



ISCE

The magazine of the
Institute of Sound and
Communications Engineers

Winter 2015



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Comments on articles and letters are invited.

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Introduction from our President

Anthony Smith MInstSCE

The year might be drawing to a close, but we have so much to look forward to in 2016.

ISCE is kicking off with the *Principles of Networking* training in January, and then many of us will be travelling to Amsterdam in February for *ISE*. Let's see how things work out with extending the show to four days – plenty of time to visit Ros on the ISCE stand.

ISCEEx2016 is fast approaching in early March and I hope you have already booked your exhibition pitch. We are expecting excellent attendance and we have some amazing seminars planned. The AGM on 8 March will mark the end of my reign as President, but I know the Institute will be in safe hands with the current Vice-President, Phil Price MInstSCE, taking on the role.

We have lots more training planned for next year and Council will also be working towards writing a Standard for talker training, a subject that was raised by John Woodgate HonFInstSCE in the last issue of our magazine.

Seasons greetings to you all and good wishes for the year ahead.

Anthony Smith ♦



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

Please send news or articles to **Ros**

Forthcoming events diary

13 January 2016
ISCE Principles of Networking training
Hotel Football, Manchester

14 January 2016
ISCE Advanced Principles of Networking training
Hotel Football, Manchester

20-21 January 2016
PLASA Focus
SECC, Glasgow, UK

21-24 January 2016
NAMM
Anaheim, USA

9-12 February 2016
ISE
RAI, Amsterdam, NL

8 March 2016
ISCE AGM and Networking dinner
Coombe Abbey, nr Coventry, UK

9 March 2016
ISCEx2016
Coombe Abbey, nr Coventry, UK

5-8 April 2016
Prolight+Sound
Messe Frankfurt, Frankfurt, Germany

14 April 2016
ISCE Sound Measurement Techniques
venue TBA

10-11 May 2016
PLASA Focus
Royal Armouries, Leeds, UK

21 – 23 June 2016
Firex
ExCel, London, UK

22-23 June 2016
ABTT Theatre Show,
Alexandra Palace, London UK

18-20 September 2016
PLASA Show
Olympia, London, UK

MORE IN COMMON



ISE 2016 – Four days, for you, for your business, for the better!

ISE is the only exhibition that breaks down the traditional technological and business boundaries that covers the Broadcast, Pro Audio and AV markets. It features over 1,000 leading manufacturers and service companies – all under one roof.

Find out more and register: www.iseurope.org

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Systems
Europe**

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Amsterdam, RAI, NL**

ISE is a joint venture partnership of

CEDIA **infoComm**
INTERNATIONAL

Networking Dinner

Tue 8 March 2016 · 7pm

ISCE will be hosting a networking dinner in the elegant dining suite of Coombe Abbey on the eve of the exhibition.

Why not book a table and invite your customers along. Guests can enjoy a fine-dining experience and mingle with the good company of industry friends and colleagues, as well as being introduced to some new business contacts. Starting at 7pm with pre-dinner drinks.



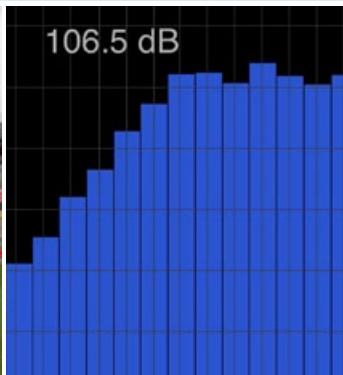
Exhibition and Seminar Day

Wed 9 March 2016 · 9.30am–4.30pm

Mix with the best in the business

At the most relevant event in the sound industry calendar, you will meet the people that matter most to your business, with informative seminars led by industry experts, running alongside the exhibition.

Free entrance to the exhibition and seminars.



ISCE

The Institute of Sound and Communications Engineers



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Join us at ISCEEx2016

ISCEEx2016



Networking Dinner Tue 8 March 2016
Exhibition and Seminar Day Wed 9 March 2016

Seminar programme

www.isce.org.uk

10.00am

Green amplification: Is 'Class-D' really all there is?

Jamie Angus Professor of Audio Technology, Salford University

Minimising our ecological impact has become an important objective for sound installers and contractors. Power amplification is a major contributor to the recurrent power usage, especially for large installed sound systems.

Normally Class-D amplification is considered to be the most efficient choice. But it has its own issues regarding radio frequency interference and power supply feed-through. Furthermore, its high efficiency only occurs in the high power region of its output range, so is it really the best choice?

This seminar will give a simple overview of the different classes of audio amplifier and their efficiencies.

It will then show that linear amplifiers can be as efficient as switching amplifiers for real audio signals.

Jamie helped start the UK's first music technology course in 1986. She worked on speech coding and recognition in the early 80s and has been active in audio and acoustic research since. She is the inventor of; modulated and absorbing diffusers, direct processing of SA-CD signals, and one of the first 4-channel digital tape recorders. Jamie is a fellow of the Audio Engineering Society.

11.30am – Warren Barnett Memorial Lecture

ANS: a new solution for providing PAVA to noise sensitive sites

Helen Goddard FInstSCE Company Principal, AMS Acoustics

This seminar will discuss the innovations necessitated by a challenging PA project that has been on-going for over a decade. The system is a hybrid PA/VA system that meets all life safety integrity standards and requirements, PA functionality and is capable of monitoring its own potential for noise nuisance. The system has a number of 'firsts' within it, in terms of both philosophy, hardware and software. It offers a new solution for projects where PA/VA is an essential requirement but there is the added complexity of the potential for the system to cause a noise nuisance. Now an installed and fully operational system, the seminar will present not only the design concepts and predictions, but also the actual verified functionality and performance of the system.

For anyone concerned that the paper will be 'banging on about STI' as once delicately put by a member, the metric will only be mentioned in passing, as this is a system solution.

Helen is a practising electro-acoustician with over 20 years of service. She remains passionate about her discipline and the audio industry at large, refusing to be beaten into submission by recessions and the general lack of appreciation for the science. Helen has been recently described as a 'champion of research' but is very much the ideas person who relies heavily on a competent pool of colleagues and trusted industry associates to explore them.

Helen is also very vocal about the value of the ISCE and can be seen on various YouTube channels talking about the Institute.

2.30pm

An exploration of networked audio protocols: AVB, CobraNet, Dante and AES67

Martin Bonsoir

EMEA Applications Engineering Manager, Biamp Systems

This seminar outlines the reasons why networked audio protocols were developed and the benefits they bring to the industry. Highlighted are some of the challenges all networked audio protocols need to overcome and analysis of the solutions with regards to timing and bandwidth requirements adopted by AVB/TSN, CobraNet and Dante.

The pro AV industry is on the cusp of an evolution with networks becoming more integrated to include everything from AV capabilities to smart building systems, success demands a keen understanding of the facts behind the available protocols. System designers and integrators need to be able to keep an eye to the future of technology during its adoption phase, while still focusing on what customers need today.

With 23 years of professional audio experience, Martin's passion for all things audio has dominated his professional life. Having started his career working in recording studios, he spent several years touring as a system technician and sound engineer before dedicating his efforts to the installed sound market. Martin draws on his vast experience, which gives him a unique insight to customer and system designer's needs and challenges. When not at work, Martin enjoys playing the cello and watching rugby, often at the same time.

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Join us at ISCEEx2016



University of Notre Dame, London: audio-over-IP System

Location: City of Westminster, London

Installer: Midland Communications

The University of Notre Dame London Global Gateway is an international satellite hub of this leading American higher education institution.

Based in the heart of the City of Westminster, the Notre Dame London Global Gateway provides an academic hub for American scholars and students to extend their intellectual and cultural experience in the UK's capital. The London Global Gateway academic centre (based in the Grade 2 listed Fischer Hall building in Trafalgar Square) provides a myriad of activities for visiting students and intellectuals including undergraduate classes, faculty seminars, conferences and debates.

When the University considered the need for an evacuation and security warning public address system, they called upon the services of integration experts Midland Communications to suggest a site-wide audio solution which could quickly and easily be

implemented throughout the Central-London based building without affecting the integrity of the Grade 2 listed building.

The University's Senior Facilities Manager, Stephen Witnall explains; "Being a Grade 2 listed building does present quite a few challenges, particularly when you want to put wiring through the building. We were looking for a system that didn't need hard-wiring, could provide pre-recorded messages and could lend itself to the building and its furnishings."

Working in conjunction with audio system experts CIE-Group, installers Midland Communications undertook a detailed site survey of the University. Martyn Phillips, sales director for Midland Communications concluded from the survey that available Ethernet cable infrastructure could offer the best solution; "We could see that the building had available Cat3 infrastructure; Kevin [Sherwood of CIE-Group] and myself knew straight away that 2N NetSpeaker would be the ideal product to put in." ▶

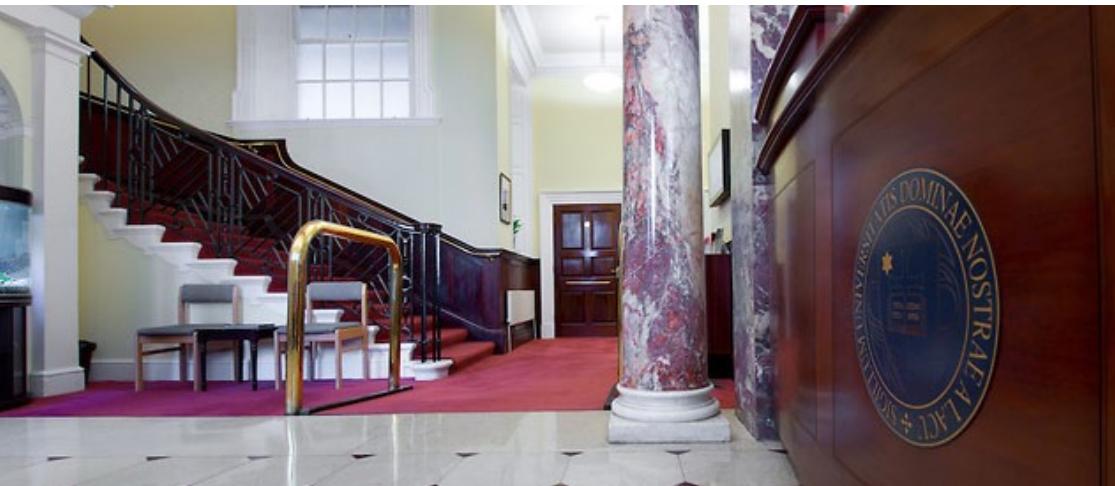
Kevin Sherwood, CIE Sales Director, explains further “The 2N product is a conventional loudspeaker... in the back of which is an embedded board which receives the audio signal from the network, re-amplifies it and broadcasts the signal through each IP-addressable loudspeaker.”

The final specified system employed over 40 NetSpeaker Audio-over-IP vandal-proof speakers which were quickly and easily installed throughout the building by connecting each audio end-point to an available ethernet port in each room – transmitting both audio signal and power-over-cable via the building's existing Cat3 cabling.

The system is controlled from a central point in the University's reception area using the 2N NetMic – an IP-addressable desk paging microphone which allows for zone control of both live and pre-recorded messages and broadcasts to the AoIP NetSpeakers.

Notre Dame's Stephen Witnall added “We've been able to zone the speakers so that we can either broadcast to every single speaker in the building or to a defined number of devices or zones.”

www.cie-ltd.co.uk ♦



See the full Notre Dame University project Video Testimonial

CASE STUDY

University of Notre Dame, London

Uses 2N Netspeaker Audio-over-IP system





Cloud

Cloud now shipping CS-C Series in-ceiling loudspeakers

Cloud Electronics is now shipping its new CS-C Series of in-ceiling loudspeakers first shown at Infocomm 15 in Orlando, FL.

The new CS-C Series features 5-inch, 6-inch and 8-inch full-range models and an 8-inch subwoofer completes the range and is also shipping. The CS-C Series loudspeakers boast 2-way coaxial drivers with soft dome tweeter providing consistent dispersion and broad frequency response. All models offer ZeroEdge™ magnetic grilles which remove to reveal high or low impedance switch settings for distributed audio systems.

Designed exclusively for Cloud Electronics in the USA by a specialist team of speaker design engineers, the new CS-C Series speakers are extremely

installer-friendly and tuned to complement Cloud Electronics range of amplifiers and mixer amplifiers using premium quality components and electronics. The result is a range of speakers that exceed audio performance expectations without exceeding budgets.

Cloud is also expecting to launch a further three speaker models in the range at ISE 2016 in February, adding a 3-inch full-range in-ceiling speaker, a 3-inch full-range surface speaker and a versatile 8-inch passive surface subwoofer. It is most likely these will be seen in the UK for the first time at ISCEX Exhibition and Seminar Day in March 2016.

www.cloud.co.uk ♦



A hearing loop system that worked!

J M Woodgate HonInstSCE

Yes, the title is a bit cynical, because there are many loop systems that work, but there is a far larger number that don't.

Anyway, a loop system had been installed in the United Reformed Church at Rayleigh quite a few years ago, and one of its members, Mr Richard Pryor, found my name through a web search and asked me if I would vet the system. Of course, I agreed, and used the ISCE assessment scheme forms.

Luckily, the church has a wooden floor, so the 10 m square perimeter loop had promise. It is installed at 1 m above the floor because there has been no opportunity to lift the carpet. There is a sound system using a Peavey mixer and a QSC power amplifier, and the loop is driven by an Ampetronic ALD9. There is a fixed microphone at the pulpit and a wireless hand microphone.

Walk-tests using both microphones and my NHS hearing aids (which need replacing as my hearing has deteriorated) produced very positive results, with clear speech and quite sufficient volume. No interference was heard, but of course there were no mobile phones about at the time.

Walk testing with a field strength meter indicated that the system gain should be tweaked up by 3 dB to meet the 400 mA/m specification, a virtually inaudible change.

Mr Pryor and I discussed the need to train people, if possible, how to use a microphone. Also, I explained that to prevent loss of the loop signal when bowing the head, bow, if it is felt sufficiently reverent, by no more than 45 degrees. Otherwise, avoid the middle part of the loop area because there is more horizontal field component towards the sides of the loop. We also discussed the need to avoid the seating that is close to the walls, where the loop field strength is very high.

Mr Pryor mentioned that he has installed other loop systems in the area, one using copper tape. He is an electrical (power) engineer turned loop system student. What I found most impressive is that there is a rota for members of the congregation to ensure that the sound and loop system is switched on when required, and a panel of four technicians, including Mr Pryor, who look after and maintain the system.

If only they were all like that! ◆



Event Sound & Light breaks the UK monitor mould – investing in revolutionary NEXO 45°N-12 wedges

Orbital Sound reports that UK specialist Event Light & Sound (ESL) has taken delivery of a sizeable new NEXO 45°N-12 line monitor system, investing in the innovative wedges to service its growing corporate and high-end event schedule. Supplied by NEXO's UK main dealer and service partner Orbital Sound, the system was selected after a comprehensive market review, with the 45°N-12 standing out for its unique design, innovative technology, and arrayability.

ESL was introduced to the 45°N-12s by one of its regular monitor engineers, Chris Wibberley, commenting "I was offered the chance to try out the NEXO 45°N-12 monitors a couple of years ago. I have found them to be the loudest and clearest wedge I have ever used. I like the way they couple as pairs and also how narrow their pattern is, so you don't have one mix bleeding all over another. A truly excellent product!" Based on this, ESL decided to check them out, as Director Paul Galley expands: "Chris is a real fan, and we felt we had to listen to them. We were invited to NEXO's HQ in France so that we could get

to know the brand and the design philosophy behind it – which really removed a lot of our preconceptions. Orbital Sound then put on a demo for us in London, which quite literally blew us away. NEXO's design is completely original, giving you such precise focus with the audio. It enables us to control the sound on the stage very accurately – for the artist, you get the quality and gain at the volume they want. But just step away to the side, and it dramatically drops off. Everyone's happy – the artists can have their monitors as loud as they want without affecting the rest of the stage."

The new system, comprising of twelve 45°N-12s and a NEXO NUAR touring amplifier rack, was put straight to the test at the Lodestar Festival, which took place in Cambridge in early September, featuring headline act Razorlight alongside KITTEN, The Sunshine Underground, and MY BABY. Monitor engineer Paul Keeble worked the 45°N-12s hard, commenting: "Lovely clear vocal sound and very controllable on stage." ▶



The technology behind the 45°N-12 monitor is based on NEXO's patented hyperbolic reflective wavesource, which uses reflection to shape the high-frequency wavefront to any shape required. By developing a curved waveguide, NEXO was able to create a new generation of floor monitor with a whole new dimension – a line monitor that is a true line source device. A single 45°N-12 delivers a very narrow coverage pattern, at typically 22.5 degrees, creating a very tight and discrete position for individual performers. The system is scalable, enabling greater coverage and power by simply adding units without

any interference, using an ingenious magnetic locking system. The HF is spread across the entire width of the waveguide, as opposed to coming out of a single hot spot horn, providing incredible gain before feedback. The resultant sound is very musical, making it a popular choice with musicians.

First launched in 2011, the 45°N-12 has built up a strong international following. In the US, Kenny Chesney's sell-out stadium tour currently features the wedges, with other top artists including Alfie Boe, Russell Watson, Ray Davies and DJ Deadmau5. For ESL, the decision to break the mould and adopt a very different approach with its new system represents an exciting opportunity, as Paul explains: "We have always had a reputation for making decisions based on our ears and not our eyes, and this investment is no different. We wanted to do something that was outside of the regular UK bubble – the NEXO 45°N-12s are most certainly not run of the mill. The great support from Orbital Sound and the insight we now have into what makes NEXO tick as a high-end brand have given us real confidence in the product. We think that there is a niche gap in the market, and we are ready to fill it!" Orbital Sound has now been appointed as sole UK reseller for the NEXO 45°N-12 monitor system. ◆

Do you know what is involved in being an ISCE Council member?

Behind every great organisation, is a team of great people and we thought it would be good to 'go public' on what your Council and its committees do behind the scenes for the Institute.

We have created a new page titled *Council Manual* on the Members' Area of the ISCE website, to tell you how Council members are elected and what is involved in being on Council.

There is also a link to each committee's function to help you understand their responsibilities to Council and the Institute.

We are pleased to announce that a representative from each of the committees, will give a short presentation at the AGM on 8 March 2016 on the progress made over the past twelve months. We hope to see as many of you as possible at the AGM, the networking dinner and, of course, the next day at the ISCEx2016 exhibition.



The Institute of Sound and Communications Engineers

13 January 2016

Hotel Football, Manchester

Non-member £225

Member £180

Three or more persons from the same company:
10% off each individual fee

All fees exclude VAT

Principles of networking

Presenter:

Mark Faulks MInstSCE

BSc(Hons) MBCS

Learn how networks operate and how to configure devices to connect to them.

As more AV devices become network enabled we need to ensure that we are up to speed on network technology.

By attending this course, you will learn about the underlying technologies that drive a network, how to connect devices to them and how to identify and overcome common problems. You will also learn what information you need to obtain from and supply to IT departments to join your AV devices to an existing network.

Get more details and book your place now

Training Courses



The Institute of Sound and Communications Engineers

Advanced Principles of networking

14 January 2016

Hotel Football, Manchester

Non-member £225

Member £180

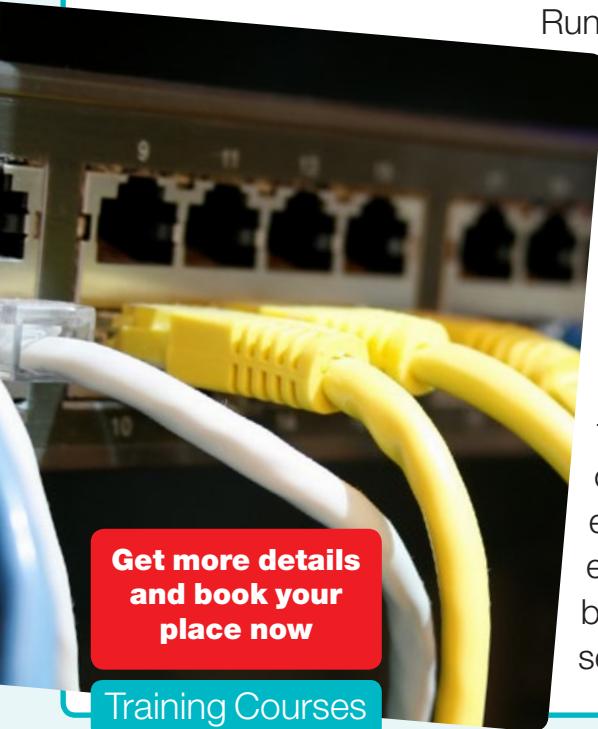
Three or more persons from the same company:
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Presenter:

**Mark Faulks MInstSCE
BSc(Hons) MBCS**

Learn the principles and technologies used to create high performance data networks with the robustness and reliability required for networked audio.



Running real-time audio and video over data networks requires large amounts of data to be reliably delivered in a very short space of time. Building on the basic principles of network operation, this course will introduce you to some of the more advanced features of networks, which can ensure that your network has enough bandwidth and that bandwidth is available to the services that need it.

Get more details and book your place now

Training Courses

Sound measurement techniques

Delegates enjoyed a full day of learning on 8 October with Peter Mapp FInstSCE. The training session, held at Hemel Hempstead Methodist Church, was fully booked and we received some excellent feedback from the participants. Due to popular demand, ISCE will be running this course again on 14 April 2016. ♦



New Members Winter 2015

Member

Adam Martin
Nova Acoustics
Ros Lambert-Porter
Forte Acoustics

Senior Technician

Chris Birchall
Birch Audio Services
Richard Lockyer
The Music Business

How not to specify a loudspeaker

J M Woodgate HonFInstSCE

Cop-out

This is an immense subject and I have to oversimplify, but it won't be very misleading. Also, I'm going to assume a single drive unit with no crossover filter or enclosure, otherwise this will turn into a three-volume novel.

History

Way back 50 years, in the days of the German 'hi-fi' specification DIN 45500, loudspeakers had to be labelled with up to three different 'power' figures in watts. What the average consumer, even an enlightened German consumer, was to make of this was seldom discussed. One might imagine that things have moved on a bit since then, and indeed that's so, much of it due to the work of Dr Wolfgang Klippen. But the old concepts refuse to expire and the question has been raised again in the Audio Engineering Society, 'How can we define 'programme power' because people keep asking for it?'.

Reality

As a concept, it could hardly be more flawed. There isn't one 'programme', there is a universe, each with a different RMS value and amplitude-probability distribution (APD). (RMS value and APD are sufficient; they don't need supplementing with peak level, which is, or should be, uniform for digital sources, or anything else.). In the DIN standard (and adopted in IEC 60268-5), it was decided to use a 'worst case' clipped pink noise signal as 'programme', and indeed it approximated the contemporary, highly-compressed popular music recordings fairly well. It was so 'worst case' that, when applied continuously for up to 100 hours, some loudspeakers being tested actually caught fire. Such stringent test procedures do not appeal to marketing departments.

'Power' is no better. Moving-coil direct-radiator loudspeakers have notoriously low efficiency in the strict physics textbook sense of power out divided by power in – especially these days, when low-frequency extension has to be coupled with minimal enclosure size. 0.5% is at the top end of the going rate. So where does the power go? All but that tiny fraction which is radiated as sound power heats up the voice coil and the magnet structure.

So what should we use to characterize a loudspeaker for maximum input level? What determines the 'maximum'? We can identify two things:

- maximum voice-coil displacement
- maximum voice-coil temperature.

Brilliant! No bigger cans of worms are known to exist in this Universe. Voice-coil displacement is a bit more tractable than the temperature, but it may be different for inward and outward movement, and in some cases, the mean position of the coil varies with programme content. Voice-coil temperature is partly a function of contemporaneous current, but is strongly influenced by the currents during a previous period, which may be many seconds for a large driver but less than a second for a tweeter. Even that is too simple, because the magnet structure also heats up and this affects the voice-coil temperature over many minutes, even hours in some cases.

When Laurie Fincham and I (and subsequently with Dr Floyd Toole) revised IEC 60268-5 in the 1970s, we boldly added voltage-based characteristics alongside the traditional power-based characteristics. It would have been a revolution much too ambitious to eliminate the latter. But a loudspeaker is designed to produce its desired frequency response with a constant voltage input, and this is far from 'constant power' because of the basic fiction of 'rated impedance'. This concept was an attempt to rationalize the interface between the amplifier and the loudspeaker.

The amplifier designer (preoccupied also with the 'power' concept) wants to measure with a purely resistive load, so requires the loudspeaker designer to state a value for it, despite the actual impedance varying very considerably with frequency (and temperature – more on that later). In an attempt to standardize this 'rated impedance', IEC 60268-5 says it shall be a pure resistance, 1.25 times the minimum impedance at any frequency within the effective frequency range (which doesn't include DC, of course). This minimum normally occurs in the mid-frequency range, due to a resonance between the voice-coil inductance and the capacitive motional impedance. This has led to an abuse whereby the 'power' rating is calculated as maximum input ▶

voltage squared divided by the actual minimum impedance (assumed a resistance) instead of dividing by the rated impedance.

So are voltage-based characteristics the best answer? The trouble is that voice-coil temperature. While a constant voltage input can produce a flattish frequency response in spite of the large variation of impedance around the main resonance frequency and the rising impedance at higher frequencies due to the voice-coil inductance, it can't cope with the rise in resistance of the voice-coil as it heats up. The result is a loss of sensitivity, described as 'power compression'. However, if we could keep the input current constant, in spite of the rise in resistance, there would be no compression. (It would be good to find a substance with very good conductivity and a very low thermal coefficient of resistance, but no such material has yet been discovered.)

So, in a sense, the input current looks like the chicken and the input voltage is the consequent egg. In fact, there is more reason for this choice. The driving force that produces the cone movement is proportional to the current through the voice-coil (assuming no harmonic distortion), not the voltage across it, and this proportionality extends to the sound pressure at any point distant from the loudspeaker.

However, it would be so revolutionary to introduce current-based characteristics that they would not be adopted. There is a way of using voltage-based characteristics while allowing for the voice-coil resistance increase, and this also removes the need to deal with the increase in (SPL versus current) sensitivity in the frequency range around the main resonance frequency.

The way to do this is, I suggest, to adopt the 'safe operating area' (SOA) concept used for power transistors. In our case we have the logarithm of time on the x-axis and input voltage on the y-axis. Where the boundary of the SOA is due to the maximum permissible voice-coil temperature, the increased resistance of the voice coil is automatically allowed for.

The boundary of the SOA is a function of frequency, but we can eliminate that by making a composite boundary from the lowest voltage permissible at each time, irrespective of frequency. This voltage has to be found by measurements carried out by the manufacturer. It is possible to produce simulations, even without a \$50 k multi-physics application, but any such simulation has to be verified by

measurements anyway. This is important because non-linearities have significant effects on the variation of voice-coil temperature with frequency, even for a well-designed driver.

The SOA boundary consists of three main regions. It is simplest to relate these to tone bursts of increasing duration, even though they would not necessarily be preferred as test signals:

- a constant voltage for durations up to one tenth of the thermal time-constant of the voice coil alone, which may be 0.5 s for a very small driver up to several seconds for a large bass driver
- a simple exponential decrease due to the voice-coil thermal time-constant
- a composite exponential decrease due to the transfer of heat to the magnet structure. (There is often some such heating at shorter times, due to induced eddy currents.)

A simulated example is shown in Figure 1 on the next page.

The dots show that this curve is produced by finding the lowest voltage at any frequency which produces the maximum permitted voice-coil temperature at the end of a tone burst whose duration is shown on the x-axis. For example, the maximum temperature could be reached at the end of a 16 V 1 second tone burst at 400 Hz, while at other frequencies the voltage is higher.

How to relate the SOA to programme material

We can take typical programme material that we want the loudspeaker to reproduce and measure its RMS value with a series of increasing averaging times (as an integrating sound level meter measures L_t for increasing values of time t). The resulting curve is compared with the SOA curve, and the point where the two curves touch, as the RMS curve is slid up the y-axis, shows the maximum voltage that can be applied for that programme material. Figure 2, on the next page, shows a simulated result.

This is overall a long procedure, but can probably be simplified. The point of describing it is, however, to throw light on what is actually going on when we feed programme material to a driver, replacing reliance on contrived 'power' specifications that can be seriously misleading. ▶

Loudspeaker SOA

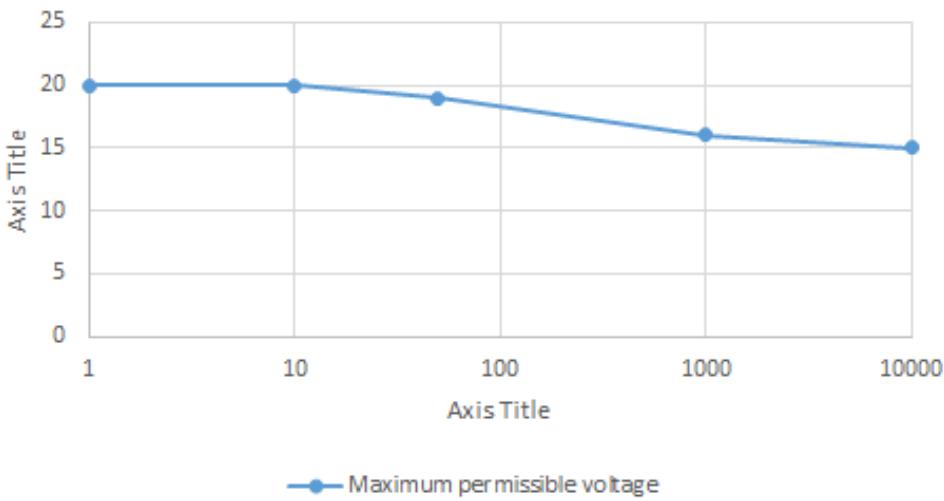


Figure 1 Example of a safe operating area curve

Loudspeaker SOA

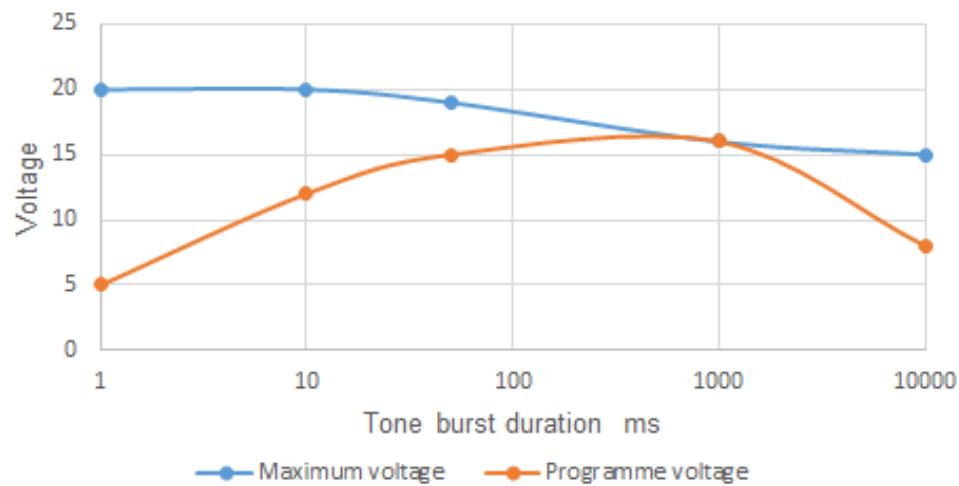


Figure 2 Aligning programme RMS curve with maximum voltage curve ◆

Successful discrimination case by deafblind campaigner cites ISCE Members as hearing loop experts

Deafblind hearing instrument user and equalities campaigner Colin Bennett of Hove in East Sussex has recently succeeded in his case for discrimination – and got the judge to specify ISCE members as the people to put things right.

Last year Colin attended an event organised by Sense (the national charity supporting and campaigning for people who are deafblind and those with sensory impairments) to promote Sense and especially to show the world that ‘deafblind’ people could contribute. He had been assured by Sense by email before the event that there was an induction loop at the venue, the Kennedy Hall at Cecil Sharp House. On the day he sat for three hours in a nominated seat which he had been told was a magic place where he could hear. He heard nothing from his t-coil enabled hearing instruments. Later, noticing a box on a table some three metres away he took a photo of it. It was a self-contained portable loop.

When he complained that there was no hearing loop signal he was told that the hearing loop provision was adequate and was regularly tested.

Not one to take no for an answer, Colin sued the English Folk Dance and Song Society (EFDSS), the venue’s owners, under the 2010 Equality Act. To cut a long story a bit shorter, EFDSS decided to contest the case and Doug Edworthy HonFInstSCE was asked by Colin to provide a technical assessment of the suitability of the hearing loop equipment provided.

Doug explained that, in order to be of benefit in the large hall, the talker would have to be within 30 cm of the portable loop’s built-in microphone (the talker was some metres away and no external microphone was being used) and the unit would have to be within a metre of Colin’s hearing instrument (it was some 3 m away).

The defendants decided to employ two solicitors and a barrister and dragged the case out for a year. But Colin prevailed and at a hearing at Brighton County Court in October 2015 was successful in getting a ‘Tomlin Order’ issued where the defendant agreed to pay compensation to Colin and get their venue equipped with appropriate hearing loop facilities.

The parties agreed in this Order that EFDSS would

- (i) engage at its own cost a member of the Institute of Sound & Communications Engineers (“ISCE”) or such other appropriately qualified person if such a ISCE member is not available within the time frame, to attend Kennedy Hall and prepare a report setting out recommendations as to the manner of hearing system most appropriate for use at the venue, and
- (ii) take reasonable steps to implement any recommendations made as soon as reasonably practicable thereafter and/or incorporate such recommendations into the Defendant’s consideration of the most appropriate hearing system to be installed during renovation of the Kennedy Hall which is currently due to begin in January 2016.’

The Institute has copies of this Tomlin Order which we understand can be used in support of future discrimination claims, and will provide copies to interested members on request.

Our Institute owes a vote of thanks to Colin for his perseverance and for promoting the ISCE as the learned body with expertise in hearing loop matters. And he has more such cases pending!

For the benefit of other claimants under the Disability Act, Colin recommends using the Small Claims Track in order to avoid any serious risk of the other side’s costs. He is also willing to give off-the-record guidance on procedure – not legal advice – to any would-be claimant. Please contact Doug Edworthy via the ISCE and he’ll put you in touch. ♦

Showcasing the potential benefits of modern technology in places of worship at Church Sound Chester



It doesn't seem long since the norm in churches was either a very basic sound system or no audio assistance at all. With technology advancing at an ever-increasing pace, so is the appetite for harnessing the potential benefits technology can provide.

On 4 November, Richard King Systems arranged *Church Sound Chester* at the Abode Hotel in Chester to showcase the potential benefits of modern technology in places of worship.

The wide range of technologies covered on the day included:

- professional audio
- audio loop systems
- audio visual
- digital hymnal
- acoustic treatments
- digital signage
- stage and architectural lighting.

The aim of the event was to bring these differing fields of technology together in one environment, for existing and potential clients and a host of information was available.

Visitors attended from across Cheshire, Merseyside and North Wales and the benefit of engaging with an ISCE member was given 'front-of-stage exposure'.

Building on the advantages of keeping industry standards high, audio enquiries were covered in detail by ISCE members Richard and John Hughes. In addition to their ISCE membership, the Hughes brothers are also registered on the ISCE Hearing Loop Assessment Scheme, so were able to bring their expertise to the loop discussions.

As well as providing one-to-one consultations at the event, bespoke sound demonstrations were also given and visitor feedback was very positive. One visitor said "It was good to meet up with you on Wednesday and we all had a great time. It was an ideal opportunity to see and experience your equipment in one place. My wife was particularly taken by the Hymnal!"

Speaking to Ros Wigmore after the event, Richard said "Being able to promote ISCE is definitely an aid for us reaching new clients and successfully securing involvement in new projects". ◆



Eric Sawkins HonInstSCE

19 January 1928 – 4 November 2015



Eric was born in The Black Horse Public House in Pilgrims Hatch in 1928, the only child of Evelyn and Harold Sawkins.

After completing his education at Ongar Grammar School and then at The Mid Essex Technical College, he started work at Marconi as a testing engineer in 1944.

Two years later, Eric enlisted in the RAF to complete his National Service where he was a Radio Mechanic. When he was de-mobbed, he continued with his education at The Northern Polytechnic after which, he spent a year in the Diplomatic Wireless Service as an engineer on the transmitters. He was then asked if he would work abroad for the services to cover the British Embassies, but he declined.

Eric spent the next years working for a variety of companies within the sound and communications industry, ending back at Marconi in 1984. During this period, Eric was appointed a Fellow at both the Institute of Sound and Communications Engineers and the Institute of Sales and Marketing Management.

In 1986, after losing his beloved wife, Kay and then being made redundant, Eric went on to run his own business, supplying sound equipment to many well known companies and churches. He loved nothing better than to design, build, supply and install his own equipment – his other great joy being Formula 1 Motor Racing.

Eric was one of the ISCE's longest serving members, joining in 1962 (at that time being called the Association of Public Address Engineers). He was President of the Institute in both 1972 and 1982 and in March 2013, Eric was awarded a much-deserved Honorary Fellowship of the ISCE.

Our industry and Institute are privileged to have known such a fine gentleman and will miss him very much. Our thoughts are with Eric's family – his three children; Jill, Heather & Clive, six grandchildren; Chris, Adam, Saydie, Clare, Sarah & Charlotte and great grandchild Rex. ♦

Tributes to Eric Sawkins



I first met Eric in the mid-1980s when both he and I served on the board of APAE. We enjoyed the meetings at Burnham, especially the lunches at the local. Following that initial meeting we kept in touch, meeting up at exhibitions and ISCE "days" and I contacted Eric when I took "early retirement" in October 2011. Because of Eric's situation at that time, his care for his clients and his meticulous records of his installation work, the joint decision for me to continue his company was a no brainer. I had previously been told that negotiations for such a company purchase would be painful, long and drawn out. Because of Eric's approach to the discussions it was painless, short and a pleasure. For the last four years I have continued to keep in touch with Eric to tell him all about his clients and their installations. He was always interested in knowing how his installations were still performing and his clients have always asked about him. Our relationship was very special and I will miss his outstanding knowledge and friendship. Of course we wish Clive and his family our love and continued support at this time.

Brian Latham MInstSCE

Eric Sawkins began his career in sound, working for Marconi in Chelmsford, moving through Solotronics, Trix and Audix to Magenta, where he finished as Divisional Manager. In that year he moved to Westrix. He also became Exhibition Manager for the 1967 APAE exhibition.

Eric joined the Association of Public Address Engineers in 1962 and soon became a member of Council. He produced a series of articles for the Public Address magazine – the forerunner of the ISCE Journal - on 'Workshop Practice' that was re-edited into a paperback book and made available to members and students. As well as others, in January 1968 he also wrote an article on 'A Column of Speakers' and is still well worth reading today!

Eric went on to become General Manager of TOA when they decided to tackle the English market, but far from retiring, he then ran his own small public address company until he was forced into retirement by illness.

I joined the APAE in 1960 and although I knew of Eric, I did not really get to know him until after joining the APAE Council in 1970. We both found ourselves on the Technical and Training Committee, where we remained until the Institute took over.

Eric and I were kindred souls, feeling the same way about developing technical excellence within the sector. We often used to speak on the telephone, putting the technical world to rights and it was not long ago that our last conversation took place.

I will miss him.

Harold Smart FInstSCE

A few Gentlemen are ever noticed.

A few Gentlemen are respected by their actions.

A few Gentlemen notice that one stands out amongst them.

A true Gentleman like Eric.

Ray Morrison, Penton UK

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