**Volume 50 No 5** September/October 2024



# ACOUSTICS BULLETIN


Institute of Acoustics
Sound • Noise • Vibration

1974–2024

# ACOUSTICS BULLETIN

Acoustics Bulletin Volume 50 No 5 September/October 2024


## Contacts


**Publisher**
Juliet Loiselle

**Contributions, letters and information on new products to:**
Nicky Rogers
Email: nickyr@warnersgroup.co.uk
Tel: 01778 391128

**Advertising:**
Dennis Baylis MIOA
Email: dennis.baylis@ioa.org.uk
Tel: 00 33 (0)5 62 70 99 25

**Published and produced by:**
The Institute of Acoustics
Silbury Court,
406 Silbury Boulevard,
Milton Keynes,
Buckinghamshire MK9 2AF
Tel: 0300 999 9675

**Edited, designed and printed by:**
Warners Group Publications
The Maltings
West Street
Bourne Lincs
PE10 9PH



This publication is printed by Warners Midlands PLC Telephone: 01778 391000





Annual Subscription (six issues) £148.00
Single copy £25.00






Scan the QR code for the IOA printing and sustainability statement

SCAN ME

## Institute affairs



## Features



**Cover image:** The four-day International Conference on Underwater Acoustics 2024 was held in June at the University of Bath. The packed programme included speakers from a variety of nations and institutions, from both academia and industry but also included plenty of opportunity for networking and socialising. **Page 26**

## Regular



### Technical articles review procedure

All technical contributions are reviewed by an expert identified by the IOA Publications Committee. This review picks up key points that may need clarifying before publication, and is not an in-depth peer review.

The Institute of Acoustics is the UK's professional body for those working in acoustics, noise and vibration. It was formed in 1974 from the amalgamation of the Acoustics Group of the Institute of Physics and the British Acoustical Society. The Institute of Acoustics is a nominated body of the Engineering Council, offering registration at Chartered and Incorporated Engineer levels.

The Institute has over 3000 members working in a diverse range of research, educational, governmental and industrial organisations.

This multidisciplinary culture provides a productive environment for cross-fertilisation of ideas and initiatives. The range of interests of members within the world of acoustics is equally wide, embracing such aspects as aerodynamics, architectural acoustics, building acoustics, electroacoustic, engineering dynamics, noise and vibration, hearing, speech, physical acoustics, underwater acoustics, together with a variety of environmental aspects. The Institute is a Registered Charity no. 267026

Institute of Acoustics
Sound • Noise • Vibration
50
1974–2024

Cirrus Research plc

# Get more than just noise measurement equipment

## with Cirrus Research

When you invest in Cirrus Research instrumentation, you get more than just noise measurement equipment.

Discover the Cirrus Research Advantage and elevate your precision with an unmatched package designed for excellence. Benefit from our industy-leading 15-Year Warranty, the ease of our licence-free NoiseTools Software, and the reliability of our UKAS-accredited Calibration Lab & experienced Service Technicians.

**Subscribe to our newsletter today!**


Institute of Acoustics sponsoring organisation

bsi. ISO 9001:2015 Quality Management

BSiF Registered Safety Supplier

MADE IN BRITAIN

UKAS CALIBRATION 10148

sales@cirrusresearch.com 01723 891655

# Dear Member

**This will be my last President's letter so I will take this opportunity to say a big thank you to so many of you who have contributed time and energy in supporting the work of the IOA over the past two years.** There are far too many to mention individually, including many of you who have no particular designated role in the Institute, but nevertheless have contributed to the running of meetings, working groups, drafting guidance, consultation responses … and so much more. I would particularly like to thank those who have committed to serving on Specialist Group, Branch and Standing Committees. These are the bedrock of delivering services to members, maintaining professional standards and providing qualifications and training for those wishing to pursue studies in acoustics.

This issue of Acoustics Bulletin covers issues which are close to my heart in terms of my aspirations for the future of our Institute.

- Chris Barlow contributes with an update on the ongoing development of our **education services**;
- Rachel van Besouw (HSE) highlights the challenge of protecting **professional standards** in relation to cracking down on rogue consultants undertaking acoustics work (if it wasn't so scary, it would be an amusing read!);
- as our Oversight Leader for **Sustainability**, Peter Rogers provides an update on the IOA's strategy in relation to organisational net zero aims; and
- Nicky Rogers briefs us on the website rebuild which has been designed with the key strategic aims of significantly enhancing our ability to enhance future **member services**, providing a robust platform for delivery of our future **education services**, and **extending the IOA's reach and influence**, both in domestic and global arenas.

I will sign off this letter as I started, with some well-deserved 'thank yous'.

Despite some extremely challenging office work environment circumstances, well done to our staff at HQ who have coped admirably and delivered their usual high standard of service to members and office-bearers.

I am particularly appreciative of those who have contributed to the running of our Institute through their service in high level governance roles. So – to our Vice Presidents, and those on Council and Executive Council, thank you for your support and advice during my term as President.

To our immediate Past President, Stephen Turner, a big thank you as this AGM marks the end of your significant six year commitment and contributions in the Presidential roles. Also worthy of note is the oversight and leadership you have provided in Parliamentary Liaison activities and the co-ordination of our 50th Anniversary celebrations. To my President Elect, David Waddington, thank you for your support and lead role you took on in relation to promoting the IOA in academia.

Looking back to when David joined the Presidential Team two years ago, we had early discussions about the future strategic direction for the IOA. He and I agreed that rather than me having a two year plan for my presidency, between us we would have a joint four year plan. Looking to the future, I will shortly become immediate Past President, and Paul Shields will join the Presidential Team as our new Presidential Elect. As before, I have had discussions with David and Paul with a view to agreeing how best we can support David in his new role as President. The aim will be to deliver long-term strategic direction and governance in order to promote the interests of our membership and the aims and objectives of the IOA.

Warm regards,

**Alistair Somerville, IOA President**

# Engineering Division

The IOA Engineering Division will support you through the process to help you become one of more than 229,000 registrants that hold international professional recognition.

***By Blane Judd BEng FCGI CEng FIET FCIBSE, Engineering Manager***

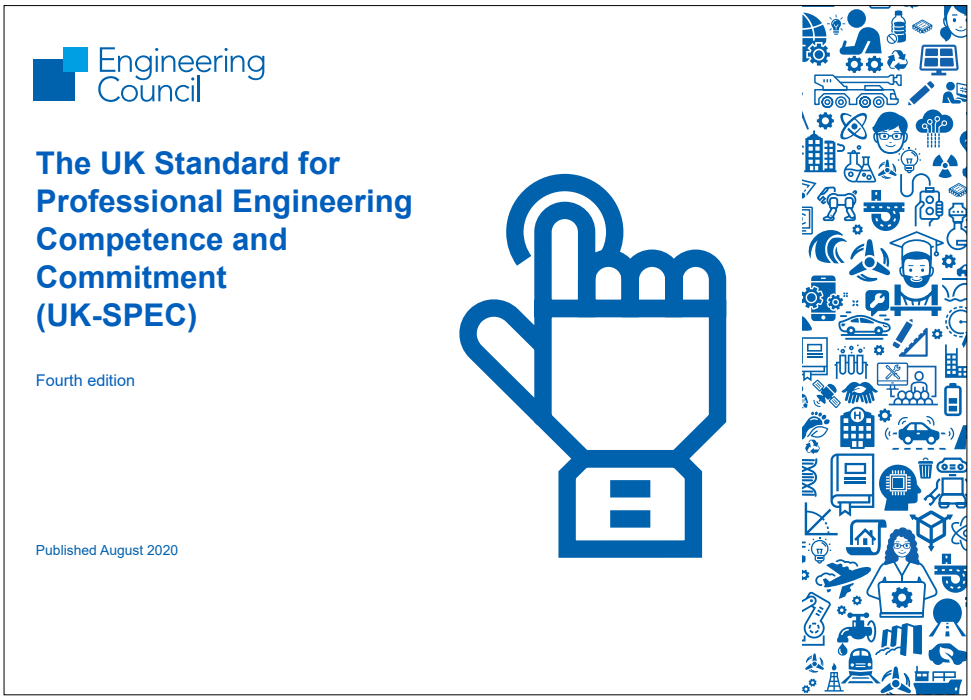
**We have had some more people come forward to train as interviewers, but we would still like to hear from anyone else who would like to be part of the team. The more interviewers we have the better we can match candidates so that interviewers are in the same field of acoustics. Those who have taken up the opportunity to become interviewers have said that it is an interesting and worthwhile thing to do. I keep my hand in by interviewing in my own areas of experience for another PEI. It is a great way to keep your CPD up-to-date, as there is always something to learn and reflect on.**

Please make sure any professional review reports you submit follow the pattern of the example that Emma sends you when you sign up for the process. We still get the odd few applications where candidates do not seem to have referred to UK SPEC 4 when drafting reports. We will still need an IPD report, detailing how you transitioned from a postgraduate to a practicing acoustician. We still get a few candidates who, once they have paid their invoice, then ask what the next steps are. These are all clearly laid out in the guidance so please take the time to study it as it will tell you what documents are needed, and which items need to be endorsed by your sponsors. It also explains what to do if you cannot find IOA members to act as your sponsors.

When you first approach us about becoming registered, we send you the guidance document, together with the support report examples. We are always ready to comment on the content of your professional review report prior to submitting the final draft. We will always comment on submissions and ask for re-drafted versions, but to avoid an iterative process, try to include evidence that shows you have the underpinning knowledge related to the projects you have submitted. For example, if you have selected a particular software to conduct modelling, explain why you chose it, what the shortfalls are, what results you were expecting and how you validated the outputs. These are all part of the A and B competencies and will save you having to do several rewrites.

The initial stages of your application will be processed by Emma Lilliman, who does a great job making sure all the fundamentals are in place. To access the UKSPEC version 4 go onto the Engineering Council website and search for UK-SPEC. The link is in this report here: **https://www.engc.org.uk/ukspec**

Neil Ferguson still helps us with academic equivalence support for those candidates who do not have recognised qualifications. You can check for yourself if your qualifications meet the required specification by visiting the Engineering Council website (**http://www.engc.org.uk/courses**) but please don't panic if your specific qualification is not listed, as we can still help you through the process using individual assessment (see later in the article).



## Interviews

We hold several interview events through the year, depending on the number of candidates we have coming forward for registration. Our next set are scheduled for 17 and 23 October. If you are interested in taking the next step to becoming a professionally registered engineer, contact us at: **acousticsengineering@ioa.org.uk** sending a copy of your CV and copies of certificates and transcripts of your qualifications. It is important that we have all of your further and higher education certificates, not just your highest attainment, training courses are not relevant at this point.

## There are two routes to registration:

The **recognised qualification** route, if you have achieved the required learning outcomes through recognised qualifications in acoustics. Qualifications which provide the required level of knowledge and understanding are for IEng and accredited Bachelor's degree and for CEng an accredited integrated Master's degree or a combination of accredited Bachelor's and Master's degrees (see table below).

| Incorporated Engineer (IEng) One of the following: | Chartered Engineer (CEng) One of the following: |
|---|---|
| An accredited Bachelor's or honours degree in engineering or technology | An accredited Bachelor's degree with honours in engineering or technology, plus either an appropriate Master's degree or engineering doctorate accredited by a licensee, or appropriate further learning to Master's level* |
| An accredited Higher National Certificate (HNC) or Higher National Diploma (HND) in engineering or technology started before September 1999 | An accredited integrated MEng degree |
| An HNC or HND started after September 1999 (but before September 2010 in the case of the HNC) or a foundation degree in engineering or technology, plus appropriate further learning to degree level | An accredited Bachelor's degree with honours in engineering or technology started before September 1999 |
| A National Vocational Qualification (NVQ) or Scottish Vocational Qualification (SVQ) at level 4 that has been approved by a licensee, plus appropriate further learning to degree level* | Equivalent qualifications or apprenticeships accredited or approved by a licensee, or at an equivalent level in a relevant national or international qualifications framework† |
| Equivalent qualifications or apprenticeships accredited or approved by a Licensee, or at an equivalent level in a relevant national or international qualifications framework† | |

* See: www.engc.org.uk/ukspec4th for qualification levels and HE reference points.
† For example, UNESCO's International Standard Classification of Education (ISCED) framework.

The **individual assessment** route, for applicants who do not have the recognised qualifications and who will have an individual assessment of their qualifications and any other relevant learning such as: formal academic programmes, in-employment training and experiential learning self-directed learning. In many instances, it is likely to be a combination of some or all these options.
Remember we are here to help you get through the process and advice and support is offered to every candidate personally.

For **individual assessment**, the Institute accepts several courses from certain academic centres in relevant subjects, such as audio technology, as being equivalent to accredited courses for the purposes of EC registration, without the need for further assessment.

The Institute recognises the IOA Diploma course and the several Master's courses linked to it as providing evidence if you are looking to gain CEng registration. You could also offer a PhD qualification, depending upon the content of the associated taught element. We can also offer support for registration via a 'technical report' route, if you do not have the relevant qualifications to help you demonstrate you are working as a professional engineer in acoustics. If you need to follow the technical route, we will discuss this with you before you embark on that process.

## Election process

The election process is overseen by the Institute's Engineering Division Committee, which is made up of volunteers from the membership, to whom we are extremely grateful. They represent the ever-growing number of members holding EC registration and provide the essential peer review process that affirms that you are at the appropriate level for recognition as an Engineering Council Registered Professional Engineer.

Our video explains how members can gain professional recognition and Engineering Council registration through the IOA.
Watch at **https://www.ioa.org.uk/video/recognising-your-professionalism-0**

# Approved Membership Applications

The Membership Committee reviewed 55 application forms on 15 July 2024 at their Committee meeting held at Leonards Hotel in Milton Keynes. 22 corporate applications have recently been approved by the Council following the recommendations of the Membership Committee. The Committee saw 30 new candidates joining the IOA, the remaining applications came from members upgrading.

**FIOA**

Derek Nash

**Corporate members**

Chase Bartlett
Philip Bowker
Craig Clayson
Matt Coll
Byron Davies
Andrew Dent
Kyle Donald
Chris Duffill
Sarah Green
George Grenfell
Robert Jenkins
Vishal Joy
Hiu Yau Lam
Lai Wa Lau
Kate Mann
Sam Message
Hannah Mills
Diogo Pereira
Andre Pires
Zachary Simcox
Sean Smale

**Associate members**

Sujitesh
Lucy Barton
Xinyao Chen
Joe Day
Rory Hendrick
Gethin Manuel
Gregory Moore
Jee Sheng Vincent Tham
Chun Kit Yeung

**Technician members**

Maria Paula Cifuentes Jaramillo
Bradley Fox
Alistair Grima
Chris Lansdown
Oscar Madslien
Cathal Reck
Matthew Robinson
Sebastian Sloan
Daniel Willett

**Affiliate members**

Eleanor Howcroft
Steve Mayers
Luke Owen
Daisy Skipper

# IOA EVENTS FOR 2024

ACOUSTICS 2024 - 50TH ANNIVERSARY CONFERENCE
12-13 September 2024
*Manchester Metropolitan University*

Organised by the Electroacoustics Group
REPRODUCED SOUND 2024 – 40TH ANNIVERSARY
12-14 November 2024
*The Bristol Hotel, Bristol*

## OTHER EVENTS

PERCEPTION INFLUENCED DESIGN FOR AIRCRAFT NOISE WORKSHOP
8 September
*Manchester*

QUIET DRONES
9-11 September
*Manchester*

ISO WORKING GROUPS AND PLENARY MEETINGS
21-25 October
*Berlin, Germany*

**For up-to-date information visit www.ioa.org.uk**

CAMPBELL ASSOCIATES
SOUND, VIBRATION & AIR SOLUTIONS

SCAN FOR PRICES


# DISCREET AUTOMATED NOISE MONITORING

AI
AI TECHNOLOGY

BATTERY POWERED

AUDIO CAPTURE

SMS & EMAIL ALERTS

# KP Acoustics Group debuts flexible block teaching for IOA Diploma at state-of-the-art research centre

KP Acoustics Group has become the first provider to introduce its unique block teaching format for the IOA Diploma – beginning in September this year. The course provides maximum flexibility for both candidates and employers by accelerating opportunities for progression within the field while minimising disruption to professional commitments.

**To maximise flexibility for candidates and employers, the IOA Diploma offered by KP Acoustics Group for 2024-25 is moving to a block teaching format following successful trials within its Manchester centre.** In this format, candidates will study the Diploma as four week-long short courses spread across the year, engaging in concentrated study sessions that enhance their comprehension and retention of core concepts.

**A recent report by the Quality Assurance Agency for Higher Education (QAA)**, suggests that block-format teaching approaches can significantly improve attendance, retention and overall learning outcomes through their concentrated and immersive nature. This not only enhances the effectiveness of the training but also ensures that the investment in employee development yields tangible, lasting results for the organisations they work for.

The practical experience will be significantly boosted with access to the firm's state-of-the-art Southampton-based research facility and the University of Salford, enabling hands-on practice with a variety of measurement equipment. The intensive one-week study periods will also reduce the need for frequent absences from work, benefiting both students and their employers whilst fostering improved networking opportunities through collaboration and peer support. This approach is particularly advantageous for distant learners who prefer in-person teaching but wish to avoid the need for frequent travel.

Chris Barlow, Head of Research and Innovation at KP Acoustics Research Labs, said: "This approach has already been trialled successfully this year through our Manchester centre, taught at the University of Salford, and we are now rolling it out to our Southampton centre.

"Students can build on their learning over several consecutive days, including reinforcement through practical sessions and labs, without disruption from work. This particularly helps learners in the early stages of a new job as the first week of learning helps them get to grips with the key concepts of acoustics which they can quickly put into practice."

## 25 days of taught content

The block teaching system includes two one-week sessions on the general principles of acoustics module in the autumn term, with a day of labs each week. Each specialist module is studied as a one-week intensive course in the spring term, again with a day of labs each week. During the third term, there will be five one-day online sessions for all candidates for revision in the run-up to the exams in June, providing 25 days of taught content along with continuous support from the tutor team.

Students have access to KP Acoustics Group's Moodle-based learning management system, which includes teaching notes, presentations, revision videos and access to tutorial recordings, as well as remote access to all examinable standards in the Diploma through their BSI subscription.

KP Acoustics Group is confident that this new teaching format will significantly enhance the learning experience for IOA Diploma candidates, providing them with the skills and knowledge needed to excel in the field of acoustics.

# SOUNDSORBA®

ACOUSTIC PRODUCTS

## Superior Sound Absorption Panels

Soundsorba are acoustic specialists, manufacturing and supplying a wide range of sound control solutions for building interiors.

**www.soundsorba.com**







Soundsorba's highly skilled and experienced acoustic engineers will be pleased to help with any application of our acoustic products for your project.

Please contact us by calling **01494 536888** or emailing **info@soundsorba.com** for any questions you may have.

**TEL:** +44 (0)1494 536888
**EMAIL:** info@soundsorba.com

**SOUNDSORBA LIMITED,** 27-29 Desborough Street, High Wycombe, Bucks, HP11 2LZ, UK

# New IOA Certificate course in soundscape assessment

Dr Chris Barlow, Chair of IOA Education and Learning Working Group introduces the new IOA certificate course in soundscape assessment.

**The field of soundscaping has had a significant increase in interest in recent years.** Scientific research has established both the challenges of a noise control approach, and the potential for positive impacts on health and wellbeing of a soundscape approach.

With the Welsh Government leading the way by implementing the soundscape framework in both national policy and primary legislation with the *Environment (Air Quality and Soundscapes) (Wales) Act* 2024, the requirement to formally assess soundscapes for both outdoor and indoor environments is increasing for IOA members.

While many acousticians recognise the need for soundscape assessment, the process of undertaking or reviewing soundscape assessments is outside the experience of many members, particularly given the difference between this approach and the more traditional methods of noise measurement and control.

In response to a demand expressed at the Acoustics 2023 conference in Winchester, the IOA has developed a new certificate course in soundscape assessment, aimed at enabling attendees to understand the concepts of soundscape and undertake the assessment and data analysis required for a soundscape assessment.

This course is of five days duration, split into three sections:

- the first day will cover the fundamental concepts of soundscape and soundscape assessment, and will be available as a stand-alone CPD day for those who just need to better understand soundscape assessment;
- days two and three will focus on undertaking a soundscape assessment; and
- days four and five will concentrate on data analysis and report preparation.

The assessment will involve two case studies – firstly preparing the materials required for a soundscape assessment in a given scenario, and secondly undertaking data analysis and preparing an assessment report on a given dataset.

The course committee comprises a mixture of academic, industry, government and NGO representatives, including some of the leading exponents of soundscape research and assessment in the UK.

Two centres have been initially proposed with one covering the south of the UK and one based in the north west (TBC). For those outside IOA membership, successful completion of the course will be considered an appropriate qualification for Technician membership of the Institute. The first instance of the course is currently planned for November 2024 or January 2025 (subject to accreditation of the centres).

For more information about the course, please contact **education@ioa.org.uk**

## Course committee:

**Chair:**
Dr Chris Barlow (KP Acoustics Research Labs)

**Chief examiner:**
Prof Jian Kang (UCL)

**Examiner:**
Dr Francesco Aletta (UCL)

**Committee members:**
Professor Keith Attenborough (Open university/IOA),
Professor Bill Davies (University of Salford),
Dr Sarah Payne (University of Surrey),
Lisa Lavia (Noise Abatement Society),
Peter Rogers (Sustainable Acoustics),
Jack Harvie-Clark (Apex Acoustics),
Dr Martin McVay (Welsh Government).

AcSoft
Noise • Vibration • Air Quality

10 year extended warranty

# 10 Year Extended Warranty

We are **so confident** in Svantek equipment, we are now offering a **10 year warranty**




SCAN ME

For more details or to register, get in touch on
**01234 639550, sales@acsoft.co.uk** or **www.acsoft.co.uk**

# IOA STEM Ambassadors' third annual visit to St Oscar Romero's School

In continuation of a fruitful tradition, four IOA STEM Ambassadors recently made their third visit to St Oscar Romero's School in Worthing to deliver the *You're Banned!* activity, designed by Richard Collman.

***By Jenny King***

**Intended to teach students about sound insulation and the properties of various materials, the *You're Banned!* task aims to economically provide sound proofing for a music practice room.** By integrating theoretical knowledge with hands-on experience, the activity aims to make the principles of sound insulation tangible and memorable for the students.

The lesson began with a brief introduction to sound waves, how they travel and the concept of sound insulation. The STEM Ambassadors explained the basics of acoustics in an engaging and accessible manner, so that the students could grasp the concepts.

## The *You're Banned!* activity

Following the introduction, the students were divided into groups and given various materials such as foams of different densities, wood and metal along with a metal frame that the materials could be clipped into. Each group was tasked with constructing a small model room and selecting partition materials to insulate it from an internal sound source. Each material had a cost and the group was given budget to spend on insulation. The objective was to minimise the amount of sound that could penetrate the walls of their model room, whilst staying within the budget.

Throughout the activity, the STEM Ambassadors moved between groups, providing guidance, answering questions and offering insights into the properties of different materials. This hands-on approach allowed students to experiment with various combinations of materials and observe their effectiveness in real-time.


## Learning through experience

One of the standout moments of the activity was the testing phase. Each group had one test measurement to see the current performance of their set up. Whilst trying to get a low background sound level for consistent testing (this proved difficult in a classroom!), a sound source was placed within each test rig and the break out noise was measured using a sound level meter app. This allowed the students to listen and observe the immediate impact of their material choices. Those who had left air gaps quickly realised that they needed to be filled. Some of the best-performing teams had used all available materials but exceeded the budget, prompting them to reconsider which materials were most cost-effective to remove without compromising performance. A final test and tot up of money spent on materials revealed the winner with the best cost/benefit ratio!

Students compared results, discussed what worked best, and theorised why certain materials performed better than others.

**Above:** (L-R) STEM Ambassadors, Jenny King (AECOM), Matt Muirhead (AECOM), Vicky Wills (AtkinsRéalis) and Andy Wardle (Academy of Contemporary Music)

**Below:** Demonstrating the sound insulation properties of different materials

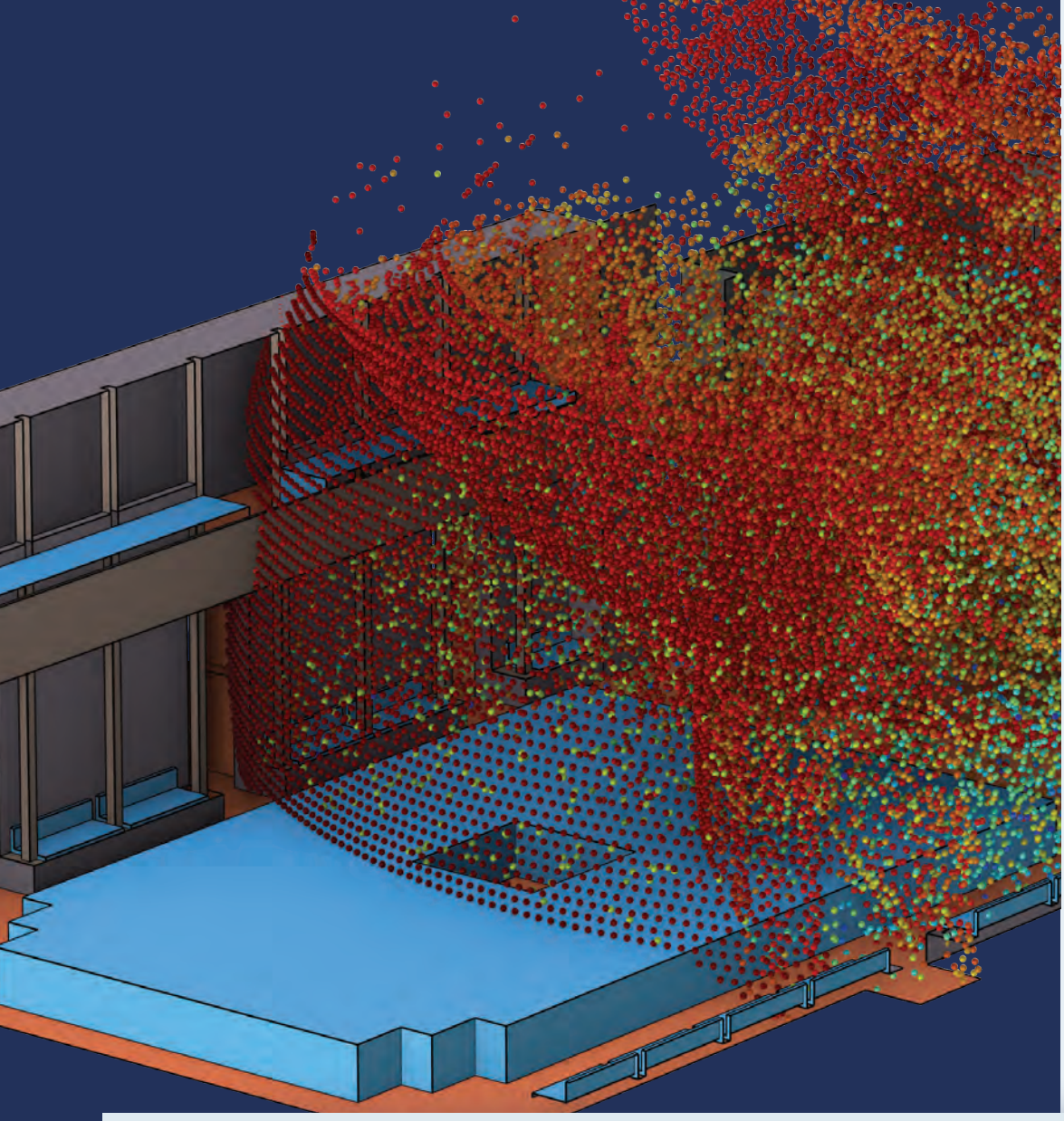
This experiential learning process not only reinforced their understanding of acoustics but also encouraged critical thinking and collaboration.

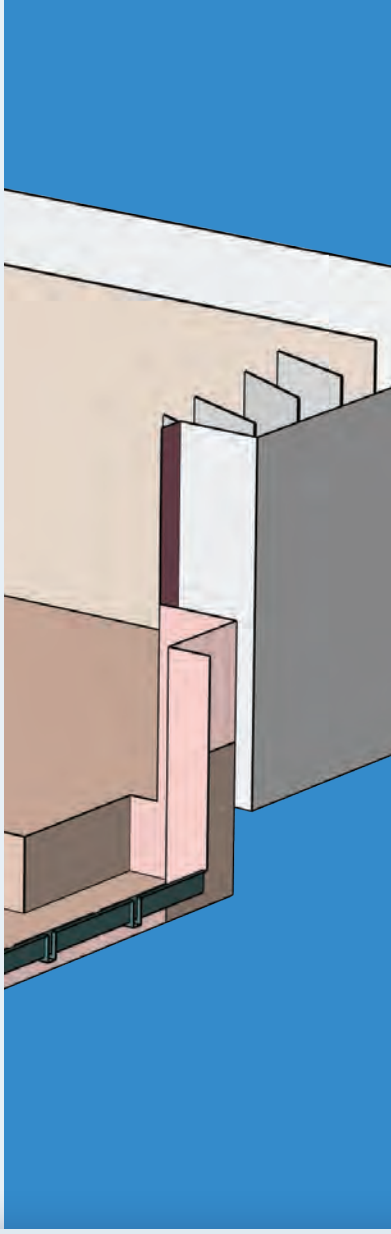
## Looking to the future

The STEM Ambassadors' visit to St Oscar Romero's School effectively enhanced the students' understanding of acoustics while fostering enthusiasm for science and technology. By providing hands-on learning experiences, the Ambassadors helped clarify complex concepts and encouraged students to explore future studies and careers in STEM fields. This annual visit has become a meaningful tradition, positively influencing the school community.

This was my first STEM visit to a school, and I thoroughly enjoyed both the teaching and our post-STEM lunch by the sea! I'll be planning another STEM visit soon. I recommend the *You're Banned!* activity as a ready-to-go lesson for any STEM Ambassador; limited preparation was needed in advance and the materials were sent straight to the school.

The *You're Banned!* activity is available for use by anyone interested in teaching students about sound insulation and material properties. To obtain the activity materials and guidelines, email the Institute of Acoustics at **info@ioa.org.uk**





# Take the Lead in Acoustics

## with COMSOL Multiphysics®

Multiphysics simulation drives acoustics innovation by providing insight into every design aspect that influences product performance. The ability to account for coupled physics phenomena lets you predict, optimise and virtually test a design under real-world conditions – even before a first prototype is built.

» *comsol.com/feature/acoustics-innovation*

COMSOL

# IOA Early Careers Group UPDATE

The Early Career's Group (ECG) has seen some changes recently, as the outgoing Chair, Josie Nixon, explains.

***By Josie Nixon***

**And just like that two years have flown by. I step down as Chair of the ECG in September and Zach Simcox, will become the new Chair.** I have had a fantastic time as Chair, and it's been great to be part of our webinar committee and see the number of online events increase, as well as attending our in-person events, such as AOBAC/AOBAA in London (2023) and Southampton (2024), hosting a day at Acoustics 2023 in Southampton and Acoustics 2024, not to mention the social evenings.

I would like to thank everyone who has supported the ECG endeavours over the last two years and the rest of the ECG committee for the support they've provided, especially the secretary, Diogo Pereira. I've also enjoyed working with the IOA Council and the amazing IOA volunteers. I shall continue to support the IOA (for now as the Eastern Branch Secretary) throughout my career and the ECG will always be important to me. But for now, I leave you in the safe hands of Zach.

## Meet Zach Simcox, the new ECG Chair

Zach has been an acoustician since 2017 and has worked at several environmental and building acoustics consultancies specialising in planning, permitting and compliance for industrial and commercial operations. He has visited many interesting sites such as windfarms, factories, quarries and mines, but has now left consultancy to start a new career in research, looking into industrial noise control for explosions.

Zach said: "I'm hoping to continue Josie's amazing work by continuing to provide engaging and worthwhile CPD and networking opportunities to our ECG members. I'm looking forward to seeing you all at one of our webinars, or Art of Being A Consultant/Acoustician conferences."

## Webinars

The Early Career's Group Webinar Group continues to arrange sessions; recently we have been focusing on read throughs of some of the more common British standards. Thank you to everyone who has hosted one of these sessions. A brief update on the last few sessions, is provided below:

**Read through: BS4142: 2014 +A1: 2019**

On 5 July, we continued our read through of BS4142: 2014 +A1:2019, again hosted by the Southern Branch ECG Representative, Conor Tickner, Hayes McKenzie. The read throughs enable participants to read alongside Conor and ask questions as we work through some of our most used documents.

**Read through: BS8233: 2014**

Our well attended read through of BS 8233: 2014 continued with Aaron Tomlinson. As the documents were studied, natural breaks were generated allowing for people to think, ask questions and provide free-flowing engagement.

In August we continued to read over BS8233: 2014 with a final session on the document lead by Zach Simcox. There was a good discussion centered around how the document was currently used as a guide by the attendees and what changes the revised document could bring in time.


**Above:** Zach Simcox, the incoming ECG Chair

**Should you wish to present at a webinar, or have a topic suggestion please get in touch directly with us: earlycareers@ioa.org.uk**

## Early Careers Award deadline

The IOA Early Careers Award for Innovation in Acoustics is awarded every year and is designed to recognise excellence and achievement within acoustics among those who are aged under 35 or early on in their careers in industry. It departs from the usual format in that it is also intended to increase awareness of the value of acoustic engineering and technology to the community at large.

So please have a look at the application form and nominate anyone you think would deserve this award. **The deadline for the 2025 award is 30 October 2024.**

The ECG is open to all members of the IOA (both corporate and non-corporate) who shall normally be under 35 years of age or within first five years of their career. The group is always keen to hear from members and non-members alike.

To join the Early Careers Group, to find out more information or to voice your concerns, visit **https://www.ioa.org.uk/early-careers-group**

Make sure you have registered with the ECG to find out about all upcoming webinars and events or keep an eye out on the IOA event website page.

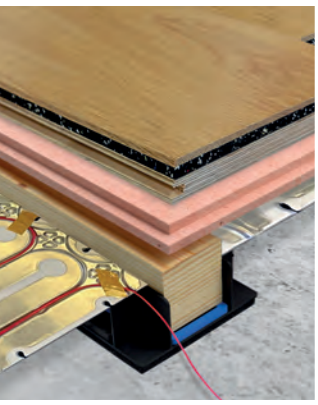
CMSDANSKIN
ACOUSTICS

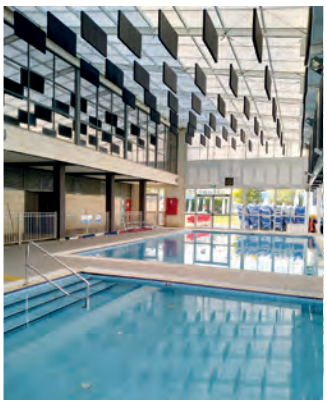
**For more than 20 years**
we've been working with acoustic consultants to create solutions for the noise and vibration challenges in

# LEISURE

ACOUSTIC EXPERTISE & SOLUTIONS
for leisure, modular, residential, commercial, education, industrial, retail, public sector and custodial applications

FLOORS WALLS CEILINGS ABSORPTION VIBRATION




CMSDANSKIN
ACOUSTICS

T 01925 577711 (Central)
E info@cmsdanskin.co.uk
T 01698 356000 (Scotland)
E enquiries@danskin.co.uk
W **www.cmsdanskin.co.uk**

CMS Danskin Acoustics is part of the
PTG PERFORMANCE TECHNOLOGY GROUP
www.PerformanceTechnologyGroup.com


# Net zero carbon roadmap for Institute of Acoustics members: A symphony of sustainability

As the global community intensifies its efforts to combat climate change, the IOA has set ambitious targets to achieve carbon neutrality by 2030 and net zero emissions by 2050 or sooner.

***By Peter Rogers, FIOA, Lead for sustainably for IOA Council, and of Sustainable Acoustics***

**This roadmap is aligned with that of the UK Government and this article is based on a recent talk I gave, *Symphony of Sustainability* to the ANC and the introductory sustainability article published in the July/August 2024 issue of Acoustics Bulletin. It is intended to show IOA members how they can align their practices with these goals, contributing to a more sustainable future for the acoustics industry, those they serve and beyond to a future that is worth living. The focus in this article is net zero and how to get there.**

## Understanding the challenge

The acoustics sector faces unique challenges in reducing its direct operational carbon footprint, from energy-drawing equipment to travel for on-site assessments and the energy used in facilities. This does mean that there are numerous areas where emissions can be cut. By following this roadmap, members can play a crucial role in the Institute's and the acoustics industry's journey towards net zero and using this as a spring board towards regenerative design.

## Key milestones

To align with the IOA's goals, members should aim for the following milestones:

1. 50% emissions reduction by 2027;
2. carbon neutral operations by 2030;
3. 75% absolute emissions reduction by 2040; and
4. net zero emissions by 2050 or sooner.

These targets provide a framework for progressive action, allowing members to make steady progress towards sustainability.

## Step 1: Getting your own house in order (2024-2025)

The first and most crucial step for any IOA member is to address their direct operational impacts. This does not include the embodied carbon impacts – this comes in the later stages. Tackling the direct operational baseline involves:

**a. Baseline assessment:**

- conduct a fearless comprehensive carbon footprint analysis of your operations, unpicking each element as thoroughly as you can;
- use online tools or established frameworks like B-Corp, Boardroom 2030, or NEPC, Engineers 2030 Vision and toolbox to assist you to do the analysis; and
- cover all aspects, including office and laboratory energy use, transportation, equipment, and waste management.

**b. Develop a net zero roadmap:**

- set ambitious targets for reducing direct impacts and what you directly use in your supply chains (batteries, goods, paper supplies etc). Note: there will be much 'low hanging fruit' – pick it all until you've identified the more difficult elements. Create short-term, medium-term and long-term goals aligned with IOA milestones for tackling the remaining impacts (such as transport, buildings, renewable energy production).

**c. Achieve carbon neutrality:**

- implement responsible carbon offsetting as soon as possible for twice your footprint to give a good margin for error. You can identify those through the UN, but your justification for this is important to the credibility for this step; and
- aim for carbon neutrality well before the 2030 target.

**d. Continuous monitoring and reporting:**

- implement robust systems for tracking emissions and energy use monthly to report on annually;
- conduct annual carbon footprint assessments; and
- share progress reports by publishing them on your website and sharing with the IOA and other stakeholders to show how you are doing proactively.

## Step 2: Focus on energy, heating, and cooling (2025-2027)

Once you've addressed your direct impacts in step 1, focus on optimising energy use in what you do:

**a. Energy efficiency:**

- conduct energy audits of your facilities;
- upgrade to LED lighting and energy-efficient appliances;
- implement smart meters and energy management systems; and
- optimise HVAC systems.

**b. Renewable energy transition:**

- transition away from gas and oil to electricity-based energy for all forms of your operation;
- switch to a renewable energy provider (there are many 100% green tariffs available and this is the quickest way to slash your carbon footprint);
- consider on-site renewable energy generation, such as solar PV panels; and
- explore power purchase agreements (PPAs) for larger operations.

## Step 3: Sustainable transportation (2026-2028)

Review and revise your transportation policies:

**a.** implement a sustainable travel policy favouring public transport and electric vehicles (hire purchase arrangements with return before the balloon payments means the embodied energy of the car remains the responsibility of the service provider, not you);

**b.** where fossil fuel vehicles are still in service and where possible, encourage remote working as part of the mix to minimise the need for travel;

**c.** invest in good video conferencing spaces and technology to maximise the quality of the experience and minimise the need for travel (a change accelerated by Covid-19); and

**d.** if you have a company fleet, transition to electric or hybrid vehicles, as per a).

## Step 4: Material specifications and supply chains (2027-2029)

Focusing on doing 'more with less' is a fundamental idea of sustainability, but a challenge which begins with the running of the operation and extends to influencing the service offered, collaborations engaged with and work that is done. Here are some ways to achieve this:

**a.** optimise embodied and operational carbon versus acoustic benefit, and quantify this for clients so they have a choice;

**b.** specify low embodied carbon alternatives over traditional materials, so that clients can have a clear alternative, which may in many cases also be cost efficient. This added value helps them to reduce their carbon footprint on a project by project basis. You can try to objectively capture the effects of your interventions;

**c.** challenge your supply chains to demonstrate their pathway to net zero, and consider a timescale beyond which a preference will be shown to those on the path; and

**d.** where they are being considered, flag up suppliers who cannot provide evidence of a net zero path and sustainability efforts to clients.

## Step 5: Innovate in acoustic solutions (2028-2030)

Leverage your expertise to develop low-carbon acoustic solutions:

**a.** research, develop or champion emerging sustainable acoustic materials;

**b.** design or select energy-efficient systems that balance noise control aiming to make these workable as part of the holistic design;

**c.** explore the use of passive acoustic design to reduce energy needs in buildings and proactively address the risk of overheating via openable windows acknowledging the challenge of doing so in noisy environments; and

**d.** integrate biodiversity considerations into acoustic designs (e.g. noise barriers, roof construction, or façade finishes that double as wildlife habitats).

## Step 6: Address urban and rural acoustics (2029-2035)

With the Government's huge push to sustainable urban development and rural preservation:

**a.** design healthy homes to work effectively in their noise environments;

**b.** balance noise mitigation with the needs of the night-time economy in towns and cities particularly;

**c.** identify and protect areas of relative tranquility in urban and rural settings, using noise policy as the justification; and

**d.** enhance soundscapes where possible to improve people's quality of lives and prosperity.

## Step 7: Support biodiversity and ecological health (2030-2040)

Integrate acoustic expertise with ecological considerations:

**a.** design noise control measures that also increase wildlife habitat and improve soundscapes;

**b.** monitor soundscape diversity before and after interventions; and

**c.** contribute to bio net gain initiatives at local, regional, and national levels.

## Step 8: Tackle noise poverty (2035-2045)

Address the societal inequality and impacts created by noise pollution, the 'neglected pollutant':

**a.** prioritise reducing noise pollution from transportation sources;

**b.** design schemes to bring people away from exposure to dangerous noise levels; and

**c.** advocate for good acoustic design in urban planning and building regulations.

## Step 9: Embrace creative acoustics (2040-2050)

Push the boundaries of acoustic design:

**a.** use acoustic science creatively in both indoor and outdoor environments;

**b.** explore soundscape composition as a design element; and

**c.** integrate acoustics with other sustainability initiatives for holistic environmental design.

## Step 10: Design for prosperity (ongoing)

Throughout your journey to net zero, strive to create value beyond just reducing emissions:

**a.** achieve triple wins on projects: economic, societal, and ecological benefits;

**b.** develop case studies that could inform national infrastructure projects; and

**c.** scale successful approaches to amplify their positive impact.

## Conclusion

The path to net zero is a collective effort that requires commitment, innovation and perseverance from the top to the bottom. By following this roadmap, IOA members can deliver on their obligation to the Institute, transform operations and ultimately begin a significant contribution to a sustainable future. As a minimum it is critical to focus on steps one to three from this article in order to then unlock the ability to go on and explore what more can be done through steps four to 10.

In my address to the ANC conference, I said: "Your company is there to make profits, but that is like living only to breathe. What is your company's purpose?"

As acousticians, our purpose should be to use our expertise to make life better and more likely to succeed not less. By creating a symphony from the things that make up sustainability, members can have effects that resonate far beyond our immediate field.

**By embracing this challenge, IOA members can act to ensure that the future of acoustics is not only secure but sustainable, contributing to a healthier planet for generations to come so act now.**

# Regulator cracks down on rogue consultants

***By Dr R M van Besouw, HM Specialist Inspector of Health and Safety (Noise and Vibration)***

**Content warning:** The following story is fictional but contains examples of failings taken from real reports that may be disturbing to the readership of Acoustics Bulletin.

**Barry Bumbler, BSc. SSc., packed his ACME 500 high precision decibel meter and his ZP-3 Professional digital noise meter into his rucksack, with his phone, a note pad and a Thermos. The ACME 500 was his favourite. He had got it for a bargain £18.95 online where it had an average customer review of 4.9 stars. Mr E. Fudd had given it five stars, affirming that it *'Works as advertised. I have no way to check the calibration, but seems close enough for the money'*.**

Works as advertised. I have no way to check the calibration, but seems close enough for the money.

It had a large colour screen, a button to flip between A- and C-weighted measurements and a pause button. The ZP-3 Professional had been reduced from £45.40 down to £26.33 and he could see why. It didn't have a colour display, he had not been able to decipher from the manual what all the symbols meant and the foam ball kept falling off, but at least he could make recordings with it.

The job today was a workplace noise assessment at Wile E Woods Ltd on the Isle of Wight, a joinery site just outside of Ryde that would earn Barry £450. He had agreed with the Managing Director to turn up at 10:30 and reckoned that, allowing for a 45-minute lunch break at Tony's Fish & Chip Shop, he could be away on the 13:00 ferry and save a few quid with a saver ticket.

On arrival at Wile E Woods it turned out that the MD was working from home on the mainland. The Operations Manager, Steve, greeted Barry instead, showed him around the site and made him a cup of very hot tea in a mug that had 'measure twice, cut once' on the side of it. Barry pointed out to Steve that he would indeed be measuring twice with his two high precision noise meters.

The site was pretty straightforward, an upstairs with an office, boardroom and kitchen area, and a machine shop downstairs with various woodworking machines. As he was upstairs and his tea hadn't cooled down enough to drink yet, Barry decided to start his noise survey in the office. He waved the ACME 500 around slowly in a wide figure-of-eight to sample as large an area as possible before pausing the measurement and jotting down the value on his note pad. He repeated this process with the ZP-3, and then repeated it again with the foam ball rammed firmly back on the microphone. P22

Sigicom

**A new era of**
noise monitoring

# INFRA C50
# Wireless Sound Level Meter


- Excellent battery life (Approx. 6 weeks)
- Robust and weather-proof
- Remote management in INFRA Net

Noise pollution is affecting people in urban areas every day. At Sigicom, we have over four decades of experience developing the most advanced noise monitoring technology in the construction industry.

We are proud to introduce our new product – the **INFRA C50** wireless sound level meter. Be among the first to experience the best monitoring solution available for a positive impact on the community and human health.

Scan for more information.

**01403 595020** **info@sigicom.co.uk** **www.sigicom.com**

The noise levels in the kitchen area, Barry noted, could be more variable. It had a kettle and a microwave, and so he took great care to measure the levels with these appliances off, with the microwave on, with the kettle on, and then with the microwave and the kettle on. He checked the time on his phone: 11:30. Half an hour until Tony's Fish & Chip opened and time to start making measurements in the machine shop downstairs.

There were fewer workers about than when Barry had been shown around the machine shop by Steve earlier that morning. Two workers were operating a large machine that emitted a harsh buzzing sound as one fed a plank of wood into the machine and the other waited at the far side to retrieve the (slightly thinner) plank as it was expelled. In between planks Barry could just about hear the machine shop radio over the drone of the dust extractor.

The machine was similar in appearance, size and shape to two other machines nearby, which Barry observed would save him some time; no need to measure all three. He held the ACME 500 and the ZP-3 in each hand and set them going as soon as the next plank of wood was being fed into the machine. When the plank emerged from other side, he paused the ACME 500 and then pressed stop on the ZP-3. The values differed slightly, the ACME 500 was displaying 88.1 dBA whilst the ZP-3 was showing 75.95 dB and a flashing spanner. Barry reckoned if he averaged the values the level would be accurate enough.

That left a sander, band saw, a panel saw and various other machines that were not in operation. After a couple of quick measurements using discarded offcuts, time was fast running out. Barry decided that he would infer the levels for the remaining machines from their user manuals.

| Machine | L.E.Q. dB(A) |
|---|---|
| 4 Sided Moulder | 82 |
| Wadkin Resaw | Not Tested |
| Wadkin Cross Cut | Not Tested |
| SCM Panel Saw | 79 |
| CNC | Not Tested |
| Double Saw | Not Tested |
| SCM Speed Sander | 77 |
| Cooksley Narrow Band Saw | 81 |

With the measurements in the bag, Barry popped back up to the office to let Steve know that he had completed his survey and that Wile E Woods would have his report by the end of the week. Steve asked him if he thought hearing protection was necessary. Barry's mind now on the menu (mushy peas or a side of curry sauce?), he advised that the levels were likely to be fine, so long as they turned down the radio in the machine shop.

## HSE's multi-year Workplace Noise Intervention targets poor performing consultants

The inspiration for the story above comes from a selection of consultants' noise reports that have been obtained from duty holders by Health and Safety Executive (HSE) inspectors since the start of its Workplace Noise Intervention in April 2024. The name of the consultant, the 'noise meters', the premises and the location have been changed, but the failings are very real and all too common.

Noise reports are being collated and reviewed as part of phase one of HSE's multi-year Workplace Noise Intervention. During phase two, HSE Specialist Inspectors will be using this evidence to target poor performing consultants.

Regulation 5(1) of The Control of Noise at Work Regulations 2005 requires employers to carry out a risk assessment if any employee is likely to be exposed to noise at or above a lower exposure action value. This duty falls on the employer and cannot be delegated to a noise consultant, although the services of the latter may be required in order to undertake a suitable and sufficient risk assessment. Regulation 7(1) of The Management of Health and Safety at Work Regulations 1999 also places a duty on the employer to ensure that any persons appointed to carry out tasks involved in risk assessment are competent to do so. Noise consultants have a legal duty under Section 3 of the Health and Safety at Work etc. Act 1974 (HSWA) to ensure the services they provide do not put others at risk.

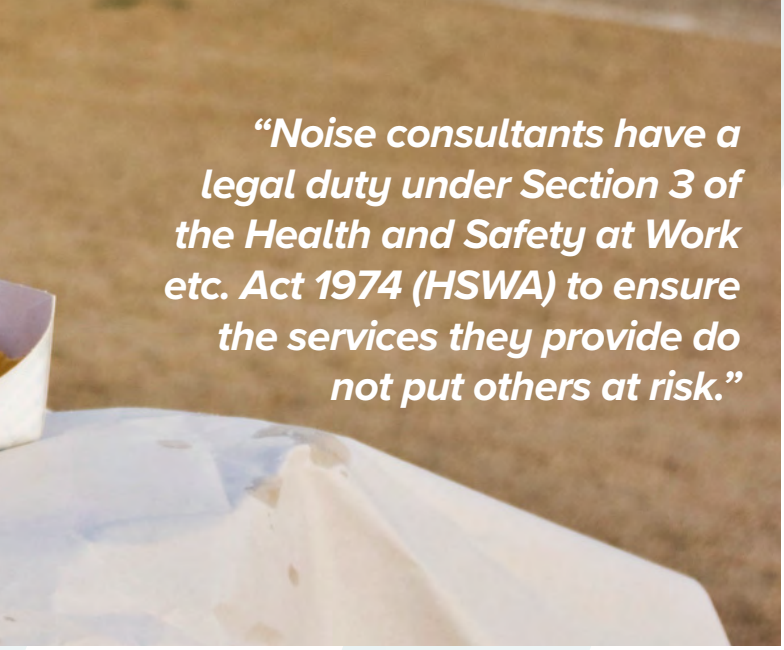
## Section 3 HSWA material breach

What would constitute a Section 3 HSWA material breach? There are many possibilities, but in a nutshell, anything which creates a risk of harm to others not employed by you, or that allows a risk of harm to others to persist. Examples from the not entirely fictional story above include underestimating exposure due to the use of instrumentation that is unsuitable for workplace noise measurements, incorrect metrics, poor sampling, inadequate observation of work practices (e.g., failing to consider all of the noisy activities undertaken by workers during a shift) and gross calculation errors.

Other failures that would amount to a material breach include:

- failing to advise on noise control techniques where widely accepted reasonably practicable measures exist;
- falsely deeming an existing control to be adequate; or
- offering false assurance – for example, by stating that hearing protection is unnecessary when exposures are in fact hazardous.

Where a poor standard of service leads to a material breach of health and safety law, the HSE will take enforcement action against the noise consultant, incurring a fee for intervention.




**Above:** Barry taking a breather

'Noise consultant' is not a protected title and a noise consultant does not have to be registered with a professional association. There is nothing to stop an individual from advertising themselves as a noise consultant and undertaking a workplace noise assessment using little more than an app on their smartphone. Furthermore, consultancies may offer a range of health and safety services, with competence in one area, e.g., local exhaust ventilation testing, leading to assumed competence in others, such as workplace noise assessment.

## HSE and IOA support

What are the HSE and IOA doing to combat poor consultants? To support employers in appointing competent noise consultants, the Association of Noise Consultants (ANC), British Occupational Hygiene Society (BOHS), IOA, Institution of Occupational Safety and Health (IOSH), and the HSE recently produced the 'Buyer's Guide – Workplace Noise Consultant'. Available from the BOHS website (**https://www.bohs.org/app/uploads/2021/09/Buyers-Guide-for-workplace-noise-consultants.pdf**) the top two questions in the Buyer's Guide prompt the duty holder to check that the consultant is a member of an appropriate professional body and is suitably qualified to measure and assess workplace noise.

The IOA Certificate of Competence in Workplace Noise Risk Assessment is one such qualification. Running since 1990, this week-long course covering health and safety legislation, measurement and instrumentation, noise risk assessment,

P24

noise reduction techniques, hearing protection and hearing health surveillance, has and continues to play a critical role in raising the standard of workplace noise consultancy.

## What IOA members can do to support this crackdown on rogue consultants

Here are three simple things:

1. Make it easier for duty holders to find you; keep your IOA membership details up to date and ensure that you appear in the IOA website's Membership Check and Find a Supplier listings.
2. Publicise the IOA Certificate of Competence in Workplace Noise Risk Assessment on social media **https://www.ioa.org.uk/training/certificate-competence-workplace-noise-risk-assessment** and support the running of this course, e.g., by offering case studies or a guest lecture.
3. Help educate employers in knowing what questions to ask of a consultant by promoting the Buyer's Guide. By doing these things you will be magnifying the deterrence effect of HSE's Workplace Noise Intervention and protecting the reputation of your profession.

## Selecting a consultant

You should expect Yes answers to the questions highlighted in GREEN 🟢⚪ and hope to get yes answer to the questions in AMBER ⚪🟠

| You should make sure the consultant is competent to do the work | Yes | No |
|---|---|---|
| 🟢⚪ Are they qualified to measure and assess workplace noise (e.g. completed IOA, BOHS or IOSH certificate/module in workplace noise assessment)? | | |
| 🟢⚪ Are they a member of a professional body (ANC, BOHS, IOA or IOSH) | | |
| 🟢⚪ If advice on control is to be provided can they show that they, or the project supervisor, have a suitable level of experience. | | |
| 🟢⚪ If they have not completed a workplace noise assessment course can they otherwise show that they have suitable experience? | | |
| ⚪🟠 Can they give examples of previous reports or examples of good work? | | |
| To help you complete the risk assessment you need specific details regarding your employees' noise exposure. Check the report wil include: | | |
| 🟢⚪ What your employee's exposure levels are in relation to the action and limit values stated in the noise at work regulations. | | |
| 🟢⚪ Advice on if you need to provide health surveillance. | | |
| 🟢⚪ The required performance of any hearing protection you may need give to your employees and/or an assessment of existing hearing protection used. | | |

For the latest on HSE's Workplace Noise Intervention, see Steel, C. 2024. Initial results of the Health & Safety Executive's workplace noise enforcement programme 2023-24. In Proceedings: Acoustics 2024.

# A **Sound** Solution

**Siderise® MC Mullion Cover is where aesthetics meets acoustics.**

This decorative and robust overclad acoustic treatment system dramatically improves the acoustic performance of lightweight hollow aluminium mullions in curtain wall façades.

Alongside our acoustic only line, we have a 2-hour fire-rated acoustic option where fire safety in buildings is a key consideration.

Siderise® MC Mullion Cover – a quick and easy solution for dealing with unwanted horizontal noise transmission.

**Find out more.**

T: +44 (0)1473 827695
E: technical.sspl@siderise.com

www.siderise.com

SIDERISE®
*integrity in all we do*

# International Conference on Underwater Acoustics (ICUA) 2024

The four-day International Conference on Underwater Acoustics 2024 was held in June at the University of Bath. The packed programme included speakers from a variety of nations and institutions, from both academia and industry but also included plenty of opportunity for networking and socialising.

***By Philippe Blondel (ICUA-2024 chair, UAG member), Andrew Holden (ICUA-2024 co-chair, UAG secretary) and Nikhil Banda (ICUA-2024 co-chair, UAG member)***

**The Underwater Acoustics Group has traditionally held two-day workshops and conferences, once or twice a year, but some topics are too small for a conference on their own (for example for emerging topics) and others have developed enough to attract large audiences.**

Our group had experience of large international conferences, like the European Conference on Underwater Acoustics (ECUA), whose last edition was held in 2012 in Edinburgh, attracting 400 participants (Acoustics Bulletin, September/October 2012), and its next incarnation, the International Conference on Underwater Acoustics (ICUA), whose first edition (2020) was virtual because of P28

**Above:**
The University of Bath, venue for ICUA 2024


**Right:**
ICUA 2024 keynote speakers (L-R) Hans Slabbekoorn and Hanne Sagen

NTi AUDIO

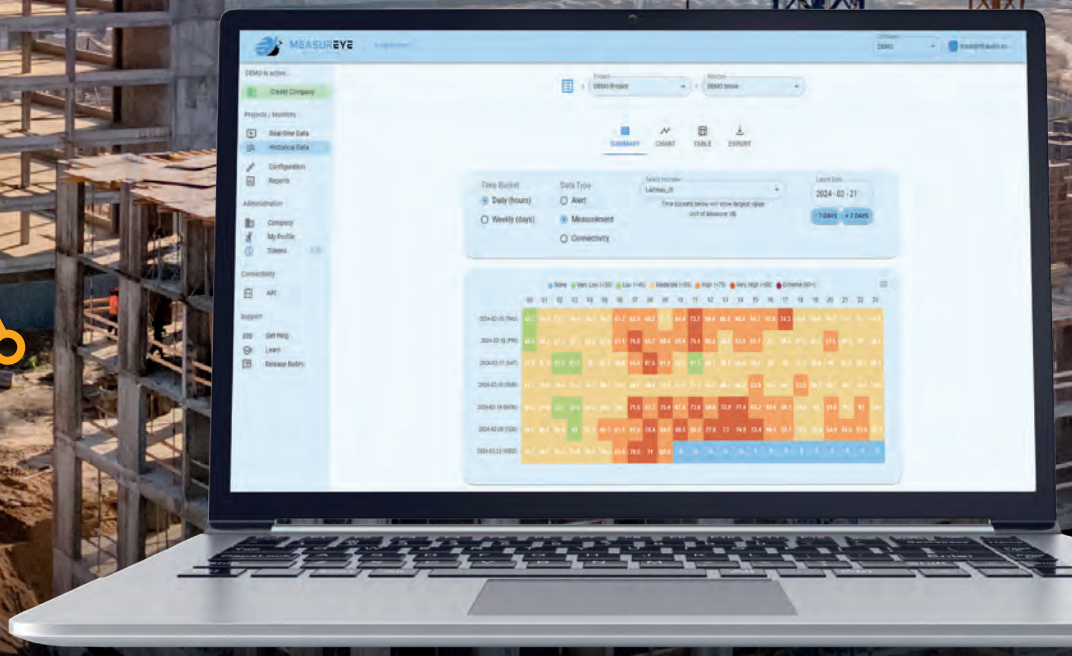
# 24/7 UNATTENDED ENVIRONMENTAL MONITORING

## Noise | Weather | Vibration | Dust

**LAeq**
94 dBA

**PM 2.5**
6 µm³

**PVS**
2 mm/s




NTi Audio UK, Charles Greene, Stevenage, Hertfordshire, UK
Contact : +44 1438 870 632 · uk@nti-audio.com · www.nti-audio.com/measureye

MEASUREYE
NTI-AUDIO

the pandemic, and whose second edition (2022) attracted around 200 international delegates to Southampton (Acoustics Bulletin, vol. 48, no. 5, September/October 2022). The third edition, ICUA-2024, was held on 17-20 June 2024 at the University of Bath, UK. This date was also chosen to coincide with the nearly 10-year repeat period of the seabed acoustics conferences organised in Bath in 1983, 1993, 2005 and 2015. There were 230 delegates from 17 countries and 190 submitted abstracts. This strong international flavour shows the attraction of IOA conferences, and the enthusiastic feedback from delegates encourages us to think about the next editions (2026 and beyond).

The conference was organised into three parallel streams grouped into themed sessions over the four days, ensuring that all delegates could present a talk or a poster as they wished and a selection of the sessions are described in this article. We had planned several social events for informal and relaxed times, very useful for networking, forging new links and making new friends (or catching up with the old ones).

On Sunday evening, a welcome reception at the University of Bath was very well attended. Some of our delegates trialled the new 'buddy system', where newcomers to the field, or to this series of conferences, could ask for someone to help them network and feel at ease throughout the conference.

On the Monday morning, we were honoured to have the first keynote lecture of ICUA-2024, when Hanne Sagen (Nansen Centre, Norway) talked about *The evolution of multipurpose acoustic networks in the Arctic Ocean*, sharing her impressive field experience in these very challenging environments and showing how underwater acoustics can be used for many objectives, from climate change to biodiversity or shipping.

## Polar acoustics

Chaired by Espen Storheim (Nansen Centre, Norway) and Lora van Uffelen (University of Rhode Island, USA), this was a popular topic, with nine talks and two sessions following the keynote lecture. The topics covered both passive and active acoustics in different frequency ranges. The talks included discussion of acoustic propagation through and below the sea ice and presented results of simulations, laboratory measurements and data collected in the field. The speakers discussed the applications and importance of acoustic measurements in the Arctic environment, including the use of sound sources for acoustic localisation of autonomous platforms under sea ice and the identification and localisation of earthquakes, shipping noise, cryophonics and other biological and anthropogenic sounds in acoustic data collected in the Arctic Ocean.

## Sonar, vector sensors and transducer technology

Chaired by Victor Humphrey (ISVR, UK), this session showed the latest advances, with active coatings for low-frequency radiation, developments in calibration of different systems, the generation of plane waves below 2 kHz in water-filled tubes (with a second transducer at the termination to prevent reflections) and the best ways to improve the electro-acoustic efficiency of Tonpilz transducers.

## Machine learning in underwater acoustics

Chaired by Philippe Blondel (University of Bath and UAG member), Nikhil Banda (Leonardo, 9UK and UAG member) and Marcus Donnelly (SEA Ltd, UK), this was the most popular theme of ICUA-2024, with 23 presentations scheduled over two days. The first session focused on the application of various AI/ML techniques to sonar imagery, including vision transformers and deep learning. P30

HEAD acoustics

# SOUNDSCAPE

## How Does Our Environment Sound?

Binaural recordings, mobile measurement systems, (psycho-) acoustic analyses with HEADscape, standardization (ISO 12913 and BS 4142): Pioneering soundscape innovation that evaluates ambient noise quality holistically - only with HEAD acoustics.

For further information and requiries please email us at HEAD acoustics UK: Sales-UK@head-acoustics.com

www.head-acoustics.com

**Above:**
Delegates aboard SS Great Britain

The second session showed the diversity of AI/ML approaches to passive acoustics, from the study of marine mammals to ships and fish habitats. The third session summarised the latest advances in water-column applications, from has bubbles to deep-sea currents. The fourth and final session addressed environment variability, algorithm robustness and the challenges of high-dimensional data, with solutions including quantum assisted computing. All sessions showed the broad applicability of AI/ML across civilian and military applications, and the very vibrant community using these techniques across the spectrum of underwater acoustics.

## Underwater propagation

Chaired by Adrian Brown (Atlas Elektronik, UK), these two sessions presented papers which showed how the fastest computers in Europe could model the propagation of acoustic energy from detonation of unexploded ordnance (the visual highlights of the sessions). At the other extreme was a paper showing rigorous application of traditional mathematical techniques to the propagation of sound pulses. The interaction between underwater acoustics and oceanography spanned idealised concepts to detailed measurements and models, showing the complexity and the opportunities in this field.

## Marine renewables and pile driving

These two connected sessions were chaired by Michael Bellman (Itap, Germany) and Federica Pace (JASCO, Germany). The first session showcased an innovative approach to instrumented micropiles as 'smart' linear receivers to characterise detailed seabed properties and their evolution with time. The second session showed measurements of noise impacts from the installation of monopile foundations with vibro-piling and associated models, and scaling laws for pile-driving sounds (and how they can be used to meaningfully address potential impacts on marine mammals).

On the Monday evening, the Early Careers Event (chaired by Nikhil Banda of Leonardo and an UAG member) included an open discussion of the opportunities and challenges of working in underwater acoustics in industry, government or academia. Around 25 early career scientists could engage with different organisations, participate in a game of guess-the-sound (whales and man-made sounds in particular), and learn about the varied and interesting career paths of other participants. Building on feedback from ICUA-2022, the event was completed with pizza and drinks in the conference foyer, leading to more exchanges.

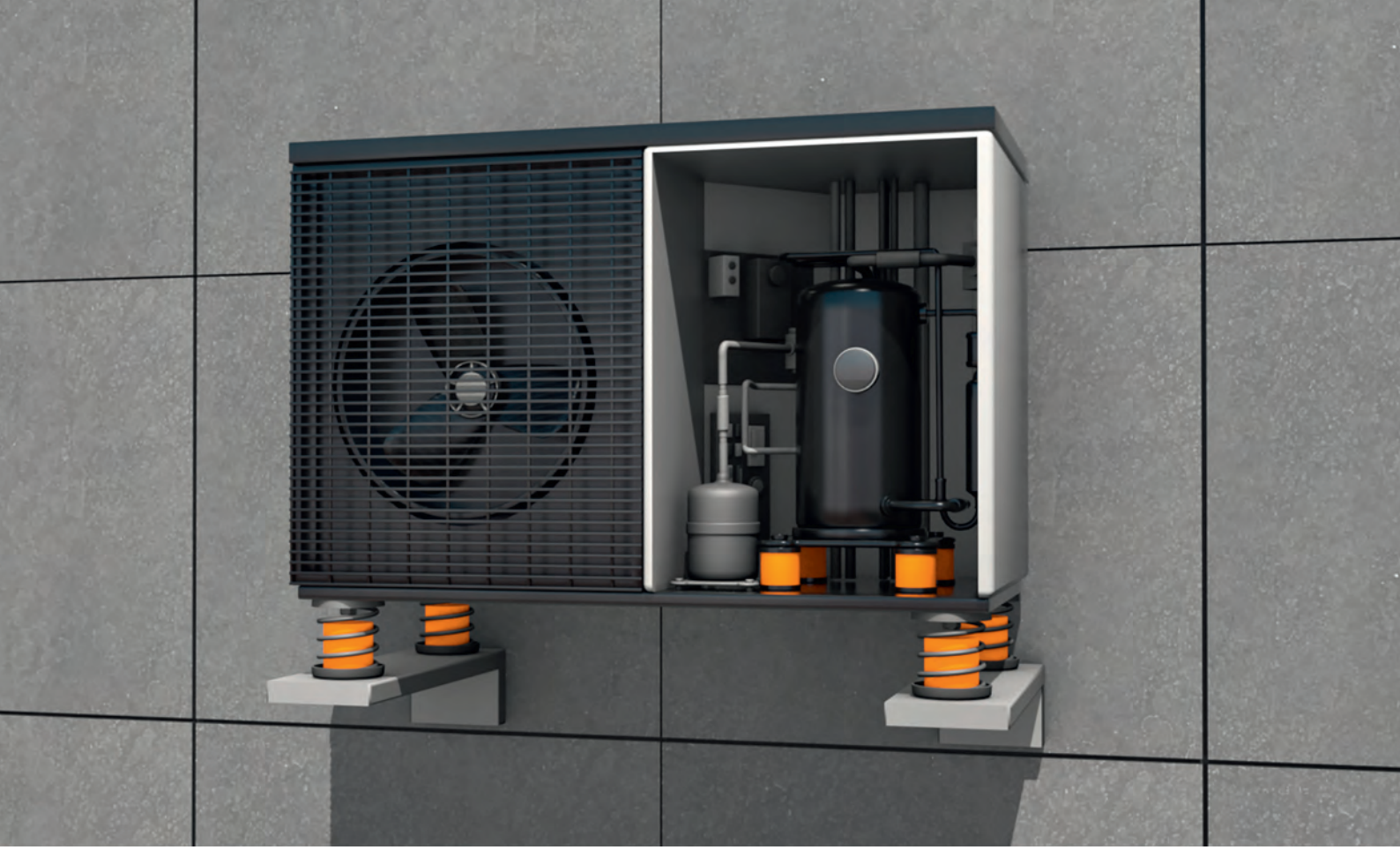
On Tuesday morning, the conference was honoured to host its second keynote lecture (originally scheduled for the pandemic-affected conference of 2020). Hans Slabbekoorn (Leiden University, Netherlands) talked about *Acoustic climate change: A fish perspective on the Anthropocene*. Solidly anchored in both physics and biology, this presentation showed the importance of underwater acoustics to assess biodiversity and reduce the impacts of human activities in a variety of marine and freshwater environments.

This keynote lecture paved the way for the next sessions on the effect of sound on marine life (chaired by Chris Capus (Ultra Maritime, UK and UAG member), bioacoustics (chaired by Paul Lepper, Loughborough University, UK and UAG member), synthetic aperture sonar (chaired by Alan Hunter, University of Bath, UK) and particle motion (chaired by Sophie Nédélec, University of Exeter, UK).

## Radiated Noise

These four sessions were chaired by Tom Smith (UCL, UK) and Alex MacGillivray (JASCO, Canada), covering a wide range of keys topics. Detailed analyses of noise levels from a wide range of vessels were presented alongside the latest developments in measurements techniques. There were some interesting finds across different vessel types, and it is clear that propulsion architecture can be as big a determining factor as speed or vessel size, particularly for smaller vessels. The environmental impacts of shipping together with design and operational strategies for reducing this impact were also covered. One of the key areas featured was measurement techniques and the continued development of an international standard for conducting acoustic trials in shallow water. The session also highlighted the need for a better understanding of uncertainty in both measurements and propagation modelling.

On early Tuesday evening, the historic SS Great Britain was the focus of a tour in neighbouring Bristol. A coach took delegates to enjoy a food and drink reception following by a look around the ship, built by Brunel. When this grand old lady was launched in 1843, she was the largest and most advanced P32



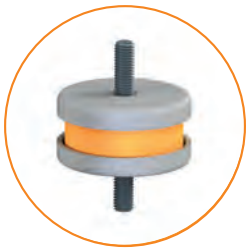
# Design quieter heat pumps.
## Minimize vibrations. Reduce noise.

**Getzner Werkstoffe is the leading specialist in the field of vibration isolation. Its solutions are based on the products Sylomer®, Sylodyn®, Sylodamp®, Isotop® and Sylocraft®, all of which were developed and manufactured at Getzner's own facility.**

They have been used since 1969 to reduce vibrations and noise, improve the service life of bedded components and minimise the need for maintenance and repairs on machines. Our mission at Getzner is to make a valuable contribution to improving the quality of life and reducing noise pollution for people and the environment.

**Isotop®**
**MSN-DAMP**

**Isotop®**
**DMSN/DSD**



**Isotop®**
**Compact**

**Sylomer® / Sylodyn®**
**Compressor Grommet**

For support on your next project – please contact:
**Ben van Breda**
Country Manager UK & Ireland
T +44 73 4066 0846
ben.vanbreda@getzner.com

**www.getzner.com/heatpump**

getzner
engineering a quiet future

ship afloat and the first iron-hulled, screw-propelled passenger liner, akin to the Concorde of her day. The ship was expertly populated with the sights, sounds and smells of the times.

## Memorial session in honour of Nick Pace (University of Bath)

Chaired by Kevin Hamson (Frazer-Nash Consultancy, UK and UAG Chair), this session honoured the memory of our dear colleague who started the regular IOA conferences at the University of Bath. We were delighted to share with his immediate family stories of working with him in different roles and at different levels, stories of the breadth of Nick's career, as well as his care for students and co-workers, were an inspiration to many young researchers who attended this session. After formal (and less formal) presentations, this session ended in the exchange of personal stories, all agreeing on Nick having been a role model for underwater acoustics.

## Seabed and sediment acoustics

Organised by Gary Heald (Dstl, UK) and chaired by Anthony Lyons (University of New Hampshire, USA), this session consisted of eight interesting presentations covering a broad mix of theoretical and experimental research topics. This included novel theoretical work on the unification of poro- and visco-elastic models for sandy and muddy seabeds, the effects of a small but finite shear rigidity of marine sediments on long-range sound propagation, and two presentations quantifying the importance of rigorous and motivated processing and representation of echosounder backscatter. There were also measurements of sediment variability in the immediate sub-seabed, multi-aspect imaging of sub-surface buried debris, and two talks about long-term monitoring of seafloor backscattering, including seasonal dependence.

There were also two sessions on ambient sound, chaired by Martin Siderius (Portland State University, USA) and David Barclay (Dalhousie University, Canada), and a short session on general underwater acoustics, chaired by Andrew Holden (DSTL, UK), showing real-time sound monitoring in the offshore industry.

## A.B. Wood medals

The Institute of Acoustics annually honours people whose contributions to acoustics or to the Institute have been particularly noteworthy.

The medals and awards programme has evolved over the years and is wide ranging in its acknowledgment of academic achievement, practical engineering applications and innovations, student achievement and contributions to the Institute and to the world of science and technology.

The A.B. Wood medal and attendant prize is awarded in alternate years to acousticians based in the UK/Europe (even years) and in the USA/Canada (odd years). It is aimed at younger researchers, those who are aged under 40, whose work is associated with the sea.

Following his graduation from Manchester University in 1912, Albert Beaumont Wood became one of the first two research scientists at the Admiralty to work on antisubmarine defence. He designed the first directional hydrophone and was well known for the many contributions he made to the science of underwater acoustics and for the help he gave to younger colleagues.
The A.B. Wood Medal was instituted after Albert's death by his many friends on both sides of the Atlantic and was administered by the Institute of Physics until the formation of the Institute of Acoustics. The deadline for nominations for 2025 is 31st October 2024.)

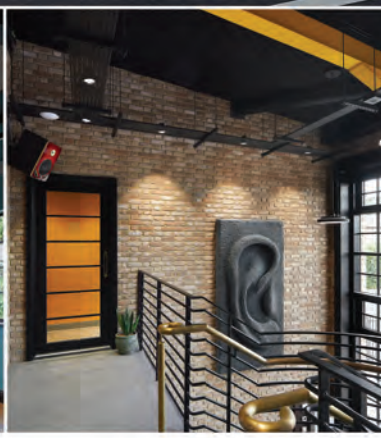
**Dr David Barclay is awarded the A.B. Wood Medal for outstanding contributions to the measurement, modelling, and analysis of ocean ambient noise.**

**Citation:**
The 2024 A.B. Wood Medal is awarded for distinguished contributions in applications of acoustics associated with the sea to Dr David Barclay, an exceptionally innovative and productive scientist who has made major advancements in the study of underwater noise and its applications.

Dr Barclay completed an Honours BSc degree in Physics with a Minor in Music Technology from McGill University, followed by a PhD from the Scripps Institution of Oceanography. As a graduate student, David won multiple scholarships and student presentation and teaching awards, as well as a highly-competitive Graduate Special Research Award in Ocean Acoustics from the Office of Naval Research. He gained diverse experience from three post-doctoral appointments: in the Department of Physics and Physical Oceanography at Memorial University of Newfoundland, working in sediment transport in coastal environments; at the Deep Ocean Exploration Institute of Woods Hole Oceanographic Institution (WHOI), working in ocean noise modelling and observations; and in the Department of Applied Ocean Physics and Engineering at WHOI in 3D ambient noise modelling. In 2015, Dr Barclay was hired as Canada Research Chair in Ocean Technology Systems in the Department of Oceanography at Dalhousie University (Canada Research Chairs are a national distinction 'for exceptional emerging researchers, acknowledged by their peers as having the potential to lead in their field').

Dr Barclay's research is innovative and diverse but generally focused on measuring, modeling and interpreting the spatial and temporal properties of the ambient noise field in the ocean. David's noise studies provide the means to predict the ocean soundscape in time, space and frequency, and to monitor human and biological activity; further, he has used noise as a passive, nonintrusive source to study the natural mechanisms that generate underwater sound and to estimate oceanographic and geophysical properties of the environment. As one of many exceptional achievements, he designed and built 'Deep Sound,' an autonomous, free-falling sensor platform for depth profiling the deep ocean, which he has used to probe ambient noise to the greatest depths ever achieved.

**Dr Özkan Sertlek is awarded the A.B. Wood Medal for his outstanding contributions to energy flux modelling and his revolutionary impact on the capacity to generate broadband sound maps for shallow waters.** P34

# book a tour

Oscar Acoustics has opened the doors to its new HQ in Rochester, Kent.

The state-of-the-art Oscar Innovation Centre acts as a captivating showroom where prospective clients can experience its acoustic products first-hand.

Book a tour today for your team or clients to view the recycled, fire-rated acoustic sprays in situ. Call +44 (0)1474 854902.



positive planet™
CERTIFIED CARBON NEUTRAL

OSCAR
acoustics

**Citation:**
Dr Sertlek received his first PhD degree in Turkey. At Gebze Technical University, he derived expressions based on the direct analytical solution of the wave equation in the time domain. He solved both lossless and lossy wave equations and implemented this approach to calculate the time dispersion in a single layered waveguide for pulse propagation problems. It was during this period that Dr Sertlek still split his time between acoustics and Turkish folk dancing.

Dr Sertlek received his second PhD degree in the Netherlands. At Leiden University, he devoted his time to soundscape modelling by which he provided new insights into the individual contributions of major sound sources to the underwater soundscape, including ships, seismic airguns, ordnance explosions and wind. It was during this period that Dr Sertlek also learned about animals, their hearing curves and behavioural patterns of disturbance and deterrence.

Dr Sertlek has made major contributions to energy flux theory, by introducing Faddeeva functions for superfast shallow water propagation modelling, developing shallow water propagation benchmarks and by applying spatial averaging and acoustic energy density techniques to sound mapping. His creative and innovative approaches contributed to multiple international projects and have been especially useful for the exploration and visualisation of underwater soundscapes of the North Sea and the Adriatic Sea. He is currently using his unique applications to sound maps of all European seas, including the Northeast Atlantic Ocean.

Dr Sertlek worked in research groups of diverse backgrounds, including offshore engineering, geophysics, electromagnetics and animal behaviour. His expertise and character allow him to blend in among people from diverse disciplines, by which he stimulates exchange of perspectives for the benefit of science. His work has guided biologists and policymakers and has led to new research ideas that promise a bright future for him and his collaborators.

## Conference dinner

On Wednesday evening, the conference dinner in the historical Pump Rooms started with a cocktail in the Roman Baths, taking in the architecture and the modern wall projections in the side rooms (from which several delegates fascinated by archaeology had to be shepherded back to dinner, so great was their interest). The Georgian Pump Room has been the social heart of Bath for more than two centuries, boasting Jane Austen and Charles Dickens amongst its previous patrons, and we enjoyed a sumptuous three-course meal, and many wonderful discussions with fellow attendees. Definitely an evening to remember!

## Target scattering

Chaired by David Nunn (Dstl, UK), this well attended session on target echo strength and scattering, covering both measurements and modelling, provoked lively questions. Unfortunately, a number of papers had to be withdrawn at the last minute due to travelling restrictions, but this did not diminish the superb papers that were well received. With speakers from a variety of nations and institutions, from both academia and industry, this session was a great success.

## Unexploded ordnance (UXO)

This short but focused session was chaired by Jose Barradas (Flanders Marine Institute, VLIZ, Belgium). It featured the use of ultra-high-resolution (UHR) 2D and 3D acoustic sub-bottom profiling (SBP) techniques in controlled test environments and successful applications in offshore locations. Another talk explored the application of diverse deep learning techniques to enhance image co-registration from scan sonar surveys, combining it with optical flow in a multi-stage alignment system for best performance.

## Sonar performance measurement and modelling

Chaired by Mathieu Colin (TNO, Netherlands) and Kristoffer Engedal Andreassen (FFI, Norway), this session provided insights into future trends and their possible impact on sonar performance, ranging from empathetic AI to climate change. The effect of the environment remains of key importance for sonar, with presentations covering how to invert sound speed profiles by combining historical and current measurements, using the environmental information to estimate best sonar and target depths and how synthetic data can help find realistic reverberation parameters. The challenges of coordination between different units and sensors were also considered, with a novel detection model for combining multiple types of measurements and a review of modelling underwater acoustic communication.

## Habitat mapping

Chaired by Angeliki Xenaki (NATO-STO CMRE, Italy), this session showed a variety of applications, including gas-bubble plumes produced by seagrass meadows and a survey of community research priorities for future efforts in habitat mapping with sonars, which will be used to inform policy and funding strategies around the world.

There were also sessions on specific topics such as signal processing (chaired by Nikhil Banda, Leonardo, UK), geoacoustic inversion (chaired by Hefeng Dong, NTNU, Norway) and acoustic tomography (chaired by Andrew Holden, Dstl, UK).

## Student prizes

The student prize was sponsored by the UKAN+ Special Interest Group on Underwater Acoustics (the UK Acoustics Network is funded by the UK's Engineering and Physical Sciences Research Council). To be eligible, the delegate had to have been enrolled as a student in a connected degree, listed as the first author on the submitted abstract and presented their work at the meeting. The prize winners were selected by a panel of ICUA-2024 committee members and the SIGUA committee of UKAN+, led by Duncan Williams (Dstl, UK).

Selection criteria were based upon the originality, clarity and quality of research, and of its presentation. The first prize (£250) was awarded to Laura Redaelli (Marine and Environmental Sciences Centre, Portugal), for her presentation entitled *Acoustic mimicry of plastics with the prey of deep-diving cetaceans: an experimental approach*. The panel's words were: "For an


excellent presentation with a clear explanation of the impact of the research and high-quality experimental data. Delivered with passion and enthusiasm for the subject and with a clear demonstration of how underwater acoustics research can really make a positive environmental impact".

The second prize (£150) was awarded to Madalin Facino (University of Bath, UK), for her presentation entitled *A simplified passive acoustic simulation to research empathetic artificial intelligence (AI) in human-ai teaming*.

The third prize (£100) was awarded to Fabio Frazao (Dalhousie University Canada), for his presentation entitled *Comparing acoustic representations for deep-learning based classification of underwater acoustic signals: a case study with orca vocalisation*.

We extend our heartfelt congratulations to the student prize winners.

**Above:**
A.B.Wood Medal winners, Dr Özkan Sertlek and Dr David Barclay with IOA President, Alistair Somerville

## Positive feedback

This was a very good and productive international conference, with excellent feedback from the delegates. Like all conferences, but even more so at this scale and with this breadth of topics, its smooth running is attributed to the flawless support and organisation of the Institute of Acoustics (and, in particular, star organiser, Linda Canty), the willingness of colleagues and UAG committee members to chair sessions, and the constant and very hands-on support of the ICUA-2024 organising committee. On-site catering was provided by the University of Bath, whose team was very helpful, in particular in addressing the large number of delegates and the very packed schedule of the conference. We would like to thank all the presenters for their high quality presentations and posters highlighting all their excellent research. Finally, we would like to thank our co-sponsors; the Acoustical Society of America, the International Commission for Acoustics, the European Acoustics Association, ONRG, the UK Acoustics Network, Tods Technology, Ultra Maritime, NPL and RTsys.

The legacy of the conference is already visible in its scientific production, with many conference papers deposited to the IOA Library and available as open-access. The buddy scheme and Early Career emphasis were good conduits for encouraging our younger colleagues to address the opportunities offered by underwater acoustics careers. Some feedback showed the desire for help for young parents (as already provided by the Acoustical Society of America for some of its conferences, for example). We are now reflecting on all the feedback, and already thinking ahead to ICUA-2026, taking the 'flag' of the Institute of Acoustics further.


# IOA awards entry deadline

The IOA annually honours people whose contributions to acoustics or to the Institute have been particularly noteworthy.

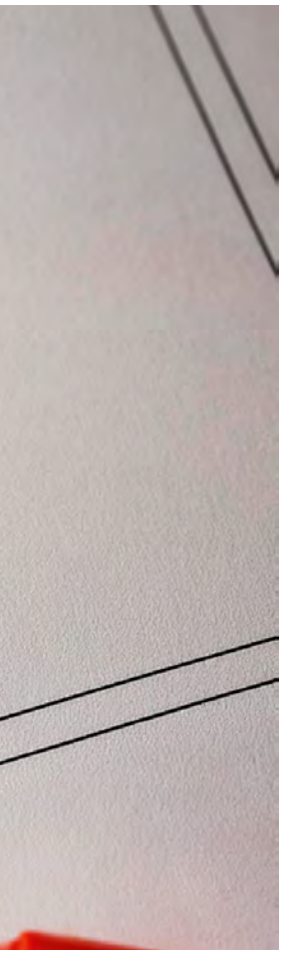
**The medals and awards programme is wide-ranging in its acknowledgment of academic achievement, practical engineering applications and innovations, student achievement, contributions to the Institute and to the world of science and technology.**

Nomination forms are at **https://www.ioa.org.uk/about-us/awards** All submissions must be received by **31 October 2024.**

Decisions will made by Christmas and the winners will be announced early 2025.

## The 2025 IOA medals and awards comprise:

- **The Rayleigh Medal**. This is the IOA's premier award, given to persons of undoubted renown for outstanding contributions to acoustics without regard to age.
- **The AB Wood Medal** (USA/Canada acoustician in 2025) is aimed at researchers aged under 40, whose work is associated with the sea.
- **The RWB Stephens Medal** was named after Dr Ray Stephens, the first President of the IOA. It is awarded in odd-numbered years for outstanding contributions to acoustics research or education.
- **The Peter Lord Award** is given annually for a building, project or product that showcases outstanding and innovative acoustic design.
- **The Peter Barnett Memorial Award** was inaugurated in 2001 by the Electro-acoustics Group, to honour Peter Barnett who died the previous year.
  This award, which is made annually, recognises advancements and technical excellence in the fields of electro-acoustics, speech intelligibility and education in acoustics and electro-acoustics.



- **The Geoff Kerry Long Service to the Institute Award**
The Geoff Kerry Award for Distinguished Long Service to the Institute acknowledges publicly the debt owed to individual members who have served the Institute in various ways for normally 20 years, but no less than 15. The award is given to recognise significant contributions in any capacity, for example, by serving on Council, committees or working groups, being honorary officers or assisting with conference organisation or other projects. The service does not have to be continuous, but over their membership must have accumulated to at least 15 years of such activity. The award is a simple memento with a written citation. There is no time scale or limit on the numbers receiving this award.

- **Early Career Award for Innovation in Acoustical Engineering (sponsored by Cirrus)** is awarded every two years and recognises excellence and achievement in acoustical engineering among those who are aged under 35, or early on in their careers in industry.

- **The Richard Cowell Sustainability Award** is open to individuals, or teams, who are able to demonstrate and provide evidence of one or more of the following:
* An exemplar contribution towards the delivery of sustainability;
* Demonstration of value in all three key areas (societal, economic and environmental)
* Demonstration of a significant contribution – through education, design, construction practices or guidance – that promotes the implementation of sustainability through acoustics.

This award is given on a rolling basis to those who reach the bar.

- **The Award for Distinguished Services to the Institute** was introduced so that the IOA could publicly acknowledge the debt owed to individual members who have provided sustained assistance over the years in some way with the running of the Institute.

More information and nomination forms are at **https://www.ioa.org.uk/about-us/awards**

Nominations should be submitted by 31 October 2024 to **ioa@ioa.org.uk**


The deadline for nominations for 2025 Medals and Awards is 31 October 2024, and it's coming up fast.

# IOA MEDALS AND AWARDS

Don't miss out, to nominate go to

**www.ioa.org.uk/about-us/awards**

Institute of Acoustics
Sound • Noise • Vibration

# The IOA in the 2010s

A shorter version of this article about IOA in the 2010s was published in the September/October 2024 printed issue of the magazine and this full version will also appear in the IOA 50th anniversary commemorative supplement, which will be available in Spring 2025.

**As the IOA celebrates its 50th anniversary, its specialist groups have been looking back at key developments in their sectors over the past five decades and looking ahead to what the future might hold.** In this issue, we look at the work within the IOA Senior Members Group and the Sound, Noise and Health Group. We also hear from four Past-Presidents.

## Senior Members Group

*By Michael Sugiura, Senior Members Group Chair*

The Senior Members Group (SMG) first 40 years report was written by Ralph Weston, the previous Chair, so this report is a continuation from then.

In 2016 there was one meeting of the SMG with a presentation by Dr Rodger Munt on modelling the blast from guns and the 2017 meeting was held in April, at St Peter's House, Victoria Street, St Albans. The Chair, Ralph Weston, who had held this position since 2011, retired at the AGM and following a suggestion by Graham Parry, VP Groups & Branches, it was agreed that I should succeed Ralph. Following the AGM, Dr Gurmail Paddan of the Institute of Naval Medicine gave an excellent talk on the work of the Institute and, in particular, the Noise and Vibration Section.

The 2018 SMG meeting was held at Sound Technology Limited; members were given two excellent presentations by the applications team who explained the features of BSS by HARMAN Audio equipment and the state of the art developments in audio signal processing.

The SMG held one meeting in 2019 at the Civil Service Club, Great Scotland Yard, Westminster, London. A talk was given by David Ball, a retired Senior Environmental Health Officer.

Michael Forrest, Secretary for the Group since its formation, stood down in 2020 and Linda Canty was warmly welcomed as the new Secretary.

2020 saw the advent of online meetings and webinars. In that year, there were 116 Senior Members and 735 members of the IOA eligible to join. A presentation by Stephen Turner, the then IOA President, covered many aspects of the Institute's activities and included some clips from recent videos.

During the year we had a further two virtual meetings. In one, Carlos Abraham gave an interesting presentation which covered many aspects of bioacoustics, and the second meeting set an all-time-record attendance for a SMG meeting with over 100 persons to listen to Raf Orlowski, who highlighted the key parts of a book he wrote, *Acoustics in Architectural Design*, which looks at the influence of the theatres of Classical Greece, the research of Sabine and the impact on the design of concert halls of the 20th and 21st centuries.

During 2021, the SMG held five virtual meetings that covered a diverse range of topics including the following:

- EPSRC UKAN its development, operation and delivery, presented by Professor Kirill Horoshenkov, University of Sheffield.
- Soundscape, current progress and future challenges, presented by Professor Jian Kiang University College London.
- Taking live music to the audience in a new way, presented by Jim Griffiths, Vanguardia.
- Acoustic barriers, traditional and the move to sustainable alternatives, presented by Steve Barnes of GRAMMM UK.
- Professor Bridget Shield MBE gave a presentation on the history of the Royal Festival Hall at 70 years.

The SMG held four virtual meetings in 2022, covering:

- Using scale modelling to assess the prehistoric acoustics of Stonehenge, presented by Trevor Cox, University of Salford.
- Acoustical reasons for greening the environment, presented by Professor Keith Attenborough.
- Myths in absorption and diffusion and what testing has revealed, presented by Ron Sauro, President, NWAA Labs Elma, Washington USA.

The SMG held two virtual meetings in 2023 and a repeat technical visit to Sound Technology Ltd in November 2023.

The online presentations entitled *Journey of An Acoustical Consultant* by Rupert Thornely-Taylor and *The Reluctant Acoustician* by Roger Tompsett gave an insight on the career paths of these two distinguished speakers.

In May 2024 Professor Susannah Buchan, based in Chile, gave a presentation to the SMG on the *Acoustic monitoring of large whales off the coast of Chile and the Southeast Pacific*.

For the IOA 50th Anniversary the SMG and the Early Careers Group plan to hold a panel session at Acoustics 2024 addressing the following questions:

1) How has the acoustic industry changed in the last 50 years?
2) How has technology/equipment changed and how do you think it is beginning to and will continue to alter our careers (consultancy, public services, research) in the future?
3) Where do you think the acoustic industry will be in 50 years? Will there always be a need for the discipline?

The SMG is producing a video entitled *Noise Consultancy, the First 50 Years!* and is seeking potential speakers for its 2024/25 meetings.

# MASON UK LTD

Vibration Control Products
& Acoustic Floor Systems

We own the entire process from tree to installation.
Quality, Engineering and Traceability are paramount.

**Mason's proprietary natural rubber formula is unique and unsurpassed in dynamic performance.**

We manufacture most of our elastomeric products in Thailand, in our factory next to the main global source of natural rubber. Our products are independently verified to demonstrate exceptionally low dynamic stiffness and high durability, allowing us to certify all moulded products to bridge-bearing quality, exclusive to the market.

▶ ***We are unique in sourcing direct from the rubber plantation***

◀ ***Raw rubber (latex) being processed in the factory***

We are able to do this as we own the full fabrication process, from tree to product. All our factories have ISO 9001 quality accreditation, ensuring our processes are fully controlled and our extensive range of products, from bespoke building isolation bearings to simple rubber pads, are manufactured to the highest quality.

Taking control of the entire supply chain gives us the most robust and reliable production system and allows for 100% traceability. Quality assurance and testing form an integral part of our manufacturing process and allow us to provide warranties, validated by engineering method, which exceed the life of most structures.

▶ ***Every bearing we make is tested to 150% rated load to assure zero problems on site***


## ABOUT MASON

A world leader in noise & vibration control products for over fifty years setting the standard for consultants & architects. We provide complete engineering design and site validation for our product range including:

• Elastomeric & Spring Mounts • Building Isolation Bearings • Floating Floors
• Isolated Walls Mounts & Suspended Ceilings Hangers • Building Services and Plant Isolation products

www.masonuk.co.uk

**+44 (0)1252 716610 info@masonuk.co.uk** Unit 6 Abbey Business Park, Monks Walk, Farnham, Surrey GU9 8HT

It is intended that these speakers would appeal to a wide range of both SMG and non-SMG members. The biggest challenge for the SMG is maintaining communication with its members due to their age, the cost of travel and the geographical spread but that is not to say that the social interaction will not be programmed where practical. However, going forward the SMG will continue to use the latest technology to focus on online meetings and webinars which will also encourage members' participation on subjects of interest to both current, and future members of the IOA.

## Sound, Noise and Health Group

**Fifty years of research, policy and guidance shaped by the health effects of noise and sound**

*By Lisa Lavia, Noise Abatement Society; Peter Rogers, Sustainable Acoustics; Benjamin Fenech, UK Health Security Agency, and Pam Lowery, RPS Group*

This article is adapted from a webinar given by Benjamin Fenech, UK Health Security Agency (UKHSA) and Pam Lowery, RPS Group, from the IOA's Sound, Noise and Health Group (SN&HG) in July 2024[1] as part of the IOA's 50th anniversary events. A comprehensive review of research, policy and guidance shaped by the health effects of noise and sound[2] over the past 50 years is beyond the scope in length of this article, therefore it sets out a brief introduction to the webinar[1], primarily in the context of the UK, and reflects upon it. The article starts with a brief overview of the SN&HG followed by a precis of UK and international noise, sound and health policy over the past half century. This is followed by selected standards, guidance and applications in the UK. Finally, implications for practitioners are outlined and future work is summarised.

**Sound, Noise and Health Group**

The SN&HG is a relatively new IOA group[3] and was launched in 2022. It is chaired by Benjamin Fenech, UKHSA, and comprises IOA members (see acknowledgments and authors) with a particular interest in understanding and assessing the effects of sound, noise and vibration exposure on human health. Its remit includes sound and noise in external and internal environments and the influence of non-acoustic factors. The main aim of the group is to provide a forum for members to exchange information and discuss developments within this rapidly developing area of acoustics. The SN&HG interfaces with existing IOA groups including the Environmental Sound Group, Building Acoustics Group and the Speech and Hearing Group, and feeds into the Parliamentary and Public Liaison Group, which seeks to communicate with decision makers.

**Noise: more than an irritant?**

A summary of the evolution of perspectives by policy makers on the health effects of noise and sound leading up to the past 50 years can be illustrated by the following two contrasting statements, published 60 years apart.

First, '*...we have not been able to find any evidence that moderate noise (by which we mean the noise normally met with domestically and socially) produces any direct and measurable physiological effect on the average person.*'
(The Wilson Report, July 1963)[4].

And, '*Environmental noise and light pollution contribute to a range of adverse health outcomes including heart disease and premature death.*'
(House of Lords, July 2023)[5].

Despite, with the benefit of hindsight, what might seem to be a stark proclamation regarding noise, sound and health, the importance of the final report of the Committee on the Problem of Noise (aka The Wilson Report)[4] is that it provided a seminal framework for policy makers and practitioners to consider the effects of noise, sound and mitigation[6] beyond the erroneous assumption that noise may be primarily (only) an irritant to humans.

The following decade saw the importance of noise and sound as a health and quality of life issue recognised with the establishment of The Noise Advisory Council (NAC) in 1970[7] by the then Secretary of State for the Environment.

The NAC's remit was '*To keep under review, the progress made generally in preventing and abating [...] noise [and] to make recommendations to Ministers...*'. Their extensive and prescient work included proposals to strengthen The Noise Abatement Act 1960[8], establish noise at work protections, reduce aircraft and road traffic noise, and evaluate risks to hearing damage of people at noisy music venues.[7] In 1974, the year that the IOA was established, the NAC reported that '*noise can be an irritant and a nuisance and one quarter to one half of the total [UK] population is subject to seriously intrusive noise levels*'[9]. The present understanding from '*...research by the UKHSA suggests that in 2018, 130,000 healthy life years were lost in the UK and that 40% of the British population are exposed to harmful noise levels from road traffic.*'[5]

## References


1 IOA Sound, Noise & Health Group: 50th Anniversary Webinar "50 years of research, policy and guidance on the health effects of sound". 11 July 2024. **https://www.ioa.org.uk/civicrm/event/info?reset=1&id=923.**

2 Noise and sound are two separate terms with distinct definitions. The term sound is objective and refers to the definition in physics of the propagation of waves through a material medium (e.g. air, water, other material) (**https://www.britannica.com/science/sound-physics**). Sound can also be defined as the 'sensation produced by a[ny] auditory stimulus' when propagated waves reach the ear and/or body regardless of audibility **(https://psychologydictionary.org/auditory-sensation/)**. Noise is a perceptual construct, the definition of which used in this article is defined by the International Commission on Biological Effects of Noise (ICBEN) as "unwanted and/or harmful sound" (**https://www.icben.org/About.html; https://journals.lww.com/thehearingjournal/fulltext/2023/11000/a_new_definition_of_noise.7.aspx**).

3 IOA Sound, Noise & Health Group. **https://www.ioa.org.uk/sound-noise-health-group.**

4 Wilson, A. (1963). Noise: Final Report. Committee on the Problem of Noise. H.M. Stationery Office.

5 House of Lords. (2023). The neglected pollutants: the effects of artificial light and noise on human health, HL Paper 232, 2nd Report of Session 2022–23. Science and Technology Committee, published 19 July 2023. **https://committees.parliament.uk/publications/40937/documents/199438/default/.**

6 Turner, S. (2014). The Wilson Report - 50 Years On. Acoustic Bulletin, 39, January/February 2014, 16-17.

7 The Noise Advisory Council. (1971). Royal Society of Health Journal, 91, 3-3.

8 The Noise Abatement Act 1960. **https://www.legislation.gov.uk/ukpga/1960/68/contents/enacted**.

9 The Noise Advisory Council. Panel on Noise in the Seventies. (1974). Noise in the next ten years. ISBN: 0117507164, H.M.S.O. for the Department of the Environment.

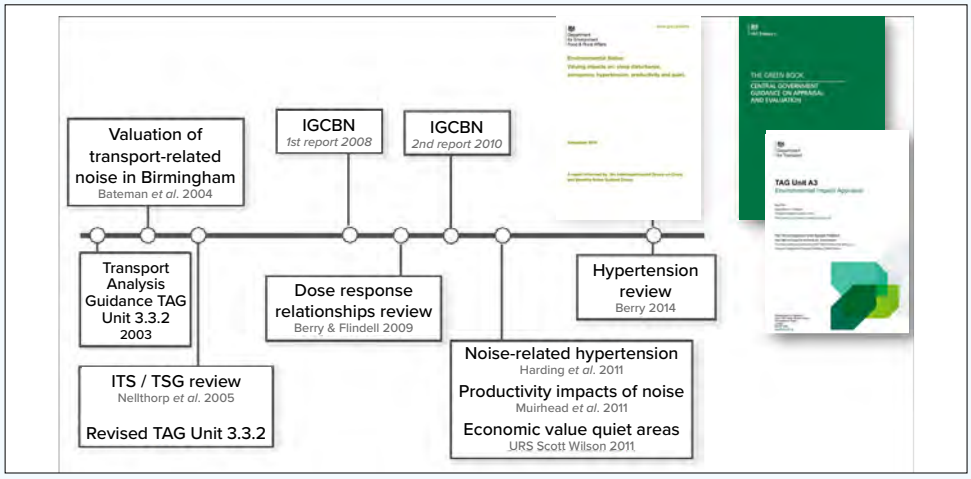
**Policy, guidance and practice in brief**

Guidance throughout the intervening decades represented the rapidly developing UK and international evidence base on the effects of noise and sound on health. See for example landmark publications from the World Health Organization (WHO) including the: *Environmental Noise Criteria 1980*[10], *Community Noise Guidelines 1999*[11], *Night Noise Guidelines for Europe 2009*[12], *Burden of Disease from Environmental Noise 2011*[13] *and Environmental Noise Guidelines for the European Region 2018*[14].

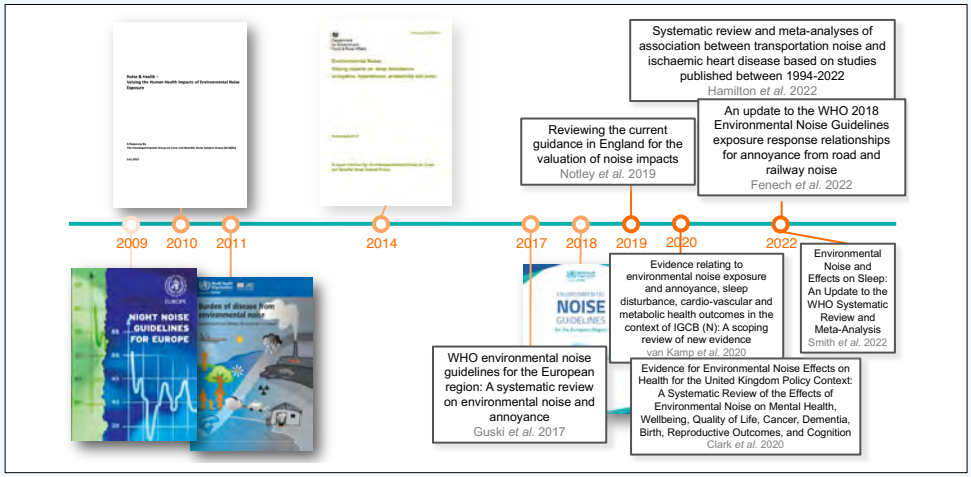
In 2010, the *Noise Policy Statement for England*[15], transposed by Northern Ireland in 2014[16], aligned noise and sound policy aims with the UN Sustainable Development Goals[17] to help develop a strong, healthy, just and equal society through balancing sustainable development with economic opportunity and innovation. Similar aims were put forth in Scotland, including via the *Planning Advice Note 1/2011: Planning and Noise*[18], and in Wales through a series of leading policies, guidance and legislation illustrated by the *Environment (Air Quality and Soundscapes) (Wales) Act 2024*[19].

For practitioners, the evolution of policy, research and guidance is represented in an increasing array of national and international standards and publications including *ProPG: Planning and Noise 2017*[20] for new residential development and *Acoustic Ventilation and Overheating Residential Design Guide 2020*[21] to name but two. And the 2000s have shown the continual development of cost benefit analyses calculating the valuation of noise and sound in relation to amenity, property values and health including, for example, from the DfT's *Transport Analysis Guidance TAG Unit 3.3.2* in 2003 through to 2024[22, 24] and Defra's *Environmental Noise* valuation of impacts report in 2014[24] (figures 1 and 2),

**Below: Figure 1.** Examples, starting from the early 2000s, of the development of cost benefit analyses calculating the valuation of noise and sound in relation to amenity, property values and health (n.b. timeline represents publication dates). *Source: Fenech and Lowery, 2024*



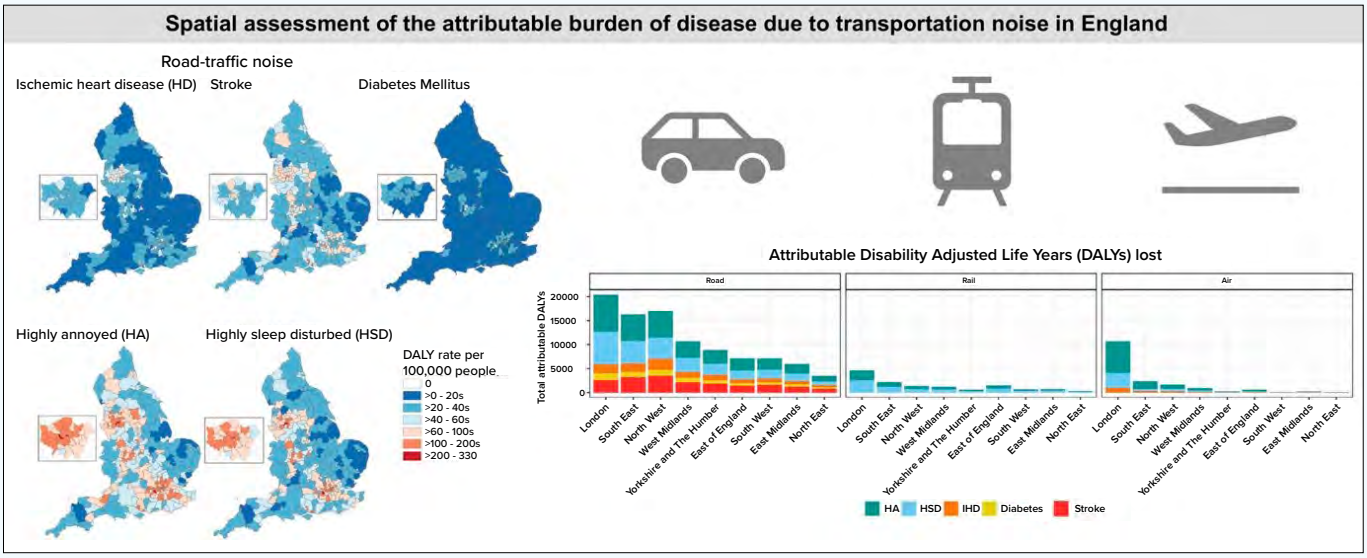

**Below: Figure 2.** Examples, from the 2000s, of the ongoing development of the valuation and evaluation of noise and sound in relation to health (n.b. timeline represents publication dates) (see additional sources). *Source: Fenech and Lowery, 2024*




## References


10 WHO. (1980). Environmental Health Criteria 12 – Noise. **https://iris.who.int/bitstream/handle/10665/39458/9241540729-eng.pdf**.
11 WHO. (1999). Community Noise Guidelines. **https://www.who.int/publications/i/item/a68672**.
12 WHO. (2009). Night Noise Guidelines for Europe. **https://iris.who.int/handle/10665/326486**.
13 WHO. (2011). Burden of disease from environmental noise. **https://iris.who.int/handle/10665/326424**.
14 WHO. (2018). Environmental noise guidelines for the European Region. **https://www.who.int/europe/publications/i/item/9789289053563**.
15 The Noise Policy Statement for England. (2010). **https://www.gov.uk/government/publications/noise-policy-statement-for-england**.
16 The Noise Policy Statement for Northern Ireland. (2014). **https://www.daera-ni.gov.uk/consultations/noise-policy-statement-northern-ireland-npsni**.
17 The United Nations Sustainable Development Goals. **https://sdgs.un.org/goals**.
18 Planning Advice Note 1/2011: Planning and Noise. (2011). **https://www.gov.scot/publications/planning-advice-note-1-2011-planning-noise/**.
19 Environment (Air Quality and Soundscapes) (Wales) Act 2024. **https://www.legislation.gov.uk/asc/2024/2/contents**.
20 ProPG: Planning & Noise. (2017). **https://www.ioa.org.uk/sites/default/files/14720%20ProPG%20Main%20Document.pdf**.
21 Acoustic Ventilation and Overheating Residential Design Guide. (2020). **https://www.association-of-noise-consultants.co.uk/wp-content/uploads/2019/12/ANC-AVO-Residential-Design-Guide-January-2020-v1.1-1.pdf**
22 DfT. Transport Analysis Guidance. (2024). **https://www.gov.uk/guidance/transport-analysis-guidance-tag**.
23 DfT. Transport Analysis Guidance TAG Unit A.3. (2024). Environmental Impact Appraisal. **https://www.gov.uk/government/publications/tag-unit-a3-environmental-impact-appraisal.**
24 Defra. (2014). Environmental Noise: Valuing impacts on: sleep disturbance, annoyance, hypertension, productivity and quiet. **https://assets.publishing.service.gov.uk/media/5a7de374e5274a2e8ab44775/environmental-noise-valuing-imapcts-PB14227.pdf.**

**Below: Figure 3.** Graphical abstract summarising the health effects from road, rail and aircraft transportation noise sources for the adult population in England in 2018. Source: Jephcote, *et al.*, 2018, 'Spatial assessment of the attributable burden of disease due to transportation noise in England', licensed under CC BY-NC-ND 4.0[25]




and the quantification of the health burden as shown in recent research by the UKHSA (figure 3).

The United Nations has also identified noise pollution as one of the three looming environmental threats, alongside wildfires and disruption to nature's cycles, in the *Frontiers 2022 report*[26]. One of its key conclusions is that '*Long-term exposure to noise pollution is a major, growing environmental issue that affects the mental and physical health of all age groups. Not only does [noise] cause sleep disturbance, annoyance and headaches … it is … a risk factor that can contribute to the development of hypertension, coronary heart disease, diabetes and irreversible hearing damage*.'[26] The report also highlights how high sound levels disrupt the acoustic environment on which wildlife depend to survive.

## Future challenges and opportunities

The UK and IOA members have been at the forefront for decades conducting noise, sound and health research in the UK and internationally. This expertise was on full display during the recent House of Lords inquiry on *The neglected pollutants: the effects of artificial light and noise on human health*[5] in 2023. The inquiry concluded that although noise '*contributes to a range of adverse health outcomes including heart disease and premature death, it remains a neglected pollutant and is poorly understood and poorly regulated*.'[5]

Thus, future challenges and opportunities for research, policy and guidance related to the health effects of noise and sound on humans include:

- expanding the evidence base for the health effects at a national and regional level of noise and sound from neighbourhood sources, mechanical ventilation indoors, commercial premises, construction activities, industrial sources, and leisure industries;
- improved evaluations of the health effects of noise and sound interventions/building design to support decision makers and resource allocation;
- expanding the evidence base for the effects of noise and sound on annoyance and health and better understanding of the impacts of non-acoustic factors;
- establishing a robust evidence base for how positive health effects can be achieved through improved noise and sound solutions, including the restorative effects of tranquillity and how these can be applied to create salutogenic[27] environments;
- expanding the evidence base for the effects of noise and sound on mental health, vulnerable groups, aural diversity, and health promoting soundscapes[28]; and
- evaluating and communicating the holistic impacts of noise and sound on health and economic prosperity for all stakeholders.

These challenges notwithstanding, the past 50 years, particularly the latter half, have seen enormous progress made in research, policy and guidance regarding the health effects of noise and sound. This bodes well for continuous innovation and developing the evidence base to support improving human health and more widely defining what makes holistic restorative environments for all species. These challenges lie ahead at a critical time in human

## References


5 House of Lords. (2023). The neglected pollutants: the effects of artificial light and noise on human health, HL Paper 232, 2nd Report of Session 2022–23. Science and Technology Committee, published 19 July 2023. **https://committees.parliament.uk/publications/40937/documents/199438/default/.**

25 Jephcote, C., et al. (2023). Spatial assessment of the attributable burden of disease due to transportation noise in England. Environment International, 178, 107966. **https://www.sciencedirect.com/science/article/pii/S0160412023002398**.

26 United Nations Environment Programme. (2022). Frontiers 2022: Noise, Blazes and Mismatches – Emerging Issues of Environmental Concern. **https://www.unep.org/resources/frontiers-2022-noise-blazes-and-mismatches**.

27 Mittelmark MB, Bauer GF. The Meanings of Salutogenesis. (2016). In: Mittelmark MB, Sagy S, Eriksson M, et al., (eds). The Handbook of Salutogenesis [Internet]. Cham (CH): Springer; 2017. Chapter 2. Available from: **https://www.ncbi.nlm.nih.gov/books/NBK435831/pdf/Bookshelf_NBK435831.pdf.**

28 Lercher, P., Dzhambov, A.M. (2023). Soundscape and Health. In: Schulte-Fortkamp, B., Fiebig, A., Sisneros, J.A., Popper, A.N., Fay, R.R. (eds) Soundscapes: Humans and Their Acoustic Environment. Springer Handbook of Auditory Research, vol 76. Springer, Cham**. https://doi.org/10.1007/978-3-031-22779-0_9**.

history. But with the continuing work and expertise of the IOA and its members these difficulties are not insurmountable, as summarised in this article and detailed in the associated webinar[1].

**Acknowledgements and authors**
This article was developed by the committee members of the IOA Sound, Noise and Health Group comprising the authors in collaboration with Charlotte Clark, St George's, University of London; Hilary Notley, Defra; Calum Sharp, Arup; and Colin Cobbing, Pinnacle Acoustics.

**Additional sources (selected)**

Clark, C., Head, J., Haines, M., van Kamp, I., van Kempen, E. & Stansfeld, S. A. (2021). A meta-analysis of the association of aircraft noise at school on children's reading comprehension and psychological health for use in health impact assessment. Journal of Environmental Psychology, 76,101646.

Clark, C. & Paunovic, K. (2018). WHO Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and Quality of Life, Wellbeing and Mental Health. International Journal of Environmental Research and Public Health, 15, 2400.

Hahad, O., Kuntic, M., Al-Kindi, S. et al. (2024). Noise and mental health: evidence, mechanisms, and consequences. J Expo Sci Environ Epidemiol. https://doi.org/10.1038/s41370-024-00642-5.

Münzel, T., Molitor, M., Kuntic, M., Hahad, O., Röösli, M., Engelmann, N., Basner, M., Daiber, A. & Sørensen, M. (2024). Transportation Noise Pollution and Cardiovascular Health. Circulation Research, 134, 1113-1135.

Stansfeld, S., Clark, C., Smuk, M., Gallacher, J. & Babisch, W. (2021). Road traffic noise, noise sensitivity, noise annoyance, psychological and physical health and mortality. Environmental Health: A Global Access Science Source, 20:32.

Khomenko, S., Cirach, M., Barrera-Gómez, J., Pereira-Barboza, E., Iungman, T., Mueller, N., Foraster, M., Tonne, C., Thondoo, M., Jephcote, C., Gulliver, J., Woodcock, J. & Nieuwenhuijsen, M. (2022). Impact of road traffic noise on annoyance and preventable mortality in European cities: A health impact assessment. Environment International, 162, 107160.

## Presidents' memories

### Colin English, IOA President 2006-2008

I joined Council in May 1997, initially as an ordinary member and then serving as Vice President Engineering. In 2000 Professor Tim Leighton joined Council and as we both travelled from Southampton, we shared a car for countless hours. Our discussions during those journeys were wide ranging and, of course, covered each other's areas of acoustics which broadened my knowledge of underwater acoustics considerably, but as we approached the M25 our conversation invariably turned to the Council meeting agenda. The Institute's membership elects the ordinary members of Council, but it is the Council members' job to elect its officers and in early 2004 I suggested to Tim that I propose him for the post of President-elect. He protested that he was far too busy, but in any case, he had decided that he was going to propose me for the post. Tim's opinion prevailed and I was duly proposed and elected. In May 2006 I assumed the post of President.

For nearly all of my time on Council Roy Bratby had served as CEO. His extensive business experience allowed him to guide the Council and the Institute very effectively. However, he decided to retire just as I assumed the presidency and Kevin Macan-Lind was appointed CEO. Fortunately, Roy and Kevin worked together for some months to ensure a smooth handover which helped me considerably.

Late in 2006 I realised that the significant contributions to the Institute made by some members, particularly some of its earliest Presidents, had not been properly recognised. Usually, honours are presented at one of our conferences, but in Professor Roland Dobbs case that was impractical and I presented his Honorary Fellowship at his home where I was a surprise guest at his 83rd birthday party.

One of the privileges of being President is attendance at all the conferences organised by the Institute. There were always duties to perform, but this gave me an insight into the wide range of activities of members and revealed how acoustics reaches into virtually all aspects of life. Members usually only attend conferences on their own areas of professional activity, but I was able to see the work of specialist groups as diverse as underwater acoustics and bioacoustics. It was at the underwater acoustics conference held in Lerici, Italy, that I gave my first conference dinner address on a terrace of the Villa Marigola overlooking the Italian Riviera.

An unexpected pleasure I gained from attending our conferences was seeing several of the inimitable Professor Trevor Cox's after dinner acoustics principles demonstrations. For anyone unlucky enough not to have seen these, Trevor's demonstrations range from creating wind instruments by drilling holes into a range of vegetables which are then played by members of the audience, to the world's largest whoopee cushion to demonstrate the Bernoulli's effect.

Like many professional institutes the IOA recognised that there was a problem in attracting people into the profession. University courses were reducing, while courses that did continue often had large cohorts of overseas students who did not enter the home workforce. We recognised that acoustics was often an unknown subject in schools and it was essential that children were made aware of acoustics before making their choice of university course. The Acoustics Ambassadors scheme was developed and piloted in schools in St Albans. This was a success and rolled out to a wider area once ambassadors were found and trained. We also noted that it was important to recognise the efforts that individuals made in making children and the wider public aware of acoustics and we established the Award for Promoting Acoustics to

## References

1 IOA Sound, Noise & Health Group: 50th Anniversary Webinar "50 years of research, policy and guidance on the health effects of sound". 11 July 2024. **https://www.ioa.org.uk/civicrm/event/info?reset=1&id=923.**

the Public.

I have always believed that professionals of any discipline should work with and understand the principles of related disciplines. For the IOA, this can be through attendance at branch meetings or our main conferences. I have also encouraged holding joint meetings with organisations such as RIBA or CIEH where members of both institutes can learn so much. It was therefore good to attend the Building Acoustic Group (BAG) conference on sustainability in acoustics which included a speaker from outside the usual acoustics world – a lady from the wool industry. In the following year BAG continued to reach out and organised a one-day meeting with National Society for Clean Air.

Throughout my time as President attendance at our conferences remained high, with sellout attendances of up to 200 delegates. BAG held an international conference attracting delegates from 18 countries and had the enviable 'problem' of receiving too many papers so had to introduce a poster session and Reproduced Sound introduced electronic voting so instant verdicts could be obtained by speakers. We also learned that our bid to host Euronoise 2009 was successful, which was both exciting and daunting. The IOA recognised that neither Council or HQ had the time, experience and contacts required to organise a major international event so Council appointed Bernard Berry to mastermind the conference.

Another concern of mine was the professional duty of care the we have, to only work within our areas of competence. Although few overall, code of conduct cases were increasing and while these were initially dealt with by the Membership Committee, some of the more problematic cases landed in my in-tray. Most complaints were found to be unjustified, but those that were usually occurred because of someone acting outside their area of competence. As a result, I initiated a review of our code of conduct. This also emphasised the need for a comprehensive programme of continuing professional development and the value of attending conferences and meetings.

In 2005 a major survey of members had been carried out to make the institute's services as relevant as possible to our members and the implementation of its findings was high on my agenda. Throughout my time on Council the Institute's membership had been steadily growing and stood at about 2,600 when I became President. As the membership grew towards 3,000 someone spotted that the original Articles of Association included a limit on membership of 3,000. There seemed to be no good reason for this limit and I ensured that it was removed at the 2007 AGM.

This growth in membership allowed us to appoint a membership manager at head office. The role was to ensure that membership continued to grow and to generally look after members' interests. A further part of the role was to implement the findings of the survey. Some practical benefits were introduced such as discounts on airport car parking and a low-cost PI insurance scheme for members who carried out small amounts of consultancy. Another move to assist those entering the profession saw HQ acted as a clearing house for summer and year-out placements for students. In 2007 we introduced the e-newsletter an also occasional themed editions of Acoustics Bulletin to explore topics in greater depth.

One significant theme in the survey results was that members wanted to see a wider influence of the IOA on the world at large, especially government. Up to that time our activities had been limited to submitting comments on consultation papers issued by the government on topics such as micro-generation technology and planning for major infrastructure. Often this involved considerable effort including branch and even national one-day meetings to inform our responses, but all too often it seemed that little notice was taken. To address this problem, we worked hard to reach out to politicians in order to directly explain how acoustics matters in so many areas of our national life. It was a slow process and much effort was put in by Stephen Turner who, through his consultancy contacts with the Department for Environment, Food and Rural Affairs, finally managed to get us a meeting with a minister at Defra. By this time, I had handed over the Presidential chain to John Hinton and Professor Trevor Cox was President-elect. Between us we represented the three main areas of membership: consultancy, noise policy and academic research and so we all attended the ministerial meeting with Lord Hunt. The meeting went very well and Lord Hunt appeared genuinely interested in how the Institute could help in the formulation of noise policy and the direction of the government's research programme. We left the meeting feeling that the years of effort had finally paid off, but imagine our feelings when about a week later Lord Hunt lost his government post in a reshuffle.

I am delighted to see that for some years now the Institute has enjoyed more successful engagement with government. I am writing this on 4 July 2024, election day, and I am aware that there will inevitably be a considerable change in ministers before the next week. However, I understand that the Institute's contacts with government now extend beyond ministers and I am confident that our interaction with government will survive whatever changes today's voting may bring.

### Professor Bridget Shield, IOA President 2012-14

It was a huge honour to be elected as the first woman president of the Institute, from 2012 to 2014. I found it difficult to believe when I got a phone call from Trevor Cox, the previous president, asking if I would consider taking on the role. This was a far cry from my first Council meeting in the late 1980s when the Code of Conduct for members was being revised (I was then the only woman on Council). At the time members were referred to throughout the Code as 'he'. I was amazed at the anger which was generated when I hesitantly suggested that maybe 'he' could be replaced by 'he/she' or 'they'. I was so intimidated that I didn't dare speak at a Council meeting again for about two years!

When I became President-elect, I promised to do two things as President – to arrange for decent coffee to be served at Council and committee meetings, and to organise a conference at Windermere (for younger members, many of us older ones have very fond memories of weekends spent at autumn conferences at the Hydro Hotel in Windermere). I achieved the former but, sadly, not the latter.

It seems that every President has a crisis to deal with, the details of which often cannot be revealed to the membership. My crisis came about as I walked into my office at the university on the morning after Trevor had hung the president's medal around my neck on the evening of 12 June 2012. However the crisis passed after a few weeks, thanks to a lot of hard work by members of Executive and others, and the remainder of my time as President had many high points to balance out the difficult moments.

The highlight for me was probably hosting the 40th anniversary conference at the NEC in Birmingham in October 2014. I was particularly proud of getting Leo Beranek to come and give the opening lecture, shortly after his 100th birthday. I felt it was important to have an inaugural lecture by a 'big name' in acoustics in order to attract delegates. When I first suggested Leo Beranek, I was told this was rather unrealistic given his age, but I thought there was no harm in asking him. So I did, and was delighted to receive a very enthusiastic and positive response. He gave a splendid talk on the latest developments and research in concert hall acoustics, and some of his own analysis of recent data in this area. Here I must acknowledge Linda Canty for her superb organisation of this – and all other – conferences. A huge amount of work goes on behind the scenes to ensure a successful event. I'd also like to thank Linda for her support throughout my presidency, which included arranging for me to attend any IOA conference I wished – a very enjoyable perk of being President!

The other office staff also do an incredible amount of hard work ensuring the smooth running of the Institute, and deserve the appreciation and gratitude of all our members.

I was very lucky in the appointment of Allan Chesney as our new Chef Executive at the end of 2012. He encouraged and enabled many of the subsequent changes in the organisation and administration of the Institute. I am delighted that he is still in post helping to steer the Institute onwards and upwards as we (hopefully) move towards a new identity as a Chartered Institute.

In preparing this article I've been rereading the 12 president's letters that I wrote for Acoustics Bulletin. It has been very interesting to see the 'innovations' that were happening at that time, and to reflect on how much things have changed in the past 12 years. In early 2013 we held what I think was our first strategy meeting, and carried out a members' survey to determine what people wanted from the IOA. Something that was essential was to minimise the costs of running the Institute as far as possible, following the recent global financial crisis. I recall long discussions about how we could maybe reduce the costs of postage and staff time by communicating with members electronically, rather than by post; this started with meetings and other notices being sent out by email in 2013. The following year the new website was launched, after many interrupted years of development. As well as greatly improving communication with members it allowed them to download Acoustics Bulletin as a pdf if they wished. How extraordinary that it is only a decade since our online communicating with members began!

Other initiatives during this period included setting up a 'Women and Families' working group to see how the Institute could better support women and others with caring responsibilities, particularly those taking a career break. Our commitment to diversity and equal opportunities was further emphasised by my signing, on behalf of the Institute, the Royal Academy of Engineering's Engineering Diversity Concordat in 2013. This commitment continues through the more recent establishment and work of our Equity, Diversity and Inclusion working group. On a personal note I should say what a pleasure it is to me these days to often have to queue for the ladies' loo at meetings and conferences – an indication of the greatly increased numbers of

### Some 2010 significant world events

- Sachin Tendulkar scored the first double century in One Day International cricket, against South Africa (24 February 2010)
- Iceland's Eyjafjallajokull volcano erupted and much of Europe's air space was closed for six days (14 April 2010)
- The Tōhoku earthquake and tsunami sparked the Fukushima nuclear disaster in Japan (11 March 2011)
- All 12 boys and their coach were rescued from the Tham Luang Nang Non cave system in northern Thailand by an international team, they had been trapped there since 23 June (8-10 July 2018)
- In Queen Elizabeth ll's Diamond Jubilee year, London hosted the 2012 Olympics (27 July 2012)
- The Brexit referendum took place in the UK and Gibraltar to ask the electorate whether the country should remain a member of, or leave, the European Union (23 June 2016)
- Greta Thunberg delivered her *How dare you* speech at the UN Climate Action Summit (23 September 2019)
- NASA astronauts Jessica Meir and Christina Koch conduct the first all-female spacewalk outside of the ISS (18 October 2019)
- The 'Salisbury Poisonings' was a botched assassination attempt on Sergei Skripal, a former Russian military officer and double agent for the British intelligence agencies (4 March 2018)
- A terrorist bombing attack at an Ariana Grande concert in Manchester killed 22 people and injured more than 140 (22 May 2017)


**Above:** Milton Keynes was chosen as the new IOA HQ in 2017

women attending such events. This is so different to my early years in the IOA when there were usually only one or two (or zero) women delegates at meetings.

Another group which started during my presidency, and whose work has expanded to reflect current interests and concerns, was the Sustainability Task Force. In addition, our programme of STEM activities and outreach work in schools expanded considerably. All these activities, together with all the interests and meetings of specialist groups and committees, are due to the dedication, hard work and enthusiasm of many members.

Two other things stand out for me when I remember my presidency, one good and one not so good. The latter, for which I was (possibly naively) quite unprepared, was the vitriol from the anti-wind farm lobby following the IOA's publication in 2013 of the *Good Practice Guide to the Application of ETSU R-97 for the Assessment and Rating of Wind Turbine Noise Assessment*. Both the IOA and I personally were threatened with injunctions and demands that the Charity Commission remove our charitable status. Fortunately, none of these things happened, despite a few negative articles in local papers, but we all had to expend a large amount of time and energy in responding to the complainants to explain and justify the IOA's position.

In contrast, I also remember that I spent a significant amount of time building bridges with other national and international organisations including the European Acoustics Association and the Association of Noise Consultants, with whom, for various historic reasons, relationships had become somewhat strained. It is pleasing to note that the IOA now maintains good collaborative relationships with these and many other bodies, and long may this continue.

I am sure I have missed many other significant happenings during my presidency for which I apologise. It was a very enjoyable, fulfilling and stimulating two years, made more so by the effort, support and friendship of my colleagues on Executive and many other friends in the Institute. Thank you all. And I hope you all appreciate the coffee...!

**Mr William Egan,**
**IOA President 2014-16**

I luckily 'fell' into the acoustics discipline and was fortunate to have two mentors who had over 40 and 50 years' acoustics experience respectively, they both took the time and patience to instil in me a love of the discipline – demonstrating that we learn something new each day – and they needed patience as I asked a barrage of questions. This is where my journey with the Institute of Acoustics began, to learn more and take an active part in supporting the professional body for acoustics and vibration.

Likewise, I was honoured and privileged to be selected as the President-elect, supporting the Institute that had quietly evolved under the stewardship of Professor Trevor Cox and Professor Bridget Shield and the members of the Executive Committee. This is really where the journey of the President begins, as the role of President-elect is intended to enable a future President to familiarise themselves with the current practices and processes of the IOA and to work with the current President to ensure a smooth transition.

During my tenure as President-elect the objective was to have more comprehensible finances and to generate surpluses. These surpluses and our financial stability would continue to underpin our strategic plan that has progressed with the membership to safeguard our future and to promote acoustics. We were also pleased to appoint a new Chief Executive in Allan Chesney.

On a personal note, as I became President I changed companies, taking my knowledge into a new domain (for me) of underwater acoustics. I mention this, as throughout my life in acoustics, just like going to school, it is a continued learning process. The IOA's Continued Professional Development Scheme is supported by a wealth of material, courses, seminars etc enabling members to continue to maintain and broaden their knowledge and skills.

My ambition during my tenure was to continue the update our mission and vision, underpin the finances of the Institute, support our new CEO and to continue to raise acoustics' profile – and that of the Institute, (as a profession we have so much to be proud of). One of my first tasks was to lead the 40th Anniversary of the Institute, a perfect opportunity to spread this message.

The 40th Anniversary culminated in the successful 40th Anniversary event at the NEC. I was extremely proud of the organisation by all to make this event such a triumph. We welcomed many visitors from overseas and it was a pleasure to have them participate. Our opening keynote speaker, Leo Beranek, celebrated his 100th birthday a couple of months before, but defied his age, when giving an up-to-date presentation, holding the audience's attention, and then demonstrating his extensive current knowledge in a Q&A session. He graciously gave the after-dinner speech which captivated and delighted the audience.

Our achievement in holding events as part of our promotion of acoustics, enabled us to successfully win the bid in 2014 to host ICSV2017 (International Congress on Sound and Vibration) in London.

Every President's tenure has its challenges and at the end 2014 the debate on onshore wind farms was at its height in the press. The IOA received many letters from various lobbies – interesting because as the IOA published the Good Practice Guide, it seems that the public and press had incorrectly assumed we set the policies and noise limits. Our role was to create a guide (not standard) to aid those who are applying the policy set by Government to ensure good robust methodology. We published a response on our website to the various comments and we continued to maintain the scientific and professional approach expected of a professional body.

As we moved into 2015, we continued to drive the strategic purposes of the Institute, one of the key reviews was education and how the digital IT infrastructure would integrate to support the vision for the future of the existing and forthcoming members. Our promotion to students and our student E-mag (Sound Bites) proved successful and supported by our social media campaigns bought more potential acousticians to the fold. This translated into increasing our student membership significantly, who were a mixture of full-time acoustics students, and those studying 'overlap' subjects such as audio engineering, music technology, etc. Additionally, our new website commenced the streamlining and optimisation of membership renewals, and we produced the first E-Bulletin.

On the use of technology, the IOA has always forged ahead and at the one-day conference, Acoustics 2015, we launched the interactive app for smart devices to enhance the experience for our delegates, allowing them to manage their agendas, ensure they covered the topics they wanted to see, have background on the speakers and organise their meetings. Something we now expect and take for granted at conferences.

The Institute continued to ensure that key standards and developments are highlighted to our members and the IOA, and the Association of Noise Consultants, jointly published a new design guide for the acoustics of schools. The 110-page document *Acoustics of schools: a design guide* was designed to accompany the revised performance standards for the acoustic design of schools


**You can read *IOA, The First 40 Years here***
**https://bit.ly/IOAfirst40**

**Memories differ**
All our contributors to this archive section will remember events differently and as we feature *their memories*, they may not be exactly how others remember them!

was a revision of the guidance previously published in 2003 as Sections 2 to 7 of Building Bulletin 93: Acoustic Design of Schools.

On completion of the 40th anniversary year and to mark this significant milestone, we printed the history booklet. It provided a wonderfully detailed history of how our Institute has grown from small beginnings to the modern, professional, thriving and well-regarded members' body and provided a fascinating insight into the world of acousticians, the many diverse areas in which they specialise, and why their work has and will continue to make a difference. My gratitude still goes to all those involved in bringing it to print.

It has also been my pleasure to present to several worthy recipients' medals and awards, for the devotion and commitment to excellence in the field of acoustics and the Institute. The field of acoustics can be served in many ways and the individuals recognised for their exceptional accomplishments and outstanding performance continues to serve as an inspiration for us all and their work influences our field for decades.

My one drawback is that I did not have enough time to visit all the branches and groups, as it is to this dedicated band of volunteers, along with all the committee members past and present, who are the life blood of the Institute that I continue to express my appreciation to.

### Ms Jo Webb, IOA President 2016-18

It's amazing how much can happen in the two-year period of an IOA Presidency. Not, of course, that the successful things are done by the President – they're done by our enthusiastic, motivated members who work hard (often in their own time), and by our head office team. As others have said in this column in previous issues, you may take the helm with definite ideas about what you hope to achieve, but life has a way throwing up icebergs prompting the need to steer a different course.

The outcome of the EU referendum was my biggest iceberg, with the potential to create both uncertainty and opportunity for our profession. Uncertainty regarding what could happen with legislation and how research would be funded, and opportunity to be more nimble in our approach to prediction and assessment than may have seemed possible within the EU. As an Institute, we decided to take measured steps to support robust policy, legislation and regulation in those uncertain times. In early 2017 we organised a successful one-day event which examined what the effect of the EU had been on the areas of sound and vibration and hence where changes could occur, plus the proposed processes behind such changes. At the meeting, the Head of Noise Policy at Defra complimented the IOA on being the first stakeholder institution to approach the department with a meaningful contribution.

The second iceberg was being told that the building housing our office had been sold, which changed the picture given our lease would expire in 2018. We began looking for new premises. It became clear that office accommodation was scarce, and particularly expensive in and around St Albans where our existing premises were. This was in part due to St Albans getting caught in the 'London spread', and in part to the conversion of offices into residential properties as commercial landlords took advantage of new rules regarding change of use. Milton Keynes was chosen as the new location because of its ready supply of affordable and accessible premises, with good public transport and road links. We considered it to be the best choice for the long-term stability of the Institute. In the move we sadly lost a number of our long-serving staff, who were unable to make the move with us.

The icebergs – particularly the office-shaped one – meant that time and energy which I'd planned to put into the future of IOA education and professional standards were quickly consumed by the immediate need to resolve our accommodation issue, and when we'd found premises, into decision making on recruitment and office fit-out. Once we understood which of our staff were able to come with us, Exec. and Council worked hard and long to agree what the head office team of the future might look like in order to deliver future aims, and to agree funding for the plan.

Thanks to the dedication of our staff, IOA life continued through the period around the move, including recruitment to our diploma and certificates. The IOA's interest in education runs from encouraging school children to consider science and engineering (and hopefully acoustics) as a career, through provision of the IOA diploma and certificates, to opportunities for continuing professional development (CPD).

We provided sponsorship for the Careers Hive and Generation Science (the latter being activities delivered in schools), to the Edinburgh Science Festival. For managing and delivering the diploma/certificates we decided to purchase an online learning platform, a significant investment for the Institute. Separately, a Standard for an Acoustics Engineering Technician Apprenticeship was published, following extensive work by a group of volunteers.

It was envisaged that the learning platform could be the delivery vehicle for CPD courses. We considered that online access to CPD material was a key part of improving professional standards, a concern from the Membership Committee who deal with Code of Conduct complaints. A subgroup was set up within Membership to look at professional standards.

Within the team coordinated by head office, our long-term Engineering Manager, Peter Wheeler, retired, and we welcomed Blane Judd to a slightly altered role.

### National Physical Laboratory services

Iceberg number three was as unexpected as the office one, and I'm still upset that we weren't able to navigate around it. Due to funding constraints limiting what

services the National Physical Laboratory (NPL) could offer, they chose to withdraw their airborne acoustics service, resulting in loss of the UK's primary and secondary noise standards. We did hold a discussion with NPL where they set out their position and reasoning. Unfortunately they weren't able to engage in any discussion regarding a potential alternative home for the standard and consequently our national standard was lost. The only consolation is that it's likely that optical methods will be developed for use in calibration for airborne sound, and that these methods would likely be more flexible. However, it's not clear when or if this will happen.

## Highlights

A highlight of my term related to international conferences. We hosted ICSV24 in July 2017, and Council agreed that we should bid for Inter-Noise 2022, which was successful. ICSV24 saw more than 1,000 acousticians from over 50 countries come together. A quarter of the attendees were students, boding well for the future of the profession (although not for the budget surplus). A huge thank you was earned by our head office team, where Linda and Allan continued to do their day jobs with the co-ordination of the conference in addition. We were immensely lucky to have so many students and early career staff volunteer to give their time, ensuring things ran smoothly and that help was always on hand. Salut to Chair Jian Kang, and (working largely in the background) and our then President-elect, Barry Gibbs.

One of the great privileges as President is to recognise our members who make significant contributions to our profession and to the Institute itself. That commitment was celebrated through the award of seven Distinguished Service awards over two years. I was also thrilled that we recognised Geoff Kerry's huge contribution with the award of a new IOA medal – the Geoff Kerry Distinguished Service Medal, of which Geoff himself was the first recipient. I spent the first day of my professional career on site with Geoff, and it wouldn't be possible for me to overplay the benefit of his mentorship – from those first tentative steps in consultancy to his wise counsel when I became President-elect.

Three of our members were recognised in a wider sense. Dame Ann Dowling was awarded the James Watt International Gold Medal by the Institution of Mechanical Engineers, and Tim Leighton the Royal Society's Clifford Paterson Medal. Sue Bird's contribution to engineering and to women in engineering was recognised with the award of an MBE.

Arising from the IOA Research Co-ordination Committee, a team led by Kirill Horoshenkov and Richard Craster was successful in securing funds from the EPSRC to set up the UK Acoustics Network (UKAN) – an initiative to bring together acoustics researchers, industry and government. UKAN has since successfully won a second round of funding and is a great focal point and education resource for acoustics researchers. It's done much over the past seven years to provide cohesion within our research community. Another headline event the same year was the University of Salford celebrating 60 years of acoustics at the University.

On a sad note, we lost two former Presidents – Orhan Berktay and Roland Dobbs, as well as Leo Beranek, and several well-loved colleagues from our industry.

The IOA published or contributed to two important documents between 2016 and 2018. August 2016 saw the publication of *A Method for Rating Amplitude Modulation (AM) in Wind Turbine Noise*, the culmination of a significant amount of volunteers' work. The report was intended to encourage a consistent approach to identifying and quantifying AM, and enable a body of comparable evidence to be gathered, permitting robust assessment and planning decisions in what has been a contentious area.

*Professional Practice Guidance on Planning and Noise* (ProPG) was a collaboration between the Institute, the ANC and the CIEH. ProPG is a blueprint for acoustic practitioners, local authorities and developers aiming to protect home dwellers from noise by putting good acoustic design at the heart of all new residential development. Producing the ProPG was a massive, cross-institute effort by the volunteers; the document has been widely accepted and applied in the industry. In recognition, the team who produced the ProPG won the Soundscape Award at the Noise Abatement Society 2017 John Connell Awards.

In 2018 I passed the helm to Barry Gibbs, supported by Stephen Turner as his President-elect. As Kennedy said, "… those who look only to the past or present are certain to miss the future". Even the most ardent future gazer probably wouldn't have seen what was just over the horizon – but that's for the following decade, after Barry's pre

**Professor Barry Marshall Gibbs**, IOA President 2018-20

My presidency took place between Brexit and Covid. It began with the move of the IOA office from St Albans to Milton Keynes, with unavoidable staff changes, but with important staff appointments.

I was confirmed as President after serving two years as President-elect. I came from an academic background, as a researcher and teacher in acoustics at the University of Liverpool. I had been a member of the IOA since its inception in 1974 and served on the Educational Committee and as ordinary member of Council for eight years. It was a pleasant surprise when Bridget Shield, then President, suggested that my name go forward as -President-elect for 2016-18. The IOA is a major and unique institution – it is both a professional body and a learned society, and is a forum for researchers, consultants, designers and policy makers. Its membership is the largest in Europe and its educational portfolio has no equivalent in other chartered engineering institutes.

I took over from Jo Webb who gave a friendly warning that each presidency is challenged by an event, often unforeseen. The effects of Brexit were not then evident, but fortunately our Institute had its Parliamentary Liaison Group ready to respond to any possible changes to noise and vibration regulations and standards. With the onset of the pandemic, the new office, headed by Allan Chesney, already had an IT system in place, which allowed rapid development of on-line delivery of committee and branch

meetings and conference.

Early in 2019, the IOA undertook a strategic review, which, along with other initiatives, proposed enhancement of its outreach and of its educational programme. For a long time the IOA has recognised its responsibility to complement the teaching of acoustics by higher education institutions with courses of its own. Many people come to acoustics from other backgrounds and the IOA provides high-quality conversion courses, such as the postgraduate diploma, now available on-line, and a range of professional competences courses.

An important initiative was the launch of the UK Acoustics Network (UKAN), set up by Kirill Horoshenkov and Richard Craster, funded by the Engineering and Physical Sciences Research Council (EPSRC). The network continues to promote links between academics, practitioners, industry and other potential beneficiaries, towards identifying and solving real-world problems. The IOA and UKAN jointly sponsored the report *Sound Economics*, which highlights the value of acoustics (approximately £4.6 billion annually) to the UK economy.

My period was eventful and whilst involved with many of the activities, I cannot claim leadership of them. This was down to our body of expert and experienced volunteer members, supported by the Milton Keynes office: Alex Shaida for his innovations in marketing; Linda Canty for maintaining the quality of the conferences; Allan Chesney for its management.

I can claim some leadership in the organisation of two international conferences. Ironically, both occurred outside my period of presidency. In 2017 Jian Kang and I co-chaired the International Congress on Sound and Vibration in London. The main challenge here was that the IOA, as host institute, had relatively little time to prepare for a conference of over 1,000 delegates. That it did so successfully, was due to the support of the IOA membership.

As Past President, I chaired Internoise 2022 in Glasgow in collaboration with International Institute of Noise Control Engineering (I-INCE). Here, the main challenge was in dealing with the remaining effects of the pandemic. After several risk assessments, it was decided to run the conference with most of the delegates attending on site. That we were able to do this, with over 1,000 delegates attending, was again due to the active support of the IOA membership.

It was my pleasure and honour to be IOA President.

**If you have any IOA memories you'd like to share in the next issue of Acoustics Bulletin, contact the editor, Nicky Rogers at nickyr@warnersgroup.co.uk**

### Technical terms

In this archive section, we use technical terms 'of the day.' These terms may not be what we use now.

# Transforming the IOA website

As the IOA continues to grow, its website is starting to creak. In order to increase traffic and deliver information quickly and accurately, and to make search results more focused towards individual users, the IOA is investing in a complete website re-structure.

***By Nicky Rogers***

**IOA has a set of strategic objectives and one of those is to improve its digital platform to help it better engage with all stakeholders, especially members. While the existing website is serviceable the time has come to invest in a revamp to completely transform the user experience.**

Experience strategist, Jonathan Lovatt-Young, Founder of Love experience, has been tasked with the job of assessing and improving the existing website and expects the new iteration to be ready for Spring 2025.

Jonathan said: "Alarmingly, users spend 0.2 seconds on a web page before deciding whether or not it will provide the information they are looking for. 0.2 seconds – and once that sub-conscious decision has been made why would you try again only to get the same results?"

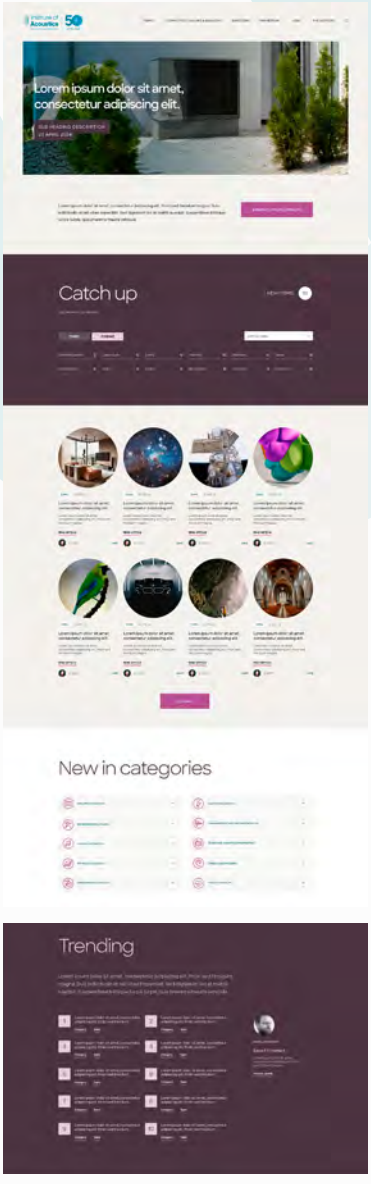
**Above:** Jonathan Lovatt-Young is masterminding the IOA website redesign

## Recognising users' preferences

Initial research into members' needs helped Jonathan to formulate a digital strategy, so he first looked at the content management system (CMS) of the existing IOA website, which makes it nigh on impossible to make updates and changes easily. it requires a lot of time, effort and resource so the decision was made to design a completely new site that will be of immense benefit to members, drive revenue to the IOA and be a source of critically important and easily accessible acoustics-related information for all other visitors.

What members will see straight away is a 'personalisation' of the website – it will be almost 'bespoke' for each individual user, as content will be prioritised in accordance with their specialisms and specific interests.

The world of acoustics can be classified into certain main categories, and under those headings, there are countless individual topics. Jonathan said: "Generally, members don't have the time or inclination to wade through topics that don't interest them just to hopefully eventually stumble upon what they do want to find out about, so the upgraded system will quickly recognise users' preferences and deliver the most relevant search results, which will then link to related information on (for example) training courses, conferences, latest research, job vacancies, news and articles etc."




**Right:** The proposed new home page

The new technology will recognise users as individuals and members will be able to enrich their own profile with their own areas of interest so that subsequent visits to the new website will deliver content that is of most importance to each visitor. It will also have an automatic 'catch up' facility which will display as lead items, any new news and developments in their specialisms that have occurred since their last visit and suggest related topics that might also interest them. This content 'push' significantly reduces the time that visitors have to spend searching and delivers an almost 'bespoke' service.

New resources will be put in place to produce new and additional website content and to curate existing content. Making no investment here produces a very shallow website, but the new CMS converts the current laborious and labour-intensive process of updating material to an automated workflow pattern with no physical input, therefore, no cost to the IOA.

And this method will be duplicated in all systems, including signing up for IOA membership (currently somewhat onerous) and making interaction easy, quick, friendly and effective at giving users exactly what they need without any faffing about.

## Making IOA the voice of the acoustics industry

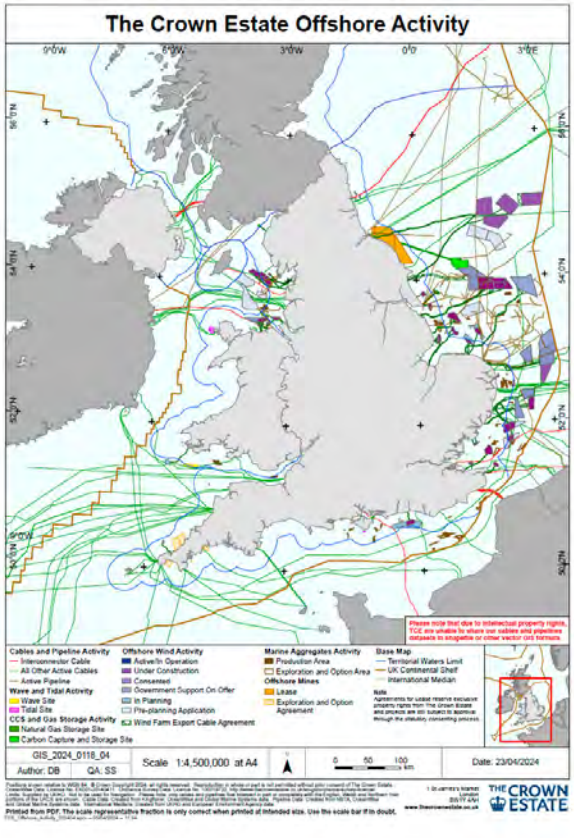
Fundamentally, IOA is a digital organisation and the prototype new website shown to a selection of members provided encouraging and enthusiastic responses, so work is now being undertaken at pace to launch next spring. As it develops though, new member benefits are coming to light all the time, for instance, the content push described above, will alert members world-wide to branch events that will interest them, so they can attend online if they want. Currently, it's all a bit hidden and can pass by unnoticed and that's a shame.

This is an exciting and transformative development in the 50th anniversary year of the IOA. It will benefit members primarily, but will help catapult the IOA into the position of a reliable, accurate, informative and approachable voice of the acoustics industry.

# Acoustic sensing using the UK offshore renewable energy archipelago

The UK has an extensive network of offshore renewable energy (ORE) infrastructure for wind and tidal power generation, and this is growing rapidly to meet the ambition of a net zero future by 2050.

***By Philippe Blondel and Anna Young, University of Bath, UK***




**Above:**
**Figure 1.**
Crown Estate map of all offshore activity (England, Wales & NI), *© The Crown Estate. Published via THE CROWN ESTATE OPEN DATA LICENCE (GIS) – VERSION 1.1. Contains data provided by The Crown Estate that is protected by copyright and database rights*

**The UK has an extensive network of offshore renewable energy (ORE) infrastructure for wind and tidal power generation, and this is growing rapidly to meet the ambition of a net zero future by 2050.**

Offshore wind power capacity was 11 GW in 2021 (approximately 10% of the UK's consumption). Tidal power capacity is currently <10 MW but will be expanding tenfold to almost 100 MW in the next five years with four new or expanding sites in Scotland and Wales. Floating offshore wind has also had its first success in the recent Government Contract for Difference (CfD) auction (32 MW to be installed). The latest map from the Crown Estate (Figure 1, updated April 2024) clearly shows these ambitious activities, along with their connections to shore.

## Underwater acoustic monitoring and surveillance network

These rapid expansions in ORE generation give significant opportunities and challenges for infrastructure design and use. In this project we have explored the potential of multi-purposing the UK's ORE infrastructure to support an extensive underwater acoustic monitoring and surveillance network. The UK Acoustics Network (UKAN+: **https://acoustics.ac.uk/**) funded us for four months, with a research project entitled *Feasibility of a Marine Acoustic Sensing Network using the UK Archipelago of Offshore Renewable Energy (ORE) Infrastructure* awarded to Anna Young. Potential applications include monitoring of infrastructure integrity, defence and security of UK waters, biodiversity and population monitoring, underwater navigation and communication, and oceanographic and climate science.

The scope of this project federated several domains around the central theme of underwater acoustics. Anna Young, the principal investigator, is based in mechanical engineering and working on marine turbulence (e.g. with her Barnacle sensor) and tidal turbine design; she leads the University of Bath Research Beacon on *Zero-Carbon Offshore Power* (**https://www.bath.ac.uk/campaigns/bath-beacon-zero-carbon-offshore-power/**). Team members included Guillermo Jimenez Arranz (PDRA), Philippe Blondel (based in physics and working on acoustic sensing, e.g. with the FLOWBEC sonars for offshore renewables) and Cormac Reale (based in architecture and civil engineering and working on offshore geotechnics). As the UKAN+ funding enabled us to expand into new initiatives, we are now also working with Alan Hunter (mechanical engineering, sonar expert) and reaching out to ORE partners across Europe.

## Dogger Bank analysis

The Crown Estate map shows the range and diversity of offshore structures. We synthesised the information relevant to acoustic sensing for all offshore renewable energy assets around the UK shore, active, in development and planned. This helped us identify an exemplar site for analysis: Dogger Bank, selected because it is an offshore wind farm in a Marine Protected Area, and because of recent press coverage of Russian vessels visiting North Sea wind farms and taking a close interest in following the routes of subsea power cables.

We then used benchmarked and validated acoustic propagation models (from the Acoustic Toolbox User interface and Post processor (AcTUP V2.2L, **https://cmst.curtin.edu.au/products/underwater/**) to quantify sounds from typical sources (e.g. small ships, submarine vehicles, mammals) and how they are perceived by man-made sensors. This modelling was done over a wide range of frequencies (including the 'shipping bands' recommended by the European Marine Strategy Framework Directive and its UK implementation) and for ranges up to 100 km from the exemplar site. The different sound levels, in different frequency ranges, were then translated into sound detection ranges for acoustic sources of interest. P50

# INSTALLATION OF
# FZHM JACK UP SPRING MOUNTS

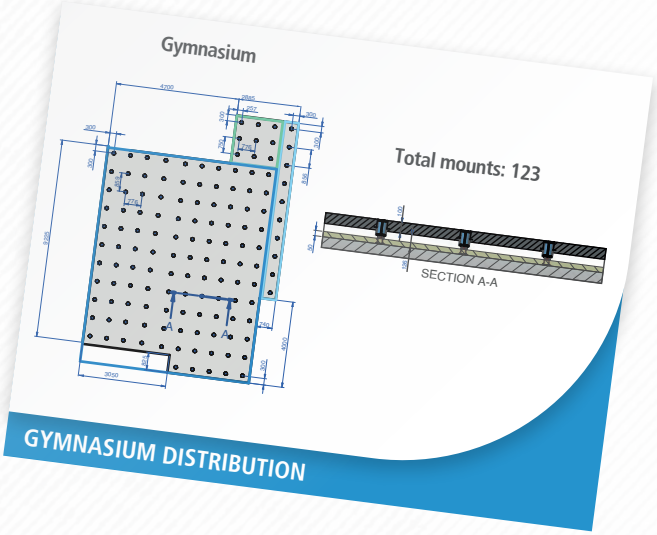
AMC MECANOCAUCHO UK UNITED KINGDOM

Manufacturing **solutions** for architectural acoustics and vibration problems **since 1969**

**AMC Mecanocaucho has been selected to assist with the design of two floating concrete slabs with FZHM+Sylomer® Jack up mounts.**

The flooring of two gym spaces have been isolated from apartments and a lounge area located directly underneath on the lower floor.

The Wiltern
LONDON




**VIDEO**
INSTALLATION

## GUIDED PROCESS

AMC-MECANOCAUCHO® has visited the site during different stages of the installation to ensure that the teams have been **guided and the correct procedures have been followed.**



**Lewis Metcalf**
Applications Engineer – UK & Ireland

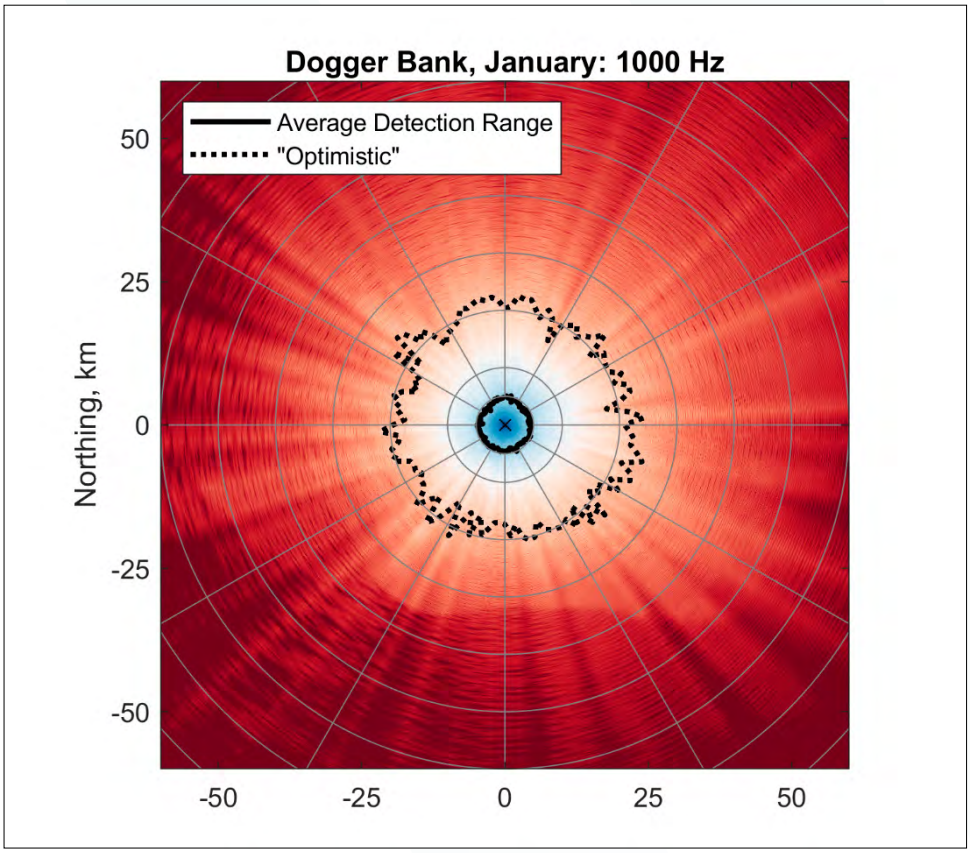
+44 (0)752 311 8007
lewis.metcalf@amcuk.co.uk
Leicester, UK
www.akustik.com

**NEW BROCHURES**

Figure 2 shows one of the many examples, as detection ranges vary with the frequencies of interest (and how they will propagate), with the surrounding bathymetries, and also with the sound speed profiles in different directions around the acoustic sensor (varying with seasons but also with tides, in some cases) and with the signal-to-noise ratios (varying from 'average' to 'optimistic' cases).

## UKAN+ funding

Thanks to UKAN+ funding, we were able to strengthen a research team to address the feasibility of building and deploying a marine acoustic sensing network, using the UK archipelago of offshore renewable energy infrastructure. We constrained quantitatively what was achievable in complex and variable environments, and we are now reaching out to different partners across Europe to translate these findings into field measurements and practical applications, helping protect and de-risk ORE assets around Europe.




**Above: Figure 2:** One example of predicted detection ranges for acoustic sources around one ORE structure


# Whatever the reason, Penguin Recruitment are here to help!

**Penguin Recruitment is a multi-disciplined Engineering and Environmental Recruitment Consultancy established in 2004. We offer nationwide and international job opportunities for anyone looking to kick start or develop their profession.**

With extensive knowledge in the Acoustics and Air Quality Industry, we are proud to offer an energetic can-do approach whilst providing a friendly, professional and knowledgeable service at all times.

If you're a growing business looking to access a wider pool of candidates to help with your expansion plans, then please get in touch!

Penguin Recruitment advertise on more job boards than any other specialist recruitment agency within the acoustics industry, and have a well-established and expansive network of candidates accumulated over 16 years of service, allowing us to provide leading advice on the current candidate market.

For more information please contact Amir Gharaati or Charlotte Lavender on **01792 365000**, or email **amir.gharaati@penguinrecruitment.co.uk** and **charlotte.lavender@penguinrecruitment.co.uk**

PENGUIN RECRUITMENT

www.penguinrecruitment.co.uk

# Concrete, acoustics and sustainability

When working in acoustics it can be difficult to make decisions that reduce our impact on the planet, purely because no-one can alter the laws of physics. The dense materials that generally provide the best acoustic performance are typically more carbon-intensive materials and therefore detrimental to the environment. Here, Tom Van Dongen, senior project engineer at Mason UK, unpacks this dilemma by focusing on the specific example of a concrete floating floor.

**At a global level, the built environment accounts for 39% of gross annual carbon emissions[1]. This includes operational carbon, the emissions produced during the day-to-day operation of buildings and infrastructure, and embodied carbon — the emissions associated with the production and transportation and construction of building materials.**

A key element in reducing embodied carbon is the choice of materials we use for our buildings. Materials like steel and cement have high levels of embodied carbon due to the energy-intensive processes involved in their production, while renewable materials like wood may have lower embodied carbon. Cross-laminated timber (CLT) is a good example of a material that has become increasingly popular in part due to its sustainability credentials. CLT is typically made from sustainably managed materials and the manufacturing processes that produce it require less energy and generate fewer emissions when compared with traditional building materials like concrete and steel.

Swapping in materials like CLT to replace energy-intensive materials would certainly help the built environment sector reduce the quantity of embodied emissions it generates. Yet while many businesses wanting to promote themselves as 'green' are openly embracing CLT, things are not always as straightforward as they appear. In the world of acoustics, ditching dense materials and replacing them with wood produces complex engineering trade-offs that we need to be honest in recognising.

Bearings supporting CLT structure in auditoria

## Example: concrete floating floors

Concrete floating floors are used in acoustics and vibration control engineering to create an air gap between a floor and the structural slab beneath, hence the name 'floating'. This breaks the transmission path for vibration, therefore mitigating vibration caused by activities like weight drops in

**Above:**
Concrete pour in studio 2

## Reference

1 **https://www.deloitte.com/global/en/Industries/energy/perspectives/sustainable-construction.html**

gymnasia or from tube trains that are close to a hotel basement, to give two common examples.

The floor is raised (or jacked) using rubber or spring isolators, depending on the application. The floor itself, however, is made from concrete. In addition, it is reinforced with layers of steel mesh. While these material choices have obvious drawbacks from a sustainability perspective, the choice is driven by engineering considerations.

In the realm of acoustics, greater mass equates to better acoustic performance. Materials that are less dense simply will not provide the same level of acoustic performance and, ultimately, would not be suitable for a floating floor in the most critical applications. If we are going to discuss sustainability and acoustics, we need to acknowledge some uncomfortable realities. To skirt around this issue would be like an oil company spending all their time discussing how many trees they are planting.

## Greener considerations

At a fundamental level we need to accept that dense materials like concrete are not going to disappear as they will always be necessary for acoustics. Mason UK recently worked on a project at Bristol University, where an historic building was being renovated using CLT panels. Both the reuse of an historic building and the choice of CLT as a building material were beneficial from a sustainability point of view. However, although 90% of the building was made from CLT, we still needed to install concrete floating floors within this structure to meet the acoustic specification.

However, recognising the necessity of concrete in acoustics does not mean we should give up on improving how we do things, or dismiss the possibility of more environmentally-conscious engineering choices. The use of steel reinforcing mesh could be reconsidered. In the Bristol University project cited above, by taking into consideration the specific loading conditions on this project, we were able to reduce the layers of mesh from two to one. We are currently exploring the implications of having a single layer of mesh as standard in our concrete floating floors, rather than two or more layers which is common practice.

Another thing to consider is the importance of accurate calculations about the volume of materials being used. Less dense materials might appear to be greener alternatives if you ignore the increased quantity that is required to achieve the correct level of acoustic performance. Finding ways to accurately estimate and account for all materials that are used in a project, including taking into consideration the quantity of each material, will be important in allowing us to better understand the trade-offs at stake. There might be instances where concrete is being swapped out for 'greener' materials, yet the overall increase in quantity of material means there is zero reduction in the overall amount of embodied carbon being used.

Using materials like fly ash or blast furnace slag to partially replace the cement in the concrete floating floor is also worth considering. Currently, there are some challenges in using blended cement in concrete floating floors. One is that you would need to allow for a 50% increase in curing time for a floor made using these materials. In principle, this is not a major obstacle provided it is correctly programmed into the project from the outset and the environmental benefits are clearly communicated to the contractor and other stakeholders.

Although these suggested changes might seem minor in the grand scheme of things, the cumulative impact of lots of small changes can be significant. Some applications demand the use of concrete due to a need for robustness, for example, absorbing impact from heavy weights or a need to support high loading from vehicle traffic or mechanical equipment. In these cases, it is still possible with a good specification to greatly lower the carbon cost of the concrete. Accepting the continued necessity of concrete as a key material in acoustics should not be an excuse for doing nothing. With the right engineering choices, we can achieve tangible reductions in embodied emissions without compromising on acoustic performance.

**Above:**
Research hub exterior render (https://www.bristol.ac.uk/bristol-digital-futures-institute/facilities/)

**Below:**
Render of studio 2 (https://www.bristol.ac.uk/bristol-digital-futures-institute/facilities/)

# Current parliamentary and policy news

The newly elected Labour Government made several pre-election policy pledges that will impact the work of acousticians and our soundscapes. The Parliamentary Liaison Group will be working to identify opportunities to raise the profile of acoustic issues to new MPs, and to those who have been re-elected.

**Planning reform in particular is an area where advocacy for consideration of sound and noise issues will continue.** Pledges made by Labour pre-election included updating the National Planning Policy Framework with a brownfield first policy to fast track 'high quality homes' and a 10 year infrastructure strategy with a National Infrastructure and Service Transformation Authority being set up to oversee road, railway and reservoir development. Updating national policy with new National Policy Statements to make major projects faster and cheaper was also promised. To make progress towards targets for renewable generation, Labour pledged to double onshore wind farm capacity by 2030 and promote local power generation. On transport, planning reform to speed up the building of new roads and support for aviation through airspace modernisation were proposed. Changes on onshore wind and the National Planning Policy Framework have been set out already and are summarised below.

**Above:** Planning reform to speed up the building of new roads has been proposed by the newly elected Labour Government

## Onshore Wind: Updated ETSU-R-97 expected Spring 2025

Just four days after the election it was announced that clauses in the National Planning Policy Statement that effectively prevented the development of new onshore wind are removed. Alongside this a consultation is pending to bring large onshore proposals into the Nationally Significant Infrastructure Project regime, with the intention of supporting quick determination, followed by a revised National Policy Statement. It is anticipated

that 'Local communities will play an essential part in delivering this mission and we will empower them to participate in decisions on local infrastructure.' In answer to a question from Andrew Bowie MP, Michael Shanks, Under Secretary of State at DESNZ said: "We aim to publish the updated ETSU-R-97 guidance in Spring 2025. In the meantime, the current ETSU guidance remains suitable for assessing wind turbine noise and should continue to be applied accordingly."
**Policy statement onshore wind**

## Consultation on National Planning Policy Statement

An updated draft of the National Planning Policy Statement for England, which is intended to accelerate the development of housing and roll out of renewable energy has been published for consultation. The new Secretary of State for Housing, Communities and Local Government, Angela Rayner, put the plan in context of wider proposals for planning reform in an announcement at the end of July. Proposed changes that could influence noise and soundscape include:

- proposing a brownfield first policy and increasing density in urban areas;
- expanding the definition of brownfield by introducing the concept of grey belt when considering the green belt;
- focusing on well-designed homes rather than 'beauty'; and
- bringing larger scale onshore wind projects back into the Nationally Significant Infrastructure Projects regime.

**Minister's statement**
**NPPF consultation**

## Consultation response: Siting nuclear fusion facilities

The IOA has submitted its response to a consultation issued under the previous government, setting out proposals for the potential siting of nuclear fusion facilities. In broadly agreeing with the proposals, the IOA response states that the current Overarching National Policy Statement for Energy (EN-1) has, to date, proved effective in controlling noise and vibration impacts from other energy projects. While technologies differ, potential noise sources from energy generation – like turbines, pumps, compressors, cooling systems and transformers, are similar so can also be applied to fusion. The consultation covers England and Wales – see **full response**.

## Consultation: Alcohol in licensed pavement areas

During the pandemic, regulations covering England and Wales were amended, allowing premises licensed to serve alcohol for consumption on premises (on-site) to sell alcohol for take away and to drink in licensed pavement areas ('off-sales'), if they had a pavement license, without changing their license. This allowed pubs and restaurants to continue to trade when they could not serve customers indoors. These regulations expire in March 2025, and this consultation set out permanent options for alcohol licensing after this date. In responding IOA cautioned against making the temporary Covid relaxation permanent, unless the local authority is satisfied that the noise impact on the soundscape enjoyed by residents was not detrimentally affected.
**Full consultation**

## Scotland: Briefing on nuisance

The Scottish Parliament Information centre has published a briefing outlining some of the main rules which can be used to deal with nuisance complaints in Scotland. These are often connected to problems in housing or with neighbours, or with wider public health or environmental protection concerns, including complaints linked to excess noise.
**View source webpage**

## Scotland: Passivhaus consultation

In December 2022 the Scottish Government pledged to introduce legislation by December 2024 'to introduce new minimum environmental design standards for all new build housing to meet a Scottish equivalent to the Passivhaus standard, in order to improve energy efficiency and thermal performance'. This stage 1 consultation seeks views on the form and approach that a Scottish equivalent to the Passivhaus standard, implemented through building regulations, should adopt. The consultation asks what aspects should be highlighted in building regulations where there are risks to occupant comfort, and considers overheating, ventilation and noise. The Scottish Branch are examining the consultation and will be commenting on any acoustic aspects. The consultation closes on 23 October 2024.
**https://consult.gov.scot/local-government-and-communities/building-regulations-passivhaus-equivalent/**

## Europe: Updated recommendations for assessing health risk of environmental noise

The European Topic Centre on Human Health and the Environment has published a new report reflecting a growing body of evidence on the effects of environmental noise and health. The report aims to evaluate the existing health risk assessment (HRA) for method for the European Environmental Agency and propose adaptations to previously used methodology where necessary. Overall, the new body of evidence shows negative effects due to transport noise at much lower levels than those captured in the END exposure assessments (i.e. 55 dB $L_{den}$, and 50 dB $L_{night}$). Therefore, the report recommends risks of noise should be quantified at levels starting at 45 dB $L_{den}$ and 40 dB $L_{night}$. It is expected that applying the new methods will considerably increase the burden of disease attributable to transportation noise in the EU compared to previous EU-wide HRA.
**ETC HE Report 2023/11: Environmental noise health risk assessment: methodology for assessing health risks using data reported under the Environmental Noise Directive**

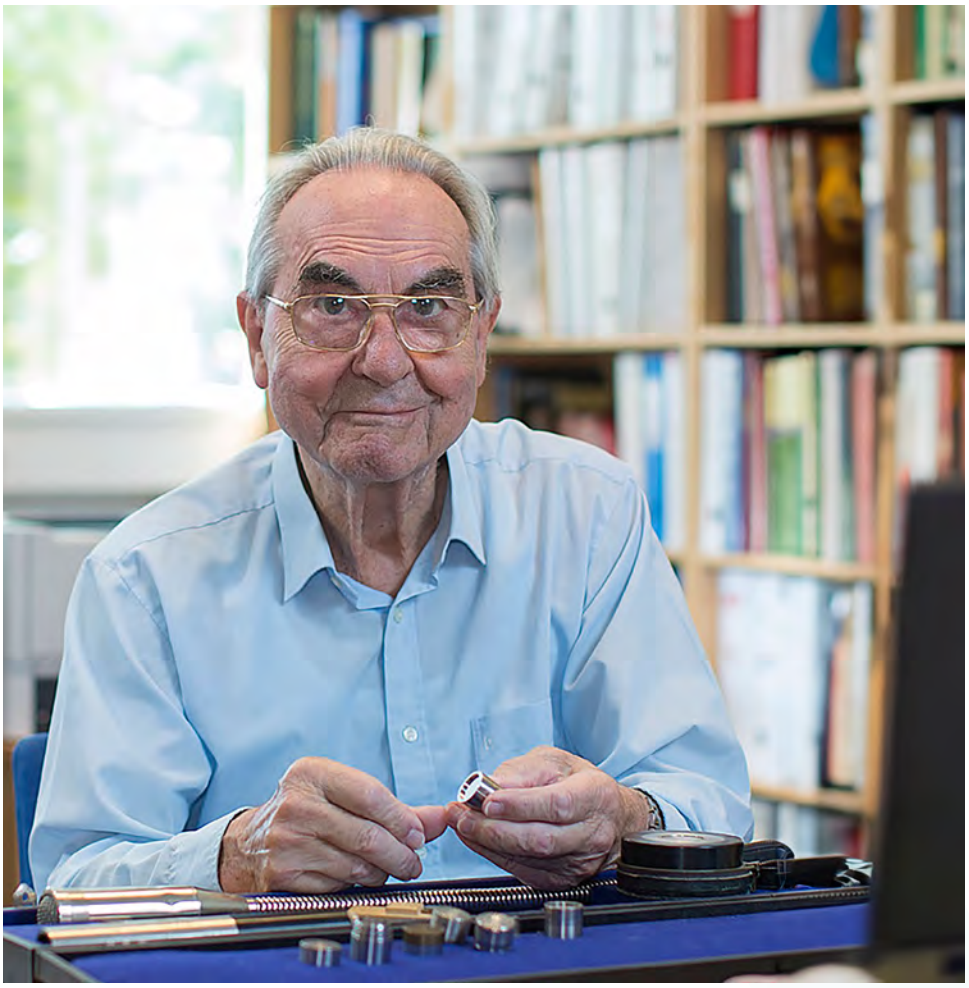
## Briefing notes online

Our series of briefing notes, which explain topical acoustic issues for the public and politicians, now have their own page on the IOA website. We currently cover five subjects – drones, noise cameras on roads, heat pumps and green space, and will be reviewing these to ensure information remains current.
**https://www.ioa.org.uk/publications/briefingnote**

**About the author:**
**Mary Stevens** supports the IOA to bring acoustics to the attention of policy-makers.

# Gunnar Rasmussen

## The founder of GRAS Sound & Vibration, Gunnar Rasmussen, died 17 April 2024.



**As an engineering student, Gunnar Rasmussen exhibited great talent, and shortly after his finals, he was hired by Brüel & Kjær.**

In the 1950s, he was sent to the USA to market products and handle after-sales service and he took the opportunity to learn everything he could about the technologies that were emerging in the acoustical industries in the USA, and to build networks across a wide range of industries.

In the 1950s, the automotive, aviation and electronics industries were rapidly growing in the USA, and there was an increasing demand for more and better measurement microphones. Through Gunnar's involvement in various acoustic measurement projects, he realized there was room for improvement in the measurement microphones that were currently available. So, when he returned to Denmark, he began to develop a new generation of measurement microphones. The result was a revolutionary but simple design, which for the past 60 years has been the preferred type of measurement microphone for all kinds of acoustic measurements and has become an international standard.

**Above:** Gunnar Rasmussen

### GRAS Sound & Vibration

At the age of 67, when most people head for retirement, Gunnar Rasmussen left Brüel & Kjær in 1994 and founded GRAS Sound & Vibration. Initially, the company was a small family business run by Gunnar and his wife, Hanna Hertz, but it rapidly grew into a respected manufacturer of measurement microphones, where many of the founder's new ideas and inventions became commercial successes.

### Honours and recognitions

Gunnar has been chairman of the ISO committee, honorary member of the American Acoustical Society (ASA), and has received the prestigious Danish Design Award for his design of measurement microphones and sound meters. Conductor Leonard Bernstein once approached Gunnar for help acquiring a better microphone for recording classical music. Gunnar also received a CETIM medal and an IEC Award. In 2008, he received the European Acoustics Association's prestigious Lifetime Achievements in Acoustics award.

**This eulogy was given by Bo Chen, at Søllerød Church. It was written by Hanna, Gunnar's wife, his daughter from previous marriage, Lise, and Peter Wulf-Andersen:**

Imagine a beautiful spring morning. The sun peeks out on the horizon. The smell of dew on freshly cut grass fills the air. There is a peaceful silence, except for the chirping of birds and the wind rustling in the trees, because it is never completely quiet. Not in our world. We live in a world of waves. And the few light waves and sound waves that our senses can catch are what give us an impression of the world in which we live. But we know it's only a fraction of reality. It is only the tip of the iceberg that we can see and hear. It is as if we are standing on an island in a vast ocean. What is in the water and what lies on the other side of the water remains a mystery.

Once in a while, there are people who venture into this ocean. With cleverness and diligence, they try to map out what we cannot perceive with our senses alone. We call them pioneers. And like explorers, they set out not only to broaden our

horizons, but also to take something back from the unknown to enrich our lives on this small island. Their names are often forgotten over time, unlike Odysseus and Eric the Red, Marco Polo and Columbus. Because no poems and heroics are written about these technical explorers. No cities are named after them. But their importance to our lives and the world is at least as great. Gunnar Rasmussen joins a long list of these pioneers. He will be remembered for his pioneering work in developing better and smaller measurement microphones, which today are used everywhere in our society.

Gunnar was born in Esbjerg almost 100 years ago. As a young man, he was part of the wartime resistance movement with his older brother. Esbjerg, with its rail connections and the port to the North Sea, was a strategic hub for the German occupying forces. And together with other brave souls, he helped sabotage railway tracks and important infrastructure. Courage was not something that Gunnar lacked. There wasn't really anything he was afraid of. This may be part of the pioneering spirit, although his later work did not exactly endanger his life. But he gladly threw himself into new projects and new ideas, despite the uncertainty and frustration that often accompanies it.

Alongside work, family was a great driving force in Gunnar's life. He was a loving and caring father, both to his four children from the first marriage and three bonus children from you, Hanna. He was a modern father who gave children the freedom to go their own way and probably reflected his own urge to pursue his own ideas and interests. And he was a loving and warm husband and companion to Hanna for over 50 years. You have had many good times together, travelled together, enjoyed each other's company and also started a company together.

Despite his success and fame in the industry, Gunnar maintained his modesty and humility throughout his life. He was not proud, but content. Satisfied with what he had achieved and the problems he had solved but knowing that there is much more that he must leave to future generations. He was first and foremost driven by curiosity. In the end, it didn't matter so much whether he got the honour himself or anyone else. It was the invention that drove him. And if it was copied by others, well, it just meant that he had done something good and right. From the view from his window on this beautiful spring morning, Gunnar can look back on his long life. A life of movement, of travel, of love, but also of difficult periods, of divorce, breakup, betrayal. Because it is also part of all our lives. None of us live a perfect life. But Gunnar did the best he could.

And his work capturing the sounds of our world in part shows us how much we don't get to hear. It is good to be reminded of this sometimes. That we should remember to listen to each other. And keep in mind that there's a lot that we don't hear.

For just as our surroundings are full of sounds and noise, some that complement each other and others that work against each other, so every human being is also wonderfully complex and enigmatic. There are many tales about who Gunnar was. Each of you have your part, each your memories, each your anecdotes, each your impressions of Gunnar; each your frequencies of the overall soundscape. And these are important to remember. They are important to share. It's important to make room for everything we can't hear ourselves. Because in the end, it is only a fraction that we are able to grasp with our senses, and an even smaller fraction that we can understand.

We live and die in a mystery, a universe, a creation that is at once deeply fascinating, but also completely incomprehensible. And so we must also meet in humility, in silence, and listen. Listen to God speak to us and give us comfort and hope for a reunion in the eternal summer. Where the sun rises again on the horizon, the birds sing their song, and we can hear everything that we could not hear in this life.


# Acoustic performance made easy
## with FloorCalc the new calculation tool

**Our new online tool FloorCalc is the perfect calculation program for customised impact sound insulation. Whether Acoustic Floor Mats (AFM) or Acoustic Floor Blocks (AFB) are selected. This programme is ideally suited for individual floor structures and delivers precise results, taking into account up to 25 configurable input parameters.**

Registration and use is free of charge and offers a wide range of customised configuration options.

For support on your next project – please contact:
**Ben van Breda**
Country Manager UK & Ireland
T +44 73 4066 0846
ben.vanbreda@getzner.com

**www.getzner.com/floorcalc**

getzner
engineering a quiet future

# John Bickerdike

John Bickerdike, who died on 20 May 2024, aged 91, was Principal Lecturer in Environmental Health at Leeds Beckett University and its antecedents from 1963 until 1992.

***By Tina Bickerdike***

**He was responsible for the introduction and development of the environmental health degree course and other associated courses in acoustics and health and safety.** He was a member of the CIEH Education Committee and the Council for National Academic Awards (CNAA) and the Education Committee of the Institute of Acoustics. On retirement he undertook consultancy on a wide range of acoustic projects.

## John's career

He left school when he was 14 but continued his education by attending evening classes and obtained an HNC in building at Birmingham College of Technology during his national service. On leaving the army he obtained a place at Leeds Health Department as a trainee public health inspector. In 1963 he was appointed Lecturer in Public Health at Leeds College of Technology, which became Leeds Polytechnic and subsequently Leeds Beckett University. He continued his education with an MSc and courses in acoustics at Salford University. He undertook a major study for the Department of the Environment into noise level and attendance patterns at discotheques, and produced a code of practice for the industry, which, unfortunately, was largely ignored, although some recommendations were followed. During this period he was an active member of the CIEH Education Committee at a time when the profession was moving to degree level entry, and he represented educational standards on the Council for National Academic Awards when courses were upgrading from diploma to degree level. During his last two years at Leeds Beckett he was given the task of managing the conversion of the faculty's professional courses to the university's modular format. He was elected a Fellow of the Institute of Acoustics and served on the Council and as Chairman of the Education Committee.

## Personal life

John played cricket in the Yorkshire Council but gave it up in his mid-20s to take up golf, which he played until his mid-80s. Only a modest player at both sports, he enjoyed the challenge and friendships. He was elected captain of Howley Hall Golf Club in 2001. He married twice; to Joyce in 1954, with whom he had two sons Ian and Graeme, and to Dorothy in 1971, who predeceased him.

# Alexander Nicolson Burd

## 13.07.1929 – 15.06.2024

David Binns, his business partner, pays tribute to Alexander Nicolson Burd, IOA President from 1994 to 1996, who died in June.

**Well before computers could model spaces, Alex Burd was a pioneer of acoustic physical modelling, which he used in the design of UK concert halls and music broadcasting studios.**

After studying physics at the University of Liverpool, where he gained a BSc (Hons), he worked with Dr H D Parbrook, researching ultrasonics and room acoustics.

### BBC career

In 1955 he joined the BBC Technical Research Department in Kingswood Warren, Surrey where he worked for 18 years, becoming a senior research engineer on studio acoustics. He developed the acoustic design of broadcast studios and pioneered work on studio sound absorbers particularly at low frequencies, dubbed by his colleagues as 'Burd boxes'. He also advanced the technique of acoustic scale modelling in this country and used it for the design of orchestral studios.

At the BBC, he published many papers including in 1966, as joint author, *BBC Engineering monograph no 64, Data for the acoustic design of studios,* which was widely used in the 1970s for the design of sound recording studios worldwide and later formed the basis of the IBA code of practice for local radio studios.

### Concert halls

In 1972 his paper on acoustic modelling, *Acoustic Modelling of Studios and Concert Halls*, would lead to the next phase of his career. At the BBC he worked with the Scottish architect and jazz clarinettist, Sandy Brown, who was their Chief Acoustic Architect. Sandy left and set up the UK's first acoustic consultancy practice,


Sandy Brown Associates (SBA) in 1969. Alex joined in 1973 and became a partner in 1974.

An early job for SBA was the music practice rooms at Wellington Barracks in Birdcage Walk, London, followed by his first concert hall; the 2,000 seat St David's Hall in Cardiff in 1982, designed with the use of a 1/50 scale model. Based on the 'vineyard terrace' design of the Berlin Philharmonic Hall, which he much admired, it was built on top of a shopping centre designed by a Birmingham architect who had no experience in the design of performance spaces. Alex put its success down to the precision with which the architect followed his advice on both the gross shape and detail. St David's Hall was rated by American acoustician, Leo Beranek, in his book *Concert Halls and Opera Houses*, as one of the top 10 in the world.

Alex completed two further concert halls, the 2,250 seat Waterfront Hall, Belfast in 1997, and the 2,475 seat Glasgow Royal Concert Hall in 1990. He also worked on many studios for radio and television in the UK and overseas projects in Europe, Africa, the Middle East and Australia.

### IOA contributions

As a contributor to the profession, Alex started as joint Honorary Secretary of the Acoustic Group of the Physical Society, then continued as organiser of their Sixth Form Lectures for the British Acoustical Society and eventually chaired their Education Committee. He then chaired the joint Committee of the IOA which produced the format and initial syllabus of their Diploma. His largest contribution was in providing leadership to the Institute in 1994-6. For his work in room acoustics, auditorium acoustics and services to the profession, he was made an Honorary Fellow in 2002 and received a Gold Certificate commemorating 50 years membership earlier this year.

### Family life

Alex's parents were both Scottish, his mother, Joanne Nicolson, became a school teacher; his father, Robert Burd, worked in banking. They moved to England in the 1920s and settled in Waterloo, one of the Liverpool suburbs, where Alex was born on 13 July 1929. The family regularly attended Sefton Park Presbyterian Church where he met his future wife, Doreen.

Both Alex and Doreen attended the University of Liverpool where Doreen studied medicine. After they were married in 1957 Doreen took a job as casualty doctor at Epsom Hospital to be with Alex in London. They lived in the village of Brockham where both their children were born.

More than anything Alex and Doreen enjoyed travelling. They travelled around Europe by car while their children were young, venturing further afield around the world after retiring. After Alex retired from SBA in 1989, they settled happily into Normanhurst Park, near Matlock in Derbyshire, and became part of a very close-knit friendly community where they enjoyed many social evenings.

Alex is survived by his son Douglas, an underwater acoustics engineer, daughter Fiona, a museum curator, and two granddaughters.

# Richard Tyler

In June the Institute suffered a real loss with the death of Richard Tyler; the result of complications from a tragic boating accident just a few days before his 75th birthday. His contribution to the success of the IOA and the acoustics world in general has been significant.

***By Ian Campbell (with thanks to Sue Dowson and Martin Armstrong for additional details of Richard's standards and IOA activities)***

Richard Tyler

**I first met Richard in 1983, when I was looking for a chief engineer who had a unique blend of acoustic and electronic design experience to lead our sound level meter business, and in Richard we had certainly found our man; but soon came to realise that we were only using a small section of his many talents.**

## Early life

At grammar school, his passion for 'techy stuff' triumphed over the classical curriculum and he found his way to City University where he graduated in 1971 in electrical and electronic engineering. In parallel with this academic path Richard's musical gifts were also being developed; at 11, he was granted a Junior Exhibition Scholarship to the Royal College of Music, giving him O and A Level music and an offer to study music full time. He decided to keep music as a hobby and chose engineering as a career. These two paths converged somewhat as he then moved on to an applied acoustics master's degree at Chelsea College in 1974 whilst he was employed by GCHQ, where he was researching new techniques for secure speech communications in real-time over H.F. radio links.

Speech intelligibility and music ambience were central to his next job when he joined AIRO, working on the design and installation of assisted resonance systems, especially at the Royal Festival Hall. A step away from acoustics in 1977 took Richard back to engineering at Roneo Vickers Ltd and then to Rank Pullin Controls Ltd in 1982.

In 1983 he joined Lucas CEL Instruments as Engineering Manager and headed the design team to produce a complete range of acoustic instrumentation. Richard was responsible for the world's first microprocessor-based precision meters with built-in memory and later the CEL 593 series meters with real-time parallel octave and 1/3 octave band analysis.

The new millennium saw Richard founding his own company, Acoustic and Vibration Instruments Ltd (AVI), to provide design and consultancy services in the field of noise and vibration instrumentation and his designs appeared in instrumentation manufactured by various companies. Within two years the AVI calibration laboratory was providing UKAS accredited calibrations for acoustic and vibration instruments, clearly establishing the concept of legal metrology in the acoustic profession.

Richard's acoustical knowledge, design, engineering and electronics skills, together with fact that for many years he ran an accredited laboratory, placed him in a unique position to understand what is needed in a specification standard from the viewpoint of the various stakeholders. As such he was active in the UK and IEC standards committees covering sound level meters, sound calibrators and frequency filters. He was also the convenor of the EMC committee as well as contributing to human vibration standardisation projects. Very recently his influence was felt in ensuring the proposed periodic testing regime for the standard on personal sound exposure meters, which is currently being revised, was practical and affordable whilst still being a good test of the instrument. Richard was an excellent representative of the UK – his comments on documents were always well reasoned and supported by facts. All these attributes meant he was very well respected by his peers and he received the prestigious IEC 1906 Award in 2018.

## IOA career

Richard was active within the IOA since joining in 1982. In 1994 he became a Fellow and was instrumental in the formation of the Measurement and Instrumentation Group to promote good practice, standards, traceability and new techniques. Richard was chosen as chairman at the inaugural meeting on 19 June 1995 and remained a committee member until his death. He was a prolific article contributor outlining new concepts and techniques in the quantification of sound and vibration signals and was one of the prime movers in the regular Instrumentation Corner articles in Acoustics Bulletin. He received the Award for Distinguished Serves to the Institute in 2008.

## Music

A church organist for most of his adult life, he commissioned, managed and worked on organ restoration projects and he was a regular violinist in the Bedford Symphony Orchestra and the Bedford Sinfonia. Centre of his life was obviously his family, and he took great pride in the achievements of his two sons, who also share his musical talents.

Richard's funeral took place at St Mary's Church, Northill, Bedfordshire on Tuesday 9 July and our thoughts are with his wife, Sue, and sons, Robin and Dominic, along with the rest of his family.

# Central Branch

## The past, present and future of BS 4142
## Central Branch 50th Anniversary Meeting Report

***By Matt Torjussen***

**Above:**
The Mansion at Bletchley Park, *courtesy of Bletchley Park Trust*

**In July 2024, IOA Central Branch members gathered at Bletchley Park, the centre of British code-breaking during the Second World War, to celebrate the IOA's 50th anniversary.**

The celebration took the form of a one-day conference on The Past, Present and Future of BS 4142, attracting 95 delegates to this in-person only event.

The day blended technical sessions and workshops with exploration of the historic Bletchley Park site and a demonstration of a surviving Enigma machine.

Philip Dunbavin, current Chair of the British Standards Institution's EH/1/3 committee, opened the proceedings with a presentation on the history of BS 4142. Starting from the Wilson Report in 1963, Philip traced the standard's evolution in response to technical advances, including the introduction of the equivalent continuous sound pressure level in 1990 and the inclusion of reference methods in 2014.

Stephen Turner provided insight into BS 4142's place within UK noise policy. He highlighted periods of misalignment with policy, its importance to Circular 10/73 Planning & Noise, its use (and misuse) under Planning Policy Guidance 24 in 1994, and the general alignment with the Noise Policy Statement for England in 2010 and National Planning Policy Framework.

Richard Collman, Managing Director of Acoustical Control Engineers Ltd, discussed sustainability as part of the context argument in BS 4142 assessments. He challenged planning conditions that require sound from fixed plant and machinery to be below existing background levels, arguing that while appearing effective at first glance, there are often unintended consequences. Richard presented case studies demonstrating that while silencing installations was achievable, the financial, environmental and visual impacts often made it undesirable and, on balance, not necessary from a noise perspective.

Jon Tofts presented the Environment Agency's review of 20 randomly selected noise impact assessments for permitted sites, revealing that 19 were 'poor' to 'extremely poor'. Criticisms included lack of meteorological data, poor calculation descriptions and conclusions based on substandard data. This led to the creation of the Environment Agency's Method Implementation Document for BS 4142, which Jon reported had improved assessment quality since its publication.

Looking to the future, Luke Hatton, Senior Acoustician at Atkins Realis, summarised a Defra-commissioned research project. This aimed to identify a methodology for assessing industrial sound impacts inside dwellings or other residential premises. The study concluded that an assessment based on absolute specific sound levels indoors would be required, whilst still accounting for acoustic features and non-acoustic factors.

Mark Dowie of HEAD Acoustics UK demonstrated how psychoacoustic indices, particularly loudness and roughness, can explain why certain sounds (like dogs barking) are more annoying than others (like birdsong) when presented at the same sound pressure levels. This psychoacoustics approach offers a broader toolset for describing and differentiating sounds with similar pressure levels at a receiver location.

The day concluded with attendees exploring Bletchley Park's grounds and museum exhibits before reconvening for a live demonstration of a surviving German Enigma machine, providing a fitting end to this celebration of acoustic innovation and history.

P64

# Eastern Branch

*By Josie Nixon*

**We have had a couple of well-attended events in the past few months and have many more planned for the remainder of the year. Thank you to all the presenters who have given their time to talk to the Eastern Branch.**

On Thursday 25 April, we had a talk by Stephen Jay, a technical advisor from AQMAU, Environment Agency (EA) on *Planning vs. permitting and the impact of new residential developments on EA regulated sites*. He provided a fantastic understanding of the different problems consultancies face and the requirements of the EA.

During the presentation, Stephen explained the noise function within the EA and where the Acoustics and Air Quality Modelling and Assessment Unit (AQMAU) sits. Stephen set out the EA's position on the interface between the planning and permitting regimes and how it can affect permitted facilities. Stephen's talk aimed to help improve acousticians' understanding of the permitting process, how to assess the impact of noise from a permitted facility to support an environmental permit application and what the EA requires of applicants in relation to proposed residential receptors adjacent to EA-regulated facilities.

On Thursday 27 June we had a fantastic presentation by Stanislas Boivin-Champeaux from Sound Directions, entitled *Speech intelligibility in the workspace: How to manage it to everyone's benefit*. The presentation demonstrated how the management of speech intelligibility is a crucial aspect of a successful modern workspace environment. Stanislas explained that speech intelligibility is most commonly considered for public address (PA) systems deployed in large and reverberant spaces, however he also explained that this metric can also be applied to other situations where voice isn't amplified, for example, in open plan offices.

Stanislas explained that the goal is different for speech intelligibility in open-plan rooms, than that for PA systems, as they aim to reduce speech intelligibility so coworkers don't interfere/distract each other. As part of the presentation, Stanislas looked at the various solutions available to reduce speech intelligibility in these environments, from passive acoustic to active electroacoustics systems, which were the main focus. Active electroacoustics systems as sound masking systems offer many variables which can be adapted to address these distraction or privacy issues, including advanced features like adaptive volume control.

Lastly, we looked at situations in the workspace where speech intelligibility needs to be pristine, such as in meeting and board rooms. Stanislas explained how room acoustics and loudspeaker optimisation can enhance the listener's experience as well as limit audio pollution in adjacent rooms. There was also a live demonstration of the active electroacoustics systems which lead to a fantastic discussion.

## Dates for your diary – 50th event

The Eastern Branch 50th anniversary event will be held on Thursday 24 October 2024, where members will have a tour of Flakt Woods in Colchester and a social event in the evening.

Woods, manufacturers of small electric motors in Colchester was founded in 1909, and introduced propeller fans in the 1920s. Flakt Woods was created when Woods merged with ABB Fläkt in 2002. Over the years, Flakt Woods started to design and manufacture axial fans, developing the first aerofoil blade – they now have a range of certified axial fans for almost any application including fire safety, ventilation industrial process, oil and gas and marine.

Booking will be essential as there are limited spaces. Please keep an eye open for emails for more information.

## Future events

The regular Branch meetings are organised throughout the region, although currently based around the Chelmsford area. These are intended to inform and enthuse the membership across the specialisms. We are also open to suggestions for venues across the region, so please get in touch if you have any suggestions or can host a branch meeting.

There will be a short member survey circulated soon and we urge all Eastern Branch members to complete this and return it to either Josie Nixon or Jody Blacklock. The purpose of the survey is ultimately to improve your experience at our Branch meetings and build our attendance numbers.

Should you wish to present at the Eastern Branch or have a topic suggestion please get in touch with either Josie Nixon: **Josie.Nixon@HA-Environmental.co.uk** or Jody Blacklock: **Jody.blacklock@createce.co.uk**

Make sure you have registered with the Eastern Branch to find out about all upcoming events or keep an eye out on the IOA event website page.

# London Branch

## IOA London Branch recent meetings

*By Stephen Dance*

**On Thursday 14 March, Tim Patzke from Pliteq UK gave an insightful talk at the London Branch meeting at AECOM's London office on *Design of floating floors using recycled elastomers: reducing embodied carbon.***
The talk was received well as it spoke about how we can make an impact on how much carbon is installed within building design, provided we work to the correct specification and not overdesign. The talk gave information about the basics of the floating floor design process too and how much embodied carbon there is within the industry.

After the talk, many members made their way to the local pub for some drinks which were kindly sponsored by Pliteq UK, to continue conversations and catch up over the previous month's proceedings. We would like to extend our thanks to Tim and Pliteq UK for their generosity and look forward to hearing more about how recycled elastomers can be used.

On Wednesday 10 April, Wilson Ho from Wilson Ho and Associates Limited gave an interesting talk at the London Branch meeting at AECOM's London office on *Innovative viaduct noise barriers for reducing wind load demand on foundations*. The talk touched upon tackling the challenge of installing high noise barriers on roads that can withstand high wind loads. The proposed solution was to use large poles spaced evenly with an absorptive face which can potentially provide a reduction of around 5-10 dB at around 300 Hz to 1.6 kHz. The barriers seem promising in early experiments, and we look to see how this plays out in the future.

Following the talk, many of those in attendance went down to the local to continue conversations and catch up over the past month's work. The London Branch would like to thank Wilson for his presentation and for answering many difficult questions, and encourage others to join in person for presentations over the coming months.

On Wednesday 22 May the London Branch held a conference at the London South Bank University on *Artificial Intelligence within acoustics*. The event saw more than 100 people listen to presentations (and a fire alarm) provided by different sectors of acoustics on how AI is working for them, and how we may benefit from incorporating AI into our working lives.

### IOA London Branch: London South Bank University students present their dissertation projects

On 10 July 2024 three masters' students from the MSc in Environmental and Architectural Acoustics course presented their dissertations at this now traditional annual event. The evening was hosted by London South Bank University and chaired by Dr Haydar Aygun, the Course Lead for Acoustics at LSBU.

Vincent Tham dialling in from Malaysia was first to present his research on *Acoustics of a choral rehearsal room*. Vincent explained through measurements and a survey of 22 vocalists how the acoustic performance of the refurbished space had improved. He went on to detail how further improvements could be implemented, through computer modelling, and critiqued the room acoustic performance against the newly introduced ISO 23591 standard for Acoustic Quality for Music Rehearsal Rooms and Spaces.

Vincent was followed by recent PhD candidate, Ruben Vasquez Amos, who presented his MSc thesis on *The Effect of Face Coverings on Speech Intelligibility and Speech Transmission*". Ruben explained that objective measurements of face masks using head and torso simulations had become very popular in 2020/21.
He waited until 2022 to undertake his human talker and listeners (native and non-native) tests of face coverings. These he compared to the HATS tests to understand the flexing of masks and visors with the breaths needed to talk. He also briefly described a lip-reading experiment using a visor and inked-visor, which suggested visual transparency improved intelligibility by the equivalent in SNR of 11 dB.

The final presentation was by Sam Toone on *Automated sound classification on construction and non-construction sound events*. Sam described how convolution-based neural networks worked using an example of an image of a Labrador at greater and greater image resolution. Sam developed his AI using training data from UrbanSound8K. Sam then labelled construction site audio events, a laborious task taking three weeks for 5,000 events, to validate his AI model. He described how using compressed MP3 audio only reduced the accuracy of the model by 3%, to 93%, compared to wave-based audio files. He finished by saying that sharing labelled sound event data would help all consultancies and improve the life of junior consultants!

The event finished at 2.45am Malaysia time and all the in-person attendees went off to continue discussions whilst watching the England Euro semi-final. This had an interesting acoustic effect as the pub's beer garden was full, so we watched on a laptop with a 45 second delay. This led to an acoustic challenge of event classification from the cheers, groans and boos!

P66

# Midlands Branch

*By Matt Torjussen*

**The IOA Midlands Branch hosted an evening meeting on *Challenges and Solutions for Large Scale Construction Noise Monitoring – Examples from HS2BBV*' at Balfour Beatty VINCI's office in Coleshill on 23 July 2024. The event featured presentations from Sam Williams of BBV JV, Kim Onjun of AECOM, and Mike Breslin of ANV Measurement Systems.**

Sam provided an overview of the HS2 project, highlighting the scale and complexity of construction works along the 90km BBV section. He outlined the various triggers for noise monitoring, including regulatory requirements, environmental permits and complaint investigations. The project involves extensive earthworks, tunneling, viaduct construction and bridge installations, all presenting unique noise challenges.

Kim discussed the logistical complexities of managing over 210 noise, vibration, dust and weather monitors across the project. Key challenges included data management, documentation, security, and coordination with multiple stakeholders. AECOM developed bespoke systems and workflows to handle the volume of work efficiently, including GIS-based monitor tracking and automated health and safety documentation.

Mike presented ANV's LivEnviro monitoring system, which was designed to handle large infrastructure projects like HS2. He highlighted features such as hierarchical monitor management, flexible alert settings and audio recording capabilities. The system has evolved based on project needs, with developments in power management, mass limit changes and exceedance counting.

The speakers emphasised the collaborative approach between BBV, AECOM, and ANV in developing solutions. This included creating solar-powered monitoring stations, improving data visualisation, and enhancing system functionality to meet project requirements.

Sam concluded by discussing opportunities arising from the vast amount of collected data. These include updating source data in BS 5228, comparing actual noise levels to environmental statement predictions, and investigating dose-effect relationships for construction noise.

The meeting highlighted the significant challenges and innovative solutions developed for large-scale construction noise monitoring on HS2. It demonstrated the importance of adaptability, collaboration, and continuous improvement in managing environmental impacts on major infrastructure projects.

The Midlands Branch is incredibly grateful to Sam, Kim and Mike for presenting and a video of the talk is already live on the IOA's website; just log in to the members' area and navigate to members' videos.

# Middle East

## Façade design in the Middle East

*By Harout Taghilian*

**At a recent Middle East Branch meeting, members discussed the need for acousticians to think not just about sound insulation but the entire façade system where all the requirements of a project shall be met (wind load, U-value, maximum profile thickness, lamination types, sound insulation, etc).**

Façade design is very broad subject and buildings in the Middle East region have different requirements to those in Europe. For example, having extreme heat on the external façade (i.e. outer pane) compared to low internal ambient temperature can have a significant impact on the glazing which could lead to 'pillow effect'; something acousticians often don't think or know about.

In addition to this, it is critical that both acoustic and façade consultants look at all drawings and façade details during the design stage of the project as there is absolutely no point in specifying acoustically high performing façade glazing and missing out the details around the system, which would lead to flanking sound transmission and thus the overall system would fail eventually leading to complaints and legal action.

In addition to having a great technical discussion, it was fantastic to meet with colleagues from different consultancies and networking with each other.

**Above:**
IOA Middle East Branch members at their recent meeting

# North West Branch

## News from the North West

*By Helen Sheldon*

**The North West Branch has been having a resurgence in 2024 after a bit of hiatus.** The Committee has reconvened and events are well underway. We had an interesting and engaging session run by Ecophon at Material Source in Manchester, with a board game helping us all to learn how to interpret EPDs (Environmental Product Declarations). Many thanks to Shane Cryer and the Ecophon team for a great evening.

We held a celebratory event for the Institute's 50th anniversary year – a trip to the Electric Go Karting circuit in Warrington on Thursday 4 July and we're starting to plan a number of other events to run throughout the year, including meet ups around Acoustics 2024 which is being held in Manchester in September. At the conference, the NW Branch's very own David Waddington will be elected IOA President. Keep your eyes peeled for more events!


**Above:**
Shane Cryer of Ecophon at a recent IOA North West Branch event

# Scottish Branch

## Scottish Branch: AGM and lecture on BS4142 Estimation of Character Corrections

*By Elena Prokofieva*

**The Scottish Branch AGM was held on 23 April 2024 at Arup's Glasgow office, the hybrid meeting had 16 people attending in person and 41 online and was chaired by Anne Budd.**

The Chair's annual report was followed by the Treasurer and Early Career Group updates. The Committee confirmed Anne Budd's continuation as Chair, and announced that Ashley Leaper and Lindsay McIntyre were stepping down from the Committee, they were both heartly thanked for their contributions to the Branch. Two new members were proposed, seconded and voted to join the Committee: Elena Prokofieva and Emily Tilbury; and Peter Brooks and Tim Britton were co-opted to the Committee for the year 2024-25. It had been highlighted that the role of Early Career supporter in the Committee has become vacant after Ashley left, and not yet filled, so anyone who is interested in taking this role is welcome to contact the Committee or the Chair.

After the AGM, the Scottish Group welcomed Matt Torjussen, Acoustics Lead at ANV Measurement Systems, who spoke about *Estimating BS4142 character corrections at the planning stage*.

The new version of BS 4142 Methods of Rating and Assessing Industrial and Commercial Noise has been in operation since 2014, with several significant amendments added in 2019, and is one of the documents used frequently by various specialists from planning and environmental health officers to consultants, architects and designers. During the work on a planning application, understanding the key elements of the current and proposed noise environment and the ways of applying corrections by every participant is extremely important. The BS 4142 document provides subjective and objective methods for determining graded corrections to the specific sound level for impulsivity and tonality when the specific sound sources are already installed and operating in the field. In planning applications often the sources are proposed, and the information on their performance is provided by the manufacturer. In some cases of pre-existing sources they may be modified or enforced, or the propagation paths are to be amended once new development is completed.

In complicated cases, acoustics practitioners must provide reliable information to the planning committee to demonstrate the likely prominence of these operating sources. To address this issue, an 'auralisation-lite' (simplified auralisation) has been suggested to estimate the character corrections. Matt demonstrated the methodology used, and showed some experiments with the auralisation-lite approach. At the end he also involved the audience in an interactive test to demonstrate how important the identification of the character corrections is, and why the objective method could give a more reliable output.

If you are a member of the Scottish Branch but are not receiving the relevant notices and emails, please make sure to update your preferences in the 'My Details' section of your online IOA account by signing up to the Scottish Branch.

P68

# Southern Branch

## Laboratory testing of HVAC products

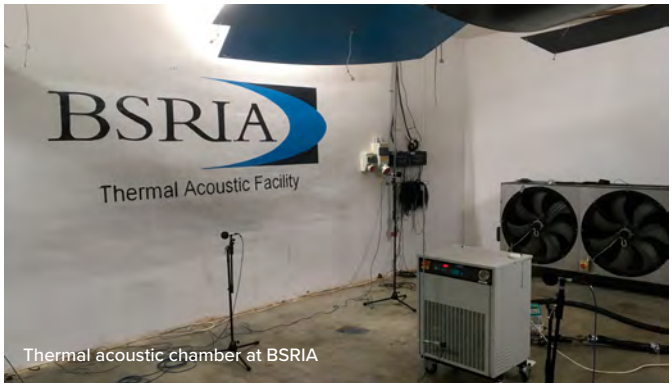
*By David Yates MIOA, Chair of IOA Southern Branch and Head of Acoustics at Syntegra Consulting*

**On Tuesday 9 July, the Southern Branch were welcomed to BSRIA's facilities in Bracknell by Rebecca Hogg for her talk on the laboratory testing of heating, ventilation and air conditioning (HVAC) products.** Those in-person attendees were joined by other members online as Rebecca described why acoustic testing of these products is important, how it is carried out and to which standards, or not as the case may be when suitable standards do not yet exist.

Acoustic specifications are widely used by designers, installers, architects and acousticians to make an informed judgement during the selection process of products to be used on site. Accordingly, acoustic testing is a vital step in the process to fully understand the noise levels emitted and the characteristics of that noise.

The presentation explained the process of acoustic testing of HVAC products and how thermal and environmental parameters impact on acoustic measurements and the results obtained. Several interesting case studies of product testing, including heat pumps and fan coil units, were discussed during the presentation.

Those members present were then treated to a tour of the testing facilities within the Bracknell site, including an acoustic transmission suite and their specialist 210m$^3$ thermal acoustic reverberation chamber. The thermal acoustic chamber (pictured) has been designed with fully controllable environmental parameters to enable full control over the environment and conditions the HVAC products being tested are working in and therefore measure more realistic noise levels to be used for specification purposes.



Thermal acoustic chamber at BSRIA



# The 4th edition of The Little Red Book of Acoustics has been published


**Published by Blue Tree Acoustics, this handy book is recommended reading for those pursuing professional qualifications in the field, providing an accessible guide to acoustics for specialists and non-specialists, including EHOs, legal professionals, town planners and technicians.**

This edition of the textbook proposes a method for objective BS4142 representative background sound level selection (the LRB Method). It also covers concepts such as basic acoustics, parameters, descriptors, propagation and transmission, with examples of calculations and tables. Each section is broken down into manageable chunks of information, indexed for ease of use. The book also includes an updated 'standards and regulations' section, which encapsulates the current standards and regulations now in force in the UK relating to acoustics and noise issues.

Expanded to additionally contain calculation tables as in the original edition, the 4th edition now has 402 pages, but still retains its compact size and ringbound format for user-friendliness both out onsite and in the office.

For more information, email **info@bluetreeacoustics.co.uk**

# DB-61AWV

## Acoustic Wall Vent

Dba Products

Innovation in acoustics

30m³/h • Self Regulating

4400mm² Equivalent area

For Internally Insulated Walls

125mm Core Drill

Wall Attenuation : 61dB (57Ctr) - Open


01163800424

www.dbaproducts.net team@dpaproducts.net


"quietly going about our business"

# Institute Sponsor Members

Council of the Institute of Acoustics is pleased to acknowledge the valuable support of these organisations

## Founding Key Sponsors

HBK HOTTINGER BRÜEL & KJÆR

Cirrus Research plc

| | | | |
|---|---|---|---|
| Acrefine Engineering Services Ltd | Couch Perry Wilkes Acoustics | L-Acoustics | Siderise Group |
| Aecom Infrastructure & Environment UK Ltd | dB Attenuation Ltd | Mason UK Ltd | SITMA |
| | dB Consultation Ltd | National Physical Laboratory | Sound Reduction Systems Ltd |
| AMC Mecanocaucho | Direct Acoustic Solutions Ltd | Noise Solutions Ltd | Spectrum Acoustic Consultants |
| ANV Measurement Systems | Echo Barrier Ltd | noise.co.uk Ltd | Stantec UK Ltd |
| Apex Acoustics | Emtec Products Ltd | Nova Acoustics Ltd | WSP UK Ltd |
| Arup Acoustics | Farrat Isolevel Ltd | Pliteq | Zenita Ceiling & Grid Solutions Ltd |
| Bickerdike Allen Partners | GERB Schwingungsisolierungan GmbH | Quantum Acoustics | |
| Cahill Design Consultants Ltd | Getzner UK Ltd | RBA Acoustics | |
| Campbell Associates | Gracey & Associates | Rockfon | |
| Cellecta ltd | Hann Tucker Assoc | RSK Acoustics Ltd | |
| Christie & Grey Ltd | Hayes McKenzie Partnership Ltd | Saint-Gobain Construction Product UK t/a Saint-Gobain Ecophon | |
| Clement Acoustics Ltd | Hilson Moran Partnership Ltd | | |
| CDM Stravitec | ISOMASS Ltd | Sandy Brown Ltd | |
| CMS Danskin Acoustics | KP Acoustics Ltd | Sharps Redmore Partnership Ltd | |

Applications for Sponsor Membership of the Institute should be sent to Membership at the Milton Keynes office. Details can be found on the IOA website.
Members are reminded that **ONLY** Sponsor Members are entitled to use the **Sponsor IOA logo** in their publications, whether paper or electronic (including web pages).

# Committee meetings 2024

| DAY | DATE | TIME | MEETING |
|---|---|---|---|
| Thursday | 10 September | 11.00 | CPD |
| Thursday | 10 October | 11.00 | Publications |
| Thursday | 17 October | All day | Engineering Interviews |
| Wednesday | 23 October | All day | Engineering Interviews |
| Thursday | 24 October | 10.30 | Engineering |
| Thursday | 31 October | 10.30 | Meetings |
| Tuesday | 5 November | 10.30 | CCWPNA Examiners |
| Tuesday | 5 November | 13.30 | CCWPNA Committee |
| Wednesday | 6 November | 09.30 | CCBAM Examiners |
| Thursday | 7 November | 10.30 | Diploma Tutors & Examiners |
| Thursday | 7 November | 13.30 | Education |
| Thursday | 14 November | 10.30 | CCENM Examiners |
| Thursday | 14 November | 13.30 | CCENM Committee |
| Tuesday | 19 November | 10.30 | ASBA Examiners (Edinburgh) |
| Tuesday | 19 November | 13.30 | ASBA Committee (Edinburgh) |
| Thursday | 21 November | 10.30 | Membership |
| Tuesday | 26 November | 10.30 | Research Co-ordination |
| Thursday | 28 November | 10.30 | Executive |
| **Wednesday** | **4 December** | **10.30** | **Council** |

# Institute Council

## Honorary Officers

**President**
A Somerville HonFIOA

**President Elect**
Prof D C Waddington MIOA
*University of Salford*

**Immediate Past President**
S W Turner HonFIOA
*ST Acoustics*

**Hon Secretary**
F Rogerson MIOA
*Arup Acoustics*

**Hon Treasurer**
Dr M R Lester HonFIOA
*Lester Acoustics LLP*

**Vice Presidents**
J Hill MIOA
*Apex Acoustics*

Dr P A Lepper MIOA
*Loughborough University*

H Notley FIOA
*Defra*

## Ordinary Members

Dr C Barlow FIOA
*KP Acoustics*

D Goodhand MIOA
*Goodhand Acoustics*

A Lamacraft FIOA
*Sustainable Acoustics*

Dr Y Liu FIOA
*AECOM*

R Mahtani FIOA
*Stantec*

Jim McIntyre FIOA
*Scottish Environment Protection Agency (SEPA)*

Richard Perkins HonFIOA
*Mott MacDonald*

P Rogers FIOA
*Sustainable Acoustics*

Matt Torjussen MIOA
*ANV Measurements Systems*

## Chief Executive

A Chesney
*Institute of Acoustics*

RION Sound and Vibration

A&D Measurement Systems

Norsonic

# The **One Stop** Shop

## For Noise & Vibration Instrumentation


**Building Acoustics**
**Environmental Noise**
**Groundborne Vibration**
**Sound Power and Intensity**
**Laboratory Systems**
**Remote Monitoring**
**Ultrasound**


CIVE nviro + NorCloud

- **Sound Level Meters**
- **Vibration Meters**
- **Multi-Channel Systems**
- **Remote Access**
- **Microphones and Accelerometers**
- **Noise Sources**

**Sale** of Rion and Norsonic hardware and software
**Hire** of Rion and Norsonic hardware and software
**Calibration** of all major brands of sound and vibration instrumentation

WWW.NOISE-AND-VIBRATION.CO.UK
INFO@NOISE-AND-VIBRATION.CO.UK
01908 642846

ilac-MRA UKAS CALIBRATION 0653