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# WHAT'S THAT wind?

New acoustic materials require stronger relationships with interior design. BY PAULINE TINGAS

## WHEN IT COMES TO THE DESIGN

of commercial spaces, there is much more than meets the eye. There also is the ear to consider.

While most professional designers are comfortable implementing tactical solutions that incorporate sound-deadening materials, furniture, floor coverings, wall partitions, ceiling systems and other products, many are not as adept at delivering acoustic design strategies.

Findings on how sound moves through a room have changed very little in several decades, making it difficult for designers to increase their knowledge of sound physics. What has increased, however, is the data regarding the ways in which noise, speech privacy and sound quality affect the people who occupy a space.

Current research says unwanted noise in open-plan interiors can influence worker productivity, employee morale, corporate profits and even – in the case of healthcare facilities – patient outcomes. Some experts use these findings to persuade commercial designers to approach acoustic design with a much broader,

Haworth Inc., a product and service provider for adaptable workspaces.

That's not to say there haven't been advances in acoustic materials and products. It's simply that the advancement has been more in the area of harmonious connection to other materials than it has in the area of intrinsic quality.

Rick Talaske, President and Principal of Talaske, an acoustical consulting firm in Oak Park, Ill., says the biggest advantage of the latest acoustic materials is in the way they blend more effectively with interior design. "These materials can be specified to facilitate a designer's vision," he says.

New products can mimic flat drywall and curved surfaces and can also be shaped or painted without compromising their acoustic performance. Acoustic fabric, a recent introduction by Aurora, Colo.-based Whisper Walls, allows printing of any computerized image onto fabric that can be as wide as 16 feet and as long as 200 feet. The product thrives particularly well in studio applications such as speaker covers.

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evidence-based mindset, where the owner and occupant – not the building – become the center of research and planning.

“I think the future of sound and acoustics in design is less about the specific technologies and solutions and more about demonstrating its investment value – in terms of occupancy quality and other meaningful organizational outcomes,” says Jay Brand, Ph.D., a cognitive psychologist with Holland, Mich.-based

Designers also look to sound-masking systems to do the trick. Conventional systems typically are placed in the space between the structural ceiling and a drop-down ceiling, but the newest sound-masking components, such as those by Armstrong World Industries, are flat and deliver a unique combination of sound masking, music and paging through a common set of speakers that look like ordinary

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ceiling panels. These systems provide wider sound dispersion and offer designers more freedom in creating visually pleasing ceiling-scapes, says Kay Trimmer, IIDA, of Kay Trimmer & Associates in St. Pete Beach, Fla. Such systems lay into the grid of standard acoustic ceiling panels and cost about \$1 per square foot to install.

It’s a boon in healthcare environments, where the costs of implementing recent HIPAA speech privacy laws can be extensive. “Sound masking can help to offer what HIPAA specifies as ‘reasonable safeguards’ to protect health information,” Trimmer says. “That includes concern over conversations between patients and caregivers in exam rooms, doctors’ offices and patient treatment areas – and with administrators during patient registration and billing.”

Other developments include more advanced computer modeling software that gives designers the ability to assign various acoustic attributes to wall, floor and ceiling surfaces. These models can predict the timing of sound reflections between source and receiver to create the “acoustic signature” of a room. It’s a system Talaske and his consulting firm use in their work with performance spaces. “We number-crunch the model in different ways to assess the acoustic quality of a space, much like a doctor might look at an EKG to see if your heart is beating properly,” he says.

Though such computer models are not widely used in other environments, software recently developed for the open-office by the National Research Council of Canada allows designers to manage their acoustic design budgets while they’re still in the planning phases. As is the case with most any design flaw, acoustics that need correction after the fact can become expensive propositions.

Sound cancellation also offers intriguing possibilities for the future. The concept of “virtual” walls that isolate sounds and prevent them from moving throughout an open environment might soon be reality, according to Brand, who monitors developments in open-plan work spaces for Haworth. “Although acousticians may scoff, I’ve seen some pretty convincing demonstrations of the ultimate feasibility of such ideas,” Brand says.

These new acoustic offerings are all part of a designer’s toolbox. But simply employing the best-rated acoustical products and materials is not enough to create long-term sound solutions. Steven Orfield of the Minneapolis-based acoustical consulting firm Orfield Laboratories says the design of interiors is less likely to be revolutionized by materials than by current – and future – research findings that reveal the psychological and social influence of sound on the users of a space. But most designers do not yet embrace this approach in their projects. “Less than 1 percent of office buildings use this research,” Orfield says.

It's also just beginning to be looked at in healthcare, according to Trimmer, and only because of HIPAA speech-privacy regulations that went into effect in mid-2005. "People are just now starting to understand what patient confidentiality is all about in design," Trimmer says.

While there is a body of research available that connects the built physical environment to clinical outcomes, one reason designers might be hesitant to take a research-based approach to acoustic design is cost. The elements that influence an occupant's

organization as a whole. By determining the cost and profitability of these behaviors, the case can be made for the economic benefits derived from good, research-based design.

Savings gained from a reduction in staff turnover, for example, would allow an organization to recoup the higher investment required for the implementation of sound solutions. "You have to spend money to save money on people," says Orfield, who advocates such specialized data-gathering measures as building performance studies, which evaluate

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experience with sound are unique to individual facilities, and each of these facilities requires research funding in order to accurately understand the role of sound in their particular space.

Designers often can make the case for evidence-based acoustic design by calculating human resource values, such as recruitment, retention and absenteeism, to reveal how a plan affects occupant performance and satisfaction with the environment and the

pre-occupancy acoustics of an environment; occupancy studies, which test users in a space to determine their perceptions of sound and its effect on their work utility; and office prototyping, which tests model spaces in a facility to determine occupants' reactions to various designs. "What is now possible is a more scientific understanding of what the occupant needs to feel better, perform better and enjoy better job satisfaction." 