

digital edition

300<sup>th</sup> Issue!

# Lighting & Sound international

June 2011

entertainment, presentation, installation

LSI media

www.lsonline.co.uk

## Eurovision 2011

LSi reports from Düsseldorf

### Also Inside . . .



**The ETC Culture . . .**  
LSi visits ETC's Wisconsin HQ



**TF: In Your Ears**  
IEMs & earpieces examined



**Sustainability . . .**  
Tips for greener productions



**Royal Appointment**  
Lighting Westminster Abbey

PLUS! . . . Australia's new theatres • Elbow live • MA Lighting, Asia Pacific • Q&A with Steven Brown  
Installation Management • Audio File • Rigging Safety • Gala Spiralift • Crew Cuts and more . . .

View LSi's Digital Edition & Archive online - register FREE at [www.lsonline.co.uk/digital](http://www.lsonline.co.uk/digital)





# EUROVISION

## SONG CONTEST DÜSSELDORF 2011

words & pictures by Steve Moles

Over the past decade, the Eurovision Song Contest (ESC) has become very slick in delivery, if a little predictable in content. The songs have improved in quality and the show's appeal continues to grow - and with it the list of aspirant nations: Europe, it seems, now stretches south of the Caucasus Mountains to Azerbaijan . . . And here's the thing; with so many wishing to participate the ESC is, like the European Union itself, nearing a cross-roads. Does expansion halt now, or does it become a truly international event?

Production-wise, comparing ESCs is like buying a car; each variant model has more in common with its predecessor than it has differences. A la carte design parameters include the host nation's largest indoor venue, more nodding buckets than you can shake a stick at, wall-to-wall video and a PA system that wouldn't shame a U2 concert.

But it's the differences that concern us. Much to my surprise, when I contacted Ola Melzig, the show's production manager since 2000, he told me things had changed. "The production company this year is Brainpool, not me. The German broadcaster handed the whole production element to them."

Brainpool TV GmbH was founded by Jörg Grabosch, Martin Keß and Ralf Günther in 1994 and is today one of Germany's most successful independent producers of TV comedy and light entertainment (it says on their website). The company produces hundreds of hours of television programming each year. At first glance, it doesn't sound an obvious choice for the job, but Melzig was more expansive: "They can do everything - graphics; set and stage design (even t-shirts) and they understand production absolutely. For this show they contracted in the major production elements of video, sound and lights; German broadcast just turns up with their OB units."

Despite which, Melzig was retained by Brainpool to run the concert part from first rehearsals onwards - 22 days - a shrewd move on the part of Brainpool, as we'll see. It's not so much Melzig's rock and roll PM credentials that have kept him with ESC for 10 years, it's how he's dealt with the delegations of the





various nations, making sure the join between their hopes and the production's goals are seamless.

"I've been here since the 21st April," Melzig began when I arrived on site. "The great thing for me is, here I am at show time and I'm not having to plan the load-out, and I didn't have to plan the 'in' either. My principal role is as the interface between the delegations and the production team, and to manage the venue flow. That's an area where they simply don't have the experience. And also, how to interpret the rules - explaining to all parties in the production what you can and can't do, according to the European Broadcast Union."

Melzig continues: "I'm employed directly by Brainpool. They took the obvious steps of bringing in the production elements that they don't have - people and equipment - while providing things they do, like the show hosts, for example."

The male host Stefan Raab, is a regular in Brainpool TV productions; several of the German crew I spoke with referred to him as 'Mr German TV'. "In essence, Brainpool are equal partners with NDR German broadcast TV for the event."

The main contracted parties will be dealt with in turn, but for the record they are Crystal Sound for audio, with a significant input from Neumann & Muller; Creative Technology Germany for video and projection; and Cape Cross for all the lighting and rigging, and indeed some of the video content used as links between artist.

"Brainpool also contracted in all the artistic creative team," added Melzig, "and I have to say they have all performed very well. The only serious production headache was weight - there's 280 tons hung off the stadium roof. The backstage screen was a weight too far, but was nicely solved with a Stageco support structure, and from my perspective it's all running very well."

Melzig's role has built into one of familiarity, as he explained: "Delegates generally stay the same year on year, and largely they all know me now and trust me; they know that we break our backs for them to get everything the way they want. When they see the same front line every year they're reassured. That's why, when I first took on the production role years ago, the first thing I did was open communications with the delegates. I keep it direct to avoid confusion . . . everything goes through me; I function as a shield between the delegates, the creative team





Top, the Esprit Arena preparing for Eurovision.

Crew, from top: Production manager Ola Melzig; assistant PM Stuart Barlow; Jan Heering of Sennheiser; sound engineer Oliver Voges at FOH; set designer Florian Wieder (left) and lighting designer Jerry Appelt.

and TV Director. There are some countries that want to micro-manage, they're so desperate to win. I have to tell them 'you can't do that'. And then there are some who just like to scream because it's in their culture - they think the louder you scream the more you'll get done . . . they eventually learn that the screamed messages are never passed through."

And how have the various departments performed? "There are several reasons why, for me, this year is the best. For example, the host nation was prepared to sacrifice 2000 seats just to let the Spider-cam backstage - and boy, did they get some great shots from it! Also, the creative team on this show are unique in my experience because they are an established team who make lots of big productions; they've worked together in the past. It's so important, they all know one another's position, what to expect, and have very good communications with each other. The flow is just so much smoother.

"And the venue: Esprit is amazing - large but not overwhelming, and the outside area is good too, lots of room. Inside the capacity is great, roof clearance is great, the bleachers here are made for TV - lots to see in background shots. Also there has been a very high quality of songs this year: last year, 38 out of 41 were ballads or slow songs, this year we've got it all - traditional Euro songs, rock, rap, pop, opera - the lot."

Melzig was aided and abetted by Stuart Barlow, who for 25 years has worked in Germany with NDR. "He is the Viewing Room manager," explained Melzig. "Engaged by Brainpool, the viewing room he oversees is for delegates to see what the actual broadcast cut will look like on TV, as opposed to viewing in the hall. As a division of labour I fix the stage look, Stuart handles the camera work. Stuart has been fantastic - he can discuss shooting and TV production

issues very clearly and concisely," - much as Melzig himself does with show production. Watching the synergy between the two men as the finals unfolded, I formed the distinct impression that we might be seeing Barlow at ESC next year.

#### Lighting & Stage Design

With the broadcast emphasis, this is overwhelmingly a visual show. What works for the TV doesn't always transpose to the big event, least of all a soccer stadium - but the partnership of LD Jerry Appelt with Florian Wieder (responsible for production design, set and video content) admirably fulfils both expectations - and with real élan.

Appelt started his career (much like me) in sound, before moving to lighting. "I noticed immediately the feedback from the audience, something you don't really get a sense of at the monitor desk. Since then I've stayed in lighting, the creative element is more satisfying. I did touring in the early days, then became a parent and switched to TV and corporate work to be at home more."

The fact he headed lighting at Procon for four years qualifies his ability to manage big projects. I opened by asking how the two men addressed the project. "Florian and I are a team. We work together on a lot of shows, and do a lot for Brainpool. This show started with a creative meeting led by Thomas Schreiber head of entertainment at ARD (the collective German National Broadcast authority) and Jörg Grabosch from Brainpool. They wanted to create a tight, warm atmosphere - yes, in this huge arena!"

This is a 45,000-capacity stadium with a retractable roof: no easy task then? Wieder says: "Our response was a small, circular stage - after all, most of the time there are between one and six people on stage, and rarely musicians, so a 15m diameter stage is

more than adequate. So the whole design is physically defined by circles; the smaller, teardrop circular platform out to stage left is for the presenters, and the lighting rig above radiates from the centre point of the stage.

"The floor of the arena has been integrated into the visual concept, the aisle-ways have a slight raised deck and we've added a strip of [Barco MiStrip] LED video set into it. Coupled with the rays of LED in Jerry's circular truss above [MiStrip inner, MiTrix outer] the two, with further rays of LED in the main stage deck, form a coherent whole. This is what makes the entire audience part of the show."

Appelt uses a subtle but effective ploy to embed this idea of audience integration: gentle pulses of pale mauve light emanate from the centre via the LED strips above and below, and ripple out to the extremes of the soccer pitch area. If you've ever seen footage of electro-luminescent jellyfish gently pumping through the ocean currents, you'll recognise the organic nature of Appelt's creation. Add the fact that this motif runs constantly from the moment the audience is admitted, and throughout the show between artist performances, and you begin to see how it insinuates itself into the viewer's mind.

And there were plenty of beams: aside from the Clay Pakys and BadBoys there were 40 multi-beam 3000W Xenon Falcon Flowers

from A&O at floor level and another 16 7000W versions in the ceiling. Appelt has also put in an enormous amount of audience lighting to extend the reach of involvement to the furthest reaches. Here too he's done something special: audience lights are rigged on trusses along the balcony edges at mid and top levels; the audience is lit from above and behind and the camera is given lots to 'look at' with the lamp faces towards them (moderated to avoid flare).

The wings that frame the backdrop LED screen were also Wieder's design: "They are designed like huge enfolding arms, to bring the enormous width out into the audience, and link to the stage. They also give the sense of scale we needed, without losing the tight atmosphere on stage."

All scenic work was constructed by Studio Hamburg, the wings are frameworks with stretched fabric covers. The aisle-way decks are especially clever in that the MiStrip (from Creative Technology) drops flush into slots constructed with cross members beneath at 90°, so that if someone steps on a strip, it can't pop up and trip anyone, but a CT technician can easily remove it for service. "The custom floor panels, the stage, the wings - Studio Hamburg does a lot of film and TV sets and I'm very pleased with their work."

Besides the huge back screen, the arena has a dozen projection screens out in the



From top:

L-R: Dave Crump, Alex Klaus and George Roessler of Creative Technology.

L-R: Assistant sound designer Jan-Christopher Ditt and sound designer Jochen Jensen.

DESIGNED IN GERMANY / BRILLIANT SOUND / FINEST ASSEMBLY / PREMIUM SERVICE...

**3 Year Warranty!**

**IT'S ALIVE!**  
THE NEW **LD PREMIUM 8"-15" ACTIVE SERIES**. YOU WILL HEAR IT COMING.

WWW.LD-PREMIUM.COM  
LD PREMIUM IS A BRAND OF ADAM HALL GROUP. **ADAM HALL UK HOTLINE +44 1702 613922**

plaza2011  
11-14 SEPTEMBER 2011, EARLS COURT  
SEE US AT STAND 1-G36



## Equipment List

### Lighting & Rigging

(supplied by Cape Cross)

#### Lighting Control

- 8 x GrandMA2 full size
- 5 x MA Wing 2
- 8 x MA NPU
- 5 x MA NSP2
- 3 x MA 3D MediaPC

#### Fixtures (2300 fixtures total)

- Clay Paky Wash & Spot 1500
- Clay Paky Profile 1500
- Clay Paky Spot 700
- Clay Paky Sharp
- Bad Boy 1200
- Robe Colorwash 1200
- Martin MAC 2000 XB, MAC101
- Martin Atomic 3000 strobes
- GLP Impression R90, RZ120, XL
- Sunstrip Active SA-10
- Sky Falcon 1200
- Hungaro Strobes 85,000W
- Expolite TourLed 42CM
- Coemer LED ParLite
- ELP 60 Powerbar
- Expolite LED Powerbar 4
- ETC Sourc Four Profile 750
- ARRI Studio 1000W / 2000W
- ARRI Lo Caster LED
- ARRI Junior 300 & 650
- A&O Falcon 3000W / 7000W
- Dinolight 12,000W
- Robert Juliat followspots 1.8-4KW

#### Truss (approx. 8900m)

- Litec QD, TD & FD truss
- Slick GS & MB truss
- Prolyte B100, S52 & H40D truss
- James Thomas MD truss

#### Motors

- 830 x Chainmaster D8 (1000kg, 500kg, 250kg)
- 92 x Movecat VMK-5 500-24

### Sound

(supplied by Crystal Sound)

#### Main PA

- Central Subs - 2 x hangs J-Sub
- Ring 1 Near - 11 x hangs Q1
- Ring 2 Main - 8 x hangs J-Series
- Ring 3 Delay - 6 x hangs J-Series
- Ring 4 Delay - 13 x hangs T-Series
- Sub Array - 8 x J-Infra
- Front-fills - 10 x Q1
- Backstage - 6 x E1

#### Green Room

- Main - 1 x hang T-Series
- Delay - 6 x Q7

#### Monitoring

- Side-fills - 2 x hangs Q1
- Wedges - 8 x M2
- Wedges Spare - 8 x M4
- Live Band - 8 x MAX12

#### Amps, Control & PA Flying

- 165 x d8b D12 amplifiers
- 5 x R70 CAN-Bus Interface
- 2 x PC for R1
- 20 x J-Flying Frame
- 24 x Q-Flying Frame
- 16 x T-Flying Frame

continued on facing page >

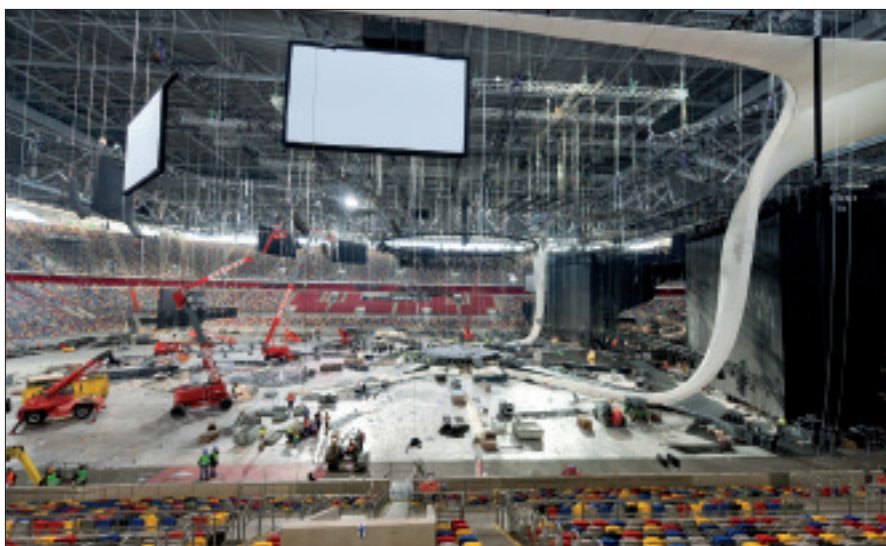


Photo: Cape Cross / Hogrege Photodesign

audience, used for the 'VT Postcards' between performances and live footage of the hosts. The rear screen has show content produced specifically for each performance. "The content is produced by my company, Wieder Design," explained Wieder. "Falk Rosenthal led most of the work. Jerry takes many of his cues from the video."

"Or" added Appelt, "the video guys will respond to my pre-programmed lighting". "It's very much a two-way flow," the two men chimed together and then laughed: it was interesting to witness how in tune they were.

Appelt said: "The show runs about 80% with content, the rest is entirely light dominated. We have 42 acts and it's quite hard to get different looks for them all. We start from a creative base for each song; we are given the 'final' cuts of the songs from each country and brainstorm how they sound then look at those videos. That was the most intense period, effectively just three weeks to do the basics for the big screen."

When you examine closely the detail and variety of what has been produced for each song, and how strikingly creative and distinct each is, the fact that all were produced just three weeks before production rehearsals is all the more impressive.

"Jerry started to develop the light show at the same time using the GrandMA 3D system; by April 18th we had 37 of the 42 acts programmed, the rest we completed here on site. Yes you do have countries who change a song after you arrive, but we were already in good shape in the desks when we arrived. By the 25th we were in first dress rehearsals - that's a week session without the performers but using stand-ins. So when the delegate teams arrived on 1st May we could show them immediately what we had for them. There were just two difficulties, but the changes were comfortably accommodated."

The rig features more than 2000 moving heads, the entire system and all rigging (for PA and Video too) being supplied by Cape Cross

(more elsewhere). Just about every major manufacturer is represented in his design with the exception of Vari\*Lite (though none the worse for that). Some of those choices were purely functional - especially those fulfilling that simple-but-effective role in the audience - others were more critical. I asked Appelt about his equipment choices: "I chose the GrandMA2 for two reasons: when I did the Commonwealth Games with Ola [Melzig] the show was on a scale comparable to this. I knew then that to make such a show easier we needed to be able to run the whole show program in one session, not several, so that all the programmers can work in one world - same session, at the same time."

There are eight GrandMA2 desks in use on this show: Appelt himself has two MA Wings as well, though these are much more about grabbing show critical responses, as he explains later. "At the Commonwealth Games we realised this is possible. Afterwards we made a test during the selection shows for the German ESC entrant; it worked and now I can control more than one operator at a time - I can have one operator suddenly pull a pair of lights down onto an interview booth as I continue to work on the song we are dealing with . . . We just decided to trust the system. I knew that even if we had problems they would occur during fit-up or pre-programming and that MA would sort it out. With the investment made by Cape Cross - they did buy all the desks for me - if there were any fundamental problems within the desk itself, you knew that MA would have that solved within six months, so long-term the desks are a solid investment for them. Shows on this scale are relatively rare, so you have to accept you're going to be a bit of a beta-testing ground for them, but they will make it work."

Appelt isn't usually a GrandMA user: "I used the WholeHog in the days when I did major show programming and I still think and direct in the Hog syntax to explain what I want. I don't know enough about the wider improvements in the GrandMA to the Mk2 desk, but this is my first opportunity to use the Wings and they have proven very useful. We always have

programmed structures and cues for this type of show, but if you assemble it like a festival patch - for example, put blinders and strobes on an audience light handle on the Wing - then I can always respond to the Director while the operators concentrate on the programmed show; that keeps it tight.

And what of the lighting instruments? "Clay Paky is a brand I love to work with. The mechanical quality is really good, especially the Alpha 1500W series. They have been really nice toys to play with, but I just couldn't get enough of them for this job, not the CP Wash, to do the whole audience, so I pulled in the equivalent power Martin fixture which has worked well. The BadBoys from PRG, especially in the very wide angle, are quite spectacular. As a basic tool I especially like the CP Profile, even from very high the frame shutters make it very good for a key light. For the catwalk between the main stage and presenter stage I have 50/50 the shuttered CPs and HPEs, so they can do several different roles."

Cape Cross is virtually unknown in the UK: Appelt says: "It was nice, considering the size of the production, to see how much heart and professionalism they put into it. To see Thomas [Brügge, the company founder] take on this challenge was great; I found it very easy to draw in my normal head rigger and gaffer and integrate them easily and comfortably into the Cape Cross team."

### Thomas Brügge, Cape Cross

Cape Cross founder Thomas Brügge says: "Cape Cross specialises in big TV events. We've been in the market for just 10 years. Besides lighting we have a big Postcard Production facility; we made all the Postcard continuity clips shown between the live performances. As a company we also produce TV drama, so we have a fair stock of studio and broadcast equipment - mostly it's stocked for one-offs and special events."

Considering the commitment of resources for this show, Cape Cross must have experienced enormous growth? "We have been lucky: we met and forged strong relationships with two or three important people at the beginning. I was a film and TV gaffer by profession and had always harboured a dream of having my own truck and equipment which I'd take through Europe from one plum job to another. I'd done some nice projects, my last as an individual was the movie *Amelie*. After that I said to my contacts 'guys, I have an idea'. The banks weren't interested of course, but I found a producer who gave me a new show - curiously the banks seemed interested after that."

Brügge doesn't hold much truck with banks, all cap-ex by Cape Cross is self-financed from cash flow, he revealed, and that's just the way he and his fellow directors like it. "That's important to us; it



### Microphone Systems (Sennheiser)

- 41 x EM 3732-II dual-channel receiver
- 8 x SK 50 bodpack transmitter
- 60 x SK 5212-II bodpack transmitter
- 42 x SKM 5200-II handheld transmitter
- 34 x KK 104 S Neumann head for SKM 5200-II transmitter
- 22 x SR 2050 IEM dual-channel IEM transmitter
- 168 x EK 2000 IEM bodpack transmitter
- 21 x e908 T drum mic
- 10 x e935 evolution vocal mic
- 68 x HSP 4-3 headset

### Video

(supplied by Creative Technology)

- 1330 x Spider 30 LED screen modules (30mm pixel pitch) weighing almost 30 tons
- 1600 x Schnick-Schnack LED C-Series System
- 1400 x Barco MiStrip (stage floor)
- 2800 x Barco MiTriX LED modules (flown)
- 350 x Barco MiStrip (flown)
- 12 x Barco FLM 20 projectors with 20,000 ANSI-Lumen, each providing 12 projections on screens of 60sq.m each - a total of 720sq.m projected area
- Operator's desk equipped with seven media servers, each with backup system, plus two media servers for LED variations on stage
- Content - realised and controlled with two Encore systems and various matrix switchers, completed with DVI fibre optics

**TRIWAVE**  
110

INTRODUCING TRIWAVE 110  
LINE ARRAY - POINT SOURCE - REFERENCE MONITOR  
SMALL VENUES TO THE WORLDS LARGEST STAGES - ONE SOLUTION

"ONE OF THE CLEANEST SOUND SYSTEMS I HAVE EVER WORKED ON" - CARL COX

**FLARE**  
AUDIO

WWW.FLAREAUDIO.COM  
+44 (0) 1273 270103



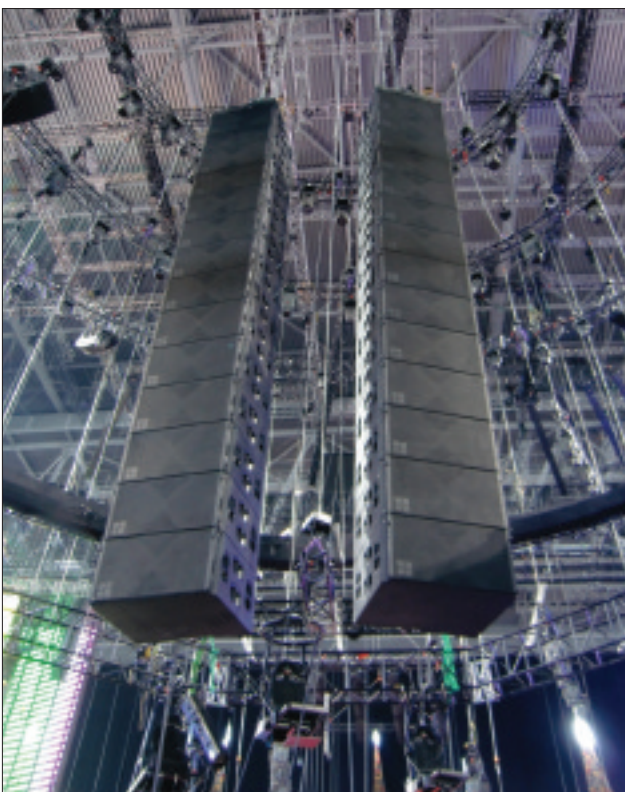


Photo: Janko Ramuscak

makes us flexible in our decisions." Brügge has learned a lot about business in a short time.

"The Brainpool relationship has built over that 10-year span, and I've also known and worked with Jerry [Appelt] since before Cape Cross. Jerry knows how we manage budget on these kinds of shows; he knows I know the order of magnitude of his shows will be more than one page of equipment so he just needs to give me an informal outline of his intended direction. For this show, I know he prefers the Clay Paky lights; that worked fine for us, the maintenance is very easy and their internal construction is well developed. Compare them with the BadBoys, for example, and there is no big difference."

The rigging is a huge undertaking, the entire flown system is above the audience, plus you've also supplied rigging for video and sound; and Appelt has 92 axes of motion in his design. All this from stock? "MoveCat is the motion control system, we supplied almost 1,000 hoists and winches of various types; the MoveCat is brand new for this show."

These 1000 hoists are all from German manufacturer ChainMaster, provided via German dry-hire company Niclen: they consist of BGV-D8 and D8plus hoists with capacity of 500-1000kg and chain lengths up to 100m.

Brügge continues: "We partnered Stage Kinetik for the MoveCat system, the programmed moves are accurate to 1mm, and the movement speed is variable to 24 metres per minute. German regulations on moving equipment above the audience have changed recently - now there need to be four ways of back-up in the event of failure, not just double brakes. We had no time to test the system beforehand, so we did it on-site."

As with Appelt and the GrandMA2s, Brügge was prepared to take a chance with the unfamiliar - and as Appelt said: "Sometimes you have to be the guinea pig, and a situation like this puts the manufacturer on the spot, so they have to support their product absolutely." Brügge agreed: "Support from the market is good, we had no problems with these or the GrandMA2s."

To get a feel for the scale of the Cape Cross operation I asked Brügge, 'Was a show this big done at the expense of smaller client?' "No, we have the capacity to rig and light for other shows. This equipment will have been in here for between six and four weeks . . . Like any company we couldn't afford not to operate elsewhere for that length of time. But don't confuse Cape Cross with a giant rental house; we are much more concerned as a production house. Since we became established we have become something of a magnet for other TV media type companies in Köln; there's quite a concentration around our site now. We're not just lighting the big event, we're producing TV shows. Our activities are broad."

**Audio: Jochen Jensen**

The whole live audio section of this event is the responsibility of one man, Jochen Jensen, who works for NDR, the regional broadcaster for the northern part of Germany. NDR's sphere of broadcast is a huge territory, so Jensen is well accustomed to the big event. Even so, he finds himself in the unusual position of presiding over the largest sound reinforcement systems ever assembled for a single performance in this part of the world.

He says: "My first thought when I got the job was, who are the specialists who can help me with this? I also considered my favourite speaker systems, and my favourite guys to work with." In one of those not-so-curious twists of fate, Jensen and LD Jerry Appelt had lived on the same street in Hamburg, "and Ralf Zuleeg, now at d&b audiotechnik, was also there at the same time." Zuleeg is head of application support at d&b. "I called him and said 'it will be a challenge and will need a big commitment from d&b, are you interested?' Ralf laughed. The first days were all spent considering the audio structure and planning; the show design was not yet



Facing page: Three more varying looks from the flexible set, video & lighting design.

The 14-cabinet d&b J-Sub hangs above centre stage.

Right: The Sennheiser radio systems team (photo: Ralph Larmann)

finalised and things changed every week. Eventually I was able to mail Ralf the first solid stage design and he sent back ideas.

"First we looked at left/centre/right, but the issue of sightlines for the camera, and the enormous amount of lighting equipment above stage meant that was never going to work . . . We ended up with a three-ring distributed system."

Jensen's right hand man, Jan-Christopher Ditt, who did all the logistical planning, detailed the rig: "The first ring at the stage perimeter uses d&b Q1 speakers. Each hang had to have flying frames top and bottom to allow us to angle the array downward enough to cover the front rows. d&b did great work to get the engineering approved in time. The next two rings use J Series. Finally, for the upper reaches of the grandstands, we have another system of d&b T Series. There are approximately 100 of each type of speaker in the flown system."

But it was not quite that simple, as Jensen explained: "Every centimetre of that roof



Photo: Ralph Larmann

space was a hard-won fight. We did a venue check, the reverb time is massive, with the building empty and the roof closed at 50Hz it's something around 12 seconds. Put in 40,000 people and that doesn't change a lot, so getting the direct to reverberant ratio correct was the challenge. The stadium has a corrugated metal roof and there are hectares of it; it is a huge reflection area, so minimising reflections from the floor up to the roof was critical."

What about monitors? "Fortunately there are no wedges on stage - yes, some performers did ask for them and we didn't say no, we

just told them how much better in-ear systems are, and how it would help them improve their performance - and we succeeded."

"With the PA we had other problems. There is over 200 tons of equipment up in the roof," continued Jensen. "Thousands of lights, trusses and video gear; we couldn't always position our speakers exactly where we wanted them, though most are close. We also had to trim very high. It's 19 meters to the bottom cabinets to keep them clear of the camera, that's as high as most venue roofs. The arrays are generally throwing

**45N**  
**12**

## The world's first line monitor

The remarkable new NEXO 45N12 line monitor achieves exceptionally high headroom before feedback, focussing coverage only where it's needed to reduce overall acoustic power on stage.

An ingenious magnetic locking system links cabinets together into arrays for wider coverage and greater SPL, with no interference between wavefronts – thanks to NEXO's revolutionary 'smiling' waveguide.

Now there's a single, scalable monitor reference to meet the needs of all musicians. Find out how we did it at [www.nexo.fr](http://www.nexo.fr)

Bringing the benefits of line array technology to the stage

Find out more at [www.nexo.fr](http://www.nexo.fr)

www.isionline.co.uk

# 4<sup>TH</sup> KNIGHT OF ILLUMINATION AWARDS

LONDON, 11<sup>TH</sup> SEPTEMBER 2011

Organized by:



Official sponsor:



Proudly supported by:



Sponsors:



WWW.KNIGHT-OF-ILLUMINATION.COM



Photo: Cape Cross / Hogrefe Photodesign

a maximum 50-60 meters. The other obstacle we had to overcome were the huge projection screens - getting past them and rigging between them led us to need many separate hangs of PA."

But where does all the equipment come from? "My biggest question to d&b was could they manage the job: then it was a matter for them to recommend Crystal Sound & Light for the PA. They provide the equipment and the personnel, and very good they have been, but it was essential for me to know the manufacturer was behind the project."

Watching several rehearsals - the second semi-finals and the finals - I had ample time to explore all corners of the venue. The coverage was remarkably even everywhere, right across the frequency range: Jensen and Zuleeg had not omitted the low end in this design. "We have flown 28 J-Subs in two columns directly above stage. There are also some J-Infra cabinets on the floor. The show is not very loud, but I always try to get hi-fi sound, so frequency management is very important to me and full low-end is part of that process, even at the reach of the Infras. The better the range, the less pressure level you need, and actually the music is extremely varied: operatic, cabaret, heavy metal, rap - it's not just pop, it's all there."

Control for this huge array of equipment was equally vast, and features the largest assembly of Yamaha PM5Ds I've ever seen. The desks and the PA driver systems are provided by Neumann & Müller - a company with offices and equipment all over Germany: also a large d&b stockist, most of their work is in the corporate and TV sector, and as such they simply didn't have the stocks of J-Series required.

I was lucky enough to run into Ruben van der Goor from Yamaha Professional European support. "Of the six PM5Ds out front, one is for the music, one for effects,

and one for the continuity mix; three are redundant back-up, as the EBU insists. They are all mirrored via MIDI so every change is immediately doubled by the second desk. We also have a PM1D out here which does the opening and intermission acts. It's a similar story at the stage end, with three more PM1Ds for monitors, one for the contest acts, doubled, and one for the opening and intermission acts."

Van der Goor indicated that the distribution of mix responsibilities was determined by Jensen. "There is a further PM1D in the rehearsal room where the performers do their pre-stage mic and in-ear check." I put down my pen to consider this fleet of desks, but Goor's Yama-fest wasn't over: "Then there are two M7CLs for the Green Room, one a mirror of the other; these take the same feed as FOH and mixes for the performers and delegates sat there backstage." It should be noted that for the show finale the huge rear video screen parts to reveal the entire Green Room to the live audience.

"Anything else from Yamaha?" I ventured. "Well, there is a DME also redundantly backed-up, for continuity section; an extra insert on the sub-groups on the vocals so we can de-ess and add some specific EQ. There are some smaller tasks: an M7CL is used by the microphone guys for a pre-check of their own, and the Sennheiser team has a DM2000 to monitor receivers. Oh, and a pair of OMV96s for the listening room - this is a room where the performers can go and hear themselves against rehearsal performances."

Van der Goor was accompanied by Andy Cooper from the UK: "Since April 18th there has always been at least one person each from Yamaha, Sennheiser and d&b audiotechnik here for support." I got the feeling they had all got to know one another quite well.





Photo: Janko Ramuscak

Looking up . . . 280 tons of equipment was flown from the roof of the Esprit Arena.

Jensen's desk strategy looked logical enough, the division of labour a luxury maybe, but this is after all a huge undertaking and a massive live broadcast. "The first decision was that I wanted digital from mic to speakers, well - as far as the D12 amps," explained Jensen. "There is only one conversion, from 48kHz to 96kHz at the Meyer Galileo system. That's what we use to route to the various zones of the PA system.

The entire digital signal network was handled by Riedel RockNet: "It didn't make sense to go any other route," says Jensen. "The individual demands on each desk are not that great, six microphones for each act is not that many. The bigger issue is the more than 40 playbacks to handle, and they all have their own characters - levels and EQ are often wildly different. Performers vary too, some are professional, some not, and even the professionals can be nervous. All this affects performance to the microphone. In rehearsals, each singer's delegation and management sit in the front row so they need to feel secure that we understand their artist's requirements and performance needs. That's why Oliver [Voges] and the team do so much work anticipating ahead of time. If the delegates are happy, then the worry and interference never even starts. That's why we have the large number of desks; each operator is entirely focused on their own aspect of making it work. With just 45 seconds between each act, it keeps each operator fresh because they're not over-pressured."

With so many desk operators I selected just one for some hands-on comment. Oliver Voges handles the main performer mix: a typical freelancer working in TV, regular shows and special events, he also does work for Sennheiser, beta testing new microphones and running radio workshops. Credentials established, what of this particular show? "We came in four weeks ago. Jochen had already created the desk plan so we were set technically, so programming commenced almost

immediately. We programmed in every detail we had been given. Some changed, of course, but we carefully examined everything we were given by each delegation. We then thought about everything that could be changed, and we programmed for that as well - better to have something already in there for every eventuality than to try and program on the fly. In this situation you just don't have that luxury, the time confines are too tight."

"It's not an easy room," says Voges, "the STI is something like 11.5 milliseconds. But the guys from d&b have done an amazing job - the sound in the room is really fantastic . . . you can sit in any position in the house and hear everything, there is nowhere where there is a significant build-up of low end, or that nasal sound in the voice. Then came the ambience mics and obviously for TV broadcast the audience noise needs to be above the level it is naturally in the room. So yes, there is some compromise on level in the house left/stage right grandstand area so the TV people can get the gain they need, but it's not significant, maybe half a dB."

Jan Heering from the Sennheiser team gave me some of his valuable time just two hours before the curtain went up on the Finals show. Readers will be familiar with Sennheiser's long and solid support for this event: they run the mic and in-ear radio systems at a support level, hand-holding at every stage if needed. That said, all the radio equipment - and there's a hell of a lot of it - comes from MM Communications in Berlin, as do many of the personnel. "For this show we have some 32 channels of 2000 series for the in-ears. Microphones are all KM5200s with Neumann 104 capsules." Every singer uses the same mic, is that another instance of EBU ensuring fairness? "It's more a case of what works best for everyone," he replied diplomatically. "We make a test with all the performers and determine what gives us maximum sensitivity with minimum colouration from the room."

## FOUR BIG LEAPS FORWARD



### PR-5000 BEAM

- Beam angle 6°
- Strobe 0.3-25 F.P.S
- Wireless integrated
- Firmware upgradable through PC



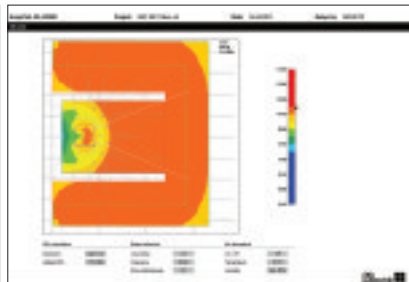
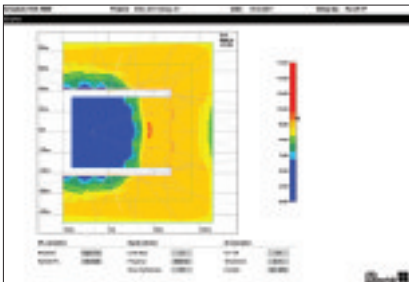
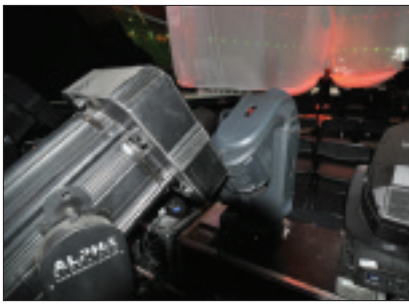
### PR-5000 SPOT

- Beam angle 10° - 67°
- Strobe 0.3-25 F.P.S
- Wireless integrated
- Firmware upgradable through PC



PR LIGHTING LTD.

TEL: +86-20-3995 2379 FAX: +86-20-3995 2330  
 Http://www.pr-lighting.com E-mail: info@pr-lighting.net



Above: d&b's ArrayCalc simulations of the sound system coverage at 4000Hz (left) and 63Hz (right).

Left, from top: A&O Falcons, Clay Paky Alphas and PRG BadBoy fixtures; Robert Juliat Lancelot followspot; the MA Video server racks; a Martin Pro MAC 2000; one of 830 ChainMaster hoists.

Over the years with ESC, Sennheiser has built an enormous level of experience with large multi-channel radio systems in a pressured live broadcast environment - and in some pretty awkward venues. Were any new lessons learned in the Esprit Arena? "Not really, we are relatively far from the city centre so there are no unexpected local RF problems to speak of, and even the enormous video wall across the back of stage is not a problem. We have quite a big frequency range available to us, even with eight channels of digital TV from Köln and Düsseldorf TV close by, we have from 470MHz to 790MHz for the system; every channel we use is doubled, fully redundant back-up.

"We run a big crew to keep it tight, seven for mics and in-ears, two just at the stage. Three people do the body packs for the IEs; three do mics; one girl for the female singers and presenters; and one person is just for logistics - getting mics in the right place at the right time. The two guys at the stage have six mics and six sets of IEM immediately available in the event of sudden unexpected equipment failure, but it's unlikely; we have one person who tests the mic, then I check it again with the performer; they go on stage fully confident that they can hear and be heard."

Jensen had some observations on radio world: "Microphones and in-ears is a separate world and works well for that, we copied that pretty much exactly from Oslo last year. I watched it on TV and in my opinion that was a perfect show from that perspective - I have no idea what could possibly be done better. The idea of the

in-ear rehearsal room is a big help, it gives much more time for preparing the stage, which in turn means the director can concentrate on the cameras, which is very positive for the artist. The mic choreography from Oslo is beautiful to watch: they sent us a DVD - there are runners with small suitcases bringing mics from stage to backstage. Beautiful."

**Creative Technology & Screen World**

Creative Technology (CT) Germany has two bases. The national HQ, headed by Georg Rössler, is in Stuttgart, but their other base is in Düsseldorf, so logically it fell to Alexander Klaus at Düsseldorf to lead this project. "We supply everything LED," he began. "The floor is all Barco MiStrip, the back wall is Spider 30 modules, 1,250 square metres of it. The flown sections that radiate out like spokes from the lighting rig are MiStrip for the inner set with the outer lengths from MiTriX."

With the finals just two days away it was no surprise to find Rössler and European CEO Dave Crump also in attendance. Crump had some observations on the show: "The back screen is huge, twice the size of the U2 *Pop Mart* screen." He was right. It's not easily measured by eye from out front, but when I eventually walked to the other end of the pitch I began to realise the size of the beast; it's 20 metres tall. The deception is partly a tribute to Florian Wieder's stage design: for the average concert-goer who will have no doubt visited the occasional 15,000-seat arena, the Esprit appears at once familiar, yet it is three times the size.

Crump continued: "We have restructured CT in the last year: the bases here in Germany, the one in Holland and in the UK. We can now seamlessly move equipment between them all, as and when needed, so the resources here come from all these depots. Because it's so big we've had to pull in from the US and others as well. The Spider 30 you see is in two pieces: the main centre section, which is on a traveller and parts from the middle for the finale to reveal the Green

LOS ANGELES · NEW YORK · LONDON · BRISBANE · SYDNEY

**ALL ACCESS**  
STAGING & PRODUCTIONS

web: [www.allaccessltd.co.uk](http://www.allaccessltd.co.uk) • e-mail: [ukinfo@allaccessinc.com](mailto:ukinfo@allaccessinc.com)  
tel: +44 (0) 1483 765305 • fax: +44 (0) 1483 762594

Me-10 2011



# YOUR CHALLENGE YOUR CHOICE 2000 SERIES

VISIT US AT ABTT THEATRE SHOW  
STAND 75, LAWRENCE HALL



## SENNHEISER 2000 SERIES

One off live shows, concert touring, conferences, theatre performances, broadcast and Electronic News Gathering - whatever the wireless application Sennheiser 2000 Series allows you to master complex events with flexibility, reliability and confidence. With up to 75 MHz of frequency switching bandwidth and a full range of hardware components to choose from, 2000 Series gives you all the options when adapting to fast moving production environments.



EM 2050



SKM 2000

Sennheiser UK Ltd  
3 Century Point, High Wycombe  
Buckinghamshire HP12 3SL  
01494 551551 [www.sennheiser.co.uk](http://www.sennheiser.co.uk)



**BGV-D8  
BGV-D8+  
BGV-C1**

- Capacity 250 kg - 12000 kg
- Climbing- Or Standard Hoist
- Overload Protection with Patented Friction Clutch
- Direct Control Or Contactor Control
- Light And Compact Design
- Precise Chain Guide
- Textil Chain Bag
- Several Models On Stock



**CHAINMASTER BÜHNENTECHNIK GMBH**  
 Uferstrasse 23,  
 04838 Eilenburg, Germany  
 Tel.: +49 (0) 3423 - 69 22 0  
 Fax: +49 (0) 3423 - 69 22 31  
 E-Mail: sales@chainmaster.de  
 www.chainmaster.de



Photo: Ralph Larmann

**Nerve centre: A view of the FOH control position.**

Room, is all CT stock. Flanking either side, one-and-a-half metres downstage, sit the outer sections, which are subbed. This is the entire CT Spider from the US, Germany and UK; it represents approximately 80% of the world stock."

And there was more, as Klaus detailed: "The Green Room is fitted with Schnick-Schnack - 1,600 pieces; there are 1,400 MiStrip and 1,800 MiTriX. The flown circular structure is divided into 'cake slices': it's 65m in diameter." Just let that sink in: that's over 200ft across! "Each slice is six metres wide and 10 metres long and has four strips of LED." The slices all move; this is where a lot of Appelt's 92 axis of movement are used.

"We pre-assembled each linear strip mounted and cabled to the physical structure in the warehouse, and then built the slice structures in the arena. They're too large to load-out so they'll need to be stripped down: logistically the out is more pressured than the in. We ran the build 24 hours round-the-clock, two teams of 20 people for the first two weeks, then reduced down to between 12 and 14, so the main hardware installation was almost 7,000 man-hours. Then the time was consumed by pixel-mapping: for example, each aisle-way has 6,500 pixels in one section. We have seven MA servers for the shows, seven for back up, plus two more for the UK song and also some video content for the Russian song."

Where the UK entrant had brought an HD screen with them, the Russians had not, and it showed in contrast to the big screen behind. "There are 16 servers in all - we purchased most of them, six are rented in. As with so much of this show, we've consumed almost the entire European stock, more so for the Barco and Spider equipment."

I queried why CT would buy into new servers when they must already have comparable stocks of alternatives to match their screen inventory? "We bought into the MAs because that was the lighting control; we are frequently led in this way

by which lighting control system is used. We have stocks of Hippo and Catalyst for the same reason. They told us the network system for the MA is more solid, and that is our experience since we installed the system. MA has also given us a lot of technical support."

The installation of 'fat-pipe' fibre video data spine is detailed elsewhere. "Out in the house there are 12 HD20 Barco projectors. Nine screens border the 65 metre rig, plus three more screens way out at the back bleachers. Each screen is truss-framed, 10 metres wide, six metres high. We commenced build on the 5th April, and we have just five days to get out after the show, so timing is very tight."

The MA servers sit out front - there is no room backstage and situating them besides the lighting control makes sense for such a large video infrastructure. Klaus continues: "The other huge thing is driving the system. Barco still needs separate data and power and there's a limit to the cable runs; there's also a finite amount of cable available and these are all long runs. Volker Suhre, my right hand man, mapped out all the cable; he detailed it down to every last five metre run. This was an enormous task and the contract only confirmed in January. It's tight when you pull almost the total world inventory in such a short time."

Klaus explained that Omex boxes distribute video to the MiStrips and miTriX: "Each can't be more than 10 metres from the LED, or you need to make a fibre link; one Omex to every five strips and again, only so many exist. So the Barco DX700 runs fibre to the Omex, positioned up in the roof. Each can run up to 200 metres; we run double fibre just in case - one was trashed when a moving light snagged it during the build."

The roof has sea-containers mounted to its underside for electronics platforms, video and lighting, mains and control: two containers each side of house, they have had their tops cut off to aid ventilation: "But it's still damn hot. With cherry-pickers



and fork trucks running below it is 40 degrees and stuffy: At that temperature fibre ceases to pass data effectively, it becomes too flexible. Trouble is, they couldn't open the roof once rigging was started, only the fire vents, but they close very slowly so if it starts to rain we're in trouble. There are 14 screen sections in the roof and we have used all the fibre connections in the EU."

Despite the vast array of LED, what I liked most about this system was the fact it didn't overwhelm the show; when I last visited an ESC final four years ago in Helsinki, the application of LED into the stage set was, upon reflection, too dense. That was of its time; it *could* be done and so was done. Now the desire for video everywhere is more moderated (shows like 'Pop hasn't got Talent' excepted), what emanated from those thousands of MiTriX and MiStrips was diffuse and as such more lighting effect than image, the fact it could be addressed in such detail making it a subtle tool of colouration. If Helsinki was the Jeff Koons of LED video staging, all bright, brash and inflated, then Düsseldorf was more impressionist, like Edward Degas' ballet dancers - soft and sensual.

### Concluding Comments . . .

In its present form, the live concert experience is truly world class, the Germans have excelled themselves, yet the lesser nations have shown that even without the resources available to the 'big five', they too can produce an event to be proud of. So how will the ESC move forward?

I asked Melzig for his perspective. "It will be small but significant touches that will make the difference: we can't re-invent the show, but we can allow it to grow. I think the rule of only six persons on stage is limiting the performances: if you have backing vocalists, they must be on stage. Why? In this day and age, why not put them on the music track? That way we can focus more on choreography. Some countries say every year 'we don't want them there', but these are the rules, conceived in the 1950s by what was then a small group of European nations with different aspirations. Yes, it should be controlled to be fair to all performers, but limitation is not always fairness - not everyone can find BVs who can dance. What's fair then?"

"Also, production-wise you're dependant on who wins: if Azerbaijan can't hang 280 tons off their biggest arena, then what? Is that a good thing for them to be seen as a lesser nation to Germany? Well actually, I think that is a good thing, but I do worry about such countries stretching themselves so far financially to try and keep up. They feel obliged to hire in from the West to be equal - there simply aren't that many nations with quality equipment readily available in such quantity. It is hard to make short-cuts in technology.

"We really tried to cut production time in Norway because it's so expensive there, day rates are very high, but every delegation need long rehearsals. That's one area you can't cut. It doesn't matter the size of production, it's still the broadcaster who pays, and no matter how many tickets they sell to how many dress rehearsals and main show, they're never going to recoup the money. Then the broadcaster has to go to Government for cash and then it becomes political. I was really glad when Germany won it; it was time for one of the big five to win. They could have decided to set new standards, they could have said 'let's do it in a more reasonable way', instead they went all-in.

To close, I asked Melzig if he saw any positives from the ESC, outside the superb production values that have been established? "Look at the Balkan nations, every year they all vote for each other. It was not so many years ago when they were all killing each other." That idea of healing wounds between nations might be tricky to measure, but it's arguably more cohesive than, say, the Common Agricultural Policy. And at a local level, it's always refreshing to witness the *bonhomie* that permeates every corner of the venue and host city for a few days. Where else can you see three middle-aged gay Englishmen in skin-tight fluorescent PVC Lederhosen, chatting and laughing with Nordic warrior Trolls, resplendent in their tribal tattoos; pierced . . . well, pierced everything really. Thor meets Loki indeed, yet as these two unlikely groups of men were discovering, they actually had more in common - like how to have fun - than differences.

zero88



ORB SERIES

A brand new experience



The ORB Series consoles combine an extensive theatrical feature set with speed of programming, utilizing touch screens & user defined keys, and an intuitive control surface to provide operators with the tools to deal with the most demanding shows.

Two versions of ORB are available, allowing professional theatre operators to choose a control solution to meet the needs of either traditional pre-programmed shows or dynamic live performances.

ORB caters for traditional operators working primarily with cue lists. It features 10 Playback Faders which may be assigned as submasters or cuestacks with individual 'Go', 'Pause/Back' and 'Select' buttons, plus dedicated LCD displays across the operating surface for instant access to information.

ORB XF adds fader control for intensity channels and live submaster playback, making it ideal for hands on control of live events. ORB XF features 60 multifunction faders which can be utilised as either channel controls, submasters or playbacks.

For further information on the ORB Series consoles visit [www.orbdesk.com](http://www.orbdesk.com) or call +44 (0)1633 838088.



Visit us at ABTT, 15-16 June, Stand 71, Lawrence Hall.

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

COOPER Controls