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The Wizard of Oz

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The wonderful Wizard of Oz

Julie Harper follows the Yellow Brick Road
all the way to the London Palladium . . .

production photography by Keith Pattison

Recreating the iconic images of a twister and cyclone-tossed house on stage, taking Dorothy (and her little dog!) and her companions on their technicoloured journey through the cornfields, poppies and haunted forests of the Land of Oz - not to mention flying monkeys and witches above the audience - was always going to call for some ingenuity.

Consequently, production designer Robert Jones', 'biggest sweetie shop in the world' is a tightly-packed, brightly-coloured confection masking some heavyweight engineering.

A defining theme of the production is Jones' desire to create a 'constant journey' for the characters, keeping the action moving with scenes that melt into one another instead of the more conventional succession of vignettes. The Yellow Brick Road is transformed into a ring of dazzling light on a tilted revolve, packed with tricks, which ensures that every step of the journey is visible to the audience. In its centre, a drum revolve splits into two Yin/Yang style platforms, onto which scenery is loaded below stage and raised up on hydraulic scissor lifts. A final outer revolve spirals Kansas barns, Munchkin houses and the Witch's Castle into view.

The whole is augmented by a mass of scenery practically spilling out of the wings, and by the large lighting rig, massive flying pieces and performer flying equipment vying for space in a grid supporting 33 tons of weight . . .

Before the storm

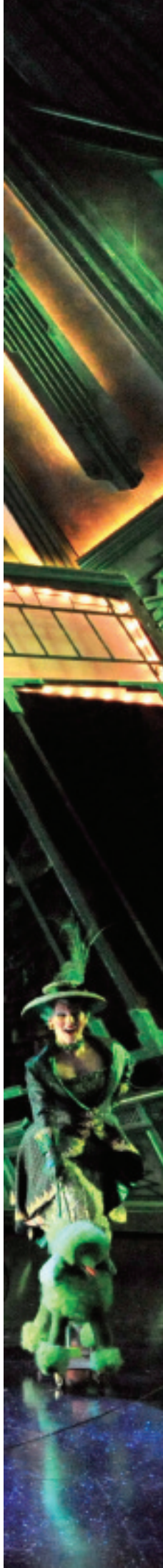
The load-in for the show was complicated by the Royal Variety Performance which took place three weeks into preparations, during which time Unusual Rigging and Delstar Engineering worked to install the infrastructure of the complex system of revolves.

Over 20 tons of Delstar steelwork, including the two 3.5 ton scissor lifts, had to be lowered into the basement. To do this, Unusual Rigging installed a temporary 'mother truss' of 40 chain hoists (each with a 1-ton lift capacity) on tracking I-beams.

There has been much talk about the restoration of the Palladium revolve, famously removed for *Chitty* in 2002. The current incarnation, which cuts into the orchestra pit, had to be approved by English Heritage and was not without its challenges.

Delstar Engineering's Paul Craven explains: "Our main problem was how to get all revolves accurately positioned on an uneven floor - and after the top of the orchestra pit wall had been demolished, taking with it all points of reference! We centred and levelled the rails of the drum revolve first and took all readings from there. It helped that we had built a modular floor for *Chitty* nine years ago, so knew what we were likely to come across. Plus the BBC's imminent arrival focused our minds!"

Unusual Rigging also needed to make modifications in the grid. "This is a particularly tight and heavy show," says senior rigger Simon Stone. "The Emerald City alone weighs nearly two tons so you can't hang this size of show on the Palladium's antiquated system."





From the top:

The Witch's Tower.

Slip-ring scissor-lifts with Witch trap.

CO2 extraction substage.

20 extended cradles were therefore added to the counterweight system to handle some of the bigger flying pieces, while the main weight is diverted away from the wooden slats of the historic infrastructure to rest on the theatre's steel grid channels or hang off the main steel roof bearings.

With very little clearance between flying pieces and lighting bars - only 50mm in some cases - Unusual Rigging's design engineer, Jeremy Featherstone, calculated the optimum diverts to align the steels into the show positions.

The foundations of Oz

The undoubted workhorses below stage are the two 5m x 1.2m scissor lifts. These are located in the drum revolve and can extend up to 5.6m to form staging levels, or split into their curvilinear halves to bring scenic elements - such as crowd-filled cornfields or Munchkin flowers - into view. A drop-and-slide and rolling lift for the 'melting witch' effect slots beneath the rolling scissor lift, presenting Delstar with another multi-dimensional jigsaw puzzle.

The lifts are identified by red and green LED safety indicators with fibre optic guides, installed by Howard Eaton Lighting Ltd (HELL). Each houses a Look Solutions Viper smoke machine and fans, controlled by HELL DMX fan speed controllers, which feed out through over 400 individual smoke tubes to holes drilled around the edges. Each smoke system travels up and down with the lifts.

There is also a full-stage low fog system generated by two Le Maitre LSG machines which are ducted up to the stage via pneumatic DMX-controlled pop-up outlets, also by HELL, plus two MDG Atmosphere hazers located in the wings. To limit the amount of smoke that flows into the orchestra pit and

audience there is an extractor system which operates through a 6mm slot in the stage floor.

The drum revolve is centred on a slip ring which delivers hydraulic and electric power, data and foldback speaker circuits to the scissor lifts. The revolves are controlled using Stage Technologies Maxis SI drive technology and powered from a 110kW hydraulic power unit pumping 135 litres of oil per minute to each scissor lift and 90 litres per minute to the Yellow Brick Road revolve for the tilt rams. Rexroth proportional valves provide the direction control.

Whilst most of this is hidden from the audience, the 10m diameter, double-stacked Yellow Brick Road revolve is far from unseen. "There's a lot packed into that revolve," says production electrician Fraser Hall - and he's not kidding: it is a complex piece of engineering.

The YBR revolve's lower layer is limited to 270° of rotation due to its supply umbilical. Onto this are mounted four hydraulic cylinders to support a tilt frame mechanism above it, to be finally topped by a 360° slip ring. All this is packed into a mere 750mm and sits on running tracks outside the drum revolve to provide support and maintain concentricity.

Working closely alongside Delstar Engineering's mechanical engineering, it is Stage Technologies' control, cabling and software which handle the onboard drives and electronics. "If it's big, black, heavy and metal then it's Delstar, if it's cables and wires, it's Stage Technologies," explains Stage Technologies' Peter Quinlan.

Four static Stage Technologies motors are connected to Delstar pinchdrives on the lower



Photo: Stage Technologies

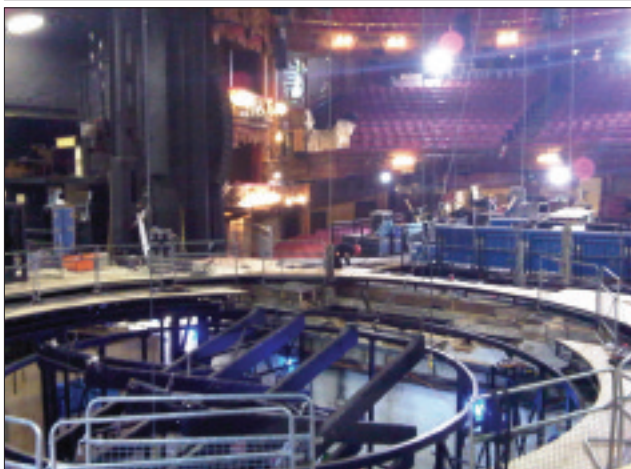


Photo: Delstar Engineering

Top: Stage Technologies' Big Tow winches.
Above: The scissor lift under construction.

ring and driven in parallel from one drive to manage any uneven loads as set is moved on and off the revolve. The hydraulically-lifted tilt frame is pivoted on a single downstage hinge and surrounded by a 30mm working gap, whilst four more motors drive the YBR slip ring on the top. The hydraulic rams are all grouped together by the Stage Technologies 3D imaging and plotting software, eChameleon, to ensure they all continue to move synchronously - a necessity since the rams have different strokes and, without a centre, the disc cannot be self-supporting.

A Stage Technologies Acrobat G6 provides main show control for these elements with secondary control from an Illusionist control desk situated on the fly floor. Programmed by Alex Hitchcock, the Illusionist is mainly responsible for performer flying control and is positioned with a clear view of the performer flying diving board. There is some cross over, and either can run the show, but they are kept separate for safety and operational reasons.

Built into the YBR revolve (yes, there's more!) are 100 180W RGB LED light boxes - with added yellow LEDs. On top of this is a 10mm Polycarbonate layer for strength, a back projection screen for diffusion, a clear film printed with a brick motif, a 6mm hardened polycarbonate stage surface and, finally, 25 panels of heavy-duty cladding, the latter manufactured by Terry Murphy Scenery to conceal the lightbox before its disclosure midway through Act I.

Designed and manufactured by HELL, the lightboxes replace the original idea of tumbling periaktois, which were deemed too hazardous (you don't want to get your Toto caught in those!). Power is supplied by a rotary busbar in the revolve which supplies the on-board dimming to each lightbox using HELL's new 12-way LED driver XT cards.



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Production Credits . . .

Production Designer: Robert Jones
 Associate Designer: Bec Chippendale
 Production Manager: Matt Towell
 Lighting Designer: Hugh Vanstone
 Associate LD: Tim Lutkin
 Lighting Programmer: Stuart Porter
 Senior Production Electrician: Fraser Hall
 Production Electrician: Richard Mence
 Production Electrician: Simon Targett
 Chief Elec., Palladium: Dave Draude
 Dep. Chief Elec., Palladium: Chris Barstow
 Followspots: Linford Hudson, Travis O'Sullivan,
 Jessica Borge, Kevin Brouder, Case Eames
 Projection Designer: Jon Driscoll
 Associate Projection Designer: Gemma Carrington
 Projection Production Engineer: Nev Bull
 Projection Technical Associate: Alan Cox
 Projection Programmer: Jonathan Rouse
 Sound Designer: Mick Potter
 Associate Sound Designer: Paul Gatehouse
 Sound Production Engineer: Andy Brown
 Sound Assistant Production Engineer: Sean Lawler
 Keyboard Programmer: Stuart Andrews
 Head of Sound: Nic Gray
 Sound Technicians: James Meadwell, Kevin Bennett
 Design Engineer, Unusual Rigging: Jeremy Featherstone
 Senior Rigger, Unusual Rigging: Simon Stone
 Riggers: Chris Shadwell Evans, Mark Davis,
 Cruggy Warlow
 Production Project Manager, Delstar: Paul Craven
 Fabrication Fitters: Pete Salmon, Richard Hart,
 Nathan Plumb
 Rental Services Engineer, Stage Tech: Peter Quinlan
 Souvenir Scenic Studios: Simon Kenny
 Scenic Painters: Alistair Brotchie, Gordon Aldrid
 Producers: The Really Useful Group, Bill Kenwright
 Producer, Additional Music & Adaptation:
 Andrew Lloyd Webber
 Additional Lyrics: Tim Rice

Suppliers . . .

Lighting and Smoke: White Light Ltd
 Projection Supplier: Sound Stage Services
 Sound: Autograph Sound
 Rigging: Unusual Rigging
 Automation & Stage Engineering: Stage Technologies
 Show Engineering: Delstar Engineering
 Specials: Howard Eaton Lighting Ltd
 Props: Factory Settings

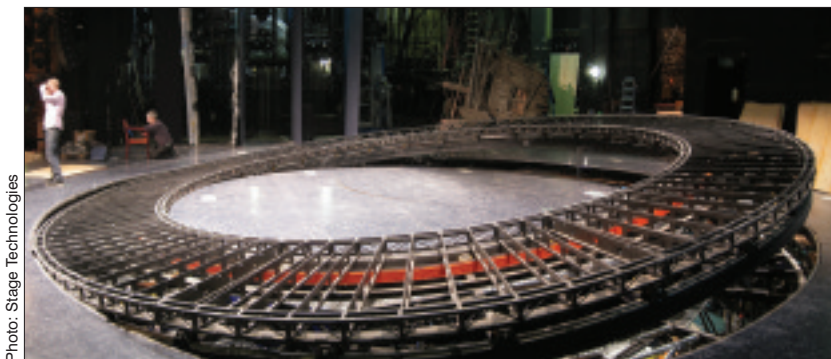


Photo: Stage Technologies

Above: The tilt frame.

The LED lightbox brings the Yellow Brick Road to life, instantly transforming the scene as soon as Dorothy lands in Oz and continuing to dictate all through the remainder of Act I. Originally appearing in understated blue, it forms a surreal, vivid slash as it flows yellow and continues to respond to mood settings and changes in location. "It's a gift for us," says associate lighting designer, Tim Lutkin. "The green and white of the Emerald City, for example, lends itself to an Art Deco effect that echoes the architectural representation in the flying pieces and sliders."

Embedded into the inner circumference of the YBR are 36 individual 50mW lasers, each of which are deflected upwards through a 45° mirror to form the bars of Dorothy's 'prison', whilst six propane jets providing flame effects are set around the outer circumference and offset at an angle to avoid the tilt ring. "It's all a bit of a tight fit!" says Howard Eaton.

It's a Twister

On stage it is no less busy. Kansas houses and barns, manufactured and painted by Simon Kenny of Souvenir Scenic Studios, are shoe-horned into the minimal 8ft (2.4m) wings. Unusual Rigging installed an extended grid off-stage, beneath which are suspended three storage cradles to ease storage problems.

Props, manufactured by Factory Settings, are loaded with special effects from the HELL workshops - including flaming

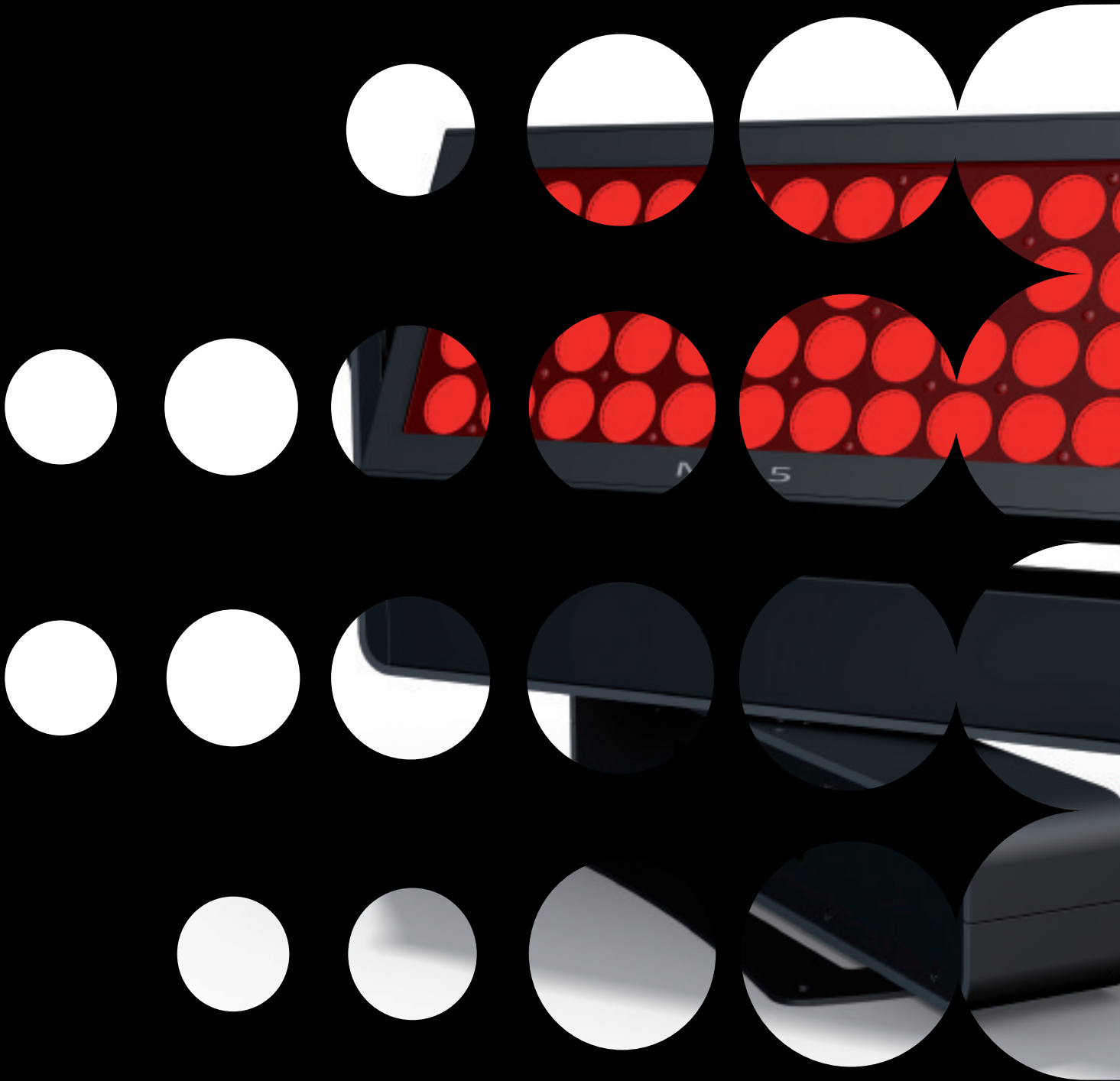
broomsticks, exploding hat boxes and tree stumps, custom-built pyros and gas jets in the floor. "We drove them all mad!" says associate designer, Bec Chippendale. "More ideas developed during each rehearsal and we always wanted each prop and piece of scenery to do even more!"

The pivotal scene in which Dorothy's House - all 2 tons of it - is drawn up into the 'twister' is a melée of mechanics and projection. The revolves, lifts and the base of Dorothy's House are designed and built by Delstar Engineering and controlled by Stage Technologies onboard control, with a HELL onboard dimmer rack driving practicals and window lights. The House truck spades into a track on the drum revolve, from which it also draws power and data. Once pinned in, it rotates on its own axis and is lifted and rocked on its own elevator with Dorothy onboard. Two motor axes are used to operate the revolving slew ring and tilt, whilst two more give vertical lift using two Serapid chains guided by lambda arms, all of which are hidden from the view of the audience.

The 'twister' scene, which marks the transition from the monochrome world of Kansas into the searing colours of Oz, is where the wizardry of projection designer Jon Driscoll comes to the fore. The scene is viewed through a gauze onto which is projected the advancing twister as it sweeps across stage. The audience is distracted and then engulfed within an



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animated special effects sequence, as front projection takes over, concealing the transition into Munchkin Land taking place behind.

The sequence is a mixture of filmed green screen and computer generated effects composited together. Driscoll storyboarded the sequence in September 2010 and post-production commenced in November. The animation team endeavoured to create a look that was filmic and paid homage to more traditional methods of optical special effects processes. "Andrew Lloyd Webber fortunately agreed to compose a score to the finished pictures which was extremely helpful and effective at marrying up the visuals to the sound effects and music," says Driscoll.

Three Panasonic PTDZ110 projectors, chosen for their size, picture quality and quietness, are rigged close to the audience on the Upper Circle to give the necessary brightness and backup. Meanwhile, four Panasonic DZ6000 projectors, the first in the UK, sited on onstage perches behind the gauze, add depth by projecting images of the twister's chaos onto the curved backdrop.

A live video booth is situated substage for moments of live camera work when Dorothy first meets the Great Oz and when she is imprisoned in the Witch's Castle. Live images of Auntie Em & Uncle Henry, and the Witch, are captured by a Sony BRC300 remote-controlled camera, triggered by Catalyst. The actors are lit by two Rosco LitePads supplied by White Light. The live images are projected from two pairs of DZ6000s located on the Upper and Dress Circles, the latter heavily braced against audience movement.

Catalyst PRO software runs on four Mac Pros (with two more as backup), sending signals via a matrix to any of the projectors via fibre. TVOne C6104 quad splitters are used for preview. "The whole system is

completely re-routable and highly automated," says production engineer, Nev Bull, "which means we can easily change over to a backup in the event of a problem."

Driscoll's technical associate, Alan Cox, was responsible for specifying the video installation which was supplied by Stage Sound Services. Programmed by Jonathan Rouse, it runs off four universes of DMX, and is controlled from a GrandMA console, which merges video with over 400 lighting cues.

Over the Rainbow

Above stage the logistical challenges continue. "It's quite full up there and a bit of a Mensa test jigsaw to fit it all in," says Chippendale. "As soon as we solved one problem it would create a new one."

Three enormous, curved cyclorama backdrops were painted by Alistair Brotchie and Gordon Aldrid on the largest cloths the Drury Lane paint frame can hold; a fourth is a starcloth and cityscape of the Emerald City outlined with thousands of fibre optic points built by HELL using "a few thousand metres of fibre" and illuminated by three 3-way green custom and standard twinkle light sources. The cloths are very close together so Unusual Rigging installed a curved drop truss beneath the grid with Stage Technologies winches to move each cloth independently.

To facilitate the flying witches, wizard and monkeys onstage, Unusual Rigging installed a customised performer flying truss, designed and manufactured by Stage Technologies, suspended off four 1-ton chain hoists and a performer flying diving board, fabricated at Unusual Rigging's head office in Bugbrooke, at grid level.

Four Stage Technologies BT2 200 winches are mounted in the performer truss to give 2-dimensional performer flying axes (traverse and lift) to take the actors to any



Above: FOH sound.

Right: Associate sound designer Paul Gatehouse (left) and sound designer Mick Potter.



height and lateral position across the stage. Two more BT2 200 winches - one in the vast auditorium dome and the second in a front-of-house void - pick up and drop the Wicked Witch of the West and her flying monkey as they descend from the apex of the auditorium ceiling to the front of the stage.

The eChameleon software automatically compensates for lift and traverse positions using its new feature, Sculptor Auto Compensation, which has its first outing on *The Wizard of Oz*. The performer flying winches are powered from eight AU:tour racks, each capable of handling six axes, and customised to drive different size winches.

Seven BT2 200 winches are engaged in the scenic flying moving pieces like the Wizard's balloon basket, whilst 18 BT Classic Big Tow counterweight frame-assists handle the larger pieces.

At two tons, the Wizard's Chamber is the largest flying piece and it takes four counterweight sets and two Big Tow winches to lift it. These are locked together via eChameleon software to maintain the correct offset.

The Wizard's Chamber is alive with gizmos, created by HELL. "The set electrics are crazy on this piece," says Lutkin. "There's a lot of atmosphere before we even start lighting it." Crackle neon, fibre optics and ropelight define laboratory pipes, bubbles in the boiler are created by blowing compressed air through tubes of glycerol; there is a practical working fan, pyro and myriad incandescents and pinspots.

Eight DMX-triggered CO₂ jets encircle the centrepiece of a 4m circular revolving fan which doubles as a projection screen for the Great Oz's first appearance. "The fan was a major challenge," says Eaton. "It is only 100mm thick with no centre and weighs 260kg." Manufactured from steel and aluminium the fan is edge-driven: the perimeter is cut as a gear sprocket which meshes with four large Tufnol gears at the corners, two of which are driven by DMX-controlled motors; additional Tufnol rollers guide the main sprockets. Too big to fit on a 40ft truck, the final result was towed to site behind a transit van, avoiding low bridges en route!

The show's all important rainbow also comes from the HELL stable. A portal of seven segmented light boxes, each divided into 27 sectors, house 189 programmable custom RGB LED strips which are invisible until lit. The 567 circuits used to control it chase and fade using 12-way LED driver XT cards. The whole piece took three months to build and uses 1500m of LED.

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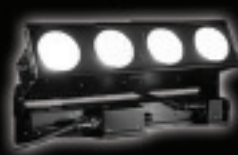
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Equipment List . . .

Lighting

- 18 x ETC Source Four 10^o 750W
- 65 x ETC Source Four 14^o 750W
- 44 x ETC Source Four 19^o 750W
- 9 x ETC Source Four 26^o 750W
- 5 x ETC Source Four 36^o 750W
- 16 x ETC Source Four 50^o 750W
- 52 x ETC Source Four PAR VNSP 750W
- 32 x ETC Source Four PAR NSP 750W
- 24 x ETC Source Four PAR MFL 750W
- 14 x ETC Source Four PAR WFL 750W
- 71 x PAR 64 MFL 750W 1000W
- 18 x MR16 4ft EYC 750W
- 4 x MR16 4ft EYJ 750W
- 2 x Altman UV 703
- 30 x I-Pix BB4
- 10 x Thomas Pixelline 1044
- 14 x Vari*Lite VL500B STIPPLE
- 24 x Vari*Lite VL3000-Q
- 19 x Clay Paky Alpha Wash 1200
- 6 x Martin MAC TW1 Narrow 80V
- 4 x Martin MAC 700 Spot
- 4 x Martin MAC III
- 13 x Coemar ACL-M
- 2 x Robert Juliat Flo 1200W followspot
- 4 x Robert Juliat Lancelot 4000W followspot
- 1 x Look Solutions Viper NT
- 6 x Look Solutions Viper
- 2 x Le Maitre Freezefog Pro
- 2 x MDG Atmosphere Haze Machine
- 2 x JEM Fan
- 2 x Reel FX-2 Turbo
- 28 x HELL RGB 200W
- 100 x HELL RGBY
- 8 x HELL LED
- 2 x Birdy L/N EXT 50W
- 3 x Birdy L/N EXN 50W
- 1 x Yellow Fuzz Light 100W
- 44 x Wybron Coloram 7.5" (for S4 PAR)
- 6 x High End Systems Dataflash
- 7 x PAR 64-mounted HES Dataflash
- 2 x Martin Atomic Strobe



"The rainbow portal forms an aesthetic link between Kansas and Munchkin Land by remaining present behind the black gauze that flies in between Dorothy's bedroom and Oz, in an echo of what has been," explains Lutkin, who has collaborated with LD Hugh Vanstone on more than a dozen productions. "For every new element that is introduced, something of the old scene remains, helping us maintain a lingering transition, a smooth, continuous journey."

The continuous journey means there is very little dead time and few hidden set changes between scenes, so most lighting changes happen in full view of the audience whilst negotiating the minefield of moving pieces. The praise for Vanstone's lighting is, as ever, universal. "The initial design of the rig was to get light wherever we could, with as much in-built flexibility as possible, to be ready for all eventualities," continues Lutkin.

There are four overhead positions, on ladder beams for extra weight bearing, each with chain hoists in the grid to make the lighting technicians' job a little easier when running multicores. The curved upstage bar carries PAR cans to light the curved cyc cloths while bars 1, 2 and 3 have Clay Paky Alpha Wash 1200 and Vari*Lite VL3000Q fixtures as the main work horses, with compact Coemar 700W ACL-Ms used as backlight and for creating mid-air rainbow effects.

Four lighting ladders on either side of the stage are automated by Stage Technologies BT2 290 winches for individual control to avoid trucking scenery. These are rigged with Clay Paky Alpha Washes, VL3000s and PAR cans, which provide flexibility and 'old fashioned side cover'. High End Dataflash strobes are also positioned on most of the ladders and front-of-house for use in the Twister scene.

A cyc trap in the stage contains iPix BB4 and L&E battens to light the bounce cloth. Wide-beam Martin MAC III Performance fixtures

are set into the stage at the foot of the proscenium: Vanstone chose these, having first used them on *Matilda*, for their bright, punchy output.

Four Robert Juliat Lancelot 4k followspots were bought in specifically for their ability to punch through the high light levels from the movers on stage. Two short-throw Robert Juliat 1200W Flo followspots are used in the on-stage positions. The operators, Travis O'Sullivan, Jessica Borge, Kevin Brouder and Case Eames, are presided over by the legendary Linford Hudson, who has been spotting at the Palladium for 47 years and is the subject of a recent interview in *The Independent* (6 Feb 2011 - see <http://ind.pn/ghCvDE>). Lutkin says: "The spot ops are excellent. Linford made them audition for the job without using sights!"

The lighting is programmed by Stuart Porter, who has worked on over 70 productions worldwide, including two previous collaborations with Vanstone on *Spamalot* and *Desperately Seeking Susan*.

The show is powered entirely off the four incoming mains supplies and the newly installed ETC Sensor dimmer racks. "With no temps whatsoever," adds Hall. "The new ETC Sensor racks gave us the choice of up to 762 ways of either dimming, constant current or relay modules where we wanted them. The system was designed by [the Palladium's chief electrician] David Draude and has 133 patchable ways of data ports. It's a very flexible system and well worth the money invested."

Fraser Hall heads a team of production electricians including Richard Mence and Simon Target and is one of three ABTT Technicians of the Year on the show, along with Unusual Rigging's Simon Stone and David Draude.

All generic and moving lights, followspots and smoke machines were supplied by White Light Ltd.



Sound Arrangements

Having worked on Lloyd Webber shows the world over, sound designer Mick Potter is very familiar with the demands of his musicals. His brief for *The Wizard of Oz* was that the overall dynamic of the show should have a large, cinematic, MGM-style feel. Potter is also concerned that everyone within the auditorium should have the same quality of aural experience. To this effect, both main and surround systems are extensive and detailed.

The main system uses over 240 speakers, a curved linear array of 14 Meyer M'elodie speakers on either side of the proscenium and two rows of Meyer UPM-1P delay speakers in each level of the auditorium. There are more sub speakers than usual to cater for the drama of the Twister sequence: four Meyer 700-HPs, two at the foot of the proscenium and two in the Juliet boxes, two Meyer 600-HP subwoofers on the side circles and 10 UMS-1P delay subs and six d&b E12 surround subs over the three levels of the auditorium. The surround system for all effects and the orchestra is formed of 84 d&b EO and 6 d&b E12 speakers.

On stage, two pairs of Meyer UPJ-1P speakers are located upstage for special effects, like the movement of Dorothy's House. Ambient noise such as the whirrs and hums of the Wizard's Chamber are delivered by speakers set into the set and portals. Four d&b E8s are concealed in the Wizard's Chamber flying piece, for example, while radio-controlled EO speakers and radio receivers are embedded in the Farm Generator and other set pieces. Foley sound effects linked to the actors, such as the Tin Man's squeaks or Toto's barks, are also localised in this fashion, enabling the sound operator to track them around the stage. 20 speakers are set into the stage floor to give localised foldback to the cast.

The 36-strong cast wear a total of 48 Sennheiser SK5012 transmitters with EM1046 receivers, and over 80 DPA 4061 miniature microphones. The inordinate amount of bizarre headgear means



Top: Members of the lighting team, clockwise from left: Tim Lutkin, Chris Barstow, Fraser Hall and Stuart Porter.

Above, left: members of the followspot team, clockwise from left: Kevin Brouder, Linford Hudson, Case Eames, Jessica Borge.

Above, right: Production manager Matt Towell by drum revolve substage.

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Equipment List ...

Sound

Main PA: 28 x Meyer M'elodie
 Subs: 4x Meyer 700P, 2x Meyer 600P, 2x Meyer 500p
 Cluster/Prosc Delay: Meyer UPJs
 Delay system: Meyer UPMs
 Foldback: Meyer UPJuniors/UPJ-1P
 Desk: DiGiCo SD7
 Monitor Desk: DiGiCo SD8-24
 System Processing: Meyer Galileos
 Playback: Meyer Matrix 3 LCS system
 Reverb: TC system 6000
 Band foldback: Otz Tronics
 Mics: DPA 4011/4015/4061/4022/4007
 Radio: 48 Sennheiser SK5012 with Sennheiser 1046 receiver racks
 DPA 4061 head mics



transmitters and receivers are often hidden in hats and costumes, with all principals doubled up on mics and transmitters. The sound team of James Meadwell and Kevin Bennett are kept busy backstage swapping packs.

The 16-piece orchestra monitoring is done with a DiGiCo SD8 console which is digitally connected to the main DiGiCo SD7 at front-of-house. "The clever part of this is that it shares the SD7's inputs," explains Potter.

The SD8 also feeds an OTZtronic 24-channel mix system so the band, where necessary, can have personal mixers. Keyboards were programmed by Stuart Andrews using multiple outputs.

More details and snap-shots of the installation and production phases can be viewed in a series of video blogs by production manager, Matt Towell, at <http://bit.ly/hAJy6O>

If you want a taster of how it all turned out, watch the Wizard of Oz montage: <http://bit.ly/ehG91H>

The Wizard of Oz, which opened at the London Palladium in March, is currently booking until September. Tickets can be purchased online at www.wizardofozthemusical.com

Head of sound Nic Gray and associate Paul Gatehouse are responsible for FOH mixing on the DiGiCo SD7, with a 007 extension frame to extend the work surface and help handle the programming of 250 audio channels. A Meyer LSC Series Matrix3 handles show control, MIDI control, sync' to video and special effects, with Waves MultiRack software inserted via MADI to process effects such as the Wizard's vocals and other ominous reverbs. The system is EQ'd by 11 Meyer Galileo processor processing 100 outputs.

All sound equipment was supplied and installed by Autograph Sound. Production engineer was Andy Brown and assistant production engineer was Sean Lawler.

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