



Furnishing the benefits of workplace noise reduction

By researching the use of acoustically advanced composite technology in the design and manufacture of office furniture, a consortium led by FIRA International Ltd (Furniture Industry Research Association) hopes to help reduce noise in the working environment. The work is designed to identify materials suitable for use in office partitions, desks, cupboards, drawers and filing cabinets, to build prototypes and test their structural and acoustic performance.

Key benefits

- developing new applications for acoustically advanced materials that deliver health benefits for employees through improving their working conditions
- delivering economic benefits through the heightened productivity of a happier, less stressed workforce
- creating new employment opportunities through the commercial exploitation of techniques developed during the study that may lead to the production of new product lines

The office environment is changing. Where once we worked in self-contained 'boxes', the trend is increasingly towards open-plan layouts where everyone shares and adds to each other's noise.

And with electronic technology continuing to become more prevalent, with mobile phones, photocopiers, printers, PCs, voice recognition software and more still in their growth phase, typical work-place noise levels have reached a staggering 75 decibels. The limit recommended by the World Health Organisation stands at 55 decibels, with any level above this seen as contributing to high stress levels among employees.

It was to investigate the acoustic gains that might be achieved by using special sound-deadening materials in office furniture that FIRA launched the £70,387 Soffice (Silent Office) project in January 2005, half-funded under the government's Technology Programme.

FIRA International Ltd is leading the project in partnership with Eomac UK Ltd, Eurotek Office Furniture Ltd, Blum (UK) Ltd and Crossbrook Furniture Ltd.

Objectives

The majority of office space in the developed world is rented by the businesses working there, limiting the amount of work that may be undertaken on the structural elements of a building such as its walls, ceilings and floors. So even those businesses experiencing difficulties with excess noise levels in the office are currently restricted in how best to cope with them.



However, when FIRAs Sue Calver visited an office services exhibition in 2004, she came across an exhibitor promoting its sound-deadening materials developed primarily for use in public buildings like theatres and other auditoria. As she says, "Two things struck me. First, their boards held a resemblance to materials that may be used for making furniture. Second, it occurred to me that even if you couldn't clad a wall, putting panels into a row of filing cabinets, for example, would have a similar effect."

This was the starting point of the Sofifice study, designed to investigate four main areas. First, would the materials be visually acceptable for making furniture? Then, would they have the necessary structural rigidity? Third, would the economics of using such materials work, enabling a realistic purchase price? And finally, would the use of these materials make a significant difference to office noise levels?

Solutions

During the nine-month study, the team built suites of office furniture using both conventional and acoustically absorbent boards. These were then tested in a special room at the University of Southampton, set up to allow no sound absorption so that the length of time a sound takes to 'die' could be accurately measured.

Initially, when the new materials were included in the drawers, back panels and facings of a desk, for example, little or no difference was discernable during testing.

But progress was rapid, and as the team learned more it became apparent that using different items of furniture in the same space did lead to significant gains.

According to Sue Calver, "We made great strides with desks and cabinets, although more work is still needed to take these where we wish to go. We would like, for example, to create a desk that doubles as a 'reverse loudspeaker', absorbing sound rather than magnifying it."

The greatest advances were made in developing sound-absorbent screens for separating workstations, and the team believes these have significant commercial potential.

Results

"We now have a far better understanding of the comparative acoustic performance of modified and unmodified furniture," says Sue. "We've also

developed insights into the most productive construction and assembly techniques and into the best combinations of pieces of furniture for the most effective performance."

The team is satisfied that there are clear commercial opportunities arising from the study, although more research and development work is needed before all its findings can be put into practice. Key among these is the viability of producing an integrated range of office furniture and screens that promotes better health in the workplace through reduced ambient noise, delivering the potential for new employment at FIRAs manufacturing partners.

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