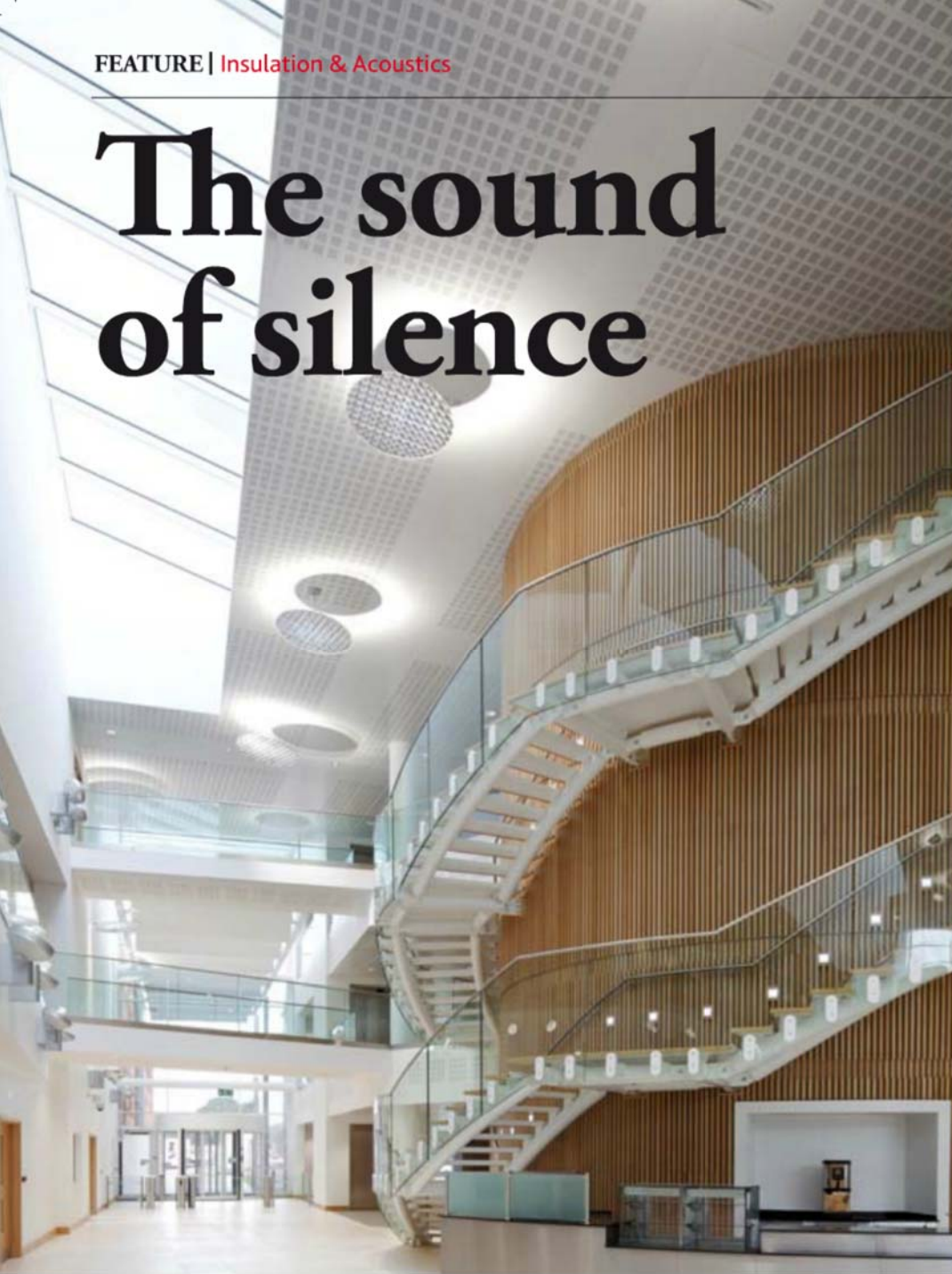


The sound of silence



A symptom of a lack of sector-specific regulations, incorrect or inadequate acoustics specification in offices can often counteract any initial savings made, in remedial costs. Hannah Krol spoke to the experts to find out more about the art of office acoustics.

Most of us spend more time at work than we do at home, therefore it stands to reason that office environments need to be as comfortable as well as practical as possible for our well being. However for whatever reason, a lack of regulation surrounding acoustic performance in offices is having a detrimental effect, both on office users and the specification chain itself. According to industry experts, products are being specified incorrectly, creating poor acoustic environments that are not only unproductive, but also costly, as acousticians need to be called in to fix the problems. Problems that they could have addressed, if they'd been involved in the design process.

The lack of regulation surrounding the topic was one of the reasons the Association of Interior Specialists recently published its

Value engineering at the new Ordnance Survey building in Southampton led to a feature wall being changed to a plaster finish, impacting on reverberation times

'Guide to Office Acoustics.' "A standard was needed that both specifiers and acousticians could consult and hopefully learn from," explains Joe Cilia, technical manager at the AIS. "Acoustics needs to be thought of early on in the design process, and a professional acoustician needs to be present in a the design team to calculate the required performance correctly." The guide, a mixture of definitions of key acoustics aspects in offices, case studies and technical drawings, sets out to highlight the importance of office acoustics, and in turn minimise the common mistakes that are sometimes made when specifying acoustic materials.

"Having no regulation gives companies an opportunity to cut corners," explains Paul Absolon, technical director at CMS Acoustics, highlighting the contrast with regulations which exist for schools. "BB93, the regulation for acoustics in schools, allows the design and specification process to be policed – there is no choice but to follow protocol. In offices, there is nothing to say what the acoustic performance needs to be." As a result, despite the impact of poor acoustics on millions of workers, it could be said that this 'silence' on office acoustics has made architects and specifiers either blissfully ignorant of the importance, or worse, complacent about the risks.

Another problem that has made the acoustic performance of offices more complicated is changing design trends over the past 50 years. "It's important, when considering the design challenges of office acoustics, to reflect on how spaces have changed since the 1950s," says Absolon. "Offices used to be very compartmentalised, but now it's all about open plan, and obviously noise carries a lot easier when there's nothing in its way to block or absorb it."

Office acoustic design do's and don'ts

Being familiar with your space, therefore, is a major factor to consider when specifying acoustic products. "The first question you have to ask yourself, as a specifier, is what is the space going to be used for?," says Cilia. "The acoustic requirements will differ greatly, whether it is a meeting room, a presentation space, or a general office space where lots of people will be working alongside each other."

A classic example of this is specifying products for areas that need to be private, and a common misconception is that these private rooms need to be placed in the quietest area of the office space. This is counterproductive, Cilia explains: "The best place to have a private conversation would

"A standard for offices was needed that both specifiers and acousticians could consult, and hopefully learn from"

Joe Cilia, Association of Interior Specialists (AIS)



actually be McDonalds or a train station, because of the levels of background noise." He continues: "Meeting rooms and private office spaces need to be in the noisiest part of the office; you want to use background noise to mask sound. It's no more complicated than that. If you add the background noise [in decibels] and the performance level together, if it adds up to 75 dB you will have privacy. Non-acousticians won't necessarily know this equation, and it's a helpful tool to bear in mind."

"In my opinion, the only way to achieve correct acoustic performance is to hire a professional acoustician from the word go," continues Cilia. "Acoustics needs to be considered as part of the design process, because at the moment, it isn't. It was recently estimated that 85% of the cost of the building is the people in it, leaving the remaining 15% for the design, construction and ultimate demolition. This means that a minuscule percentage is dedicated to acoustics, and it is often left out of the design process."

This omission often results in incorrect products being specified, in the absence of a professional acoustician. This, allied to value engineering, often leads to more time and money having to be spent correcting, replacing or adding to the products chosen. "I have seen some incredible disasters where the incorrect materials have been specified," explains Absolon. "For example, low-cost non cross-linked foams being used as the resilient layer under the screed, which then creep and reduce in thickness under applied load to the point that they are ineffective,

whereas a recycled rubber crumb option would give longevity for the building's life."

Value engineering was to blame for problems with the acoustics in the new Ordnance Survey headquarters in Southampton, according to manufacturer of acoustics products SAS International. The feature wall, which was originally designed as an acoustically neutral brick wall comprising 95,000 bricks, was designed to surround the building and then cut through the atrium. The reason for this was to avoid distraction from the noise of a nearby dual carriageway, however the wall design was changed to a plaster finish from brick, with the reflective surfaces negatively impacting on reverberation times. Additional absorption had to be specified in the bulkheads between the floors, and an upgraded acoustic ceiling was added, all from SAS International.

This type of value engineering, (or more accurately, 'cost-cutting') mistake can also have an effect on compliance with regulations, explains Absolon: "One of the negatives of value engineering is the need to prevent contractors uncontrollably substituting materials of much lower performance. I have seen this happen with adverse results like failing to meet the requirements of Document E. It's OK to source economical acoustic materials, but maintaining the acoustic specification is vital."

Despite all of the above, it is also necessary to guard against over-specification. Cilia witnessed an example of this: "I was at a project in Canary Wharf recently, and an acoustician had been employed for the

presentation areas only, so when I went to the main office area, it was totally overspecified, and a total waste of money. This would have been avoided if an acoustician was contracted for the whole project."

A practical remedy for a common mistake

Another example of what can go wrong was demonstrated at the offices of Gateway Housing Association in east London, where CMS Acoustics was called in to remedy the mistakes made.

The refurbishment converted former industrial premises into a two-storey office facility in 2009, however, as the client confirms, dry lining partitions had not been connected to the structural soffit, resulting in direct sound transmission between the open plan office space and the designated private and confidential areas.

"The poor acoustics in the new offices meant that we couldn't use the interview room for resident consultations, as literally every word spoken would carry through into the neighbouring office," explains Kathy Stewart, the facilities and procurement officer for Gateway Housing.


To be able to use the facility to full capac-

"Having no regulation gives people an opportunity to cut corners"

Paul Absolon, CMS Acoustics



ity and effect, Gateway Housing had to seek expert advice – something that clearly should have been done in the first place – on how to correct the sound insulation. This led to the specification of CMS Acoustics' Quietslab laminate to close the 1200 mm voids between the top of the partition and structural soffit. 300 m² of SoundBlocker was also specified to add density to the suspended ceiling tiles, and SuperLag FL-B was installed to provide additional insulation for the air conditioning units housing in the ceiling void.

Ultimately specifiers need to firmly establish their own requirements, and familiarise themselves with the space, and the products that are out there. "It's all about knowing the right products for the job," says Absolon. "I've seen some office spaces where there has been no on-site acoustician, and instead the contractors have specified low-cost, and ultimately poor performance materials here there and everywhere, yielding hugely adverse results." 

CMS Acoustics was called in to remedy an office refurb where partitions did not connect with the structural soffit, causing direct sound transmission between the more open office areas and private meeting rooms



www.buildingproducts.co.uk