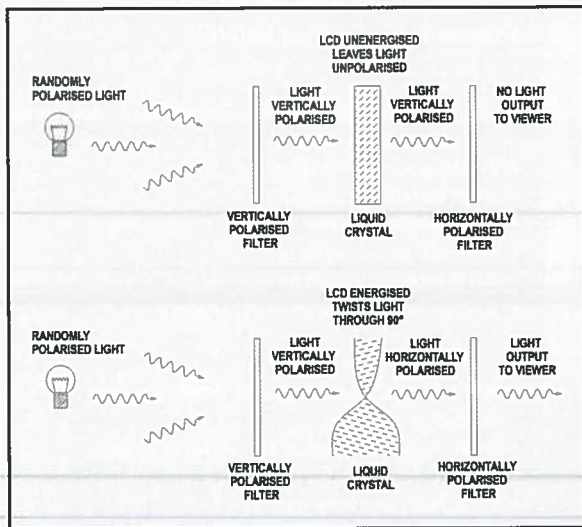


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can be applied in either direction, as the crystal is not polarity sensitive. In order to prevent ionisation and subsequent deterioration, the voltage used is often a.c.

CONSTRUCTION

In a typical screen, some several hundred thousand cells are arranged in a rectangular matrix and controlled by their own thin-film field effect transistor (TFFET). To turn on a cell, a voltage is applied at the correct row and column in the matrix of the cell required and, depending on the drive voltage, each cell can be turned on, off or anything in-between, to give a greyscale shade. In order to achieve a colour image, each cell is given either a red, green or blue filter and the filters on each row are arranged in an offset manner to give closely-spaced RGB pixels.

In order to make this system 'viewable', a light source is required behind the panel highlighting the cell changes. In small LCD panels, or where power is critical (for example mobile phones), this is normally carried out by LEDs, but on larger screens, small fluorescent tubes are used with a reflector and diffuser to give a bright even image over the picture.

CHOLESTERIC LIQUID CRYSTALS

Whilst most displays tend to use nematic liquid crystals, there are developments being made in other areas. Some companies such as Kent Displays have harnessed the use of cholesteric liquid crystals: unlike those in the nematic phase, cholesteric types are highly reflective, and bistable. Being bistable, these displays can maintain an image without consuming any power, as the image is either on or off, and require power only to change state. The high reflectivity enhances sunlight readability to a degree which exceeds similar display technologies; it is much the same as ink on paper. High ambient lighting conditions do not degrade the contrast as with typical LCDs, but go some way to improving it. Also, the viewability of ChLCDs in low ambient lighting conditions is much improved. Very

wide viewing angles are achieved, as ChLCDs are not transmissive (see below). ChLCDs are also flicker-free, because the screen is only updated as required, and thus produce very low eyestrain levels, even while viewing for extended periods of time.

PLASMA ADDRESSED LIQUID CRYSTAL

Surprisingly, the most widely used Plasma screens are actually LCD-based. The process of manufacturing lots of LCD cells, each with its own drive transistor and associated electronics, becomes a little more awkward at very large sizes. For large flat

screens with good performance (and price tags to match) Plasma Addressed Liquid Crystal (PALC) displays are used. In PALC screens, the LCD pixels are not turned on and off via transistor, but by gas discharge. The discharge is triggered by a voltage in the region of 300V. On triggering, the video signal is applied to the LCD section which glows in proportion to the amplitude of the video signal. A single plasma channel controls one TV display line in which individual pixels are addressed, retaining their state until the next discharge pulse. The video signal is stored and each line fed to the display progressively for display.

The other method of plasma technology is much more akin in operation to the cheaper and more easily made cathode ray tube. In the CRT, electrons hit the phosphor coating of the glass, providing an image. Similarly, in the other style of plasma screen, coloured phosphors are used. Each pixel has its own coloured phosphor and the cell is filled with neon gas. To turn on the pixel, a discharge is generated through the gas generating ultra violet rays which in turn hit the phosphor pixel, causing it to glow.

USES & FEATURES

LCD screens tend only to come in smaller sizes - 24" is considered quite large. This does limit their application in a number of entertainment situations, but for much corporate AV work involving smaller meetings, they are more than adequate, as well as a fraction of the price of their plasma counterparts. Another increasingly common use of small LCDs is in presentations where they are used in a lectern to relay the main images on the screen behind, or as monitors for broadcast work.

LCD screens are generally well engineered and there are not many different aspects to set manufacturers apart. Most are designed for fairly 'tame' use: mounting to a wall, sitting on a desktop and basically not being moved too often. Accordingly, not being designed for

serious road use, ruggedness is a criteria not easily applied. Often aimed at serious desktop computer use, many now come with USB functionality, built in speakers, TV tuners and so on. These are not particularly part of the review, but are mentioned where part of the system.

CONTRAST RATIO

The contrast ratio is dependant on several aspects. Taking the two extremes, the brighter a pixel and the darker the background, the better the ratio. It is affected by local light levels as anyone who has a monitor near a window knows - in a bright room the backlight has to compete with the sun, making viewing harder. Also, depending on the quality of construction of the LCD, some light may leak to adjacent pixels, making a dark pixel appear brighter.

COLOUR

Being of a digital control nature, each pixel is controlled via a series of voltages governing the amount of twist in the crystal, and hence what shade it should be. Invariably this voltage comes from a digital to analogue converter and is not a true linear waveform, but stepped in increments of several microvolts. The resolution between on and off is not therefore infinite and each cell has a number of fixed brightness levels - in the region of 250. With each colour cell having the same number of brightness levels it is possible to calculate the total number of actual colours available. (This control method was covered in last month's Technical Focus concerning LEDs). Generally, manufacturers quote values in the region of 16.7 million colours, which shouldn't be an issue for most!

BRIGHTNESS

This is an aspect where manufacturers can differ. As described earlier, brightness is generated by the backlight and this depends very much on the type of backlight used. On small, low power LCDs the backlight may be generated by LEDs, but commonly small fluorescent tubes are used. Variations in light output are thus a function of the tube itself and the associated reflectors, and the actual opacity of the LCD panel when all the cells are fully open (i.e. 'white').

ASPECT RATIO

Traditionally, a video picture is in the ratio four units wide to three units high. The advent of widescreen TV has brought about the 16:9 ratio. Most 16:9 format screens will display 4:3 images by leaving the extremes blank.

VIEWING ANGLE

Viewing angle problems on LCDs occur because the technology is a transmissive system which works by modulating the light

LCD Display Comparison Chart

Manufacturer	Model	Size	Aspect ratio	View angle	Resolution	brightness	contrast	inputs	Notes
Sony	LMD650	6.5"	16:9	50°	640 x 480	Not Quoted	Not Quoted	S-Video, Composite	
	LMD151MD/129	15"	4:3	170°	1024 x 768	Not Quoted	Not Quoted	RGB (Optional Composite & S-Video)	
	LMD181MD/129	18.1"	4:3	170°	1280 x 1024	Not Quoted	Not Quoted	RGB (Optional Composite & S-Video)	
Panasonic	TC-7WMS1	7"	16:9		480 x 234*				
	TX-22LT	22"	16:9	120°	854 x 480	400 cd/m²	400:1	Composite, SVGA	
Sharp	LC-150M2U	15"	4:3	140°	640 x 480	380 cd/m²	60:1	Composite, S-Video	
	LC-121M2U	12.1"	4:3	140°	640 x 480	450 cd/m²	80:1	Composite, S-Video	
	LC-20VM2	19.7"	4:3	120°	640 x 480	400 cd/m²	60:1	VGA, Composite, S-Video	
	LC-28HM2	28"	16:9	160°	1280 x 768	400 cd/m²	350:1	VGA, Composite, S-Video	
Zenith	ZLD-20A1	20.1"	4:3	140°	640 x 480	450 cd/m²	400:1	SVGA, Composite, S-Video	
	ZLD-15A1	15.1"	4:3	120°	1024 x 768	250 cd/m²	200:1	SVGA, RGB, S-Video	262,000 Colours
Wordsworth	DM-121	12.1"	4:3	Not Quoted	800 x 600	250 cd/m²	Not Quoted	VGA Only	262,000 Colours Industrial Panel mount monitor
	DM-150	15"	4:3	Not Quoted	1024 x 768	200 cd/m²	Not Quoted	VGA + DVI	Industrial Panel mount monitor
	DM-170	17"	4:3	Not Quoted	1280 x 1024	170 cd/m²	Not Quoted	VGA + DVI	Industrial Panel mount monitor
	SRM-121	12.1"	4:3	Not Quoted	800 x 600	1308 cd/m²	Not Quoted	VGA Only	262,000 Colours Industrial Panel mount monitor
	SRM-150	15"	4:3	Not Quoted	1024 x 768	1750 cd/m²	Not Quoted	VGA + DVI	Industrial Panel mount monitor
	SRM-170	17"	4:3	Not Quoted	1280 x 1024	725 cd/m²	Not Quoted	VGA + DVI	Industrial Panel mount monitor
Samsung	SM-240MP	24"	16:10	170°	1920 x 1200	250 cd/m²	400:1	WUXGA	
	SM-170P	17"	4:3	160°	1280 x 1024	230 cd/m²	400:1	SXGA, Composite, S-Video, UHF	Includes TV Tuner
	SM-171P	17"	4:3	120°	1280 x 1024	240 cd/m²	400:1	SXGA, Composite, S-Video, UHF	Includes TV Tuner
	SM-151MP	15"	4:3	120°	1024 x 768	250 cd/m²	330:1	SXGA, Composite, S-Video, UHF	Includes TV Tuner

Information from Manufacturers Specification sheets E&OE

Links:

www.bpgprod.sel.sony.com www.panasonic.com www.sharpelectronics.com www.zenith.com www.wordsworth.co.uk www.samsung.com

that passes through the display, while CRTs are emissive. With emissive displays, there's a material that emits light at the front of the display, which is easily viewed from greater angles. In an LCD, as well as passing through the intended pixel, obliquely emitted light passes through adjacent pixels, causing colour distortion. However, technology progresses and angles in the region of 170° are now common.

CONVERGENCE AND FLICKER

A CRT has three electron guns whose streams must converge faultlessly in order to create a sharp image. There are no convergence problems with an LCD panel, because each cell is switched on and off individually. This is one reason why text looks so crisp on an LCD monitor. There's no need to worry about refresh rates and flicker with an LCD panel - the LCD cells are either on or off, so an image displayed at a refresh rate as low as between 40-60Hz should not produce any more flicker than one at a 75Hz refresh rate.

OLD AND TIRED

LCD displays have far greater life expectancies than CRTs, and rather than catastrophic failure, it's more likely that one or more cells on the LCD panel will fail, as users of early laptops may remember. On a 1024 x 768 monitor, there are three cells for each pixel - one each for red, green and blue - which amounts to nearly 2.4 million cells (1024 x 768 x 3 = 2,359,296). There's only a slim

chance that all of these will remain perfect; more likely, some will be stuck on (creating a 'bright' defect) or off (resulting in a 'dark' defect). Also, depending on the quality of light source, the tube may deteriorate and the display will show brighter lines in some parts of the screen. It may also be possible to see ghosting or streaking, where a particularly light or dark image can affect adjacent portions of the screen. Fine patterns such as dithered images may create moiré effects or interference patterns that jitter.

MARKETS

Recent research by Reed Publishing has noted a decline in sales of mainstream electronic displays by 12% in 2001 to \$48.2bn. The trend is set to be reversed in 2002 with an increase of 15% and by 2005 sales are expected to top \$85bn - not far off doubling sales within four years. LCDs have experienced a downfall in sales to the end of 2001, with reductions in revenues of as much as 27% caused mostly by capital over-expenditure and drop in demand. But future predictions for LCDs are good - by 2005 it is estimated that LCDs will account for 61.5% of the displays market. Plasma displays also are predicted to come good; sales in 2000 topped \$665m and are predicted to increase to \$4.7bn by 2005. If you are looking to buy displays, an increase in production of LCDs and Plasmas will certainly mean price reductions so it may be worth waiting a while. The CRT display is forecast to lose its 50%+

share of the market this coming year; expectations are that it will drop down to 35%. LED and vacuum fluorescent displays are pretty much still niche markets, and will stay that way with the market for LED displays declining through the period until 2005.

If you really want to jump on to the technology bandwagon, then it may be worth waiting until Organic Light Emitting Diode (OLED) displays are out of their infancy. Although there are 30 companies working on this new display technology, both TDK and Pioneer are producing commercial products. The advantages of OLEDs are that they can be produced very thinly and can be made in to wafer thin flexible displays: initial applications are in areas such as mobile phones, and mobile phone watches. (Indeed it is true, such a gadget 'Q' would have developed for James Bond is now here. Swatch have apparently been waiting for the 3G mobile comms market to pick up before releasing their mobile phone watch!)

AND FINALLY . . .

Overall, the common consensus seems to be that LCD-based screens will overtake CRTs; as the technology develops and becomes more accurate it is difficult to find fault with that view. However, the point at which LCDs will become comparable in price to mass-produced tubes is a little way off, so don't expect European legislation on 'Safe Disposal of Masses of TV Tubes' just yet!

THEATRE SOUND

John A. Leonard
A&C Black
ISBN: 0-7136-4803-1
PRICE: £12.99

Theatre Sound is a comprehensive book on all aspects of live audio engineering with the accent on sound in theatre. A useful educational reference for all but experienced engineers.

Leonard's book is a comprehensive volume on all aspects of live sound from working on location to recording studio. Whilst the accent is on theatre, the content is a good reference and grounding in live audio principles and processes. It is suitable for students through to those with a good working knowledge of audio but less practical experience. The coverage is extensive with the early sections covering the physics of sound waves and analogue representations, digitisation and the various forms of hardware involved such as cables and connectors.

The book progresses on through the structure of a live system discussing the merits and



properties of microphones through mixing desks, recording and playback devices to amps and speakers, finishing with a detailed look at sound effects, samplers and show control systems such as MIDI. Outboard devices are considered too, with a look at compressors, gates, equalizers, and effects engines with clear descriptions of their principles of operation.

On the whole the book is very readable, written in a personable

style with concise and clear explanations of techniques and principles; yet despite this, Leonard doesn't lose sight of the artistic elements of the use of sound to create an atmosphere as well as considering the 'primary' role of sound reinforcement.

There are many anecdotal illustrations from the authors' experience throughout the book that further enhance the reader's understanding of the techniques described. Leonard is not afraid to tackle head-on aspects that are difficult to understand for the beginner, nor does he shy away from using any relevant maths that go to illustrate principles. He does, however, do it refreshingly well and there are some gems to be found within, such

as the way he promotes a good comprehension of the structure of a mixing desk; not an easy task given the complexity of signal routing and matrices. A similar treatment is given to understanding of gain structures within a PA set-up - this is a so-often misunderstood topic that is worthy of the pages devoted to it.

Aside from the describing the technology involved, the book leaves few stones unturned with regard to the theatre show production process; hints and tips abound for topics such as the design of a system according to the style of venue through to the technical rehearsals. Finally there is a comprehensive bibliography as well as a large listing of useful addresses covering manufacturers to licensing authorities, with web site addresses where available. In all, Theatre Sound is an excellent addition to the bookshelf of anyone embarking on or in the earlier stages of a career in live sound engineering.

Order this book quoting 'TF April' and receive a 10% discount.

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The Art of Lightshow Maintenance



Pooterland.com is a website run by enthusiasts who have set themselves the challenge of creating the definitive list of Liquid Lightshows. We invited 'Pooter' to step forward out of the shadows and tell us the untold tale of the Liquid Lightshow and its meteoric rise in the mid-to-late 1960s on both sides of the Atlantic.

The roots of the lightshow can be traced back as far as Father Louis-Bertrand Castel (1688-1757) who in 1724 wrote extensively about light projection having experimented with prisms, mirrors and candles. Then in 1893 to England where Professor Alexander Wallace Rimington (1854-1918), Professor of Art at Queen's College, toured the country performing Mobile Colour concerts with his Colour Organ. This large and complex invention allowed him to translate pieces of music into colour sequences, all controlled by a keyboard with each key producing its own unique colour.

Several years later across the Atlantic during the 1920s and 1930s, Mary Hallock Greenewalt toured the USA with an elaborate Colour Organ, performing concerts. At around the same time there was a composer by the name of Thomas Wilfred producing compositions set to light, who toured both in America and throughout Europe with his invention called the Clavilux. In addition to this, Wilfred was responsible in 1930 for the creation of the New York Art Institute of Light which he ran until 1943. Further developments by Cecil Stokes (1910-1956) using crystals led to the birth of the Auroratron Foundation of America, who produced films in the 1900s which were later used for psychiatric treatment.

In 1952 this was given a new lease of life by Professor Seymour Locks from San Francisco State University who began experimenting with hollow slides filled with dye and also with Viewgraph Overhead Projectors using a new discovery - clock face bowls. This is arguably

where lightshows started to move in the direction of what was to become rock 'n' roll and the seeds were first sown for what would later become the Psychedelic/Hippie scene.

Eventually this 'show' was put to jazz music for some important visitors to the University and for a while the show went out on the road.

It was at this time that Elias Romero, a student of Locks, picked up on the idea and began doing lightshows at various Beat clubs in LA. Not long after this, Romero moved south to San Francisco and in 1962 ended up living on Pine Street at a building managed by a guy called Bill Ham. Romero soon started doing lightshows for the San Francisco Mime Troupe and Ham, already an artist, also became interested in the concept and began experimenting himself.

Arguably the first time kinetic lighting was used at a rock 'n' roll dance was by Bill Ham on the 21st June 1965 at the opening of the now legendary Red Dog Saloon in Virginia City, Nevada. Bill projected onto The Charlatans, pioneers of the 'San Francisco Sound'. It went down in history as the first 'psychedelic' event.

Among the many 'heads' and Berkeley 'in crowd' present at the Red Dog Saloon that night was Texan Chet Helms who went on to resurrect an old dancehall built in 1911 called the Avalon Ballroom on Sutter Street, San Francisco, and form a collective known as The Family Dog.

The Avalon Ballroom became an important factor in lightshow history, with Bill Ham's



Above, Brotherhood Of Light (San Francisco USA)

Left, Reggie Williams at the Avalon ballroom in San Francisco handling the lightshow for the Grateful Dead

Light Sound Dimension being the house lightshow and later featuring Ben Van Meter, Roger Hillyard, Jerry Abrams, Glenn McKay, Tony Martin, Reggie Williams, Brotherhood of Light, Garden of Delights and Holy See.

Very soon there was competition from the much more business-like Bill Graham who opened up another famous old dancehall called The Fillmore Auditorium in 1965, with early collaborations between the two promoters soon leading to intense rivalry. It is no surprise that The Fillmore ended up with their own lightshow artists such as Brian Eppes' Brotherhood of Light and George Holden's Abercrombe.

Almost instantaneously dancehalls used for rock 'n' roll dances started cropping up all over the USA. As fast as these opened, Liquid Lightshows suddenly gained residencies across North America like wildfire, The Joshua Lightshow emerged in New York (at Graham's Fillmore East), the Jomo Light Disaster in Texas, the Diogenes Lantern Works in Denver, Addled Cromish in Canada, Neon Moth in LA, and Family Cat in Santa Barbara: the rivalry between them became legendary.

On the other side of the Atlantic, a similar story was emerging, one that involved a certain Mark Boyle who was doing public lightshows with some of the 'Beat' crowd as early as 1963. It would be fair to say that, like

POOTERLAND IS HOPING THAT READERS OF L&S1 MAY BE ABLE TO HELP IN PROVIDING INFORMATION ON THE FOLLOWING . . .

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 DEADLY NIGHTSHADE - USA
 DON'T SHOOT THE MESSENGER - AUSTRALIA
 DR. P.H. MARTINS MAGIC MEDICINE SHOW - USA
 ELECTRIC KISS LIGHT SHOW - USA
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 EXPLODING SPECTRUM LIGHTS - UK
 FANTASIA LIGHT CIRCUS (MICK BROCKETT) - UK
 FATHER PHIPPS FREAKY LIGHT SHOW - CANADA
 GARDEN OF DELIGHTS - USA
 GENTLE DEBACLE - USA
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 LIGHTER THAN AIR CORPS - USA
 LIQUID LEN & THE LENS MEN - UK
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Left to right, Rainbow Puddle Liquid Lights (San Francisco USA). An early promo for Krishna Lights - one of the UK's first commercial suppliers of lighting equipment; Optikinetics' Solar 250

Elias Romero, Mark Boyle was the originator of UK projected lighting even though he always maintained that what he was doing was nothing more than 'Art'.

Mark Boyle's experimental and sometimes controversial lightshow performances were always ground-breaking. One famous example involved wiring up a naked couple on stage with all manner of electronics while they had intercourse and projecting ECG statistics on a massive screen in his famous Bodily Fluids show that toured Europe and the UK in 1966.

In 1968, Mark Boyle's Sensory Laboratory went on tour in the USA and Canada with The Soft Machine and Jimi Hendrix, and he soon became the undisputed master of what was known in the States as the 'Wetshow' where he would 'boil' slides mixed with all sorts of exotic and dangerous liquids. Another seminal UK lightshow event in 1968 by Mark Boyle's Sensory Lab was the Liquid Light Environment produced for the opening of the ICA in London. Within months of Mark Boyle's shows there were literally hundreds of Lightshows springing up all over the UK, inspired by seeing Mark Boyle's Sensory Laboratory.

A significant difference between English and American lightshows was the use of equipment. Almost all of the American lightshows used overhead projectors and liquids horizontally in clock-faced bowls, creating effects by adding more bowls and spinning and squashing the bowls together, giving rise to the slightly derogatory nickname of 'Dish Monkey' in combination with slide projectors using static slides. In the UK, however, projectors such as

the Rank Aldis Tutor 1000 were used to boil liquids vertically between two or three sheets of slide cover glass held together by capillary action, often by the modification of removing the projector's heat filters. In addition to this, static slides were often projected with Kodak Carousel and Leitz Pradovit slide projectors.

London's UFO at The Blarney Club on Tottenham Court Road soon became a mecca for lightshow artists and many emerging lightshow operators performed here such as Joe Gannon, John Massara, Philip Hodgson, Jack Braceland and Mark Boyle. Gannon, along with Mike Leonard, was one of the first of The Pink Floyd's lightshow operators, later being replaced by Peter Wynne-Willson.

Soon after UFO, Happening 44 (run by psychedelic nudist colony owner Jack Braceland) and then Middle Earth started up, both with in-house lightshows - Five Acre Lights at Happening 44 and Exploding Spectrum Lights at Middle Earth and The Roundhouse. Unfortunately for Braceland, Happening 44 closed within six months of opening, leaving the path clear for Middle Earth and The Roundhouse.

In 1967/68 pretty much every lightshow in the country had a collection of Rank Aldis projectors being used to boil wet slides in dancehalls the length and breadth of the country. Krishna Lights in Tottenham Court Road, formed in 1968 and run by Jimmy Doody and Keith Canadine, was one of the country's first commercial suppliers of lighting equipment, supplying liquid wheels and projectors to the up and coming lightshow operators. In 1969, an

improved version of the Aldis Tutor 1000, the Tutor 2 was released and was used mainly for Liquid Wheels as opposed to boiling wet slides. Realising the success of the Rank Tutor, and also its limitations, heralded the birth in 1970 of Optikinetics who, in 1972, were the first company to mass-produce a projector, the Solar 100, specifically designed for effects projection after Rank had decided not to market one. A year later they launched the Solar 250, which is still produced to this day; the company has sold over 70,000 of these over the years and you will still find thousands of them in use with contemporary lightshows in combination with its 'big brother' the Solar 575.

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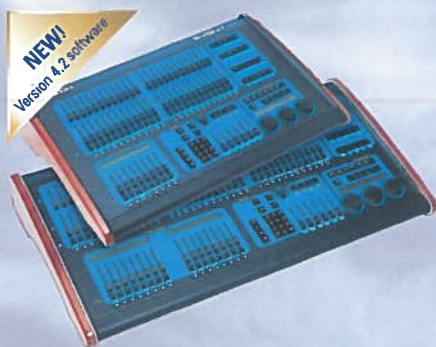
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Event 3

Event and Event Plus offer all the simplicity and features of the ESP II with additional programming and playback options. Event is a hybrid, designed to give maximum hands-on flexibility, but with sufficient features to control moving lights and colour changers with all the sophistication of most dedicated moving light consoles.

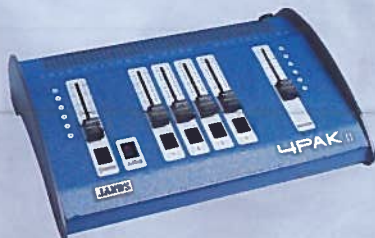


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HP6/HP12

The Jands HP range of high quality dimmer racks are specifically designed for demanding touring, theatre and contracting applications.



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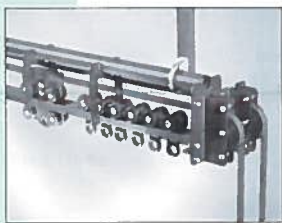
Martin Pro launches into advanced control market

Martin Professional introduced the Maxxyz lighting control system at the recent SIB International exhibition in Rimini. The desk's built-in 3D visualizer with real-time Preview mode gives full real-time preview of shows, allowing the user to create new ones without interrupting the running show. Maxxyz also offers Ethernet capability for DMX universes and multiple console linking, remote access via a laptop/PC or Internet network, plus a link for automatic Internet updates, programming modification, etc. Two complete Pentium III-based computer systems communicate with each other through COM+ technology. Full details in our SIB report next issue.

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www.martin.dk

New Curtain Track from Doughty



Rapidly becoming a one-stop shop for all things metal in the theatre and lighting industry, Doughty Engineering has just launched a brand new curtain track.

Named Sixtrack, it has been designed and produced after much consultation with end users and installers; Doughty claims that it overcomes several of the problems users say they experience with existing products.

Available from stock, the track is made up of a tubular top hanger bar and rectangular section tube rails, all finished in black powder coat. All components are assembled using 5mm nuts and bolts throughout, which means that modifying sections or adding pulleys can be done without re-threading hauling lines. A range of fully adjustable brackets has also been developed for hanging the track. A range of standard radius corners are available, with an extra bonus of a 'tighter' corner (500mm radius), curtains can also be 'parked' on the corners. A clever rope carrier has been developed so that should a hauling line become detached from its guides, it will be automatically re-located the next time the curtains are drawn in either direction. A variety of hauling mechanisms are also available.

Tel: +44 (0)1425 478961

www.doughty-engineering.co.uk

New Chroma-Q Gobo Rotators from A.C. Lighting

The Chroma-Q range now offers the lighting professional an even wider choice of high quality, affordable lantern accessories following the launch of a new line of gobo rotators.



The three models available all accept glass or metal B-size gobos and offer compatibility with most popular spotlights including Source Four, Shakespeare and Strand SL types. The Single and Twin models feature basic manual speed adjustment using a small stand-alone power supply. The Twin DMX model offers compatibility with the Chroma-Q and Rainbow power supplies enabling bi-directional, variable speed control via DMX. The robust construction and quality components used in the manufacture of Chroma-Q gobo rotators guarantees long-term reliability, coupled with near silent operation.

This expansion of the Chroma-Q range now gives consultants and designers the opportunity to specify a 'one brand' package.

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www.aclighting.co.uk

It's Cell Cell Cell with Milos



Milos has introduced its latest range of cell aluminium clamps. The company's comprehensive range of QuickTruss systems has now been enhanced with the introduction of a range of high-quality extruded theatrical clamps and couplers to suit standard 48mm-51mm (2") and 32mm (1.25" tube sizes).

The addition of the clamps and couplers range to Milos' portfolio of products enables it to supply a comprehensive package of trussing and rigging equipment to its customers. We understand this is the first of several new product introductions and developments which will be announced during 2002 and which Milos will have on stand at the PLASA Show in September.

Tel: +44 (0)1582-728520

www.milosuk.co.uk

Link and Le Mark's New Connection

A new distribution agreement between Le Mark Group and Link srl or Rome was finalized during the recent SIB Exhibition in Rimini. As a result of the agreement, Link will distribute Le Mark's Magtape range of gaffer tape, as well as its award-winning Slipway cable cover tape. Link is known for its Eurocable and LK Connector ranges, both extensively used within the audio, video and lighting sectors.

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Fire Safety for Lighting Filters

Increasing safety awareness around the world has prompted Rosco to seek accreditation to higher non-flammability standards than the current BS 3944:pt 1 1992. This latter standard is in revision, but rather than wait for the new criteria to be announced, Rosco has achieved Certification of Compliance for the more formal European DIN standards, which are not harmonized to the BS standards. Rosco's Supergel range now complies with the prestigious DIN standard 4102 Class B1, in addition to M1 for France, and Classe Uno in Italy, together with the Austrian Test House equivalent to B1. Supergel is manufactured in a unique way with 'locked-in' colour which means minimal colour bleaching in hot lights.

Tel: +44 (0)8659 2300

www.rosco.com

DSP 4 from QSC Audio

QSC Audio has introduced the new DSP-4 digital signal processor, which offers two channels of independent DSP and attaches to the back of most 2-channel DataPort-equipped QSC amplifiers. Capitalizing on the success of the DSP-3, the second-generation DSP-4 provides a number of enhancements, as well as incorporating balanced XLR connectors. These improvements include enhanced A/D and D/A converters for superior signal-to-noise performance and upgraded software that significantly increases the unit's operational characteristics.

With its new A/D and D/A converters, the DSP-4 boasts an improved noise floor. These new converters provide an unweighted dynamic range of > 106dB for a 4V input sensitivity. Software refinements to the DSP-4 (which will also retrofit the DSP-3 and DSP-30) include the addition of a true power limiting feature. The new DSP-4 is scheduled to commence shipping in April 2002.

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Broadcast Sales - Communications : London Salary: £28-32k

An energetic direct sales professional with experience of the broadcast, theatre and commercial audio markets is sought to spearhead the sales of a range of communications products and accessories. Operating from a London office base, the role will require extensive travel throughout the UK and the chosen candidate will have the necessary commitment to efficiently manage his or her own activities. Job ref BS033

MI Field Sales : Midlands & North Salary: £22-25k

An established MI product distributor is seeking an experienced and effective sales professional to manage the sales of a brand-leading range of accessory products. Suitably located, you will need to have well-developed territory management skills and a proven sales track record. Job ref AS025

Dealer Sales - Pro Audio : London base Salary: £25-35k

A leading distributor of recording and broadcast audio products is seeking an experienced and dynamic national dealer sales manager. You must be technically conversant with music recording applications and have the professionalism, enthusiasm and energy required to manage and motivate a variety of third party re-sellers. Job ref AS1832

Direct Sales - Digital Audio Workstation Products : South East Salary: £25-35k

This is an excellent opportunity for an experienced sound engineer or editor who is looking to move into a specialist technical sales role. With experience of the music recording or post-production sectors, you will be a natural self-starter with a high degree of professionalism and commitment. Operational experience of Pro-tools as well as any proven commercial background would be a distinct advantage. Job ref ADS1832

Technical Support Supervisor - Audio/Video North West England Salary: £22-25k+

A leading supplier of distributed music and video programs to the retail and leisure sectors involved in satellite distribution, as well as system supply and installation, is seeking an experienced technical support supervisor for its office-based telephone support team, to oversee day-to-day customer support services and liaise with field service and installation functions. Job ref AVT2105

Field Sales - Pro-Audio : North Salary: £22-30k plus Comm

This world-leading manufacturer of studio recording and processing products is seeking an experienced and aggressive UK sales professional. You will have a sound understanding in digital-audio technology and studio practice, and have the energy and commitment needed to succeed. Job ref AS199

Export Sales Manager - Broadcast Electronics: Bucks Salary: £35-45k+

This leading British manufacturer of broadcast electronics now seeks a technically well-grounded sales manager to manage and develop its business in the Asia region. Extensive travel, together with substantial autonomy, is offered for the right candidate. Job ref BES1815

R&D Engineer - Software, Pro-Audio Products : Oxford Salary: £18-22k+

This leading British manufacturer of recording and mixing consoles is seeking to recruit a graduate or similarly qualified engineer to join an established product development team. This will provide an ideal opportunity to develop individual speciality. Job ref ADE1824

Video R&D Engineer - Broadcast Electronics Salary: £25-35k+

Our established client supplies leading electronic control and processing systems to a global network of television and broadcasting organisations. They now seek an experienced video development engineer to join the existing engineering team. Job ref VDE1815

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Field Service Engineer : Midlands Salary: up to £22k dependent upon experience

A highly professional installation and service provider is seeking high quality candidates capable of solving product and contract problems/issues. The successful candidate must have at least 2 years relevant experience in faultfinding across lighting and sound equipment. Training will be provided. You must be capable of working on your own initiative and organising your own priorities when necessary. Job ref SE506/2a

Project Manager Location : South Salary : £25-30k

This successful company is seeking professionals who can specify and design audio, visual and lighting systems across both entertainment and commercial applications. The successful applicants must have previous experience in system design and application. Job ref PM506

INTERNATIONAL POSITIONS:

This rapidly expanding AV company, based in Dubai, which specialises in AV contracts for hotels, military establishments and private residences, is looking for:

1 x Engineering Manager (ref 2913/1) to head the department, deal with project issues and oversee staff, CAD Dept, plant and transport allocation.

1 x Service Manager (ref 2913/2) to head a team of 3, but capable of being hands-on and undertaking some field work.

2 x Project Managers (ref 2913/3 & 4) to head teams of installers. Must be experienced engineer (audio/lighting/ rigging) and be prepared to undertake field/site duties.

Attractive package includes salary, accommodation, holiday flights, medical expenses, car allowance, no tax and, of course, sunshine.

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APPLICATION FOR INCLUSION IN A SELECT LIST OF CONTRACTORS

Alterations to existing Town Hall and construction of a new Museum & Arts Complex.

The work will comprise full specialist auditorium systems, including lighting, sound and communications installations and various stage engineering systems and goods lift.

Applications are invited from competent and experienced contractors wishing their names to be considered for inclusion in a Select List from which Tenders will be invited. The works will be carried out under the JCT 98 Nominated Sub Contract current edition. Applicants should indicate for which discipline they are applying.

It is anticipated that the work will commence late Autumn 2002 and will be completed in one phase within 24 months of commencement date.

It is anticipated that up to 6 No. contractors will be invited to tender for the contracts in each category in accordance with the "Code of Procedure for Single Stage Selective Tendering" published by the JJCC.

Ballymena Borough Council gives no undertaking that all, or any, of the applicants will be invited to tender.

Applications must be in the form of a completed questionnaire, obtainable from Mr T Gordon, Personnel & Services Manager, by telephoning 028 2566 0350.

The closing date for receipt of completed applications to be included in the Select List, to be returned in the envelope provided, not later than 12.00 noon on Friday 10 May 2002.

M G Rankin, Town Clerk & Chief Executive, Ballymena Borough Council, 'Ardeevin', 80 Galgorm Road, Ballymena, BT42 1AB

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You will also need a good knowledge of IT, including Word, Excel and ideally Hiretrack Software, along with GCSE standard English and Maths.

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Job description:

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- Updating those schedules with new videos
- Creation and update of schedule of sports and other events
- Managing the supply of music videos, sports and other events
- Developing the use of other media such as adverts, film trailers, concerts
- Ensuring all music and video licence requirements are met

The successful candidate requires:

- Good communication skills
- Good computer skills
- Understanding of PC video MPEG technology
- Understanding of lighting systems and technology
- In depth knowledge of different music styles and artistes
- Knowledge and appreciation of tv and leisure entertainment

Applicants must be over 18 years of age.

Please Contact:

**Karen Ferreira or John Harland on
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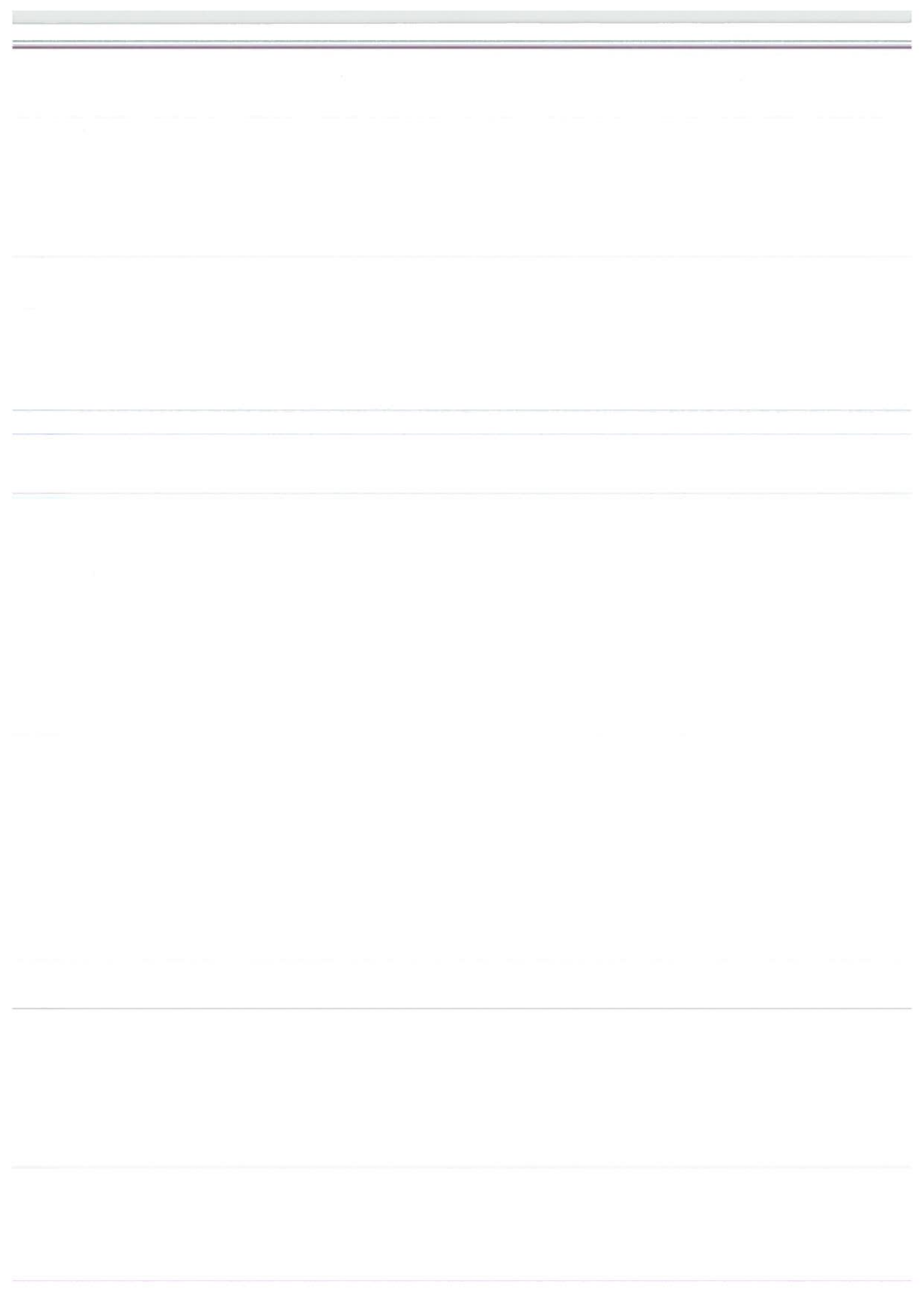
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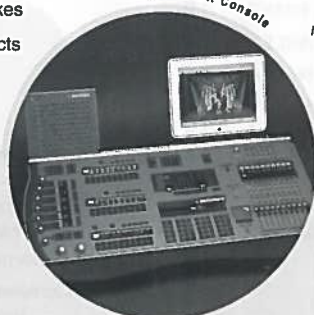
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In Profile...

L&SI Talks to the Industry Trend-setters

Fred Heuves is managing director of Ampco Pro Rent BV - one of Europe's leading audio rental companies. He is also the driving force behind the Synco Network, the European sound reinforcement rental group which has been thriving for five years and which may just provide the model of how our industry's rental businesses will have to operate in the future.

So where did Synco come from? "The idea behind Synco," explains Heuves, "was to cater for a spread of markets - not only touring, but theatre, corporate and broadcast. The problem was that there was no single sound system

available which was capable of application to all these markets. Faced with this, there were two options: to manufacture our own system, or to develop one with an existing manufacturer."

US manufacturer Renkus-Heinz was the eventual choice - a company that Ampco knew well through Ampco Audio Products, the sales division of Ampco, being R-H's Dutch

distributor. Talks began, and led to a new range of products - the RH STS (Synco Touring System) - utilizing R-H's Co-Entrant technology. This was designed in conjunction with Ampco's engineers to create a system that could be applied to different market segments.

The Synco concept was to be an exclusive, not for sale system (Ampco agreed with Renkus-Heinz the worldwide sales and marketing rights for the range), only available to the limited number of Network members. Heuves explains: "The idea was to ensure that all elements of the system held by each member company would be identical - cable, amplifiers, monitors, controllers, racks, rigging." This uniformity is strictly controlled and Network members are not allowed to deviate from the model.



The synergy of Synco gives real advantages to both its members and their clients. Network members can service more shows and have access to more equipment and resources than would otherwise be possible for a stand-alone company. Naturally, the fundamental plan behind the Network, and indeed any rental business, is to gain maximum return for investment. The fact that Ampco Pro Rent alone serviced more than 6,000 shows last year is testimony to its success.

Referring to some of the technology that surrounds us as we speak at the Pro Light & Sound exhibition in Frankfurt, Heuves comments: "Line arrays are very useful tools, but the crux of the story is that all current systems are limited to certain market areas. The Synco Network [currently holding 1.2 million watts of entirely uniform Synco systems across Europe] is suitable for a spread of markets." The network provides the potential for a complete touring service - guaranteeing that an identical system will be in place at each venue on a tour, without the usual administrative and logistical expense of trucking one or two systems from venue to venue. The Synco network provides the assurance that equipment will be precisely matched in each venue, each night - even down to the colour of the cables.

Heuves is, like many others, concerned about the current state of the rental market. The trend towards discounting is undermining the professional services which are the bread and butter of rental companies across the industry. Heuves' view is unequivocal: "If things continue in the direction they are moving now, then the whole rental market is a dead end street." He explains further: "If rental companies can't

command a price which will enable them to invest in new resources and people, then there will be no future for them." He believes strongly that trade associations should be playing a role in ensuring that sensible market prices are paid for professional equipment and services, as is happening in The Netherlands with PRESA (the Production Rental Equipment Services Association).

But what do rental companies need to do? "Rental companies too often think in the short-term. As long as the equipment is out today, and is booked out for tomorrow, they are happy. But they need to make a more long-term policy to protect their future. They need to join forces and combine resources, to offer sales and rental, project management. At present there is too much equipment in the market, and rental companies are suffering. Members of the Synco Network, however, have shown solid growth and continued investment over the past five years."

And what of the next five years? "With the arrival of the Euro, many administrative and logistical limitations have been abolished. I see this leading to increased competition in our market segments. To survive, companies need to offer quality with added value - they need to invest in new technology, to look at networking technologies like CobraNet and ethernet solutions - those who do will survive."

In this respect, Ampco has been more fortunate than most: following the sale of Ampco to Dutch broadcaster NOB, the company's sales and rental activities have been fully integrated with Flashlight, and consequently the company has the power to provide complete lighting and sound rental packages across Europe. So is Synco the model for the future? "Synco is a way to tackle the problem," says Heuves. ■

 www.apr.nl

 www.synco-network.com

The current members of the Synco Network are Ampco Pro Rent and PAS Audio of Holland; DEE Sound & Light and Flashlight/APR of Belgium; R G Jones in the UK and Puro Audio of Portugal.

Lighting & Sound NETWORK

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