SONĀRE

The Environmental Acoustics Magazine

We hope you enjoy this article from the premiere issue of SONĀRE. If you would like to receive a hard copy of the magazine, request one at

logison.com/contact

Premiere Issue

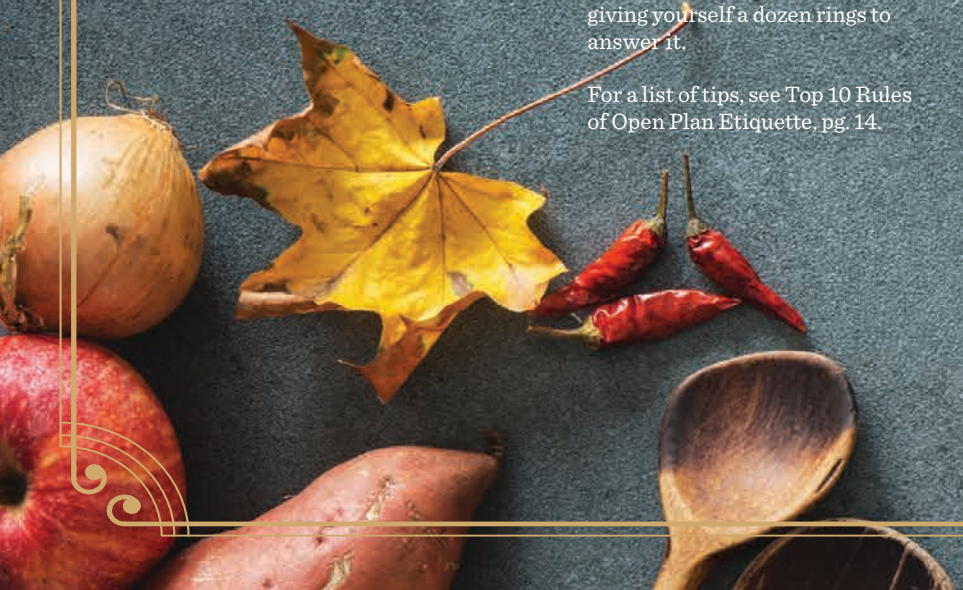
The Recipe for Great Acoustics

The 'ABC Rule' is a common topic in my field. I've literally presented it thousands of times, so I have to admit I'm a bit weary of it. If you've heard it a few times before, you might be as well, but I encourage you to read on because I'm taking a fresh approach here.

The traditional message is that creating an effective acoustic environment relies on three strategies: A, B and C, which stand for absorb, block and cover. I'll speak to these methods, but first I'd like to focus on the missing letters, namely R, E and D. So, let's begin at the end of the acoustic alphabet and work our way back...

R IS FOR REDUCE

Reduction is a key element of acoustical design. It addresses the noises in your space that simply don't need to be there. Think of loud and endless ring tones, speaker phones, office or other equipment out in the open, improperly designed or balanced ventilation, squeaky filing cabinets, and so on. Sometimes these sounds can be reduced or eliminated by the simplest interventions. The cost? Practically nothing. The impact? Huge.



E IS FOR ETIQUETTE

And then there's etiquette, which is really a subset of the reduction strategy, but it involves our ability to behave in an 'acoustically sensitive' manner. There are habits we all fall into at one point or another that we should be more conscious of because they disturb others: tapping your pen, having an impromptu meeting over someone's workstation, talking to someone across the hall through your open doorways, leaving your phone at emergency evacuation volume and giving yourself a dozen rings to answer it.

For a list of tips, see Top 10 Rules of Open Plan Etiquette, pg. 14.

D IS FOR DENSITY

Density is next. This feature has a critical impact on acoustics and our ability to control them, but it's rarely included in the ABC discussion. The fact is, the tighter we space people, the tougher it is to design spaces that work well acoustically. In open plans, the average number of square feet per workstation has dropped dramatically in recent years. There's not only less distance between people—meaning any noises they generate reach more listeners at higher volumes—but many more people within the same area, producing more noise overall.

Organizations placing more people into a smaller space need to take greater care with acoustical design, but the trend seems to be not only to increase density, but systematically eliminate most methods of acoustic control. Given that people usually cost 10 times more than the building and its maintenance combined, it's worth questioning if this is really the right course of action.

And so, we arrive at the ABCs...

A IS FOR ABSORB

Absorptive materials reduce echo and overall noise levels by decreasing the energy of sounds that would otherwise bounce off hard surfaces and back into your space.

The ceiling usually offers the largest surface, so invest in a good acoustic tile and ensure consistent coverage throughout the facility. Limit the lighting system's impact on the ceiling's performance by selecting an indirect system that incorporates the minimum number of fixtures while still meeting your lighting requirements. Minimize the use of hard materials, such as glass and metal, because these reflect noise and speech causing them to be heard over greater distances. Use absorptive workstation partitions, at least inside and above work surfaces. Install soft flooring to reduce impact noise from footsteps, particularly in high-traffic areas.

Because absorptive materials only work on sounds that reflect off their surface, they typically have greater influence on noises created farther away from you. In other words, absorption requires some distance to take effect and can't control noises directly transmitted between nearby occupants.

B IS FOR BLOCK

Blocking works at shorter distances because its effect is immediate. However, walls, windows and doors won't completely stop noise transferring from one side to the other. Rather, they'll lower their volume as they pass through them.

Though primarily used in the construction of closed rooms, blocking is also a relevant technique for open plans, unless partitions are below seated head height, nullifying their acoustic value. Layout can also be used to isolate noise. For example, originators of the open-plan concept, Quickborner Team, used break zones that were separated from the workgroups, offering an inviting space in which to come together for ad hoc meetings, fostering interaction while not disturbing those in surrounding areas.

C IS FOR COVER

Because many believe that noise is only truly under control when a space is as silent as possible, they tend to try to enlist the above strategies in pursuit of the old adage 'silence is golden.' However, just as with light and temperature, there's actually a comfort zone for sound—and it's not zero. If a facility's background level is too low, conversations can easily be heard from a distance and occupants are even disturbed by low level noises.

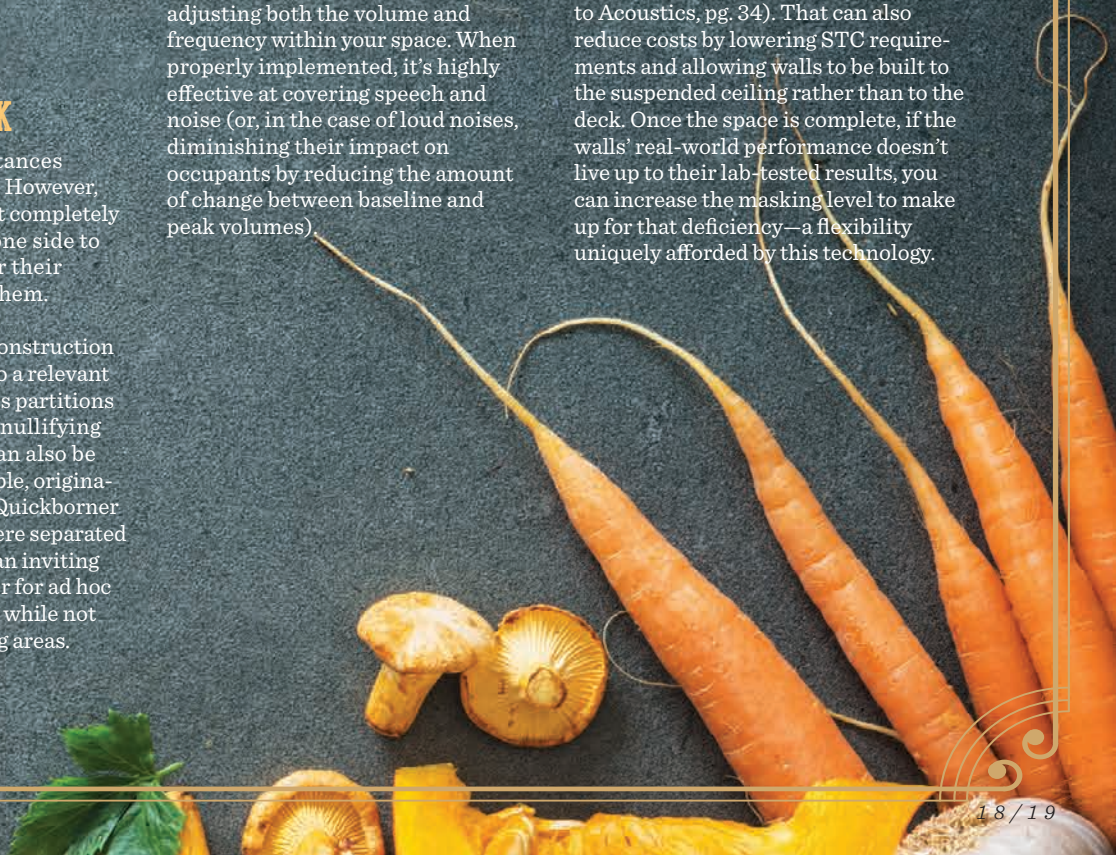
To ensure the space has an appropriate minimum background level at all times, install a sound masking system. This technology uses a system of loudspeakers to distribute a comfortable sound similar to softly blowing air, covering up conversations and noises occurring at a distance and reducing the intelligibility and disruptive effect of those happening closer to you, making them less distracting.

Sound masking is the only acoustical technology that can accurately control the background sound by adjusting both the volume and frequency within your space. When properly implemented, it's highly effective at covering speech and noise (or, in the case of loud noises, diminishing their impact on occupants by reducing the amount of change between baseline and peak volumes).

A Beautiful Combination

Many assume that providing effective acoustics is a single design requirement. Unfortunately, this notion also leads to the misconception that any acoustical element can yield the desired results on its own. For example, one might install an acoustical ceiling and believe their job is done. But a well-performing space uses all of the described strategies—reducing, absorbing, blocking, and covering—because each one performs a unique role in the final result.

In fact, it's even more effective if you turn the traditional 'ABC Rule' on its head and start with 'C.' Why? By using sound masking to define and, therefore, know exactly what the background sound level will be anywhere in the facility, you can more accurately specify the remaining materials, such as the walls' STC rating (see A New Approach to Acoustics, pg. 34). That can also reduce costs by lowering STC requirements and allowing walls to be built to the suspended ceiling rather than to the deck. Once the space is complete, if the walls' real-world performance doesn't live up to their lab-tested results, you can increase the masking level to make up for that deficiency—a flexibility uniquely afforded by this technology.



Oops!

COMMON MISTAKES

If your workplace uses acoustic treatments, but occupants can still hear conversations and a slew of other unwanted noises, you might conclude those methods have failed. However, there can be many reasons behind this kind of 'facility malfunction.' Here are the most common:

Just Add Absortive Materials

Many believe that only one or two treatments will provide the desired conditions—for example, adding absorptive ceiling materials. But no technique is a silver bullet. Rather, each part of the acoustical design contributes differently to the overall performance of your space. So, while any given element might be doing its job perfectly, without all of the required pieces in place (see The Recipe for Great Acoustics, pg. 18), occupants continue to be disrupted by noise and dissatisfied with their level of privacy.

Let's Make it Really Silent

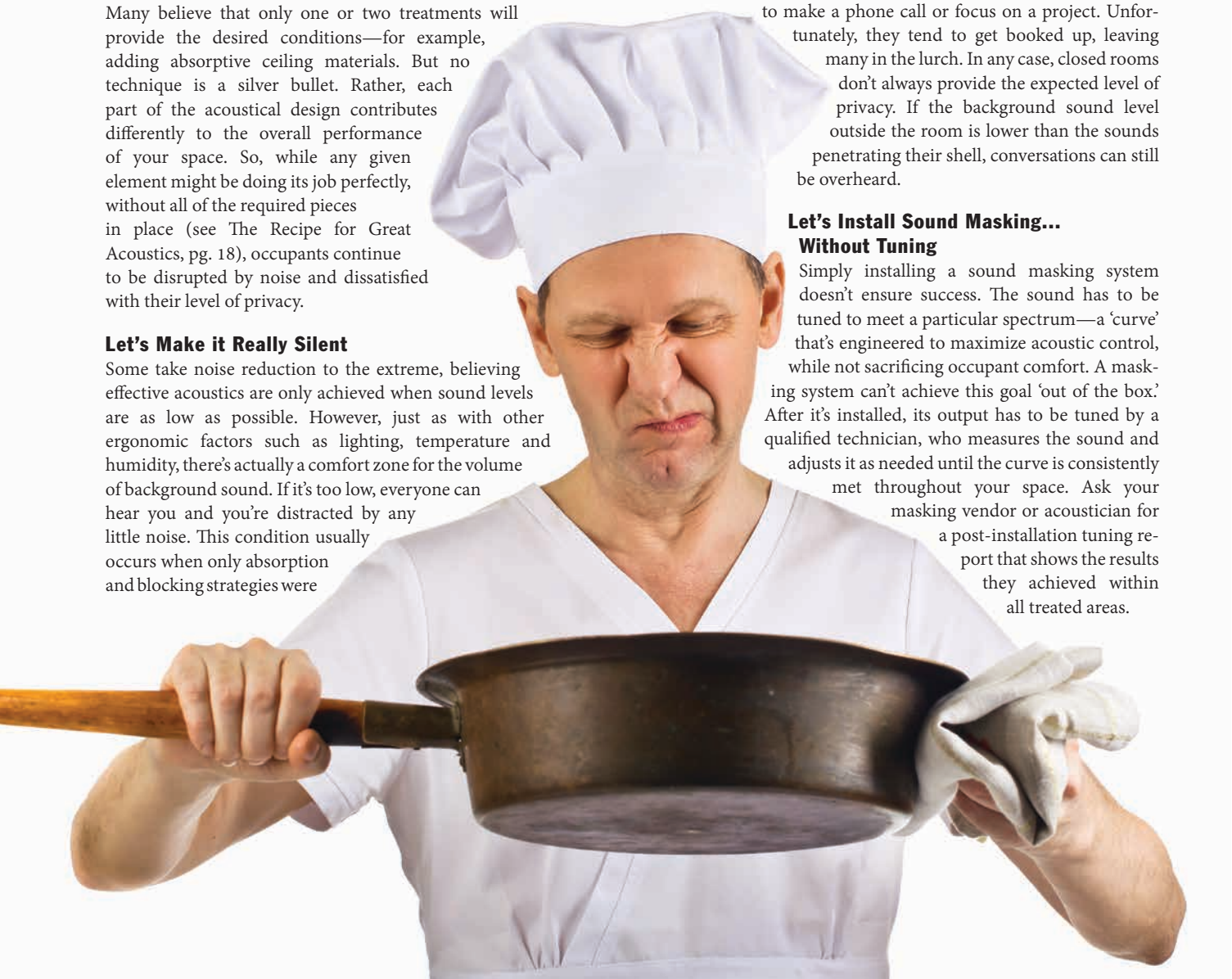
Some take noise reduction to the extreme, believing effective acoustics are only achieved when sound levels are as low as possible. However, just as with other ergonomic factors such as lighting, temperature and humidity, there's actually a comfort zone for the volume of background sound. If it's too low, everyone can hear you and you're distracted by any little noise. This condition usually occurs when only absorption and blocking strategies were used. Those methods aren't failing—they just can't meet the need to control the background sound level, which is handled by a sound masking system.

Closed Rooms Are Enough

Perhaps you're relying on closed rooms—meeting rooms or booth-like spaces—to provide privacy for open-plan occupants who need to make a phone call or focus on a project. Unfortunately, they tend to get booked up, leaving many in the lurch. In any case, closed rooms don't always provide the expected level of privacy. If the background sound level outside the room is lower than the sounds penetrating their shell, conversations can still be overheard.

Let's Install Sound Masking... Without Tuning

Simply installing a sound masking system doesn't ensure success. The sound has to be tuned to meet a particular spectrum—a 'curve' that's engineered to maximize acoustic control, while not sacrificing occupant comfort. A masking system can't achieve this goal 'out of the box.' After it's installed, its output has to be tuned by a qualified technician, who measures the sound and adjusts it as needed until the curve is consistently met throughout your space. Ask your masking vendor or acoustician for a post-installation tuning report that shows the results they achieved within all treated areas.



Celebrating 40 Years of Sound. That Works.

LogiSon®
ACOUSTIC NETWORK©

www.logison.com