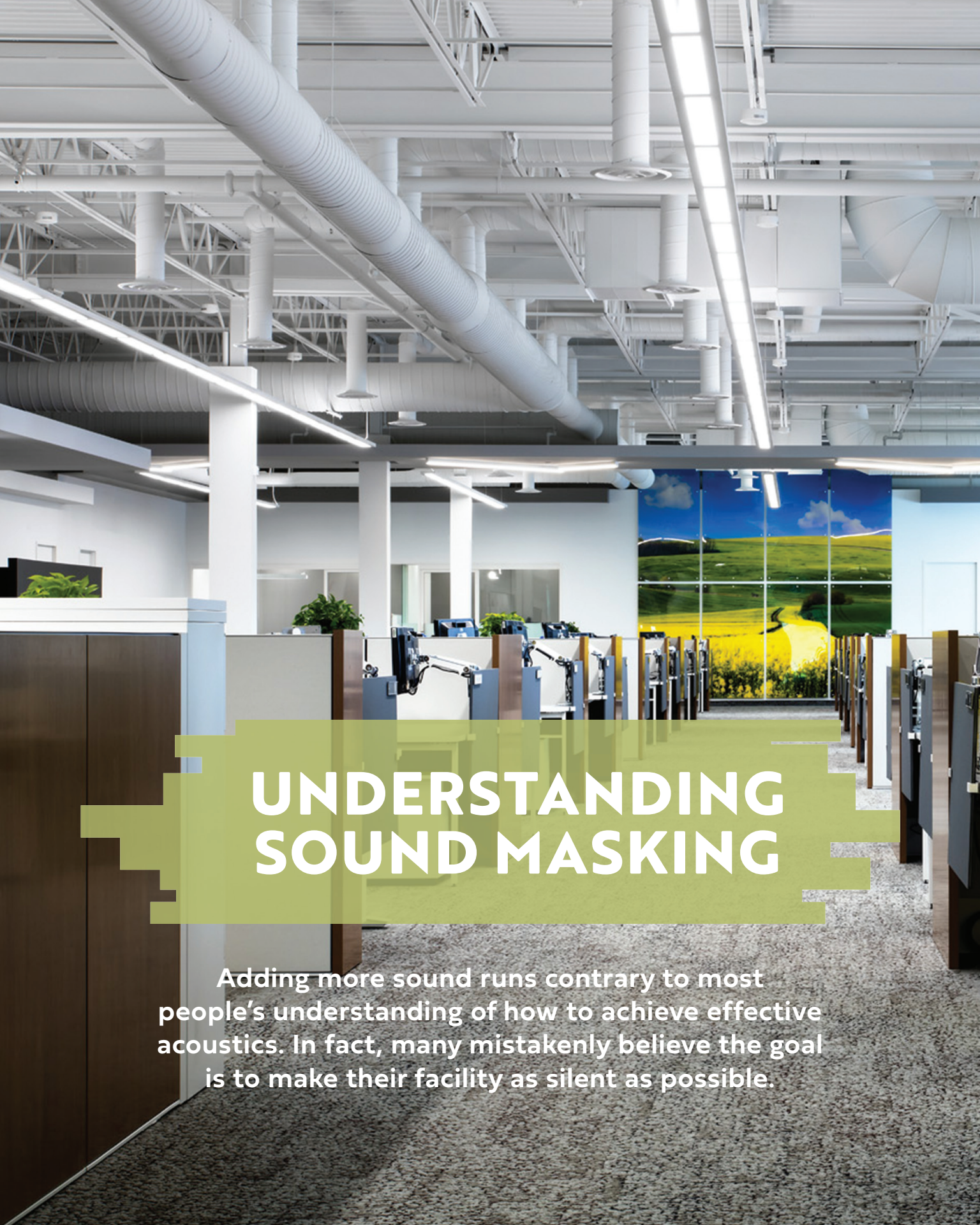


UNDERSTANDING SOUND MASKING

Adding more sound runs contrary to most people's understanding of how to achieve effective acoustics. In fact, many mistakenly believe the goal is to make their facility as silent as possible.

PHOTO | COMLEY VAN BRUSSEL

But the problem with most buildings is that—due to improvements in construction materials and quieter equipment—they're already too silent. Their inadequate background sound level leaves occupants acoustically exposed, even to noises generated a good distance away. In these 'library-like' or 'pin drop' environments, it's really easy to hear other people's conversations and even the smallest noises disrupt our train of thought. And so, we tend to describe such spaces as noisy.

In order to create an environment that's more acoustically comfortable, it's essential to not only replenish its background sound, but to provide a known and controllable level: one that allows us to clearly hear the sounds we want to be audible, while completely covering or at least reducing the disruptions caused by sounds we consider to be noise. The only treatment that can effectively perform this function is a sound masking system—a technology that uses electronic components to generate a subtle, but effective background sound that's distributed via a network of loudspeakers.

The premise behind this solution is simple: any noises and conversations that are below the controlled background sound level are covered up, while the impact of those above it is lessened due to the reduction in the degree of change between the baseline level and any volume spikes. Disruptions to occupants' concentration are diminished. Similarly, conversations are either entirely masked or their intelligibility is reduced, improving privacy. Overall, occupants perceive treated spaces as quieter.

In other words, sound masking doesn't absorb, block or cancel noises, but rather interferes with our ability to hear them, much like it's difficult to understand someone talking to you from a distance when you're running a tap or fan. In fact, there are countless everyday examples of this type of effect: the drone of an airplane engine, the murmur of a crowd in a busy restaurant, the hum of highway traffic, and the rustling of leaves in the wind. All have the potential to mask sounds you'd otherwise hear.

Of course, when introducing a background sound to a workplace, it's vital to ensure it's as inconspicuous as possible. Most people compare the sound of a properly implemented masking system to that of softly blowing air, and many even assume HVAC is its source. However, unlike HVAC equipment, masking technology is engineered so that its output can be tuned to meet a spectrum—or 'curve'—specifically designed to provide both acoustic control and occupant comfort.

Because no masking system produces the desired curve from the moment the equipment is powered on, post-installation tuning of the sound is an essential part of the commissioning process within each facility. If the sound isn't tuned, it will be ineffective in unpredictable areas and may even become a source of irritation itself, as was the case with white noise systems in the 1970s. When tuned to meet the right curve, masking is a highly effective contributor to the overall acoustic performance of open plan, as well as to the speech privacy levels experienced in closed rooms. It also ensures a more consistent and comfortable acoustic environment throughout the facility.

Here's why this technology is essential:

Noise Control

Sound masking reduces dynamic range, which is the difference between the background sound level and peak volumes. Our senses are attuned to changes in our environment, making it very difficult to disregard them. By raising the background sound level in a controlled manner, this technology dramatically reduces the number and magnitude of these changes. Noises beneath the masking are imperceptible. The impact of those above it is lessened.

Speech Privacy

Similarly, our level of speech privacy depends on the signal-to-noise ratio or the volume of the speaker's voice relative to the background sound level. The greater the voice's volume relative to the background sound, the more noticeable and intelligible the conversation. While sounds decay in volume over distance, low background levels mean that they can be clearly heard from afar. Sound masking dramatically reduces this distance.

Acoustic Consistency

Sound masking also addresses the acoustic variations found within all facilities, which can be due to the type of ceiling, open air return grilles, HVAC equipment, proximity to walls and office equipment. Variations in lighting and temperature are kept within comfortable parameters and, similarly, sound masking minimizes variations in both sound volume and frequency by introducing a specific background sound at controlled levels across the space.

Sustainable Design

Using sound masking can also help support sustainable endeavors, especially when included in the project's design stage. For instance, masking increases noise isolation in open areas. Natural ventilation can be employed without affecting speech privacy and the amount of disruptions occupants experience due to noise. It can also support using demountable wall systems. Adding it is comparable to increasing Sound Transmission Class (STC).

Project Savings

Sound masking is easy to retrofit. However, planned incorporation during design can eliminate the need for extra insulation or layers of drywall, plenum barriers, and high-spec or permanent walls around private offices, reducing costs and maintaining the flexibility of the space for future renovations. In open plans, it helps maintain acoustic control as density increases or workstation partitions are lowered. This technology also reduces the requirements for other treatments, though a balanced approach to acoustic design is always needed. Paging and music distribution can be handled over the same loudspeakers.

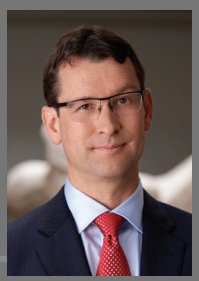
PHOTO | STEVE TSAI

PHOTO | STEVE TSAI

Acoustic Comfort

Just as with lighting and temperature, there's a comfort zone for the volume of background sound. If it's too low, conversations and noises can easily be heard and cause more disruptions.

PHOTO | MARTIN KNOWLES



Niklas Moeller is the vice-president of KR Moeller Associates Ltd., manufacturer of the LogiSon Acoustic Network. He has more than 25 years of experience in the sound masking field.

This article was first published in the premiere issue of SONĀRE magazine.

If you would like to receive a copy of the magazine, visit logison.com/contact.

LogiSon® ACOUSTIC NETWORK ©

www.logison.com