

The magazine of the
Institute of Sound and
Communications Engineers

December 2011

ISCE



Inside this issue

- 1** Introduction from our President
- 1** Events diary
- 2** John Longden FlinstSCE
6 October 1922 – 26 September 2011
- 5** ISCEx 2012
- 6** A recent Baldwin Boxall project
- 7** Can you believe it?
- 8** PLASA 2011
- 10** Institute Day 2011
- 12** xSolutions 2011
- 12** Become a Supporting Member
of the ISCE
- 12** Sound industry charities
- 13** ISCE's who's who
- 13** Upgrade to Member
- 14** Sale of Electronic Audio Systems Ltd
- 14** Change of ownership for Rackz Ltd
- 14** New Members December 2011
- 16** Engineering Note 30.1
- 17** Supporting Members

For a sound job, always choose an ISCE member

ISCE

The Institute of Sound and Communications Engineers

The UK professional body for sound system designers, professional installers and consultants.

Members are bound by a code of conduct and promote the highest technical standards

Our Register of Members can be found on www.isce.org.uk

For more information call **+44 (0)118 9542175** or email info@isce.org.uk

Keeping industry standards high

Introduction from our President

Terry Baldwin *ComplnstSCE*



Into my third and last year!

Time flies, as the monkey said as he threw the clock out of the window.

Since my last awfully interesting missive, council have met, we've had training courses and held our

2011 Annual General Meeting. My visits to supporting members continue. The next one could be YOU! Don't panic, it's by appointment!

We have had three resignations from council. All have worked hard for the institute and deserve our thanks. Jon Raper has been on council for many years and has been of particular value when it comes to his work for the training committee. We are pleased he will continue his work in this area as Training Chairman.

We say goodbye to Jim Gilroy, who has attended almost all meetings despite living in Lancashire! Thank you Jim, for all your time. However, we are pleased Jim will continue to work with Jon on the training committee.

Finally (!), Andy Scott. What can I say about Andy? He is known to the world and ISCE for chairing the training certification project, and also his involvement with our own ISCEEx exhibitions. Thank you Andy and thank you too for remaining, pro tem, on the executive committee.

Our costs are rising all the time but Council is determined not to steeply increase membership fees. The way to prevent it is to **get more members!** If every member recruited just ONE more, we would be financially secure for many years. I would remind you that there are rewards for recruiting new members. Go to: [http://www.isce.org.uk/members/only/ISCE MGM scheme.html](http://www.isce.org.uk/members/only/ISCE_MGM_scheme.html). The 2010 username and password are still valid, because of the delay in collecting subscriptions.

Our training committee are busy collating courses which will include the 'oldies' but will also include some exciting new topics. We were delighted the AFILS Measurement and Certification course was a sell-out.

A piece of really good news is that ISCEEx2012, will be at a new exciting venue, namely Jury's Hotel, Milton Keynes. It is very central for road and rail access and a great venue. I know Ros has negotiated better room rates, although I know they are a little higher than the past, due to the rating of the hotel. We can fit more exhibitors into the exhibition area and there is plenty of room for the lectures. Make a note now, 28 February 2012.

It leaves me now to wish you all a splendid festive season and the prospect of a good forthcoming year. Remember, it might be tough out there, but it is and always will be 'the best man wins' rather than the cheapest!

OK 'The best man or woman wins'! ♦

We welcome your contribution to the magazine with editorial and advertising. Please send news or articles to Ros

Events diary

**31 January –
2 February 2012**
ISE 2012, Amsterdam
28 February 2012
ISCEEx2012, UK

21–24 March 2012
Prolight & Sound, Frankfurt
17–18 April 2012
PLASA Focus, Leeds
1–3 May 2012
PALME, Middle East, Dubai

Comments and/or opinions expressed by contributors and in letters are personal, and may not necessarily reflect the opinions and policy of the Council of the Institute of Sound and Communications Engineers.

Comments on articles and letters are invited and, to make them available in a timely manner, they will be published on the website and the mailing list, as well as in the magazine.

Published by the
Institute of Sound
and Communications
Engineers Ltd
PO Box 7966
READING RG6 7WY

Manager, Secretariat contact details

Ros Wigmore
ISCE
PO Box 7966
Reading RG6 7WY

t/f: 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:
3 Bramfield Road East,
Rayleigh, Essex SS6 8RG

VAT registration number:
GB 781 3372 24

Design and production

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

John Longden *FInstSCE*

6 October 1922 – 26 September 2011

Although this is an obituary, because Johnny has had such a fascinating career, we thought you would be interested to read more about his life.



Pioneering sound engineer John Longden, who has died at the age of 88, was responsible for a range of developments that were to change BBC radio production techniques and transform the corporation's outside broadcast capabilities.

In a career spanning 42 years, 'Johnny' Longden's innovations became industry standards, including the 'self-drive' control desk that enabled DJs at the new Radio One to control their own programmes. He was credited as the first person to attach a microphone to an Anglepoise lamp arm.

The excitement of the emerging broadcast technology of the 1930s was irresistible.

He recalled: "I joined the Beeb at the height of the Blitz in 1940, and went straight into London Outside Broadcast Department as a Junior Maintenance Engineer without any knowledge of how a broadcast was made but I did have a huge schoolboy enthusiasm for the job.

"The BBC was short of younger engineers at this time. There were no training courses or qualifications in place, and the BBC found it was facing an ageing engineering staff nearing retirement, or younger ones being called up.

"I was interviewed for a job as JME, and in mid-interrogation, an unexploded bomb which had been dropped during a raid the previous night, went off. "There was a tremendous bang, and we were showered with glass, cracking heads together as we dived for cover. That terminated the interview at a fortunate moment, as I had just been asked a difficult question regarding the impedence of a 10 h choke and various AC currents being fed into it.

"We were unhurt, apart from almost total loss of hearing for a few hours – and to my surprise and delight I was told I had got the job."

For the next two years, Johnny was involved in wartime morale-boosting broadcasts, "We had to do these things even if the cinema had been bombed and didn't have a roof. If the organ worked, the show went out," Johnny recalled. ▶





During the war the BBC provided sound equipment and technical expertise for pantomimes given by the The Windsor Castle Players, whose leading lights were Princesses Elizabeth and Princess Margaret Rose and ‘twiddling the knobs’ fell to Johnny.

He ran the control desk for King George VI’s Christmas speech in 1941 but he had been told that on no account was he to speak to the King. “He was very nervous and kept straightening his tie in the mirror. It became increasingly difficult not to speak to him, because he kept pacing around, and eventually he asked me: ‘How’s it going?’ but I was so nervous I could only reply: ‘Slowly’. Then Queen Mary arrived causing a minor flurry and he was off.”

He remembered with amusement one wartime broadcast by Winston Churchill.

“I had been setting up the microphone,” Johnny said. “As I was connecting it up, I noticed Churchill’s enormous hat sitting there, and I couldn’t resist trying it on. It was huge, and came down over my ears.

“Just then this enormous voice boomed out behind me: ‘Oh! So you think you’re me, do you?’”

In 1942, Johnny joined the RAF as a radar boffin. It was here that he met his future wife Dorothy, a flight sergeant in the WAAF.

At the end of the war, Johnny returned to the BBC.

In the 1950s he designed the Longden Music Desk – an innovation that transformed outside broadcasts.

In 1961, Johnny became a special projects engineer, and the work he did over the next eight years confirmed the use of sliding rather than rotary faders across the BBC. But this meant a particular choice had to be made.

“I had to decide which way they should travel to fade up or down. The commercial desks of the day tended to favour UP – away from the operator, and DOWN, toward the operator, as they did in the USA. I adopted UP for OFF and DOWN for ON, simply because our domestic switches do this, the opposite being the case in America. ▶

"I was very amused to read all sorts of comments in technical articles, discussing the difference between BBC and commercial practice for sound faders years later, where various theories put it down to "not knocking the script pages as one fades out..." etc.

One of his biggest challenges was launch of BBC Radio 1 in September 1967.

Johnny was commissioned to design and build a mixing desk for the first transmissions.

"This was a fascinating since it was the earliest days of 'self-drive'," he said. "Some DJs welcomed it, others were wary of it – and some were scared stiff.

"Knowing everyone would have their own idea of the best desk layout, I persuaded the marvellous team of carpenters in the Langham basement workshop, under George Bow (a 2LO veteran), to make a mock-up desk with wooden shapes representing the then new quadrant faders.

"The desktop was a hardboard sheet, and the D-shaped pieces of wood were placed – but not fixed – where I thought they should be.

"I then invited as many DJs as I could contact, to come and sit at the desk, and move the models around to their preferred positions".

"The mic, gram and tape faders, the PPM, various switches and buttons all had to be tried and agreed, as well as the height and reach of the desk."

In 1970 Johnny became the first engineer-in-charge of BBC Radio London, which became a hothouse of broadcast talent, as well as becoming a template for BBC local radio across the country.



Johnny even went in front of the mic himself in this period, presenting *Sounds Good*, a specialist hi-fi programme, where he answered listeners' technical questions and reviewed audio equipment. He retired in 1982.

Johnny lived independently at home until his death in hospital after a short illness.

He leaves a daughter, Dot Prior, former controller of CBBC, a son, Anthony, a journalist, and one granddaughter. ♦

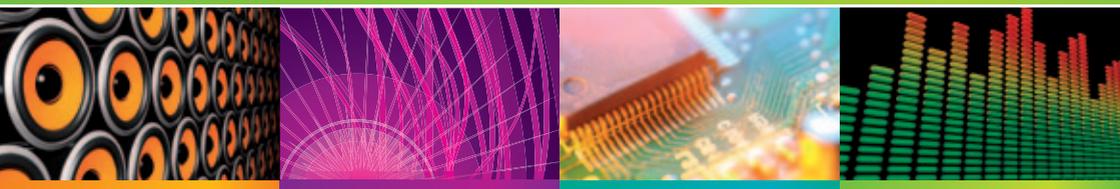
Exhibition and Seminar Day

Tuesday 28 February 2012 · 9.30am–5pm

Jurys Inn Milton Keynes, Midsummer Boulevard, Milton Keynes, MK9 2HP
t: +44 (0)1908 843708 f: +44 (0)1908 843777 w: www.jurysinns.com

Mix with the best in the business – Join us at ISCEEx2012

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.



10.00am

Are modern technologies always appropriate?

Tony Barns *MInstSCE*

Managing Director, AK Barns Ltd

In an era of convergence of technologies, often a technology is applied to a solution that is not always appropriate. This seminar will address whether the application of certain technologies compromises the integrity and reliability of voice alarm systems.

11.00am

The science and art behind audio localisation

Robin Whittaker

Director, Out Board Electronics Ltd

Audiences find it distracting to see an actor on the right side of the stage, but hear their voice from a loudspeaker on the left. Spread this out across multiple actors and you have an audience stressed by the effort of trying to discern who is saying what. This seminar covers source-oriented reinforcement, effectively giving each performer their own PA system, voice localisation techniques and automation.

2.30pm

Audio over IP – a new solution for old problems?

Eric Bevilard

Global Product Manager, Ateis Europe

The Audio over IP solution can be used in every-day applications, and its ease of use and integration enables a flexible system for a variety of different applications. This seminar will cover how you can fit this powerful solution into your daily projects for PA, intercom, retail and transport, in an efficient and effective way.

3.50pm

The future of live sound – controlling the mix the new way

Martin Daley *AMInstSCE*

UK Sales Manager, Allen & Heath

Digital is here to stay, and in the case of live festival events to church and theatre sound installations, digital mixing can offer invaluable tools for creativity and control. This seminar will look at how these digital desks can be accessed using laptops, iPads and iPhones and the best ways to get them all talking to one another.

ISCE

The Institute of Sound and Communications Engineers

For the latest list of exhibitors, please visit our website www.isce.org.uk

All seminars will be commercially neutral, although demonstrations may use the speakers' own products

A recent Baldwin Boxall project

The Royal Edinburgh Military Tattoo, Edinburgh Castle



Each year Edinburgh Castle is home to The Royal Edinburgh Military Tattoo, which is world-famous, and the castle entrance is transformed into an impressive open air arena for 8,700 spectators. This year, a special new grandstand has been designed which can be erected in half the time of previous years. This is a clear advantage as the structure is put in place each year just for the duration of the event. It is then dismantled and stored – freeing up the Castle for the rest of the year.

A Baldwin Boxall VIGIL EVAS voice alarm system has been built and, like the arena itself, will be installed annually for use during The Royal Edinburgh Military Tattoo. This is an unusual scenario as, typically, voice evacuation systems are considered a permanent feature of a site.

As you would expect, the system is fully monitored, a requirement of BS5839 part 8, ensuring it will function correctly at all times. In the unlikely event of a fault occurring (from the end of the loudspeaker lines through to the microphone), this will be indicated immediately to the operator.

The installation of the system was carried out by Chubb Fire and commissioned by Baldwin Boxall in July 2011. Iain Morison (Chubb Fire) was the Operations Manager for the project. He commented, “This was an interesting project – a lovely site and lots of history. Working alongside Baldwin Boxall the job went smoothly and our customer is pleased with the quality of the sound.”

Since the first Royal Edinburgh Military Tattoo in 1950, more than twelve million people have attended the event. This is a spectacular display with performers from many countries. Regimental bands, daredevil motorcycles, battle re-enactments, Highland dancers and much more, create a colourful and memorable show.

The word ‘tattoo’ comes from the closing-time cry in the inns in the Low Countries during the 17th and 18th centuries – ‘Doe den tap toe’ (‘Turn off the taps’). ♦

BALDWIN BOXALL

Let Baldwin Boxall be the guardian of your assets wherever quality, reliability and peace of mind are important

Voice Evacuation

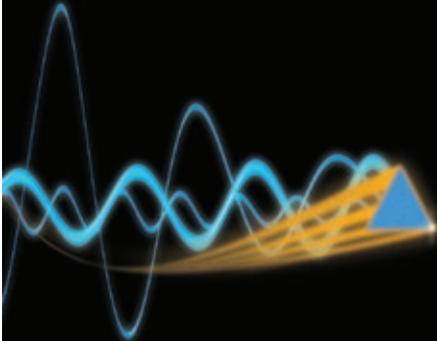
Disabled Refuge

Fire Telephones

Public Address

Disabled Toilet Alarms

Emergency Microphones



TEL: +44 (0) 1892 664422
FAX: +44 (0) 1892 663146

EMAIL: MAIL@BALDWINBOXALL.CO.UK
WEB: WWW.BALDWINBOXALL.CO.UK

BALDWIN BOXALL COMMUNICATIONS LTD
WEALDEN INDUSTRIAL ESTATE,
FARNINGHAM ROAD, CROWBOROUGH,
EAST SUSSEX, TN6 2JR, UNITED KINGDOM

LEADING THE WAY TO SAFETY



CAN YOU BELIEVE IT?

An engineer from Blaydon Communications was recently putting down some loop tape for an induction loop system, when a contractor asked him if it was for a hard of deaf system!

If you have any strange or funny snippets to add to this column, we would love to include them in future issues of the magazine.

DAGC

David Andrews Graphic Communication

An efficient and competitive information design service

Design of leaflets, adverts, booklets, newsletters, exhibition graphics, reports, web adverts and permission-based email marketing campaigns etc

Making sure that your message is easy to read, easy to understand and visually compelling

For more information please contact Dave

0118 958 2334
dave@dagc.co.uk
www.dagc.co.uk

'Dave has worked in close association with the ISCE for many years. He was instrumental in creating a new brand for our organisation and continues to produce a new range of marketing materials, training guides and magazines.' **Ros Wigmore, ISCE**

PLASA 2011

11–14 September 2011, Earls Court, London

The ISCE Pavilion at PLASA 2011, was once again a success, with relevant visitors being drawn to the area. The ISCE stand was buzzing a lot of the time and we were delighted with the outcome. Our thanks to David Tyas and Kevin Sherwood, who represented the ISCE by presenting seminars during the exhibition.

ISCE Pavilion



Keith Golds of DNH World-wide, getting down to business.



Terry Baldwin with members, Anthony Frost and Stanislas Boivin-Champeaux.



Ros Wigmore (right) with Kevin Macan-Lind, Chief Executive of the IOA, with his wife, Linda.

The CIE Group enjoying the PLASA experience.



Paul Ward of Bosch Security and Craig Buckley of RW Salt Communications.



Phil Price of RCF, catching up with his emails!

INSTITUTE DAY 2011

Thursday 3 November 2011, Park Inn, Watford

We were delighted to welcome Philip Newell all the way from Spain, to present the Warren-Barnett Memorial Lecture at this year's Institute Day. His lecture revealed some fascinating facts about the complex technology in creating the soundtrack within a cinema environment.



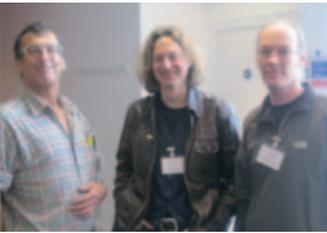
At the end of the AGM, Terry Baldwin presented John Woodgate with an Honorary Fellowship for his services to the ISCE and the sound industry.

John Woodgate said: "I've always believed in the Institute as an essential force for good. High-quality communication is good for society, not just for the industry itself.

"My fellowship award in 1990 came as a complete surprise, and the honorary award also. I am grateful for the support (and sometimes tolerance) of my professional colleagues".



After lunch, there was an opportunity for members to raise questions and the hot topic discussions got underway. Some of you have been asking for further details on the subjects raised, and details of the AFILS assessment scheme, mobile apps and Safety and Licensing Consultations update will be followed up shortly.



ISCE

supporting member

Your opportunity to become a Supporting Member of the ISCE

As a supporting member, your membership contribution will strengthen our effort to improve the technical standards, knowledge and practices of sound installation.

For just £300 a year, your business can take advantage of a host of benefits that are exclusive to our supporting members, such as links from our website, reduced fees for staff attending ISCE training courses, additional discounts on advertising, free entry on our website Buyers Guide to include company product information, publicity at exhibitions and ISCE events, to name just a few.

Further details and an application form are available from www.isce.org.uk

xSolutions

ISCE was kept busy on 19 & 20 October, exhibiting at xSolutions at ExCeL London. We received a steady stream of visitors, enquiring about membership and our training courses. It was also great to catch up with our existing members who stopped by our stand for a rest and a chat.

The xSolutions team promoted the event to key players in the UK AV industry, which was evident in the visitors that attended the event. Visitors included AV consultants, integrators and end users.

xSolutions 2012 will be held on 3-4 October at ExCeL London.



Sound industry charities

Ron Walker (*Trustee & Administrator, The Alex J Walker Memorial Fund*)

In the September edition of the ISCE Magazine I wrote about one of our registered charities. For this edition I am writing about the other charity which is *The Alex J Walker Memorial Fund*, (registered charity No 262085) set up in 1970 for the purpose of helping with training and education in our industry.

Over the years, help has been given by offering to fund prizes to students. The fund also used to provide new books for the library which has now ceased as a part of the Institute's service. The trustees have offered to fund copies of lecture notes, and could contribute to providing a large quantity of CDs or DVDs for training and educational use. Currently, although the fund has limited resources, the trustees would be pleased to receive suggestions for grants which they could make.

If the fund had more resources it could be much more ambitious with its grants. If you would like to assist in this way, please make a donation by sending your cheque to the administrator:

Ron Walker
Alex J Walker Memorial Fund
132 High Street North
Stewkley
Beds LU7 0EP

If you are a UK tax payer the trustees can claim Gift Aid enhancement of donations if the donors sign a form.

ISCE's who's who

As you know, the ISCE is an entirely independent Institute, run by a Council elected by its members. It is important that you know the people who represent you on Council:

Terry Baldwin
President

John Woodgate
Vice-President Finance and Administration

Bryan Robinson
Past President

Doug Edworthy

Anthony Smith

David Howe

David Tyas

Jim Smith

John Oliver

Joules Newell

Julian Pieters

Ken Dibble

Ray Gatehouse

Membership Committee

Ray Gatehouse
Membership Chairman

Bryan Robinson

David Tyas

John Woodgate

Phil Brown (non-Council)

Training Committee

Jon Raper (non-Council)
Training Chairman

Jim Gilroy (non-Council)

Peter Roe (non-Council)

ISCE

The Institute of Sound and Communications Engineers

Upgrade to Member

Interviews will take place on 28 February, during ISCEEx2012 in Milton Keynes.

If you want to book a short, informal interview with the membership committee, please contact Ros who will be co-ordinating the appointments. The interviews will be carried out in a meeting room adjacent to the exhibition hall and will not clash with any of the seminars. All candidates are eligible for a 50% discount off the seminars.



At Sanctuary Acoustics our main specialism is architectural and room acoustics, from design through to testing we can cater for most needs

Our particular area of expertise is schools and the associated Building Bulletin 93 – Acoustic Design of Schools document.

We also conduct noise surveys for planning applications and noise nuisance complaints.

We can travel nationwide from our base in the West Midlands.

If you need design advice to resolve an acoustics problem or require a noise survey to satisfy planning, please contact:

info@sanctuaryacoustics.com
07988 763183 or 07851 389789
www.sanctuaryacoustics.com

Sale of Electronic Audio Systems Ltd

Eric Sawkins *FInstSCE* is pleased to announce the sale and transfer of Electronic Audio Systems Ltd to Brian Latham *MInstSCE*.

The sale and transfer took place following the successful ISCE Institute Day held at Watford on 3 November 2011.

Brian is delighted to have the opportunity to continue Eric's successful sound system installation and maintenance business. He will be continuing the same business activities and looks forward to contacting both trade suppliers and valued customers over the next few weeks.

Eric is looking forward to a well deserved rest and 'hanging up his screwdriver'.



Change of ownership for Rackz Ltd

Rackz Limited has now become part of the Penn-Elcom Group.

Head Office:
Philips House
Drury Lane
Ponswood Industrial Estate
St Leonards-on-Sea
East Sussex TN38 9BA

David Roberts *MInstSCE*, has retained a 25% interest in the company and is also staying on as the Managing Director.

There are no plans to change the operation and day-to-day running of the company; the accounts and bought ledger will still be at Kingswood in Bristol. You can still contact Sue in account@rackz.org or call 0117 9352727.

This alliance will bring with it financial benefits and much greater sales potential as Penn-Elcom have sales and distribution subsidiaries in over 26 countries.

New Members December 2011

Member

Akshay Khanna

Honeywell

John Turner

West Audio Design Ltd

Affiliate Member

Matt Collman

Ateis UK Ltd

Senior Technician

Adrian Stewart

Clockwork Audiovisual Ltd

John Willis

Production House (NI) Ltd

Technician

Paul Beardsall

Pioneer Europe NV

Andy Bradshaw

Newtech Southern Ltd

Ben Moss

BM Electrical Services

James Woolley

New Venture Theatre

Upgrade to Honorary Fellow

John Woodgate

J M Woodgate & Associates

Integrated Systems Europe

The No.1 show for professional AV and
electronic systems integration presented by



CUSTOM
ELECTRONIC
DESIGN &
INSTALLATION
ASSOCIATION

InfoComm
INTERNATIONAL

31 Jan - 2 Feb 2012
Amsterdam RAI, NL

**Come and visit ISCE on
stand no 7E214 in hall 7**



See. Hear. Touch.

ISE 2012 will have more new technology on display than any other AV industry tradeshow. With thousands of new products from over 750 exhibitors, you're bound to find something you have not seen, heard, or touched before. If it's going to make an impact on tomorrow's media and communications environment, you'll find it at ISE 2012.



Platinum Sponsors:



www.iseurope.org

The dynamic range of a microphone

John Woodgate *FInstSCE*

The dynamic range of a microphone

This Engineering Note was prompted by someone asking why microphone manufacturers do not specify the dynamic range and why it is not mentioned in IEC/EN 60268-4.

It's easy to see what the dynamic range must be – the difference between the highest sound pressure level (SPL) the microphone will handle and the lowest SPL it can convert to an electrical signal. But both of those are 'moveable feasts', and that's where the problem arises.

Highest sound pressure level

In most cases, this is limited by non-linearity, producing harmonic (and, inevitably, intermodulation) distortion. Not always; a ribbon mic in front of a trumpet will have the ribbon snapped before it has a chance to distort!

So, how much distortion (on very loud peaks) can you accept? The answer is usually, 'quite a lot' – 10% is quite a useful guide. What really matters is how abrupt is the rise in distortion with increasing SPL, and this varies between designs, like the different behaviour of amplifiers with large and small amounts of negative feedback. Large amounts give a very abrupt rise in distortion with input level, while small amounts give a 'softer' overload at the expense of perceptible distortion at levels below the maximum. Of course, some types of microphone, such as dynamics, don't have on-board electronics, so there is no effect due to negative feedback, but the same sort of effect occurs according to how the diaphragm suspension stiffens up at its extremes of travel.

However, some sounds, mostly produced by musical instruments, are unusually degraded in quality by quite small amounts of distortion, so for those sounds, the maximum SPL has to be lower, or a more linear microphone used. On the other hand, many microphones used in our field are not exposed to very loud sounds when in use, so the real 'highest sound pressure level' is that experienced in the programme, and is independent of the microphone characteristic.

Lowest sound pressure level

There is, of course, no such thing as silence. Not even in Outer Space – there are still a few billion vibrating gas molecules floating about in each cubic light-year. In air, the reference level for SPL (0 dB SPL, 20 μ Pa in pressure terms) is approximately the sound level due to the thermal vibration of the molecules in the air. But only people with good hearing can hear that, and then only in an isolated room. All microphone and amplifier combinations have inherent electrical noise which corresponds to a sound level several decibels above 0 dB SPL. For example, a 25 mm diameter precision measurement capacitor microphone, with its cathode-follower, has a noise level corresponding to 15 dB SPL. The acoustic noise level, even in a very quiet normal room, is rarely less than 30 dB SPL. Obviously, for practical purposes, the 15dB noise level of the microphone is irrelevant when it is used in a normal room.

No single value

So we can see that for microphones used in our field (as opposed to measurement microphones used in anechoic or isolated rooms) the practical dynamic range is limited at the low end by the 'quiet' acoustic noise level and at the high end by the 'loud' sound level, which we hope is a wanted sound and not something going 'bang!'.

It simply isn't helpful for a manufacturer to specify a dynamic range. IEC 60268-4 requires the specification of the 'equivalent sound pressure level due to inherent noise' and the overload sound pressure at a specified distortion, so you can, if you really want to, calculate the 'ultimate dynamic range', but it is almost always irrelevant. ♦

DISCLAIMER

Care is taken to determine that 'Engineering Notes' do not refer to any copyrighted or patented circuit or technique, but ISCE can accept no responsibility in this connection. Users of the information in an 'Engineering Note' must satisfy themselves that they do not infringe any Intellectual Property Rights.

Supporting Members

A K Barns Ltd, Cambs
www.soundplayback.com
Mr A Barns *MinstSCE*

ADS Worldwide, Manchester
www.ads-worldwide.com
Mr J Houldcroft *MinstSCE*

Akwil AV Ltd, Manchester
www.akwilav.com
Mr A Akka *MinstSCE*

Alarm & Communication Systems Ltd, Tyne & Wear
www.alarcommsys.co.uk
Mr S Jefferson

Ampetronic Ltd, Nottinghamshire
www.ampetronic.com
Mr J Pieters *MinstSCE*

AMS Acoustics Ltd, London
www.amsacoustics.co.uk
Ms H Goddard *FirstSCE*

Arup Acoustics, Manchester
www.arup.com/acoustics
Mr D J Smith *MinstSCE*

Audio-Technica Ltd, Leeds
www.audio-technica.com
Mr H Roberts

AVID Installation Solutions Ltd, Birmingham
www.avid-isl.com
Mr A Hayden

Baldwin Boxall Communications Ltd, East Sussex
www.baldwinboxall.co.uk
Mr T Baldwin *ComplnstSCE*

BL Acoustics Ltd, Essex
www.blacoustics.co.uk
Mr B Larcombe *MinstSCE*

Blaydon Communications Ltd, Tyne & Wear
www.blaydoncomms.co.uk
Mr P Dougherty *AMinstSCE*

Bosch Security Systems, Middlesex
www.boschsecurity.co.uk
Mr P Ward *AMinstSCE*

CIE Group Ltd, Nottinghamshire
www.cie-group.com
Mr J Doar *AMinstSCE*

Clarity UK Ltd, Essex
www.clarityuk.co.uk
Mr G Palmer *AMinstSCE*

Cloud Electronics Ltd, Sheffield
www.cloud.co.uk
Mr S Curtis

Commercial Audio Solutions Ltd, Derbyshire
www.commercialaudiosolutions.com
Mr W Mackie *AMinstSCE*

Communication Technology, East Sussex
www.communication-technology.co.uk
Mr A Walker *FirstSCE*

Contacta Ltd, Kent
www.contacta.co.uk
Mr R Dungan *MinstSCE*

Cooper Fulleon Ltd, Gwent
www.cooperfulleon.com
Mr R Choppen

Cooper Lighting & Safety Ltd, Doncaster
www.cooper-ls.com
Mr B Walder

C-TEC, Wigan
www.c-tec.co.uk
Mr A Green

CUK Ltd, Glasgow
www.cuk-audio.com
Mr S Thomson

Current Thinking Assistive Listening Ltd, Tyne & Wear
www.current-thinking.com
Mr S Binks

Delta Telecom Sound & Security Ltd, Stockport
www.deltatelecom.co.uk
Mr S Ratcliffe *TechnstSCE*

DNH Worldwide Ltd, Milton Keynes
www.dnh.co.uk
Mr K Golds *AMinstSCE*

Duran-Audio UK Ltd, Cardiff
www.duran-audio.co.uk
Mr N Screen

Edworthy Audio Consulting, East Sussex
www.edworthyaudio.com
Mr D Edworthy *HonFirstSCE*

Fuzion plc, Surrey
www.fuzion.co.uk
Mr T Torlini

Gordon Morris Ltd, Somerset
www.gordonmorris.co.uk
Mr G Morris *MinstSCE*

Grainger Communications Ltd, Co. Tyrone
www.graingercommunication.com
Mr M Grainger *MinstSCE*

Ikon AVS Ltd, Worcestershire
www.ikonavs.com
Dr D Tyas *MinstSCE*

Mongey Communications, Co. Kildare
www.mongey.ie
Mr D Mongey

Northern Light, Edinburgh
www.northernlight.co.uk
Mr J Allen

NSR Communications Ltd, Hertfordshire
www.nsrcommunications.co.uk
Mr P Walker

Peavey Electronics Ltd, Northants
www.peaveyelectronics.com
Mr J Kennedy

Penton UK Ltd, West Sussex
www.penton.org
Mr P Albery-King *MinstSCE*

Principle Link, Huddersfield
www.principle-link.com
Mr R Cooke

Provoice, Lancashire
www.provoice.co.uk
Mr J Gilroy *MinstSCE*

Pure Install Ltd, Lancashire
www.pureinstall.co.uk
Mr S Makinson

RCF Audio, Essex
www.rcfaudio.co.uk
Mr P Price *MinstSCE*

R K Sound Engineering Ltd, St Albans
www.rksound.co.uk
Mr J Raper *MinstSCE*

Romers Electronics Ltd, Blackburn
www.romers.co.uk
Mr J Caton *MinstSCE*

R W Salt Communications Ltd, Manchester
www.rwsalt.co.uk
Mr C Buckley *AMinstSCE*

Sennheiser UK, High Wycombe
www.sennheiser.co.uk
Mr A March *MinstSCE*

Shure Distribution UK, London
www.shuredistribution.co.uk
Mr T George-Tolonen

Shuttlesound Ltd, Surrey
www.shuttlesound.com
Mr D Howe *MinstSCE*

SigNET (AC) Ltd, Tyne & Wear
www.signet-ac.co.uk
Mr A Scott *MinstSCE*

Simcol Communications Ltd
www.simcol.biz
Ms Coleen Hurditch

Simpson Sound & Vision Ltd, Warwickshire
www.simpsonsoundandvision.com
Mr D Simpson *MinstSCE*

Solent Sound Systems Ltd, Southampton
www.solentsound.com
Mr R Gatehouse *MinstSCE*

Sound Directions Ltd, London
www.sounddirections.co.uk
Mr S Boivin-Champeaux

Sound Productions, Dublin
www.soundproductions.ie
Mr D McGlynn *MinstSCE*

TOA Corporation (UK) Ltd, Surbiton
www.toa.co.uk
Mr B Downing

Vaughan Sound Installations Ltd
www.paigroup.com
Mr R Vaughan *MinstSCE*

**Integrated
Systems
Europe**

Cloud will be Exhibiting at ISE, Amsterdam from
Jan 31st – Feb 2nd 2012, Hall 11, Stand No. 11D93

Cloud
Clearly better sound

Clearly better sound

www.cloud.co.uk

