

## Interview with James Eade



*James Eade has an unorthodox background in rock 'n' roll and events, yet is now a familiar face on the Wiring Regulations panels and related standards committees representing his industry. He also wrote the guidebook for the IET on temporary power entitled Temporary Power Systems: A guide to the application of BS 7671 and BS 7909 for temporary events and has published a book about the lighting protocol DMX512. Wiring Matters asked how he forged such an unusual career path.*

***You've been working in the entertainment industry for over 20 years now. How did you get into this line of work? Was it something you set out to do, or was it one of those 'falling into it' encounters?***

I lit my first play at school when I was around 12 because it was a fun thing to do and we got to stay up late. The more I did it, the more I enjoyed it and I carried on through my school years, buying the only book on the subject back then written by a famous lighting designer, Francis Reid, and teaching myself. I wanted to pursue it at university, but in those days the only route into technical theatre was via drama courses at places like RADA. With those courses you studied drama and then specialised in technical theatre at the end, learning bits of everything backstage related. But I really didn't want to study the drama bit at all, so instead, I studied engineering at Coventry.

I spent more time than I probably should have done working at the Belgrade Theatre, as well as a bit of crewing for the Students Union events team. As it transpires, that served me well as it was akin to an unofficial apprenticeship and introduced me to the wider industry. During a show I would sit in the control room or at my follow-spot between cues, poring over the only industry magazine of the time soaking up tales of the industry at large. Unsurprisingly, and like most, I hankered after the touring lifestyle, taking bands around the world. After I graduated, I quickly landed a job through a friend with a rental company in London. There I learned about audio, video, more lighting and the production management side.

My career then progressed through a series of lucky breaks, working with the right people at the right time and taking opportunities as they presented themselves. Once you are 'in' the industry, it's so much easier to move around. By far the majority of people working in the business are freelance, so getting other work is usually by recommendation and word of mouth. Many of my contemporaries did fall into the industry though, often by helping out friends backstage or similar as a one off favour, then getting called again to help out on another event, then another...

I ended up as the part-time Technical Editor for Lighting&Sound International magazine and through that helped out the technical standards department of the Professional Lighting and Sound Association. That role is ultimately what led me to the involvement in standards and allied work.

## *It sounds glamorous and very rock 'n' roll – what is the reality?*

Planes, hotels and venues are your usual surroundings. Occasionally you might be in a tour bus which is effectively your mobile bedroom, lounge and home for weeks on end. So, in short, it's far from glamorous. Sometimes you get a bit of down-time to explore the local area, but it's the exception rather than the rule. Closer to home it might be a muddy festival site, getting the modern equivalent of trench-foot in the British summer while trying to keep everything operating in torrential rain. Some people pay good money for mud therapy – we often get no choice and wish we had shares in wellington boot manufacturers instead. Having said that, it can be exciting and you do end up in all sorts of weird and wonderful places. Anyone working in the industry will have tales of getting stuck in customs or shenanigans in hotels and backstage. I couldn't possibly divulge too much detail in such a learned publication as Wiring Matters, but the work can be terribly diverse, with events like corporate sales conferences, motor vehicle launches or fashion shows being the mainstay for many, especially outside of the summer festival season.

To illustrate the diversity, many years before the Arab spring I was part of the lighting crew putting on a son-et-lumiere for Colonel Gaddafi in Libya. In complete contrast, a couple of months later I was part of the lighting crew working on Miss World in the Seychelles. We had time there to explore the island in between rehearsals and it was quite relaxed. So you just never know what the next phone call might bring or where it will take you.



*BBC Proms in the park, with the stage in the middle and large video walls flanking it either side, displaying the BBC proms logo. The black hanging columns are speaker stacks. Image courtesy of Dave Roberts*

But it's *why* we do it rather than *where* – it's not the glamour of being associated with a band or artiste as you don't often have cause to work with them directly, unless you actually design part of the show or work with the management. For me and many others the rewards come from making people happy and just enjoying the adrenaline rush from the excitement of the moment when it all goes live – hearing in your headset the words from the show-caller 'stand-by lighting cue 1' and you know there's no going back and it's all about to happen. Seeing thousands of excited audience members singing, dancing and (in theatre) performing a standing ovation is priceless and it's incredibly rewarding being a part of making that happen; it's a job satisfaction unsurpassed in my experience.

***From a purely speculative point of view, I would imagine that you would have various challenges in this line of work – some technical, some potentially personality driven as you must work with some demanding figures. What is your biggest challenge?***

I think the biggest challenge is, for many, staying in a relationship. You have to have a very understanding partner; with the irregular hours, different locations and different countries, Skype becomes your best friend. The relationships you have with your fellow crew are important too – you are thrown together and have to get on with each other in what can be, at times, testing circumstances. Patience and a happy 'can-do' helpful disposition are common attributes in successful people in this line of work.

And yes, there are artistic challenges too. It's not uncommon for designers to turn around at the last minute and want to make things bigger, brighter, louder or whatever. Generally though that is all completed in the rehearsals so the show gets polished before an audience sees it – if you have rehearsals that is; some shows you literally make up as you go along – or busking as it's known. But generally shows are always innovative in some respect, whether it's designers wanting to create an effect or stage that's not been done before, so the challenges are in the innovative engineering to achieve an objective.

In addition, there are usually the technical challenges when things stop working, and the law of sod dictates that it will always happen before curtain-up. For many electricians, pressure might be a site manager shouting at you because the second fix isn't finished and the client is coming around to inspect the works tomorrow. Having your 500 kVA twinset generators shutting down for no apparent reason half an hour before a show and 20,000 people knocking at the door wanting to come in is real pressure. The prospect of cancelling a show isn't an option that's entertained, so the skill is in making it happen somehow.

Recently I was inspecting a one-day festival in a London park. A popular band was in the middle of its set and suddenly the main 400 A circuit-breaker for the PA tripped for reasons unknown; there was a big thump from the speakers and it all went quiet. In situations like that all eyes are on you – it's not just the technical issues riding on it though. If you have an audience getting restless or annoyed that their favourite band has walked off unfinished, you may have a crowd control and subsequent security issue looming which can have potentially life-threatening consequences.

As such the challenge is to really understand the technology so you can fix these things. The phrase 'showstopper' has entered the English dictionary to mean an event that causes the show to stop, usually as a result of something pretty catastrophic. It is a testament to crews everywhere that it's still a rare happening and the phrase still carries appropriate gravitas.

***I've noticed that you run training courses. What are the skills and expertise someone would need to enter into this line of work, and can you tell us more about the training you run?***

A significant requisite to be successful is the ability to work effectively in a team. It is a unique culture and even has a language of its own to some degree; having spent some time in the army there are many parallels that can be drawn in that respect. In our case the objective is the show going live, on time and fully functioning. For tours the venues may be in different countries (or, indeed, continents) and the kit and crew will need to be moved in one or two days. For example, on a Sunday you could be doing a show in London, on Wednesday operating the same show with the same kit and crew in a venue in Spain. A whole culture and infrastructure has grown up to allow that to happen and it is more vocation than job to some degree, so the first rule for anyone entering the industry is that you have to be a very good team player and willing to put the hours in with good humour.

The technical skills would vary according to the role. Common themes would be an understanding of electrical safety principles and, for most disciplines, a working knowledge of IP networking is increasingly important. Other skills depend on the career path, whether it be audio, lighting, video, broadcast, rigging, automation or pyrotechnics etc.

When I started, the industry still had a bit of a 'them and us' mentality when it came to application of standards and related guidance. The events industry has matured over the years and is now comparable to something like the automotive sector in fiscal terms, with a contribution to the UK economy in the region of £40bn+ year. As a result, the industry takes such matters seriously and works hard to influence standards and legislation accordingly, and that's why I got involved in the various committees.

That sets the context for the courses I run – many are for production or venue managers and those in similar positions to understand their obligations with regard to the law and how that is achieved practically using standards like BS 7671 *Requirements for Electrical Installations* (the 'IET Wiring Regulations') and BS 7909 *Code of practice for temporary electrical systems for entertainment and related purposes*. Others are for technicians working with power who need to get to grips with the relevant standards and how they are applied, or to understand modern problems like power quality issues arising from the drive towards energy efficiency.

Typically, the available electrical courses are aimed at the traditional electrical contracting industries where such topics like leading power factors and harmonics are not usually a concern – or even taught. An event electrician needs to appreciate how these might stop the show, as well as understanding, for example, how to safely synchronise generators and run an 800 A three-phase supply around a muddy field. So teaching them how to size a length of twin-and-earth for an electric shower in a bathroom doesn't equip them with the right knowledge.

While both require electrical skill, the context and practical application is very different and that's the aim of my courses – to put the established standards in an appropriate language to help the candidates apply it in a practical fashion. The most popular is the Creative Skillset Certificate in temporary power systems which was developed by the industry and is being enforced by many organisations, including the three main UK broadcasters.



*Some of the dimmer racks used on the TV program Top Gear. The left unit is a 48 x 3kW per channel dimmer and the right is a 72 x 5kW per channel dimmer. They are ready flight-cased so the lids are fitted on the front and back after use and the racks wheeled into the trucks. All the cable connections are on the rear, and the flexes plugged into the top of the racks are part of what is called the 'patch-bay'. Each dimmer channel has a socket on the top and so dimmer channels can be individually allocated to the different output sockets on the rear via the patch cables.*

## **Are apprenticeships available?**

That's an interesting question. Up until now there were few, if any, available, although in the past some broadcast companies operated their own internal versions for lighting crews and one or two do exist for technical theatre, but they are not necessarily linked to any national vocational qualifications. Generally people would apply for a job with a company and start at the bottom, loading trucks and packing flight cases before being allowed progressively more responsibility and the opportunity to get more technical experience.

However, the [Association of British Theatre Technicians \(ABTT\)](#) has been working with 14 other organisations and employers in a Trailblazer partnership and has been part of a successful bid to develop a new apprenticeship standard for the occupation of Creative Venue Technician at Level 3, which is nearing completion. This will give candidates a thorough grounding in all things related to presenting live performance whether for a live audience or for camera.

Essentially, people working in this role provide end-to-end technical services in a range of creative, cultural and community venues and the training touches on pretty much everything from old traditional – but still relevant – skills such as knot tying and splicing, through to working with the latest computer based stage automation systems. There are also the 'live' elements like cueing a show and learning to work with other production departments as well, so it's good coverage for working in various sectors such as theatre, television/broadcast and shows.

The hope is that candidates will, as part of the scheme, attain the Bronze Award from the ABTT which is the first step in a career backstage. When it comes to fruition it will be well received and very exciting for an industry that is ever more technically complex and also facing the pan-industry shortage of technical skills.

## ***What standards and other references relate to this industry?***

From an electrical view, the IET Wiring Regulations and the temporary power standard BS 7909 are the main ones if you're working in the UK – although you have to consider national standards if taking shows abroad as appropriate. If you look at the technology involved in the rest of a production, then it opens up a raft of other potentially applicable ones ranging from American National Standards Institute (ANSI) standards for lighting control protocols, machinery standards for stage automation, IT standards for the network infrastructure or the Institute of Electrical and Electronics Engineers (IEEE) and the Advanced Encryption Standard (AES) standards for audio, for example.

There are also a host of proprietary standards that are widely adopted in the industry. ArtNet, an open-source Ethernet based lighting protocol developed by Wayne Howell at Artistic Licence, is an example of a very widely adopted standard that readers may have come across in architectural installations. It was developed to overcome the limitations in channel count of DMX512 for stage lighting, and has now become a de-facto standard for most automated lighting and control desks. There are similar audio standards too, for example, CobraNet or Dante.

## ***What installation are you most proud of?***

There have been many events that I've been proud to be a part of. One that I and a colleague, Ron Bonner, were pleased with was a charitable concert in aid of a cancer charity. We pulled in all sorts of favours from rental companies and freelancers who gave their kit and time for free and helped raise some good money – such kindness was really appreciated and we had great fun putting it together.

Perhaps the most memorable though was a summer spectacular for a theme park involving the Royal Marines. Through that I met my wife and also managed to cause a collision between two of Her Majesty's boats, though the two events were unconnected.

## ***You are a member of ABTT. Could you tell us more about the ABTT and your role in the organisation?***

The ABTT is a charity that has a long history of supporting the backstage professionals in all things related to technical theatre, and a principle aim is to advance education in the technical arts. Part of that is the temporary and permanent electrical infrastructure and my role is to work with the Safety Committee to help members with guidance and resolving related technical issues.

The ABTT, along with the District Surveyors Association, the Chartered Institute of Environmental Health and the Institute of Licensing, developed guidelines for performing venues called *Technical Standards for Places of Entertainment*. We have to keep the electrical content of that up to date, whether it's about emergency lighting or updates in the IET Wiring Regulations.

A current project is reviewing the ABTT portable appliance testing guidelines to tie it in with the 4<sup>th</sup> Edition of the IET's *Code of Practice for In-Service Inspection and Testing*. Many theatres have their own equipment but will also rent equipment for long term hires. As such, guidance on who should do the verification and how often is helpful, particularly as it's a more risk-based approach. It's big business too – at a venue like the Royal Opera House in London, for example, the lighting department alone has a stock of around 4,000 items of electrical hardware from lights to control equipment. On top of that, there are racks of

extension leads in various capacities and lengths ranging from 16 A to 400 A and a team of four who are permanently dedicated to ensuring that all of it is in good order and ready for use.

A large part is representing the interests of members on standards panels and similar industry related technical forums. I ensure that comments are taken forward and changes are discussed and considered as appropriate. If a standard is to be effective, it has to be fit for purpose, so we have to be engaged to ensure it meets our needs as well as those of the more established sectors of the electrical industry.



*A typical mains distribution unit. Along the bottom can be seen the single-pole connectors, each rated for 400A. There is a supply in and a loop-through to the next distribution unit. The outputs are a variety of BS EN 60309 ('ceeform' type) connectors in single and three phase, ranging from 16A to 125A. The protective devices are at the rear of the unit, and it sits on metal skids so can easily be transported using a forklift or similar.*

***You're going to be working closely with Wiring Matters over the coming year; could you tell us what we should expect from your series of articles?***

Robin Townley (CEO of the ABTT) and I are aiming to reveal just some of the areas that ABTT members work in. We're planning to write about the different roles of those working with electrical infrastructure in a variety of event contexts, ranging from a resident theatre electrician, a production electrician on a show, an electrician involved in the temporary power at an event and a contractor who designs and installs the permanent electrical systems for performing venues. All are very different in their own way, yet all have the same ethos and culture.

The aim is that these articles will give an insight into the industry and hopefully entice some new apprentices. It's the nature of the backstage people to keep a low profile and work with quiet efficiency – this will be an opportunity to highlight the good work they do.