



AC/DC – ROCK ‘N’ ROLL AIN’T NOISE POLLUTION

AC/DC’S ROCK OR BUST TOUR SLAMMED INTO LONDON’S WEMBLEY STADIUM LIKE A ROCK ‘N’ ROLL FREIGHT TRAIN, TO THE HEADBANGING DELIGHT OF A 60,000 STRONG AUDIENCE, MANY OF WHOM HAD DONNED THEIR FAVOURITE AC/DC TOUR T-SHIRTS FOR A NIGHT OF THUNDERING STAGE ANTICS. SARAH RUSHTON-READ WAS LUCKY ENOUGH TO DISCOVER THAT HELL AIN’T A BAD PLACE TO BE!

Providing the perfect setting was Ray Winkler and Patrick Woodroffe’s grungy, buffalo horned, Mad Max-style set, which saw lighting, video and Paul ‘Pab’ Boothroyd’s imposing PA cohesively welded together in a corrugated steel-clad, domed stage and fascia. The look is big, bold and tenacious, yet conversely the dome shape of the stage, complemented by the toppy lighting and flanked by chunky video and PA, brings a certain intimacy to the stage. It’s vintage, it’s brassy, it’s two-colour, parcan-style lighting, massive speaker hangs and lots of IMAG. It’s dynamic yet not distracting, it makes sense, it pulls you in - it’s brilliant!

As ever, the AC/DC show concept was the astute creative work of design colossi of Ray Winkler from Stufish Design Studio and Patrick Woodroffe of Woodroffe Bassett Design Ltd. “AC/DC’s identity is distinct, they’re a straight forward rock and roll band,” stated Woodroffe.

“We wanted to reflect that in a way that’s engaging, yet reminiscent of the old days. This is a big show and it has to be scalable. It has to have spectacle and it has to give 60,000 people something interesting to look at for two and a half hours.”

And so it does - by the bucketload. Fans across Europe were delighted to see that the customary exploding cannons, massive Hell’s Bell, distinctive wall of Marshall amps and giant

inflatable Rosie were still bathed in chunky, dynamic beams of bold-coloured light on the 28-date European sortie, which kicked off at Arnhem GelreDome in the Netherlands and arrived at London’s Wembley Stadium on 4 July.

HIGH VOLTAGE

Woodroffe says inspiration for the design came from many places, but the starting point for him is always to understand what the artist or the director is trying to say. In this case the raw style of the design reflects the band’s in-your-face, viscerally loud, straight-up rock and roll, occasionally combined with moments of comedy and self-deprecation.

“AC/DC demands bold, bright, spectacular

Opposite and Below: Fans across Europe were delighted to see that the customary exploding cannons, massive Hell's Bell, and distinctive wall of Marshall amps were still bathed in chunky, dynamic light on the 28-date European sortie, which arrived at London's Wembley Stadium on 4 July.



(yet uncomplicated) lighting and I think we gave that to them in spades this time!" explained Woodroffe. "It was our Production Manager, Opie Skjerseth, who pointed us in the direction of the arched roof and Ray worked this up into the screen surrounds that tie the whole composition together. My job is to get everyone thinking in the same straight lines and bring the band on board to understand and support the concept."

"AC/DC demands bold, bright, spectacular (yet uncomplicated) lighting and I think we gave that to them in spades this time!"
 Patrick Woodroffe of Woodroffe Bassett Design Ltd.

The result was a seamless fusing of lighting and set. The corrugated iron façade was peppered with Clay Paky Sharpy Washes, housed inside transparent domes, which were interspersed with two and four-way Molephays and SGM Q-7 strobes fixed into the horns. All brought texture, colour and dimension to the set and regularly bathed the audience in sharp,

randomly-angled, acid-coloured light.

Lighting was supplied by Upstaging, and Neg Earth for Europe, and fixtures were chosen for their power and versatility as Woodroffe explained: "We were looking for powerful, bright lights that would work particularly well with no colour. We also wanted some more delicate effects, some tight beams and some hard edge source points. We chose a variety of fixtures including the new Philips Vari-Lite

VL4000 BeamWash, the VL3500 washes and profiles, Clay Paky Sharpys and Sharpy Washes along with some Robe BMFLs, a handful of strobes and bulkhead lights, which in combination gave us all this in a variety of permutations."

Woodroffe stressed that he doesn't work in isolation and his approach is always

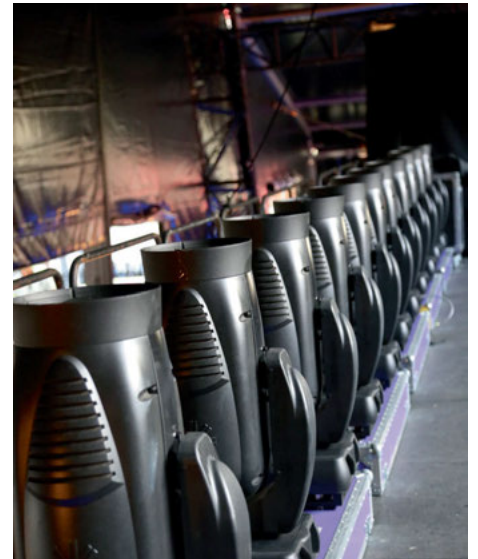
collaborative: "That is both the joy and the strength of working with people you know and like," he said.

One of his closest colleagues on this show is Lighting Director Cosmo Wilson, who is responsible for taking the show on the road. The pair have worked together for over 25 years and in that time both have seen the evolution of stage lighting from the traditional Parcan and other conventional fixtures to intelligent luminaires and beyond.

For this tour Woodroffe and Wilson took a leap of faith and specified the brand new, as yet untested, Vari-Lite VL4000 BeamWash, which alongside the VL3500 Wash provided the mainstay fixtures on the show: "I'm fast approaching my 700th AC/DC show," laughed Wilson, "and all of them apart from this tour has had PAR cans in the rig. However I'm a big fan of Vari-lite and although at the time the VL4000 BeamWash was unproven, we were assured Vari-lite would deliver."

According to both Woodroffe and Wilson they've worked brilliantly. "The VL4000 BeamWash lens system is unbelievably good," continued Wilson. "We use it as a wash but then we tighten it up and it's a great profile. I'm not a big gobo person. AC/DC isn't exactly a

Below: Pyrotechnics and bold lighting designs have always been a big part of the AC/DC live production; Lighting Director Cosmo Wilson; FOH Engineer Paul 'Pab' Boothroyd and his son, who came to watch his dad in action; Philips Vari-Lite fixtures featured heavily in the lighting rig.



gobo band, however the rare times we do use them they work well. Yes, they're big lights, but they move fast and that enables me to change the look on the stage in an instant. Colour is also important as we wanted to reproduce all those grungy and acid colours with a raw, almost analogue feel. AC/DC lighting is all about using intensity to accompany the music, we want the audience to feel the heat, feel that sense of attack and decay alongside the attack and decay of the guitar."

Also interspersed in the rig are a number of Robe BMFLs: "I saw these at LDI and I loved them so we're using them for effects. We also have a load of Clay Paky Sharpy Washes and Sharpys, which are being used to light the PA and fascia of the set. We have a load of VL3500 Profiles from behind the Marshall Amps for the aerial finger looks and on top of the amps we're using the Sharpy Washes."

For control Wilson has recently switched

from grandMA1 to grandMA2: "I am a very hands on kind of programmer and the MA2 suits my style better. For many years I was an Avolites / Celco user but on the last tour I used the grandMA1 and liked it. However, the MA2 is faster and easier to programme on the fly as it has more faders. I do prefer the buttons of the MA1 as occasionally I get that fat finger issue when I'm working too fast!"

As ever Woodroffe and Wilson worked alongside their regular team of collaborators including: Terry Cook, Project Director, Programmer Dave Hill, who was unfortunately taken ill just after he had finished the WYSIWYG part of the programming, which left the live programming to Pryderi Baskerville who thankfully stepped in at a moment's notice.

ROCK 'N' ROLL AINT NOISE POLLUTION

Keeping the sound the rare side of raw is the much sought-after FOH Engineer Pab. "I've

worked with this band since 1995 and I loved their music way before I joined the industry. It's a pleasure and an honour to mix them, they're great guys and they do what they do brilliantly."

Pab's genuine love of AC/DC is more than echoed in his gritty mix on the Midas XL4 analogue console. The sound is 3D and hovers just on the right side of distorted, with a mash up of beefy riffs that evoke a time in live music long before in-ear monitoring, clean digital sound and quiet stages. As a result, it drills right to the core of anyone who has found the slightest thrill in banging their head to super-loud music until their ears are ringing and their head is spinning.

Remembering when he first got the job, Pab said: "I was busy tweaking my mix to try and get a really good, clear sound and just as I believed I'd perfected it the band manager came up and said 'Pab - great sound mate, now can you dirty it up because that's what the fans want, don't

Below: Guitarist Angus Young and Monitor Engineer Jon Lewis.



make it too pretty!' And it's true, AC/DC punters want to be deafened, they want to be blinded, they want to feel the heat of the pyro. That's what makes a great AC/DC concert. So for this band we don't try and tame the beast, instead we turn it up and duck!"

The 40 Marshall amps and plenty of on-stage foldback undoubtedly presents challenges to Pab and Monitor Engineer Jon Lewis, but both acknowledge that it adds an essential flavour to the mix. The wailing guitars of Angus and Stevie

and SM beta 57 on backing vocals, with Audix on drums. Guitars are handled via the AT 4047 large condenser on stage. In addition we're trying the amazing Rode NTR ribbon mics in our guitar ISO boxes under the stage - awesome beasts - and for in-ear and press feed ambiance we use the Rode NT4 shotguns. We under-mic the cymbals with four DPA 4061 mics, which give maximum isolation from the guitar and drum coming from the Marshall wall and side fills. At the end of the day it's been an evolution

the analogue flavour. Whether I can tell the difference or not I don't know but I feel the difference and that's the point," he laughed.

When it came to the choice of PA traditionally the band would use a large format modular curvy PA system that joins together to make one big old style wrap. "With AC/DC the show is about theatrics, if the PA looks big it will be perceived to be loud. I chose to use Clair Global's i5D cabinets and the B-sub base joined together to make one big box. I then took that box and added two rows of i5b sub-bass to it and flew the lot. The PA is 18 deep by two wide per side. In total there's 22 tons of PA in the air. That's a whole lot of power."

System Tech Chris Nicholls concurred: "AC/DC takes a personal interest in the sound. The system had to look big but still work sonically. The full range i5D enclosure was our first choice, powered by the new Lab.gruppen PLM 20000Q and it's worked well. We can also get a tremendous amount of up-tilt on a side hang. For Wembley the very top cabinet has 26 degrees of up-tilt, something many other manufacturers struggle to achieve. From the top row to the front row every member of the AC/DC audience expects the band to be in their face and that's what we give them."

Complementing the main system are four delay towers, also provided by Clair. For Wembley they were supplemented with eight separate hangs of K2 provided by Britannia Row.

"Clair Global and Harry Witz, who has always worked on AC/DC tours with me, redesigned some of the rigging and grids so the whole system can be flown safely," concluded

"When we measured just the snare drum with the local authorities we're close to 125dB, and that's before we put the rest of the band on!" Paul 'Pab' Boothroyd, FOH Engineer.

Young remain completely unprocessed. There's no boxes, no plug-ins, just pure unadulterated sound straight to the wall of Marshall amps upstage, from which the resulting tsunami of sound barrels into the audience.

"When we measured just the snare drum with the local authorities we're close to 125dB, and that's before we put the rest of the band on!" chuckled Pab.

With that level on stage, the choice and positioning of mics is critical: "I use mics from all sorts of manufactures," Pab continued, "but we like the trusty SM beta 58 on main vocals

over many tours, it's about creating little gains that help bring the whole mix together."

Regarding his choice of console Pab added: "I use whatever is right for the job. This band doesn't like anything digital, they're old school analogue. For that reason we're using copper multi cables to and from the stage to keep digitisation to a minimum. We have some really old 1980s BSS line drivers boosting the output signals to the front end of the amps. Of course today's processing mainly happens in the amps but we do our best to keep

Below: Pyro King, Casey Lake with the famous AC/DC cannons which are rigged in pairs; Video Director Michael Duquew.



Pab. "There are no speakers on the ground and minimal front fill. We now have four massive zones of controllable PA and those four zones are broken down into zones themselves."

Pab's counterpart in monitor land is Engineer Lewis. "In addition to the Marshall amps the stage is packed with Clair Global's new CM22 monitor wedges. We also have four IDLs a side and the ground, side and rear fills comprise the Clair Global's Vision system, which is a high mid and a low mid box and they are in various configurations around the stage."

Lewis has worked with Pab on a number of projects, including AC/DC's last tour and the pair have developed an intuitive relationship. This makes dealing with the issues of a loud stage much easier. In addition they've managed to persuade most of the band, excluding guitarist Angus Young, to use in-ear monitoring (IEM). "The nature of Angus' performance

makes it impossible for him to use in-ears," explained Lewis. "Angus is constantly running around in various states of undress, rolling on the floor with his guitar or swapping guitars out - there's no way we could attach or keep the IEMs on!"

Because of this Lewis has zoned the on-stage sound: "We've created pockets of sound," he explained. "Although singer Brian Johnson uses IEM, he's a one in and one out kinda guy. The zoning allows him and Angus to retreat somewhere they can hear and get a handle on a song. It also gives the rest of the guys an opportunity to get away from the tsunami of sound from the Marshall amps."

Like Pab, Lewis is also using an analogue Midas console, a Heritage 4000. He explained: "It's a joy to go back to analogue. When I make a small change on the desk I can really feel and hear it. It makes me feel connected to what I am

doing. Not only that, it's a bonus to have to go around the back of the desk to plug in a gate as opposed to just pressing a button and latching it. it's the little things!"

Monitor outboard is pretty simple added Lewis: "Drawmer gates and comps, with Avalon 737 across the main vocal. I'm using a BSS 901 multi band comp across Brian's vocal for the IEMs to give me more control. I'm loving the Dramer 1973 FET stereo compressor, which I'm using for the first time on this tour as a final stage compression across a few in-ear mixes. It's subtle and gives me so much control on the final mix."

The band uses Shure PSM1000s with the JH Roxanne Siren earpieces. Lewis explained: "Some of the band are using IEMs for the first time so I wanted something smooth and natural sounding which made JH the first choice. In terms of radio mics for both Brian and Angus

Below: Cannons have become an iconic part of AC/DC's stage show.

we're using the Shure Axient system, which has got a frequency avoidance system built in. That gives us a safety element and makes the frequency management of the system easier. Some of the places we're playing are quite weird, such as the sides of airfields and football grounds. This means we don't always know what the frequency environment will be, having a system like this gives us an essential edge."

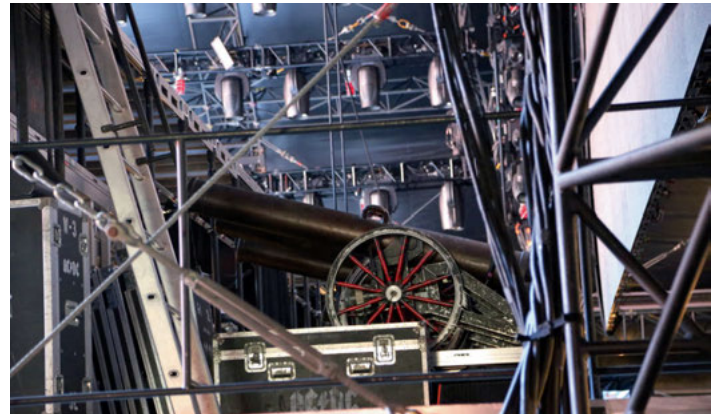
FLICK OF THE SWITCH

In charge of video direction is Michael Duque, who moved over from lighting to video a couple of tours ago. With two huge 15mm pitch IMAG screens - supplied by video rental partner Screenworks - placed either side of the dome stage plus a Screenworks 12mm stage wide central screen and a delay screen and with content primarily being dynamic camera work, Duque's has a busy two hours each night.

There's also an element

of grungy retro style content animated effects and wordplay as Duque explained: "Most of the content was designed by Sam Pattinson and his team at Treatment Studio in close association with Woodroffe. The nature of the content is eclectic, but we try to keep things fairly simple. For playback we're using a 2 by 2 Channel Blackstorm and a Ross Synergy 3 Switcher. We're not actually using a media server here. In terms of cameras we have Sony HXC-100s in the stage right pit, on the stage left boom and SR and SL FOH. We're using Toshiba IK-HD1s for drum POV and on the FOH lift for Angus's big solo."

Duque says as video director he strives for the camera operators to be in total sync throughout the show. "Our strength comes from the way we illustrate how the band and the crowd interact. The more connected we are with band the more dynamic, exciting and engaging the IMAG content is for the audience. This fires the camera



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Below: Mojo Barriers' Opie Skjerseth (L) Cees Muurling (R) ACDC Paris May 2015.



guys up and they seek out interesting characters in the crowd to mix in. It's then about us making an engaging mash up between band and audience."

Fortunately for Duque, three of his camera operators were on the last tour: "They intuitively know the kind of shots I like. They also know the music intimately. Gabriel Lopez, who has worked with me for almost 10 years, knows instinctively where he can help me. However that's not to say that the band doesn't catch us out on occasion. It's definitely never boring!"

HARD AS ROCK

Pulling all these elements together in a post-apocalyptic whole is Ray Winkler's 66.3 metre wide arena filling set. Created by Tait, it's built around a Stageco arched roof and topped with a pair of Angus style horns.

Long term AC/DC Production Manager Skjerseth discussed: "The look of the show is crucial to the band. It's presentation with a capital 'P'. AC/DC have a seriously loyal following who know exactly what they want to see. The band therefore remain heavily involved in, and are very particularly about, the look and feel of the production."

Stageco and set fabricator Tait worked with technical consultant for the tour, Jeremy Lloyd of Wonderworks: "Although in simple terms Stageco provided the steel structures and Tait focused on the 'rusted' corrugated cladding and horns that fix to the roof, the partnership was more interwoven than that," explained Lloyd who, alongside Skjerseth and Project Manager for Tait, Matthew Hales, worked in collaboration with Stageco Project Manager Bert Kustermans and R&D Manager Dirk Van Der Goor.

Hales added: "Tait has been providing stage sets for AC/DC for years. Skjerseth contacted us at the end of 2014 and by January 2015 we had a well-developed show. We worked closely with Ray Winkler on the stage set and Terry Cook, Patrick's Project Director, on the integrated

lighting. Jeremy Lloyd helped co-ordinate everything for the Production itself."

And with any production as large as this there's always a lot of back and forth between technical realisers and the creative team: "Mainly in how we approach things from a technical perspective, while maintaining the creative aesthetic of the project," explained Hales. "This involves much prototyping and development. In this case to break the relatively complex fascia into a simple set of workable components to make installation, deconstruction, and transportation as efficient as possible."

The biggest design hurdle however was the Scenic Fascia with integrated LED. "The whole Fascia had to break down into pieces that were small enough to transport and install efficiently,"

"The structural design has ensured we don't have to fight through each day..." Opie Skjerseth, Production Manger.

Hales continued: "We were faced with literally thousands of unique individual components that had to go through multiple processes to end up in a very specific location on the set. Thankfully the entire group from the creative team to the guys on the ground that make it happen everyday have been incredible. It's an amazing show that travels with an unparalleled operational efficiency."

Production Manger Skjerseth agreed: "The structural design has ensured we don't have to fight through each day and the set is relatively easy to tour. In general Stageco get to each

venue a few days in advance and build the framework, production comes in after that and eight hours later we're up and running."

For the European tour Stageco is leapfrogging three systems with crews headed by Stefaan Vandenbosch, Hendrik Verdeyen and Johan 'Bellekes' Van Espen.

SHOT DOWN IN FLAMES

Adding further dimension to the stage is pyro king, Casey Lake of Stage and Effects Engineering: "We have a number of elements to this show. The opening works in conjunction with video to create a big meteor explosion that work their way across stage as the band make their entrance. We also have a number of flame bar and CO2 effects for *Highway to Hell*, along with six liquid flame heads at the side of the

stage, which will reach 30 to 40ft."

However the iconic AC/DC pyro moment has to be during *For Those about to Rock*, as Lake discussed: "We have 12 large cannons, three either side of the stage and six upstage, which rise up over the top of the Marshall amps and then roll slowly forward. When the band sing "fire" the cannons go off. It's a great effect. This is further emphasised by the fact that each cannon has a recoil action built in, adding weight and authenticity to the effect."

The finale of the show is accompanied by around 15 seconds of set wide fireworks, but

Below: The structural design has ensured that the crew does not have to fight through each day and the set is “relatively easy” to tour.



given that the Wembley show was on the 4 July, Lake added in a few extra bangs in for good measure.

BLACK (ALUMINIUM) ICE

But with all the theatrics of the AC/DC show a major consideration for crowd safety has to be made. PM Skjerseth explained: “AC/DC have sold over 1.7 million tickets in Europe alone, it’s all sold out venues and they are lively audiences, so we take our responsibility for their

properly and they care about getting it right. Having used Mojo on many previous tours we all know their system, so our own crew can assemble it without the need for a Mojo supervisor to come on tour.”

Mojo’s project manager Stanley Jilesen consulted with Skjerseth to design the configuration for the front of stage barrier, following the contours of the stage and spanning the width of the stadium pitches. The additional touring barriers surround the two

that requirement for stage barriers (including curves and gates), plastic bar barriers and trained supervisors anywhere across the three continents from our local offices or network of distributors. This highlights the value of our global network.”

ROCK THE BLUES AWAY

There’s no doubt that AC/DC’s *Rock or Bust* tour is a magnificent gift of a show. Pure, loud, dirty rock and roll. For two and a half hours the Wembley skies were alight with guitar bite, rock took the right of way, and 60,000 sweaty members of the audience stood up and were counted as AC/DC gallantly saluted them in the best way they know how.

The current tour runs until 15 December when the band finish their Australasian leg at Western Springs Stadium in Auckland. However there are plans to extend the tour into 2016.

TPI

“Mojo give me confidence to know we can get whatever we need, they always find a solution to any situation that arises.”

Opie Skjerseth, Production Manger.

safety, along with that of the bands, crew and equipment very seriously.” Mojo Barriers were contracted to supply 218m of black aluminium touring barrier for AC/DC’s 2015/16 World Tour. Skjerseth explained why he placed his trust in Mojo: “Mojo give me confidence to know we can get whatever we need, they always find a solution to any situation that arises. They have the equipment and people to get the job done

FOH mixing positions. At all of the European stadium shows the local promoters have then brought in additional Mojo Barriers for use as secondary barriers, as Mojo Barriers’ CEO Cees Muurling commented: “Most venues in Europe are hiring in additional secondary barrier to allow for effective control of the crowd on the pitch with a secondary line and barriers around PA delay towers. We can support

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