ISCE

The magazine of the Institute of Sound and Communications Engineers

Winter 2017

ISCE

Inside this issue

ISCE ISCE.ORG.UK ISCEx 2018

We welcome your contributions to the magazine with editorial and advertising.

Please send news or articles to **Ros**

Published by the Institute of Sound and Communications Engineers Ltd

VAT registration number: GB 781 3372 24

Manager, Secretariat contact details

Ros Wigmore
ISCE
PO Box 7966
Reading RG6 7WY

t: 0118 954 2175
e: ros@isce.org.uk
w: www.isce.org.uk

Company limited by guarantee and registered in England no 3288938.

Registered Office:
Clarence Street Chambers,
32 Clarence Street,
Southend-On-Sea,
Essex SS1 1BD

Design and production

DAGC
t: 0118 958 2334
e: info@dagc.co.uk
w: www.dagc.co.uk

Introduction from our President

Winter has now truly arrived, with some of us recently experiencing the first snowfalls. I presume you are all ready and prepared for Christmas and the New Year?

Ros has put together another varied and interesting publication for you to read over the holiday period.

Now to update you on some of our other activities:

You should have all received an ISCE email on 5 December titled:- 'The new ISCE online membership portal- please read'. This sets out the procedure for opting in to our new Membership Portal for both our Online Members Directory and Events Registration systems. Please can you log on to the portal www.myisce.org.uk. This will allow you to set up very easily the fields you would like to be made available for public view or just for other members to see. In this portal, you can also ensure your correspondence email address, phone numbers and postal address are correct. You will need to memorise your own unique password for future use and editing.

If you rely on being contacted for project work opportunities in our industry, the Members Directory is a valuable free resource. The portal will go live in January 2018 and linked to our new website, which is now in the final phases of construction.

ISCEx 2018 and our AGM/Networking Dinner will soon be upon us! If you intend to stay overnight on Tuesday 6th March at Coombe Abbey, you should contact the hotel as soon as possible to book – quoting the ISCE Conference for special B&B rate of £97.

You can register to attend any of the following at www.iscex.org.uk

Annual General Meeting – Tuesday 6 March 3pm
Networking Dinner – Tuesday 6 March 7pm
ISCEx 2018 and individual seminars – Wednesday 7 March.

You may also like to know that in response to some requests from our members, we have set up a 'Political Lobbying Committee' within Council, with direct reference initially to making the Government aware of our Institute and the need for voice alarm systems to be mandatory on residential 'high rise' towers and office environments. This committee will also be lobbying regarding the new EU legislation on Hearing Loops becoming classified as 'medical devices' which we feel will create extra layers of unnecessary bureaucracy. Regarding the VA PA requirements, Council Member Brian Latham has been invited to make an initial presentation to the Grenfell Tower Public Enquiry.

As President, I am pleased to welcome Council Member Gareth Collyer as the new Chairman of our Training Committee. Gareth is taking over from Jon Raper who is now retiring and I would like to thank Jon on behalf of us all, for his hard work over the years.

Finally, I would like to take this opportunity to wish all our members and families a Joyful Christmas and a Happy New Year.

I am looking forward to hopefully meeting many of you at ISCEx in March, or indeed earlier if you are visiting ISE in Amsterdam 6–9 February. ◆

Phil Price

Events Diary

17–18 January 2018
PLASA Focus
Scottish Event Campus, Glasgow, UK

6–9 February 2018
ISE 2018
RAI Centre, Amsterdam, Netherlands

27 February – 1 March 2018
BVE
ExCel, London, UK

28 February – 1 March 2018
Event Production Show
Olympia, London, UK

6 March 2018
ISCE AGM
Coombe Abbey, Nr Coventry, UK

6 March 2018
ISCEx 2018 Networking Dinner
Coombe Abbey, Nr Coventry, UK

7 March 2018
ISCEx 2018 Exhibition & Seminar Day
Coombe Abbey, Nr Coventry, UK

10–13 April 2018
Prolight & Sound
Messe Frankfurt, Germany

1–2 May 2018
PLASA Focus
Royal Armouries, Leeds, UK

Kingston Park Stadium given RCF makeover

R&B Group in partnership with Nitelites upgrade major Rugby arena with Acustica P series

Set in the north east of England, Kingston Park Stadium recently underwent a complete upgrade of its main sound system, transforming the match day experience for visitors.

Although billed as a multipurpose stadium, its main focus is rugby, and the 10,200 capacity facility is the home ground for both Aviva Premiership Rugby Union side Newcastle Falcons, and League side Newcastle Thunder.

A complete new RCF Acustica P-series weatherproof, purpose-designed stadium system has replaced an ageing PA that was not IP-rated, and no longer fit for purpose, as the North, South and West stands were systematically developed.

Part of a complete RCF solution, the equipment was supplied Ed Gamble at local RCF partner Nitelites, who also assisted with the design, with installation carried out by the R&B Group under the project management of Steve Brown.

AV specialists R&B Group were already well known to the Stadium as they had staged numerous corporate events there in the past. "They recognised the need ▸

for a new system and approached a number of companies including us," says Brown. "We built the relationship during a tender and design process which started last September."

He recalls, "The system needed to work with the existing big screen, and it needed to provide longevity and operate alongside the emergency system already in place. There were also issues of containment to address as the stadium is surrounded by residential buildings." The Bowl system would be fed by two handheld mics, two background music sources and VT. And so in view of the large music content requirement — and the fact they have limited spill —, Ed Gamble recommended the 15" P3115T as the ideal solution.

R&B Group specified 28 of these two way lightweight coax enclosures, offering 90° x 60° dispersion; the West stand has been equipped with 14 x P3115; the South stand with 8 x P3115; East stand with 4 x P3115 in the stand and a further pair radiating onto the pitch. Meanwhile, the shorter North Stand (and each end of the East stand) equipped with P4228 (2 x 8") which provide the necessary wider 110° x 60° dispersion.

These are all driven low impedance by a combination of nine RCF IPS 2700 (2 x 1100 W RMS / 4 ohms) and IPS 3700 amplifiers (2 x 1100 W RMS / 4 ohms).

"We chose P series because of the dispersion pattern, the bandwidth capability for music and the IP55 weatherproof rating," Steve Brown confirmed. "In addition, they have a proven track record in stadiums and fitted the budget.

All the P series enclosures are spaced equidistant via the existing fixing points utilizing the stainless steel brackets

R&B Group provided an end-to-end signal chain using a Yamaha processing and distribution matrix over fibre via the Dante protocol. This has ensured that a pristine, low-latency signal is maintained over long distances from three control rooms (situated in South, West and East stands) — linked by Gigabit switching on a redundant network, with UPS sitting on the network switches in the West stand and at FOH

The Corporate boxes in the West stand are also serviced by RCF loudspeakers, with 13 compact DM61 speakers each serving two boxes. These were driven 100V line by three RCF UP 2321 amplifiers 320W power amps.

R&B Group's install team consisted of Chris Tolley, Phil Marshall and Dan Johnson. Following commissioning, the company spent a day testing the system, loading down EQ presets and providing operator training. The team has monitored the new system and sound levels during a number of the games this season and will continue to work with the club on further developments.

Summing up, Steve Brown said: "We received great technical support from both the stadium's onsite technical team and Nitelites — in fact one of the reasons we opted for RCF was the assurance of after sales service and the fact that the brand has a great heritage in stadiums."

Newcastle Falcons representative, Angela Alderson, added her own testimonial. "Earlier this year we invested in a tailor-made PA system at our home ground at Kingston Park Stadium. Throughout the design, installation and fine-tuning process we found R&B Group to be extremely professional, with meticulous planning and dedicated to providing outstanding service.

"Some of the comments back from our supporters include 'premium sound quality' and 'excellent to see continued investment in the facilities'".

www.rcfaudio.co.uk ◆

EES Showhire awarded contract by International Bomber Command Centre

North Nottinghamshire based and North Notts Envoys, EES Showhire has been awarded the contract to work with the International Bomber Command Centre in Lincoln to produce their prestigious opening ceremony on the 12th April 2018. With international TV coverage and Royal guests, this event is set to be one of the highest profile events we have worked on to date. We are extremely proud to be involved and relish the challenge of delivering this event.

RAF Bomber Command was formed in 1936 as a show of strength to deter aggression. War came, despite this threat and Bomber Command played a vital role, flying 364,514 sorties, in the process 57,861 men and women lost their lives.

After the war, those who died fighting for Bomber Command were not remembered, or memorialised like those in other military organisations. Until now, there has never been a memorial listing the names of those who died, a place where you can lay a poppy next to a loved one or relative. Bomber Command was international in its make up and now people from across the globe wish to pay their respects at the memorial.

In 2018 the memorial will be opened to the public for the first time and to mark the occasion a ceremony is planned next to the memorial on top of Canwick Hill in Lincoln. EES Showhire is to help stage the event in front of honoured guests by supplying sound, lighting, the stage, power generation, grandstands and large screens. We are a family owned event production company which handles sound and lighting for ▸

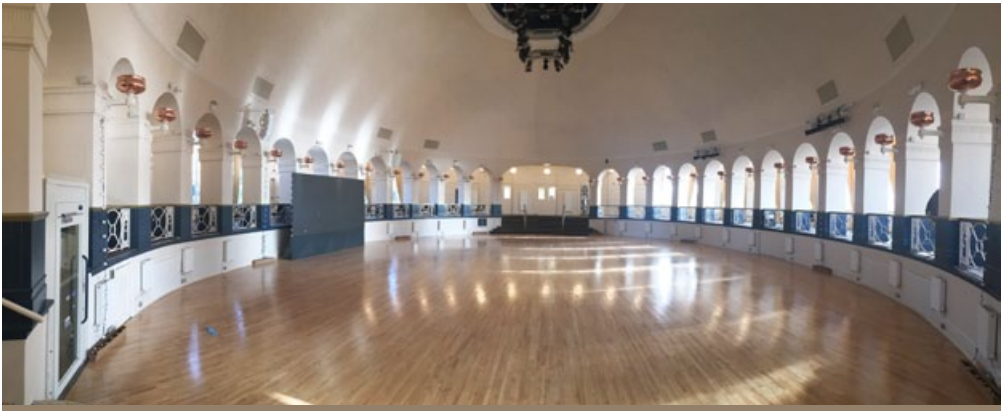
festivals and outdoor events along with installation of equipment into venues across the area. In winning this contract we have beaten tough competition from larger companies, but we believe our 20+ years experience in the industry and personable approach makes us stand out and easy to work with.

Jon Atkey TechInstSCE of EES Showhire said “we are delighted to have been chosen for this event. We understand the honour in being selected to work for such a noble cause and we will aim to make it the best show we have ever delivered.”

Nicky Barr, Director of International Bomber Command Centre said “we got EES Showhire on board because we buy from people and we liked their attitude.”

More detail will emerge about the event closer to the time.

www.ees-showhire.co.uk ◆



NEXO line array defeats 'flutter echo' in multi-purpose venue

The serenely elegant facades of the newly-renovated Winter Gardens Pavilion gave no clue as to the acoustic challenges that awaited audio-visual integrators Design AV Europe. Close co-operation with leading consultancy AMS Acoustics and sound reinforcement manufacturer NEXO has overcome the architectural quirks of this striking neo-Georgian ballroom space to produce a thoroughly modern commercial venue for academic and entertainment use.

Located in a prime site in the seaside town of Weston-super-Mare, the Winter Gardens Pavilion was completed in 1927. During the 1960s and 70s, it was a popular performance venue for touring bands, including Pink Floyd, David Bowie, Deep Purple and T.Rex. But, by 2012, the building had fallen on harder times and was operating at a considerable loss. Owners North Somerset Council agreed a deal with nearby Weston College, selling the Pavilion for a nominal fee of £1, providing the College financed the restoration of the venue. Over the last 2 years, Weston College has completely renovated the building, and installed new technology to handle a wide variety of conferences and events.

Specialist integrator Design AV Europe was contracted to provide audio and video technology in four areas of the Pavilion: the ballroom itself, the adjacent bar and restaurant, the reception, and the College reception. Damien Orritt of Design AV approached NEXO to supply the audio system for the ballroom/concert hall, designed to work in any one of five audio scenarios: speech, dinners and table-seated events; live band and concert-type events; a ballroom mode with sound only on the dancefloor; and a full DJ mode with sound on the dancefloor and the promenade.

The central space of the Pavilion is the unusual oval-shaped ballroom, with a raised promenade encircling the sunken floor, under a domed roof. Huge floor to ceiling windows ring the space, which can accommodate 450 people in a variety of layouts.

London-based AMS Acoustics was keen to work on the electroacoustic tuning of the project, as Helen Goddard explains. "This is not an easy space to put loudspeakers into. It has been designed with a natural acoustic, which allows a band to be heard all across the dancefloor. The elliptical shape of the room has ▸

two distinct axes, and the domed roof was focussing sound back down into the room. There was even a stunning 'flutter echo', which is a very rare event!"

Helen and her team spent a day at the Pavilion, measuring impulse response and reverberation times, before applying equalisation, and determining the correct time delay for the different elements of the audio system. "Technically, getting the acoustics right is the most difficult part of the installation," explains Damien Orritt of Design AV. "We applied a Class A absorber to the dome itself, just to flatten it out a bit, and worked with AMS Acoustics on programming five user settings which are button-selectable on the Crestron touchpanel."

For the central area (dancefloor), there are left/right clusters of four GEO M620 line array modules, with two LS18 subwoofers built into the surrounding balcony. For the promenade area, NEXO ID24i compact loudspeakers have been fitted. Specifying the 120° x 60° model for its wide dispersion characteristics means that just thirteen speakers are needed to provide full coverage.

"The ID24s are white and very low profile, so they don't disrupt the room's aesthetic," says NEXO's Gareth Collyer. " The GEO M620 line array modules allow the dispersion to be maximised front to back. Even though the length of the line array is short, thanks to the compactness of the M6 design, the angles between cabinets provide vertical control, directing sound away from the glass and the roof. Having the ID 24i loudspeakers around the promenade allows for the introduction of time delays, especially useful for the speech/teaching scenario, where they provide enhanced speech intelligibility."

Powered by 3x NEXO NXAMP4x1 controller/amplifiers, the system is controlled over a BSS Soundweb network. Overall, the installation team has achieved their primary audio objective for the Winter Gardens: to balance the sound between the GEO M6 and ID Series to make sure neither source is dominant, using the minimum amount of acoustic power, and maximising dispersion and coverage. The five user settings give the Winter Gardens a high degree of versatility, with precise speech intelligibility for lectures and conferences, as well as a variety of hospitality and entertainment events.

In a separate background music system, playing in the Winter Gardens reception, additional ID24i speakers have been installed, supplemented by a compact S110 subwoofer in white, virtually invisible in its ceiling-mounted location. This is the first UK installation of this dedicated sub.

www.nexo.fr ◆

Solving your clients' noise problem

Picture a typical office environment that you've worked on as a systems integrator. What does it look like? Chances are that it's an open office with private offices along the walls and rows of cubicles in the middle. Or perhaps it's a completely open floor plan space with no private spaces at all.

What do these two office environments have in common? Very likely, they both have dissatisfied employees. The reason? Lack of speech privacy and unwanted noise issues.

Most companies recognise that noise distractions are a problem, they just aren't aware there's a solution to the problem. And even if they are aware there's a solution to their problem, they probably don't know that their systems integrator is the person who can solve it. But in both cases, one of the most effective and efficient solutions to your client's noise problem is called sound masking.

The noise problem

Recent studies have shown that lack of speech privacy is what's really driving your client's employees crazy. What's speech privacy? Simply put, it's the inability of an unintentional listener to understand another person's conversation. So someone with a lack of speech privacy is overhearing lots of conversations they shouldn't be, which is, understandably, very annoying to employees. A lack of speech privacy can lead to costly distractions, but also makes it possible for employees to overhear conversations they probably should not hear.

The solution

Although everyone knows that office noise is a problem, few know there's a solution to the problem beyond giving every employee a private office or building higher cube walls. So what's the solution?

The solution is called sound masking. Although this technology has been around since the 1950s, the public at large is generally unaware of it. In its simplest sense, sound masking is the process of adding a low level, unobtrusive background sound to an environment to reduce the intelligibility of human speech and reduce noise distractions in that environment. It may sound counter-intuitive that adding noise to the environment would make it seem quieter, but the introduced noise, specifically tuned to the frequency and amplitude of human speech, covers up, or "masks," excess speech noise and makes the acoustical environment more comfortable. ▸

How you learn to install sound masking

Sound masking systems range in complexity from those consisting of simply a module, cables, and loud speakers, to systems with dozens of components. Some are easier to install and are more effective than others. Some of the top sound masking companies, like Cambridge Sound Management, offer web-based sound masking certification programs that explain how sound masking works in greater detail and explain how their system can be installed.

Sound masking: asking the questions

Next time you're doing an install, selling sound masking along with the other services you provide is a great way to solve a problem for your client while simultaneously creating a new business opportunity for yourself. When you're at the client's office, do a quick site-survey. Are there a lot of cubicles? Are a lot of the employees wearing headphones? If so, these are usually good indicators that there's a noise problem in the office.

Bringing up the fact that noise distractions are costing your clients money and making their employees crazy is usually also a compelling way to explain to them that they'll be a hero for solving this problem, not just for their employees health and satisfaction, but for their company's bottom line. You, in turn, will be their hero for being the one who fixed their noise problem.

Cambridge Sound Management
www.cambridgesound.com ◆

Opportunity to upgrade your membership

At ISCEx 2018 in March, there will be an opportunity for you to attend an informal upgrade interview with the membership committee.

We encourage our members to upgrade and if you feel you have the right experience and skills to meet the criteria, please get in touch with Ros, who will arrange an appointment.

Of course, you can always submit a technical report if you are unable to attend an interview, where you can write about a project in which you were involved, research you have carried out, a piece of original theory or even a solution to a hypothetical situation. Whatever you choose, it must demonstrate that you are technically competent to the required level in the area of your choice.

ISCE Annual General Meeting

The 21st AGM for ISCE will take place on Tuesday 6 March 2018 – 3pm at Coombe Abbey, Binley, Nr Coventry

Further details will follow in due course – but be sure to note the date in your diary

Hopkins-Baldwin Lecture

Busting the myths of mass evacuation

Dr Chris Cocking · Senior Lecturer at the School of Health Sciences, University of Brighton

This seminar will focus on research carried out by Chris and his colleagues into crowd behaviour during emergencies and the implications for crowd safety management during mass evacuations. A commonly held view is that during emergencies, people are prone to 'panic', and so crowd management strategies have traditionally been based upon fears of the possible irrational and/or selfish behaviour that might result from any 'mass panic'.

Busting the myths of mass evacuation highlights how research has indicated this is not necessarily the case during emergencies and how it is best practice to provide as much relevant information as possible on how to evacuate effectively and safely. With Voice Alarm systems having a clear role to play in this process it is vital information is delivered in a confident and consistent manner and is trusted by recipients of the message if people are to act upon information provided and keep themselves safe.

***Dr Chris Cocking** has a research interest in the psychology of crowd behaviour (particularly during mass emergencies), collective resilience and post disaster psycho-social support. He has helped developed the Social Identity Model of Crowd Resilience (SIMCR- Drury et al, 2009), and worked in the crowd management sector, consulting on crowd behaviour at large events in the South East of England. He also advises on emergency planning, and has been a visiting speaker at the Cabinet Office Emergency Planning College. Other consultations he has provided have been for the London Resilience Team (part of the Government Office for London), and the Greater London Assembly (where he contributed to their report into the 7/7 terrorist bombings). He has had his research findings published in over 20 publications in academic and applied journals and user reports, including most recently a case study by the United Nations Office for Disaster Risk Reduction Scientific and Technical Advisory Group.*

Warren-Barnett Memorial Lecture:
How do we react to sound?

Hanieh Motamedian AMInstSCE · Business Development Manager at Sound Directions
Sam Wise · Design Director at Venue Strategies

With two presenters coming from different perspectives, this seminar will focus on theory, observation, thinking and realisation. Hanieh will explore her research and work with the medical profession and patients, and how the cacophony of noise experienced in a hospital can be detrimental to recovery. She will also cover mapping widely used privacy standards into a health environment.

Sam will highlight contentions between the brain's speech decoding capabilities and the direction of audio arriving at our ears, using examples and demonstrations taken from underground transport loudspeakers. He also takes a look at how our brain reacts to lip sync; how much delay is tolerable and whether it matters which comes first – audio or video.

Hanieh Motamedian *graduated in 2009 with a degree in Politics and embarked on her career in the audio world working at Application Solutions Ltd, in a Sales Manager role. Most recently, Hanieh has worked at Sound Directions promoting the benefits of sound masking in noisy workplace environments, with particular emphasis on educating Universities and the medical profession on benefits of sound masking for patient recovery for which she has written feature articles.*

Sam Wise *has always been involved with music, electricity, acoustics and entertainment. Arriving from the USA, he started his career as a sound engineer in London's West End, while working in a recording studio. After identifying changes in audio equipment, he began designing mixers, amps and other electronics; dabbling in making installations happen. He went on to write for industry magazines and turning to consulting, where he now finds himself returning to his roots.*

We will bring details of our confirmed third seminar to you shortly.

Loudspeaker coverage

There's more to obtaining optimal loudspeaker coverage than meets the eye

A unique perspective from Peter Mapp *HonFInstSCE*

Most audio system designers would agree, I think, that obtaining even sound coverage is a good design goal to aim for – or at least be a good place to start.

But what do we mean by 'even coverage'– how even is even? Assuming that the sound level is even, will the intelligibility coverage necessarily be even? Furthermore, which is more important, even sound pressure level (SPL) or even intelligibility as characterised by the sound transmission index (STI) or STIPA? Moreover, what do we mean when we say the SPL is even? Do we mean the SPL of the direct sound or that of the total sound? (Bear in mind here that essentially there are two main components to the sound that we hear from a loudspeaker or sound source in an enclosed space – the 'direct sound' ie the sound that travels directly from the source to the listener and the 'reflected or reverberant' part.

Now before someone who has sat in on one of my lectures or classes says no you said there are four components – there are, but I am trying to keep things simple here so let's just stick with direct and reflected components.

Now getting back to the plot, if we specify the direct sound to be even, how do we measure this, as in the majority of indoor systems, it will be buried below the reflected and reverberant sound. Therefore an ordinary sound level meter or real time analyser is not going to be able to measure it, as such instruments can only measure the total sound level ie the direct and reflected components combined.

From an intelligibility perspective it is the ratio of the direct to reflected sound that is important.

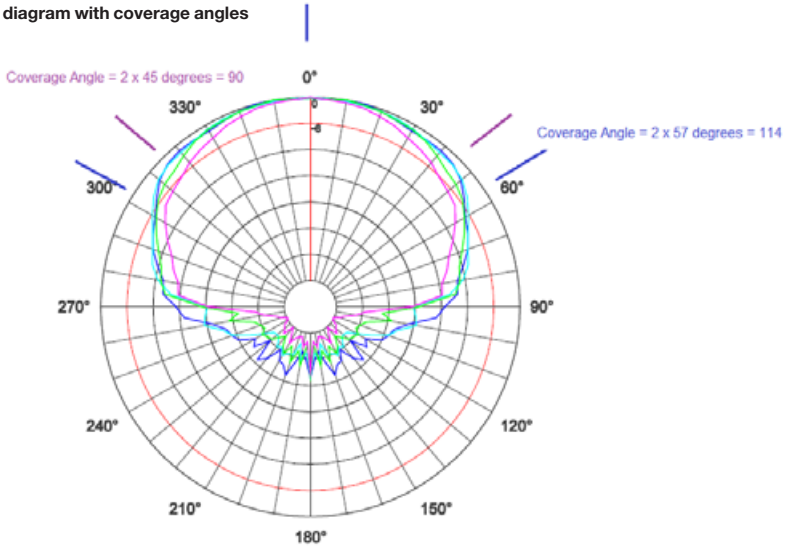
Okay, I will come clean, in reality it is the ratio of the direct and early reflected sound to the later arriving reflections and reverberation (see, I told you so, four components!). Now back to evenness.

On the one hand, an even sound level should mean that listeners will hear the sound system at approximately the same level – which would seem like a good idea. However, I would suggest that intelligibility is more important – after all, if a system isn't intelligible what is the point of having it? Unless you are working in an anechoic chamber or out of doors, then there is always going to be some reflected and potentially reverberant sound kicking about just waiting to get excited.

I have often been told that the aim of a good design is to get the listeners within the coverage angle of a loudspeaker. Well while that is a reasonable starting point, there is rather more to it than that. And as for those who say that you must be within the 'direct field of the loudspeaker' in order for a sound system to be intelligible – Well that's pure baloney. Even with high intelligibility systems where the STI measures 0.65 or 0.70, the reflected sound field will be greater than the direct sound, so you do not need to be within the 'direct field' of the loudspeaker (If this were the case then 99% of all the indoor and most stadium PA systems in the UK would be unintelligible !). But let's get back to the theme of this article – coverage. Now the pertinent question to ask is "what is the coverage angle of a loudspeaker?"

Most people, when they think about coverage angle, take it to be the angle between the minus 6 dB points. In other words, it is the included angle ▸

Figure 1 – Typical polar diagram with coverage angles



between the angular locations where the SPL has dropped by 6 dB relative to the on axis position. Figure 1 shows a reasonably typical example for a well-controlled loudspeaker. The polar diagram is calibrated in 6 dB divisions which enables the 6 dB down angles to be readily found. I have indicated them with blue and magenta lines, as coverage angles are generally frequency dependent. In this case for three of the frequencies selected the value is about the same
(2 x 57° = 114 degrees) but at the fourth, shown by the magenta line, the coverage is a little narrower at 90 degrees (2 x 45°).

A simple ceiling cone loudspeaker typically has a coverage angle of around 90 to 120 degrees.

However, the coverage angle will be frequency dependent, generally being greater at low frequencies and narrowing at high frequencies. If it is a 2 way device, i.e. it has a tweeter or high frequency horn, then the high frequency narrowing will be corrected and may become wider and more consistent or indeed may initially become wider and then start to collapse again. The point is, as a system designer, you need to know what the loudspeaker is doing / is potentially able to cover and not just at one frequency. The coverage angle of some loudspeakers varies significantly with frequency as illustrated in figure 2. Be careful of the scales here, as at this resolution the vertical coverage seems reasonably uniform above 1 kHz but in fact it varies from 50° down to 10° between 1 & 4 kHz.

Figure 2 – Variation of loudspeaker coverage angle with frequency

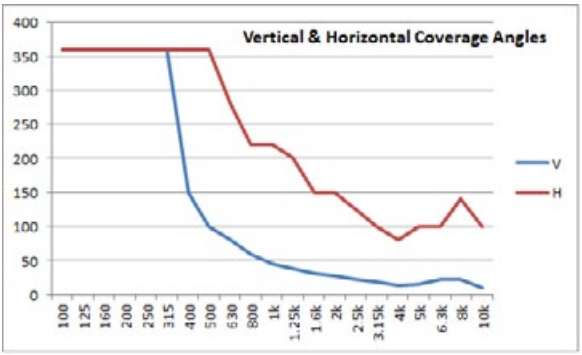
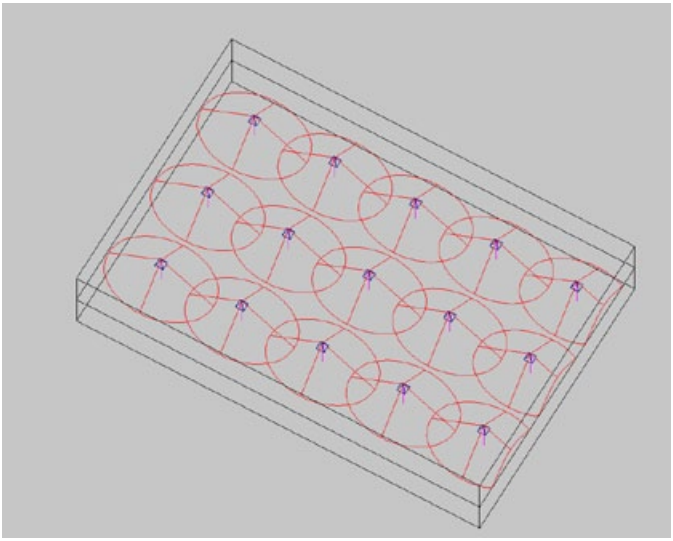


Figure 3 – Projected coverage cones for ceiling loudspeaker system



A more practical way to see how a loudspeaker is covering an area is to project the coverage angle on to the listening plane – i.e. the ear height of the listeners. Figure 3 illustrates this for a typical ceiling loudspeaker arrangement where the loudspeakers are located with a nominal 'edge to edge' overlap pattern.

As can be seen, this is an efficient way of covering a space and should lead to reasonably even coverage. The objective here is to minimise the patches of grey that do not lie within the loudspeaker coverage cones. However, whilst this approach might be appropriate for a conference system or a meeting room etc, it would be overkill for a paging system in a typical office area.

The same basic idea with regards to coverage can be applied to other situations, such as the seating area of a soccer stadium shown in figure 4. Here, for clarity, I am only showing the design with some of the loudspeakers activated. They have been spaced and located so that the projected coverage contours just touch. Figure 5 shows a plan view of the potential coverage.

However, contrary to popular belief, the projected 6 dB contours do not mean that everyone inside the contour will receive a sound level within 6 dB.

Consider for example the first or second row of loudspeakers shown in figure 4. Due to the angle of projection, the sound covering the rear of the coverage zone has to travel further to reach its target than that at the front – although they are both being depicted as being within the 6 dB contour lines. This extra distance introduces a further loss, which in this particular case is almost an additional 3 dB. But is that a problem, as surely 3 dB is almost imperceptible? In terms of sound level (SPL) alone, 3 dB is not a major change but in terms of potential intelligibility, 3 dB, when considered as a difference in signal to noise ratio or direct to reverberant (reflected) ratio, can be very significant and can quite literally be the difference between speech being reasonably intelligible and it being unintelligible. Furthermore, in this case the 3 dB is in addition to the loss of 6 dB, which by definition is what we were working with when designing with the 6 dB coverage angle. Now, the observant amongst you will ask immediately ask the question, if 3 dB can produce such a significant change then why on earth are we using 6 dB contours and where did they come from?

Figure 4 – projected coverage contour plots

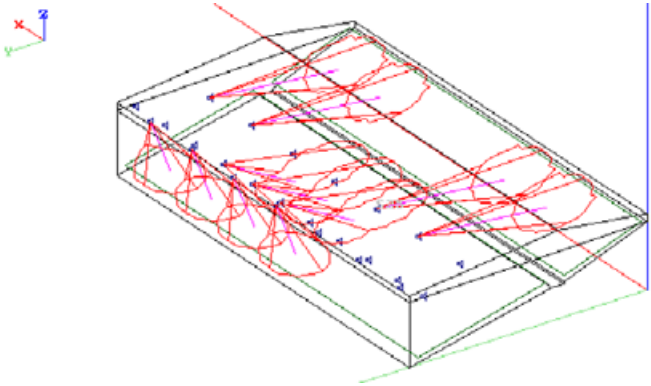
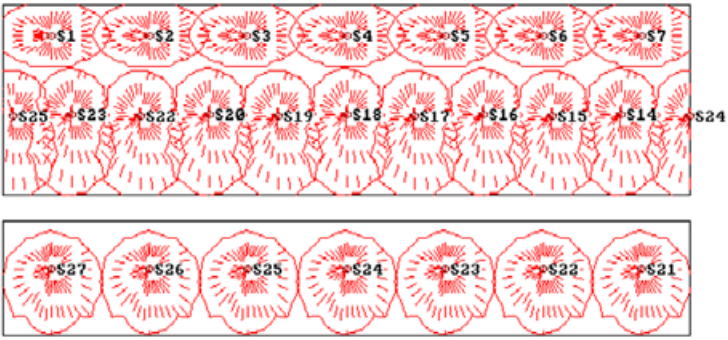


Figure 5 - Plan view of coverage of potential coverage



Good question!

Well for starters, no one says that you have to design using the 6 dB coverage angle (I regularly use the 3 dB contour in many of my designs) but as to where the 6 dB down definition / arrangement came from this is somewhat open to speculation. I have asked many people in the industry around the world for their take on this and essentially the replies fall into two groups. (1) 6 dB down was chosen, as for coherent sources, such as loudspeakers, the output from adjacent loudspeakers, when 6 dB down will combine and add back to give a difference of 0 dB. (Two identical, noise sources remember [non coherent] will add to give 3 dB addition). (2) 6 dB is a reasonable variation for a system to have. Digging around however, I found a comment from the great American audio guru, Don Davis, which paraphrasing says 'from a single overhead point source, if you aim at the last row, and can get the source high enough so that the -6 dB angle hits half-way to the front, you get (about) the same SPL at the front and back seats'. So, it turns an acoustical calculation into basic geometry, which in the days before computer modelling was a useful aid to speaker aiming. Whilst this effect would be true for that particular the case in mind, I have to wonder what this has this to do with ceiling speaker coverage and the practice of edge to edge pattern spacing or other closer packing ! Furthermore, as we have seen, the 6 dB coverage angle is frequency dependent – so what frequency does this rule apply to?

Where either there is a benign acoustic environment or when outdoors, the 6 dB rule can work quite well but in a difficult reverberant space, a 6 dB variation can be too great and lead to a very noticeable drop in speech intelligibility.

In benign environments, there is generally some latitude relating to what we hear but in a difficult acoustic space, (produced by background noise or high reverberation or worst still, both) there will not be so much scope. In these cases, hearing a good direct to reverberant ratio or signal to noise ratio, ▸

extending over the frequency range important for speech intelligibility, will be crucial. So what frequency should you use to pick the coverage angle?

Some people use the 1 kHz band for loudspeaker coverage, but it is the 2 and 4 kHz bands that are more important for speech intelligibility, so as a minimum I would use the 2 kHz data whilst keeping a wary eye on the 4 kHz band. For example figure 6 shows the coverage from a single row of ceiling loudspeakers. They are located at a height of 4m and spaced 8m apart. The upper plot shows the coverage within the 1 kHz octave band. There is a 6 dB variation throughout the space i.e. from on axis to off axis positions – so pretty reasonable you might think. At 2 kHz, (centre plot) however, the variation is 13 dB and distinct hotspots and patches of poorer coverage are apparent. At 4 kHz (lower plot) the variation is 20 dB – a huge and unacceptable variation. So clearly, using 1 kHz could be misleading. It is interesting to note that BS7827, the CoP for emergency sound systems at sports venues, specifically discusses the coverage requirement at 4 kHz.

To put all this into a practical context I was recently asked to comment on a loudspeaker distributor's proposed layout for a distributed series of semi-directional loudspeakers in long and relatively narrow space. The loudspeakers were located overhead at approximately 4m above floor level or about 2.4 m above the listener's ears – there being nowhere to mount them lower down at the sides. The reverberation time of the space was around 3.5 seconds. Now experience tells me that any form of passive and not particularly directional distributed loudspeaker system is not going to work in such a space. Yet, without modelling or undertaking a basic acoustic calculation, the distributor put forward his idea and already had the installer on board, so I had quite a job on to protect my client (the owner) to show that the system wouldn't work. Detailed computer modelling showed that, indeed the design would not have adequate intelligibility – for a number of reasons. ▸

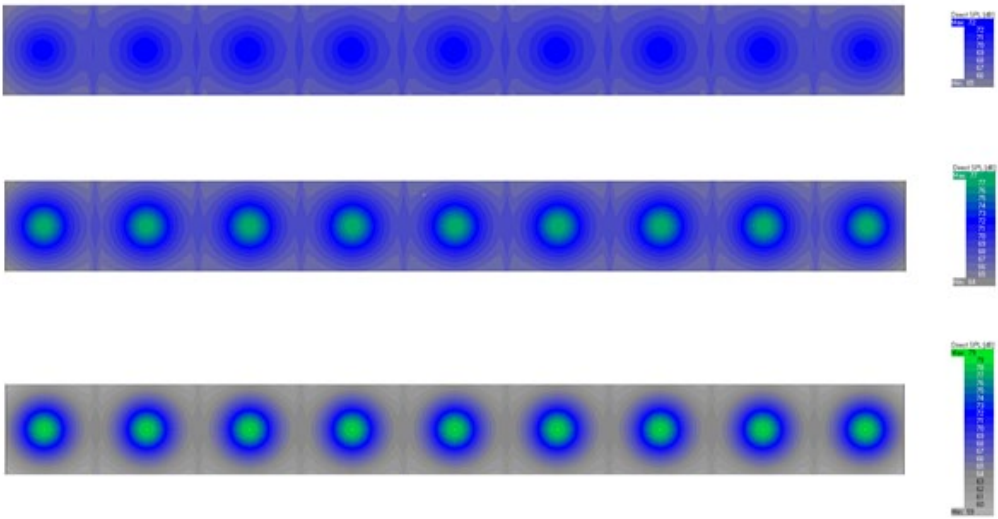


Figure 6 – Coverage at 1, 2 & 4 kHz from a 6 inch paging loudspeaker (coverage variations are 6, 13 & 20 dB respectively)

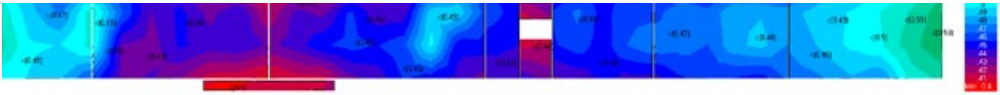


Figure 7 – STIPA plot for section of long narrow space

Figure 7 shows the predicted intelligibility for the proposal in terms of STIPA (Speech Transmission Index for PA systems)

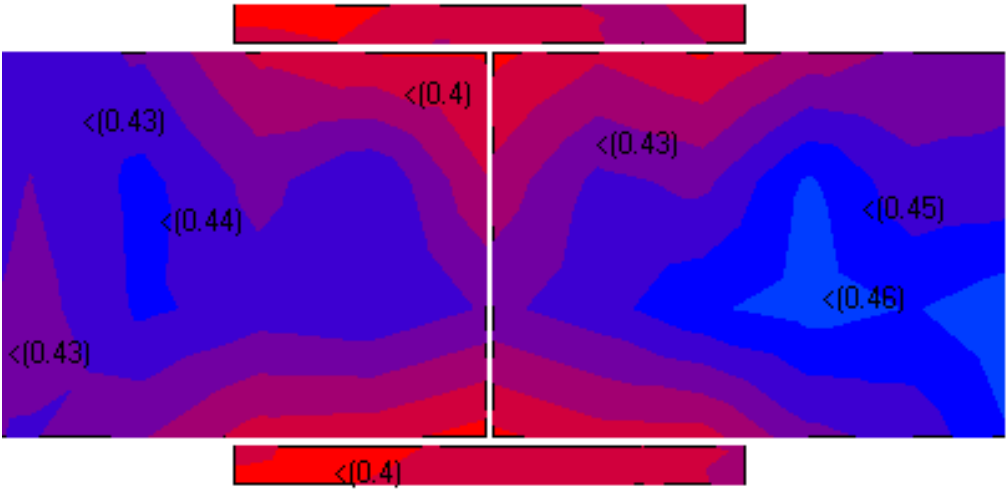


Figure 8 –Zoom of part of STIPA plot

It is difficult to see the values on the figure 7, so I have zoomed in on a section in figure 8.

Now the failing values can be seen, with the average for the area in question being just 0.43 STI and with a significant percentage of the area only achieving 0.40. Looking at the speaker coverage was truly enlightening. The claimed coverage angle for the loudspeaker in question was 170° x 60° at 1 kHz and 140° x 55° at 2 kHz. Figure 9 shows the projected 3 & 6 dB contours but filled out as solid shapes to more clearly show the coverage. As can be seen, at 2 kHz the speaker covers the central section of the space quite well but does not cover the perimeter. However, the 3 dB contour only covers a tiny fraction of the area.

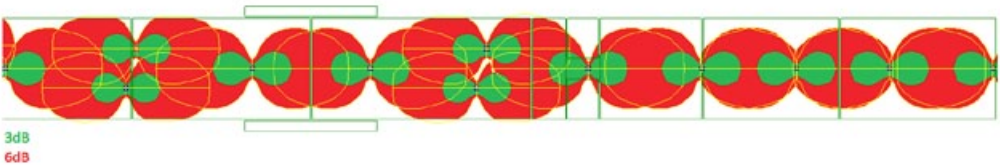
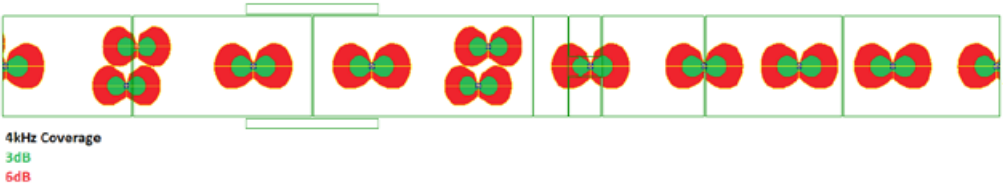


Figure 9 - Coverage at 2 kHz (3 & 6 dB contours)

Figure 10 - Coverage at 4 kHz (3 & 6 dB contours)



Now take a look at figure 10 and see what happens at 4 kHz – where only small parts of the central strip are covered, whilst the majority of the required area is not.

You might think that the STI plot would look a bit like the plots shown in figures 9 & 10 with small patches of intelligibility occurring at regular intervals (i.e. directly under the loudspeakers). Whilst this often happens, as I said earlier, 'there is more to designing a sound system than just providing sound coverage'. However, in this case the loudspeaker design did not even achieve this basic aim as the plots above clearly illustrate. The underlying point is that the space is just too reverberant to support intelligible speech from a normal distributed loudspeaker system. The loudspeaker distributor should have known this and certainly should have checked the viability of his design before presenting it and thereby causing the budget for the system to be set way too low. It is said that 'a little learning is a dangerous thing', which is certainly the case in audio & acoustics.

However, the really worrying aspect for me is that this is a VA system and forms the major element for informing the public of an emergency situation and helping to evacuate the complex in a safe and controlled manner. What chance the above proposal of achieving that? ◆

As compliant as possible

It's no secret that EN 54 is full of difficulties

Roland Hemming MInstSCE updates ISCE on the issues being tackled

Before Steve Jones died he suggested that I join the EN 54 committee. This also meant joining the BS 5839-8 committee. I'd done some standards work before on BS 7827 and indeed I now chair that committee for the next revision. However, EN 54 is a very different beast.

It's a friendly group. We meet five times a year in different European cities. The whole committee numbers about 26 and about half turn up to each meeting, mostly the same people. There is a core of about six or seven of us who contribute a lot and have the most to say. Meetings last two days.

I've been on EN 54 and BS 5839-8 for nearly four years and I'm the only independent consultant on either, everyone else is from a manufacturer or test house. I probably spend too much time on the issue and the learning curve has been fascinating.

I see my role as the one to ask stupid questions! For example, two years ago we looked at a draft of EN 50849. This isn't produced by our committee but it is of relevance to us. I asked, 'When should I apply this standard?' Silence. I asked again. I said that we are meant to be the European experts on emergency audio standards and we don't even know when a sister standard applies. Now, I'm being slightly unfair, but we did have to discuss it and we noted how it introduces some EN 54 confusion itself.

One of my other mantras is how do we fit the square peg of professional audio into the round hole of EN 54? Or is it the other way around? Recently I organised a field trip to a stadium, to demonstrate the problems we have at the more extreme end of compliance. Many of these issues filter to other projects. Whilst the CPR and all national codes of practice allow for bespoke projects, the market demands EN 54 certificates and this seems non-negotiable.

Whilst I'm sure I frustrate some on the committee as others do to me, we have all reached the same conclusion. As we meandered towards this realisation, people higher up the committee and CPR chain have done the same. Put simply: EN 54 is broken and we don't yet know how to fix it.

EN 54 harmonised standards exist because of the CPR, formally the CPD. What you may not know is that more than half the new EN standards produced recently under the CPR have been rejected. Not because of anyone on the committees doing anything wrong but because of the disconnect between committee work, CEN and the European Commission.

Just think of all those people, travelling to all those meetings…

In short the committee members don't understand the legalities of the CPR, why should they, they are experts, not lawyers. Meanwhile CEN and the EC don't understand us or haven't sufficiently explained what they want from our standards.

This issue is being looked at by a special task group and we expect an answer between six months and two years. To an extent, the revisions of EN 54-16 and 24 are in a holding pattern until that time.

But that doesn't mean we are not doing anything, and I want to explain some the areas of work. There are too many, for this article but we are genuinely trying to make things easier.

First of all, anything we change can't preclude existing tested products, without a very, very good reason. So manufacturers of existing products needn't worry.

We'd like to include active loudspeakers but will that be part of EN 54-24 or a new standard? A major problem here is not active loudspeakers but large loudspeakers, active or passive. Currently large loudspeakers can't be tested properly because they won't fit into the corrosion chamber or be measured properly, even in a large anechoic chamber. Some large loudspeakers have used smaller 'samples' for the test, but the current standard doesn't actually ▸

permit this. Are those large EN 54 loudspeakers actually compliant and if they aren't, or is it acceptable for the test house to unilaterally decide a pragmatic approach? We don't know.

How do we deal with single components such as an amplifier? Can you test it on its own? Is an amplifier in a VACIE treated in a similar way as one inside an active loudspeaker?

If you do allow testing of single components how do you guarantee compatibility for the system as a whole? Is such compatibility even a requirement for EN 54 or should that be left to the national code of practice?

We will be adding clarity on the use of network switches and fully programmable signal processors but that's fairly easy.

Then there are the legal issues – what are we actually testing for and how does the legislation permit us to structure the standard?

A VACIE is a product under the CPR, but the EN 54-16 was written as if it is a system. To test components would we need to break the standard up into something like EN 54-16-1 for amplifiers, EN54-16-2 for processors etc.? So, would the amplifier part of an active loudspeaker conform to an EN 54-16 standard or something within EN 54-24? How would you keep all those standards in sync in the future?

What if we had one single standard for absolutely everything? Such a standard could include the loudspeaker element and then manufacturers just said 'NPD' – No Performance Determined for elements of the standard that don't apply to their product.

Next, we need to look at how do you deal with families of similar loudspeakers 4 inch, 6 inch 8 inch... Are they separate products each requiring full tests? At present test houses have different policies on this.

We are working through these questions and ideas, whilst being reminded that our job is to answer the mandate of the CPR legislation – no more no less.

It does seem possible that limits on parameters will be removed. There may be no frequency response or S/N ratio for example. Instead the manufacturer declares it and the test house tests that. Furthermore, it is not permitted to have voluntary or unofficial limits where the parameter is part of a harmonised EN standard.

This serves as a timely reminder that EN 54-16 and 24 are just product tests, not a mark of quality and certainly do not demonstrate if a system is safe or not.

It is not the role of the committee to educate people on the standards or the CPR. We can't put too much informative text into such standards. Nor can we dictate how systems must be used.

The major problem is that the committee has found that the majority of practitioners don't fully understand the standards or what was really intended behind the clauses and when each standard applies. Furthermore, they don't know what to do if something doesn't exactly comply. At project level, there is a conflict between needing to say you are EN 54 compliant in order to win the job and the chance that you will almost certainly not be complaint for one reason or another when you actually implement the project. Of course, that doesn't necessarily mean you shouldn't use any compliant products.

The other issue is that the interpretative nature of voice alarm has made people think that all aspects of the subject are open to interpretation, but that's not the case. For example many people still cite EN 60849 in voice alarm specifications when it simply isn't permitted to do so. The CPR is very clear about this.

Very few Voice Alarm specifications lay out how they actually comply to those standards on their project, which is what you are required to do.

All of this is fine, until there is a fatal incident.

If you are involved with voice alarm system design in any way, you can no longer consider this just as an engineering task, you need to dig deeper into the standards and the associated legal framework. This is everything from how the products are purchased and physically supplied, to how you fit the compliant product as well as conform to the appropriate installation codes of practice.

Voice Alarm design is something that practitioners charge hundreds of pounds a day for. If you are not supplying clients with this additional guidance where should clients get this information from? ◆

Young sound engineers in Armenia benefit from training

Passing on one's experience is an essential part of any occupation, and sound engineering is no exception.

Like many ISCE members Jon Burton SenTechInstSCE has been actively involved in working with younger engineers, both teaching and mentoring. It was a chance meeting with a former pupil of SSR college in Manchester while working in Georgia, that led to an unusual request.

The pupil, Vardges Sayadan had come from Armenia to the UK to study sound engineering before returning to his home city of Yerevan to work for one of the countries top promoters, DG Communications and Events.

Armenia has few learning opportunities and a shortage of skilled experienced crews. Vardges set about trying to run short courses with the help of Gohar Danelayn-Dubost of DG Events. Gohar had also recognised the need for training in this area and was willing to provide support.

An off the cuff remark prompted Jon to accept the job of running a three day crash course in Yerevan for young engineers. Never having visited this part of the world the offer of a free trip, combined with some sight seeing seemed too good to miss.

The course ran earlier this year and was a great success. The teaching took place in Armenia's capital Yerevan in the Architectural Society's lecture hall using their in-house facilities.

The pressure of trying to cram as much information in to three days as possible was rewarded by the incredibly positive attitude of all those involved, from the students to all the organisers. It is hoped, following the success of this course, to make it an annual event. ◆

Security and Fire Excellence Awards

Wednesday 22 November 2017
London Hilton on Park Lane

ISCE was honoured to present the 'Communication Product of the Year Award' at this year's IFSEC Security and Fire Excellence Awards held at the London Hilton Hotel.

The Security & Fire Excellence Awards has consistently broken new ground in highlighting the very best people, projects and processes the security and fire sectors have to offer.

Ros Wigmore, Manager of ISCE, took to the stage, to present the award to Qognify for their Qognify Extend product.

Ros said: "It was great to talk to so many people in the security and fire industry in the grand setting of The Hilton Park Lane. It was an added bonus to meet the charming Gaby Logan, who delivered a seamless introduction of the categories and nominations". ◆

Vintage hearing loop system meeting the 'everything wrong' standard

J M Woodgate *HonFInstSCE*

This installation, in quite a large church, dates from the early 1990s, so we would expect that it was set up to achieve 100 mA/m, not 400 mA/m on the 'loud bits' We were not disappointed about that, but we were about other things. Even so, the loop system has been in use continuously since then, and it was the renewal of the sound system that prompted questions about the loop system.

The person in charge is a very skilled electronic engineer, a specialist in high-frequency and EMC rather than audio. However, some years ago he found that the loop consisted of the thin 4-core cable used for alarm systems, with the four cores in series. He reasoned that it might be better to have the four cores in parallel, and so it proved.

The amplifier is of Swedish origin (not Univox) and has loop area settings up to 160 m^2. The looped area, the central and side-aisle pews and choir stalls, is 18 m by 16 m (288 m^2), so the amplifier was too small even by the manufacturer's rating. To get 400 mA/m at 1.45 m listening height above the centre of the loop requires 7.8 A at 15.5 V (RMS values), assuming a single 2.5 mm^2 loop cable.

Presumably, the use of four turns in series was intended to reduce the current demand, but this was totally frustrated, because the (measured) resistance of one turn is 9 Ω, so the poor amplifier was trying to push a large current through 36 Ω. The 2.25 Ω of four parallel cores is much more reasonable, but still rather high.

The amplifier, driving one (4-core) turn, was able to reach a field strength of about 8 dB below 400 mA/m when driven hard, at a favourable position (inside the loop, near but not too near to the cable), which explains why the system is still in use. But clearly the only sensible thing to do is to retrieve the amplifier and maybe the cable for use in a much smaller system, and have a new, well-designed system installed.

What is especially disappointing is that the manufacture's document on their present, quite similar, loop amplifier, still refers to 100 mA/m, and claims that the amplifier complies with IEC 60118-4, which, of course, applies to a complete installed system, not to an amplifier alone. For amplifiers, IEC 62489-1 applies. The frequency response is claimed to be -3 dB at 9 kHz, which, of course, is not wise now we have the lovely Radio Equipment Directive. The less said about the 'tone controls' the better. ◆

Yamaha helps St George's tame the dragon of poor sound

A number of the UK's most well-known cathedrals now feature Yamaha audio systems, where the flexibility of the company's products is making them a popular choice for the acoustically-challenging environments. The latest is St George's Cathedral in London, seat of the Roman Catholic Archbishop of Southwark.

The Metropolitan Cathedral Church of St George (to give it its full name) was built in 1848. Badly damaged during the Blitz of 1941, the following decade it was restored and reconsecrated. Its architecture is typical of what many consider 'a cathedral' to be - high, vaulted ceilings, numerous pillars, large leaded windows and expanses of smooth stonework, all of which present challenges to effective sound reinforcement.

Appointed in 2015, one of the first jobs for the new Cathedral Dean - Canon Richard Hearn - was to get to know his congregation. Through this he learned of the difficulties people at the back of the cathedral had in hearing services clearly. Thanks to their long experience of quality house of worship AV installations, Cunnings Recording Associates were recommended to Canon Richard as being able to help.

"The cathedral had an ageing sound reinforcement system, but it had never been properly commissioned," says the company's Daniel Cunnings. "No delays or EQ had been set up for any of the loudspeakers and there weren't enough outputs available for the number of speakers.

"As well as services the cathedral also hosts a range of other events, so there are microphone points throughout the building. The existing system was not easy to operate, so another intention behind the upgrade was to allow them to use their audio facilities to their fullest extent."

The cathedral commissioned a two-stage upgrade, the first being to quickly and radically improve the sound quality for the spoken word, but with very straightforward control. This meant replacing the existing audio processors and programming the right amount of EQ and delay for each output. Daniel chose a Yamaha MRX7-D and two MTX3 matrix processors, with a DCP1V4S control panel located discreetly in the cathedral sacristy.

"We looked at all available options, but the Yamaha solution was the only one that could provide the range of inputs and outputs we needed. The cathedral wanted the system to be as simple as possible to operate, so the MRX7-D's onboard Dugan automixing was also essential," says Daniel.

There are 25 loudspeaker locations throughout the cathedral, including the day chapel and monitors for the choir and organist. The most-regularly used inputs are microphones on the main lectern, the day chapel lectern and above the choir, plus a handful of wireless units.

"The system is zoned and can address each loudspeaker individually, if required," says Daniel.

"For now the DCP1V4S provides a basic mute, enable and volume adjustment of each zone. One button is also programmed to recall the system back to its base state. Indeed, a reset button is the most important control for many of our clients!"

The next stage of the project will, as Daniel says, "take the project up a gear". New speakers and amplifiers will further improve the sound, while Yamaha's multipurpose MCP1 control panel and the ProVisionaire Touch and Wireless DCP apps will be added, allowing comprehensive control of the system. This will also eliminate the need for an analogue mixing console, which had to be brought in for music events and recitals.

"The second stage will happen at the beginning of 2018 but, for now, Canon Richard is very happy that the whole congregation can hear services clearly," says Daniel. "We have been pleased to help take St George's into a new era and are looking forward to really making the most of the power of the Yamaha system in stage two of the project."

www.yamahaproaudio.com ◆

Photos courtesy of Karl Christmas/Yamaha

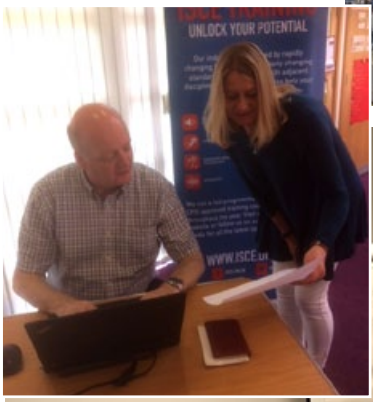
ISCE ECS Sound Engineer cards

ISCE has organised seven H&S assessment sessions since the card scheme was introduced, our most interesting venue being the House of Commons.

We are delighted that so many of our members are keen to hold an ISCE ECS card and of course, it has also brought a considerable number of new applicants into our Institute.

Our members can also attend any public H&S assessment organised by ECS. You just need to send us proof of certification and your card can be ordered directly from ISCE. ◆

To register, go to
www.isce.org.uk/isce-sound-engineer-ecs-card/apply/



ISCE welcomes new supporting members

2B Heard

2B Heard is a leading UK-based distributor of premium audio brands and the sole authorised representative of K-array in the UK and Ireland. Led by respected industry figures Dave Wooster and Sam Nankivell, the company delivers exceptional service and support based on real world experience within the UK's entertainment technology, professional AV and home audio markets.

2B Heard is delighted to have become a Supporting Member of the ISCE. Our founders, Dave Wooster and Sam Nankivell, believe deeply in the importance of supporting the industry, protecting and maintaining standards and forming new mutually supportive relationships. We are enthusiastic about our involvement and look forward to many successes to come.

www.2b-heard.com ◆

Ampman Audio Services

Ampman Audio Services is an independent company that has supplied services to the professional audio sector for over 10 years. With a combined experience of over 70 years, our speciality is the repair of high-powered amplifiers and loudspeakers. Our services extend to on-site repair and installation. We are the exclusive UK and Ireland service centre for our partners RCF SPA, Lab.gruppen AB and K-Array. Most of our repairs are done to component level, which is a skill that's becoming increasingly rare. A hire service for environmental and electronic test equipment is also offered, with a bias towards sound reinforcement.

We have joined the ISCE as it mirrors our ideals in the pro-audio sector. The institute provides a platform for us to network, by connecting with like-minded individuals and organisations. It also offers other professional users knowledge about the services we offer. We anticipate good working relationships with both the body itself, and with other member organisations.

www.ampman.co.uk ◆

New Members Winter 2017

Student
Scott Binstead
AMS Acoustics

Technician
Peter Anderson
Video Inn Production
Jonny Orme
JW Audio Ltd
Steve Percy
Maltings Theatre & Cinema
Adatayo Umar
AMS Acoustics

Senior Technician
Alex Burke
Wired AV
Colin Pattenden
CP Sound Ltd
Jamie Pattenden
CP Sound Ltd
Dylan Thompson
Penguin Media Solutions

Member
Lloyd Head
Commend UK
David Foster
DF Audio Ltd
Theodoros Zioutos
Pearl Group Production Services
Chris Kmiec
Audiotek Ltd

Affiliate Member
Hanieh Motamedian
Sound Directions

ISCE welcomes new supporting members

Kelsey Acoustics

Kelsey Acoustics is one of the leading professional cable and interconnection brands within the UK. Becoming a supporting member of ISCE demonstrates our commitment in manufacturing quality products for the sound and communications industry. Kelsey compliments its own extensive portfolio with market leading products allowing Kelsey to offer complete one stop solutions.

Established in 1978, Kelsey has a long and rich history of supplying infrastructure solutions to the entertainment and broadcasting industries. Its cable has formed the backbone of many worldwide touring systems and the infrastructure to countless studios, theatres and music venues. Renowned for excellent customer service; ISCE membership allows Kelsey Acoustics to understand the latest industry and technological developments to support its customers.

Kelsey Acoustics also offers a OEM custom manufacturing service tailored to suit all individual requirements, helping our clients to achieve their vision. We continue to strengthen our portfolio with the development of innovative products and solutions and ISCE supports its members to achieve the highest of standards.

Tony Torlini, General Manager
www.kelseyacoustics.co.uk ◆

Cambridge Sound Management

Cambridge Sound Management is the world's largest manufacturer of sound masking solutions.

Our award winning QtPro and DynasoundPro sound masking technology helps organisations of all sizes protect speech privacy, reduce noise distractions, and increase workplace productivity.

Cambridge Sound Management was founded in Cambridge, Massachusetts in 1999 by a renowned acoustician and MIT PhD. Cambridge Sound Management's innovative commercial sound masking quickly gained popularity by making the technology more effective, user-friendly, and accessible. Over 20,000 companies in 30 countries now utilise Cambridge Sound Management sound masking systems in their facilities.

We sell our sound masking technology primarily through AV integrators, and have a professional certification and training program for channel partners and consultants. We also provide design services, demo kits, and technical support.

We are excited to be increasing our focus in the United Kingdom, with a new sales office in Manchester, and to be a supporting member of the Institute of Sound and Communication Engineers.

John Caton, Regional Sales Manager – UK and EMEA
www.cambridgesound.com ◆

If you want to join a select group of companies who have chosen to encourage us in our efforts to improve technical standards and practices within the sound industry, contact Ros for an application form or go to **www.isce.org.uk/supporting-members/**

ISCE
The Institute of Sound and Communications Engineers
Supporting Member
Committed to technical excellence

Standards update

By Andrew Scott *FInstSCE*

EN 303 348
Induction loop systems intended to assist the hearing impaired in the frequency range 10 Hz to 9 kHz

This has to be written to enable Induction loop amplifiers and receivers to continue to be CE marked and placed on the market after the Radio Equipment Directive came into force on June 13th.

The standard was published in July and can be downloaded from http://www.etsi.org/standards/looking-for-an-etsi-standard

However, it has been rejected for publication in the Official Journal of the European Union and so cannot be used to demonstrate conformity with the RED. Work needs to take place to review the reasons for objection and try to reach a solution with the European Commission.

EN 54-24
(Voice alarm) Loudspeakers

CEN TC72 WG23 has started to work on a standard for active loudspeakers, including large phased arrays but is waiting for publication of a new DIN standard on active loudspeakers, which will hopefully provide practical requirements and tests that will be acceptable to industry.

Meetings on this subject have been suspended for the time being.

EN 54-16
Voice alarm control and indicating equipment

CEN TC72 WG23 has set up a task group which has completed its review of the comments. Work is still taking place to tidy up the draft and to ensure that it is in line with proposed changes to EN 54-2 (Fire Alarm Control and Indicating Equipment).

Four task group meetings have taken place and two more are planned in early 2018.

BS 5839-8
Fire detection and fire alarm systems for buildings – Part 8: code of practice for the design, installation, commissioning and maintenance of voice alarm systems

It has been decided that recent changes to BS 5839-1 (Fire alarm installation) do not require a revision of BS 5839-8.

BS 5839-9
Fire detection and fire alarm systems for buildings – Part 9: code of practice for the design, installation, commissioning and maintenance of emergency voice communication systems

A request was made to split BS 5839-9 into two standards, one for product and one for installation, so that Certificates of Conformity can be produced. BSI has rejected this but may support a revision that separates the installation and product parts and introduces product tests.

Disclaimer

This information is believed to be correct but it is not guaranteed and neither the ISCE nor its officers can accept any responsibility in respect of the contents or any events arising from use of the information contained within this article. ◆

Supporting Members

2B Heard
www.2b-heard.com

ADSWorldwide
www.ads-worldwide.com

Ampetronic Ltd
www.ampetronic.co

Ampman Audio Services
www.ampman.co.uk

AMS Acoustics Ltd
www.amsacoustics.co.uk

Arup Acoustics
www.arup.com/acoustics

Atkins Acoustics
www.atkinsglobal.com

Audio Logic Ltd
www.audiologicltd.com

Audio-Technica Ltd
www.audio-technica.com

Avalec Solutions Ltd
www.avalecsolutions.com

Baldwin Boxall Communications Ltd
www.baldwinboxall.co.uk

Biamp Systems
www.biamp.com

Black Light Ltd
www.black-light.com

BL Acoustics Ltd
www.blacoustics.co.uk

Blaydon Communications Ltd
www.blaydoncomms.co.uk

Bosch Security Systems
www.boschsecurity.co.uk

Broadcast Sound Systems Ltd
matthew@broadcastsounds.co.uk

Cambridge Sound Management
www.cambridgesound.com

Canford Audio Plc
www.canford.co.uk

CIE Group Ltd
www.cie-group.com

Clarity UK Ltd
www.clarityuk.co.uk

Clever Acoustics
www.prolight.co.uk

Cloud Electronics Ltd
www.cloud.co.uk

Commend UK Ltd
www.commend.co.uk

Commercial Audio Solutions Ltd
www.commercialaudiosolutions.com

Contacta Systems Ltd
www.contacta.co.uk

C-TEC
www.c-tec.co.uk

CUK Ltd
www.cuk-audio.com

DJ Kilpatrick & Co Ltd
www.djkilpatrick.com

Delatim Ltd
www.delatim.co.uk

Delta Sound Inc (UK) Ltd
www.deltalive.com

Delta TelecomSound & Security Ltd
www.deltatelecom.co.uk

DNH Worldwide Ltd
www.dnh.co.uk

d&b audiotechnik
www.dbaudio.com

Eaton
www.eaton.com

Edworthy Audio Consulting
www.edworthyaudio.com

Elan Electronics Ltd
www.elanavs.com

Electronic Audio Systems Ltd
www.electronicaudiosystems.co.uk

Gordon Morris Ltd
www.gordonmorris.co.uk

Grainger Acoustics
www.graingeracoustics.co.uk

Hearing Products International Ltd
www.hear4you.com

Honeywell Life Safety Systems
www.honeywell.com

Kelsey Acoustics
www.kelseyacoustics.co.uk

Leisuretec Distribution Ltd
www.leisuretec.co.uk

Media Vision
www.media-vision.com

Midwich Ltd
www.midwich.com

Monacor UK Ltd
www.monacor.co.uk

Mongey Communications
www.mongey.ie

MSI Audio Systems
www.msiaudiosystems.com

Nebula Audio Ltd
www.nebulaaudio.co.uk

Newtech Southern Ltd
www.newtechsouthern.co.uk

NEXO SA
www.nexo.fr

Northern Light
www.northernlight.co.uk

NSR Communications Ltd
www.nsrcommunications.co.uk

Paragon Data Services
www.paragondataservices.co.uk

Peavey Electronics Ltd
www.peaveycommercialaudio.com

Penton UK Ltd
www.pentonuk.co.uk

Principle Link
www.principle-link.com

Professional Sound Consultancy
www.profsoundconsult.com

Protec Fire Detection
www.protec.co.uk

Pulse Sound and Vision
www.pulsesoundandvision.co.uk

RCF Audio, Essex
www.rcfaudio.co.uk

Reflex Soundpoint
www.reflex-soundpoint.co.uk

Roland UK Ltd
www.proav-roland.com

Sarabec Limited
www.sarabec.co.uk

Sennheiser UK
www.sennheiser.co.uk

Shure Distribution UK
www.shuredistribution.co.uk

SigNET (AC) Ltd
www.signet-ac.co.uk

Simcol Communications Ltd
www.simcol.biz

Simpson Sound & Vision Ltd
www.simpsonsoundandvision.com

Solent Sound Systems Ltd
www.solentsound.com

Sonic Solutions UK Ltd
www.flipside-soundsystem.co.uk

Sound Directions Ltd
www.sounddirections.co.uk

Sound Productions
www.soundproductions.ie

SSE Audio Group
www.sseaudio.com

TOA Corporation (UK) Ltd
www.toa.co.uk

Univox Audio Ltd
www.univoxaudio.co.uk

Vaughan Sound Installations Ltd
www.paigroup.com

Vox Ignis Ltd
www.vox-ignis.com

VP Bastion Ltd
www.vpbastion.co.uk

Yamaha Music Europe (GmbH)
www.yamahaproaudio.com

ISCE
ISCE.ORG.UK

ISCEx
2018

CLICK
TO
VIEW