Curtain system creates soundproofed office spaces in open floor plans

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Multiple sound curtains have been used at the headquarter of the German company Häfele. Credit: Gerriets GmbH

Anyone who has worked in an office with an open floor plan becomes aware of a major downside of these otherwise collaborative spaces: It is

impossible to hold confidential meetings with colleagues—or even make a personal phone call to schedule a dentist appointment in your office.

One solution developed by a German textile manufacturer is a system of sound-insulating curtains to create temporary, soundproofed "variable zones" within the open office, where private conversations or meetings can occur.

The system will be described by Jonas Schira of Gerriets GmbH during Acoustics '17 Boston, the third joint meeting of the Acoustical Society of America and the European Acoustics Association being held June 25-29, in Boston, Massachusetts.

The sound-insulating curtains are composed of multiple layers of fabrics with different acoustical impedances (the acoustical impedance is a measure of the resistance of a material to the passage of sound waves) that run along medium- to heavy-duty aluminum tracks attached to the ceiling. A standard seven-layer curtain—when precisely installed along the aluminum track, to avoid air gaps that could lower the amount of sound insulation—reduces the sound heard by individuals outside the zone by about 16 decibels, on average.

"The sound dampening in the middle and high frequencies is much higher though and very loud conversations get reduced to a normal background noise level, because the curtains have a high dampening in the critical higher middle frequencies," Schira said, who has a background in both audio engineering and music.

If needed, he said, the curtains can be retrofitted with additional layers to achieve even higher dampening. The thickest system created so far consists of a 12-layer sound curtain that can achieve an average sound dampening of 26 decibels. That is equivalent to the sound dampening provided when you shut a normal door connecting two offices.

Because multiple layers of fabric are used, the curtains are opaque, with only the outer layer visible to the user. This outer layer—which can come in almost any fabric or color, Schira explained, and even be printed, for example, with the logo of the company—provides an additional absorption area that helps to decrease echoing inside the variable rooms, and therefore increase the intelligibility of speech.

The sizes of the variable zones can range from small 3-by-6-foot "think tanks" to large 1800-square-foot seminar rooms. A complete system weighs just over 11 ounces per square foot (3.5 kilogram/square meter).

In future designs, the company hopes to incorporate windows into the curtains, "or come up with a completely transparent solution," Schira said.

More information: Main meeting website: acousticalsociety.org/content/acoustics-17-boston

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