

## Making less of more

How sound masking systems can make an office seem quieter



The Madison offices of Graef, Anhalt & Schloemer. A sound masking system can help keep everyone in an open office space working productively.

You can't see it, smell it, or touch it, and although millions of people hear it everyday, they don't know it's there. It does, however, have a color. It's pink.

Pink noise is piped into office buildings and cubicle work areas all over the world in an effort to control the everyday sounds of doing business. Without it, background noise would be overpowering and nobody would be able to have a private conversation, on the phone or off, without others over-hearing.

Piping pink noise into a large open office space is called sound masking, and there is a science to making the system work correctly. Henry Lewis, consultant for Lewis Sound and Video in Waukesha, Wisconsin, has been putting the systems in for over 20 years.

"The key aspect of a noise masking system is that you don't want to notice it. The more noticeable something is, the more distracting."

### Conspicuous by its absence

So how can adding more noise make things seem quieter? Lewis describes two people facing each other, talking in about the 65 decibel range. Someone ten feet away will hear only about 63 db. Put something between them, like a cubicle wall, and the listener picks up just 50 decibels.

Add an acoustical ceiling and the level drops even more. Finally, pipe in pink noise in the original 65 decibel range and the lower decibel speech becomes almost unnoticeable at just 10 feet.

"What it boils down to is that you hear the louder of two sounds presented to you," said Lewis. "If I dropped a pin and shot off a gun at the same time, you'd only hear a gun." While that's a huge difference in decibels the concept still holds true when the differential is as low as 12-18 decibels.

The engineering consulting firm of Graef, Anhalt & Schloemer asked Lewis to put these ideas to work when it moved to a new location in Milwaukee, Wisconsin in 1998. It was the firm's first experience with the open office concept and the individual cubicles that fill that space. Corporate Office Services Manager Anita Szyszkiewicz said the firm knew enough from its own projects to include sound masking on the list of must haves.

But its value really hit home when they were forced, not long after the move, to turn the sound masking system off in order to

change its location. "I had more phone calls from people saying, 'You need to turn that back on!'" said Szyszkiewicz. "It was so loud and so intense in the

office that you could hear people down the hallway. You would not believe what a difference it made." Since then, Graef, Anhalt & Schloemer have added or extended sound masking systems in three of their locations: Madison, Milwaukee and Chicago.

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"In the Chicago loop office, we have a very open concept where the front lobby is not enclosed from our staff," said Szyszkiewicz. "Lewis placed the pink noise so it didn't infringe on that client space and still allowed our employees to work without distractions." The firm was also concerned about the noise level in Chicago because the cubicle partitions are very low. "To put sound masking in that office was a no-brainer."

Szyszkiewicz added that "At first, people ask 'Why do we need to have this?' I thought it was so funny, because you turn it off, and they know exactly why you need to have this."



Sound masking is widely used in banks. Lewis has installed dozens of systems in bank branches, including Bank One and Educators Credit Union.

## Installing a system

Anyone who has flipped the channels of a TV set knows the familiar white noise that pops up between them. But white noise is an uncalibrated broad-spectrum signal that registers as peaks and valleys when fed into a spectrum analyzer. Pink noise, on the other hand, is modulated and comes out as a straight line.

"You can't do much with white noise," said Lewis. It's just there." Pink noise is controllable, making it ideal for sound masking, especially when certain other architectural elements are in place. Carpeted floors and acoustical ceilings can also play a part in successful sound masking.

"Part of the success of sound masking is that it's omnidirectional," said Lewis. "In a sound masking system the speakers are above the ceiling and typically they're not even pointed down. You don't want your listeners to know where it's coming from. It's everywhere."

The space above the acoustical ceiling becomes a resonating

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cavity housing a grid of 8-inch speakers. The actual density of the speakers depends on the architecture of the space above the ceiling. All of the speakers then run back to a power amplifier.

To avoid a pulsing effect caused by the pink noise repeating on itself over time, Lewis uses two pink noise sources, alternating them every other speaker. "This

is all for the express purpose of not being noticed," said Lewis. "We've put up sufficient density of omnidirectional loudspeakers, totally flooding the place so there aren't any hotspots." Lewis is also alert for openings in the ceiling like light fixtures or vents that might cause the pink noise to be louder. In those cases, Lewis evens out the system through a dual channel equalizer which calibrates the pink noise to an overall level and frequency contour. With 60 to 65 decibels of pink noise above and around each cubicle, someone having a 40 decibel conversation doesn't even notice the surrounding noise.

## Time change

Of course, someone sitting alone in the office at night doesn't need 65 decibels of pink noise over his head. So Lewis uses a programmable sound masking system that adjusts with the time of day.

"Our system begins to ramp up at 5 in the morning, so that by 7 or 8 o'clock when people are in the office it's up to full tilt. But then it begins low-

ering itself in the middle of the afternoon, and by 6 at night it's down in the lower mode. On the weekends it might be lower but comes back up when it's needed."

Lewis has also discovered that people who don't have noise masking in the office need time to adjust to the new noise level once they do get it put in.

"They say, what's all this noise? It's driving me nuts!" said Lewis. "What you do when you put it in to an existing office situation is, you bring it up over time. " At least one system has a mode called Slow Start, which brings the pink noise level up gradually over a ten day period.

"It's going to slowly bring itself into the picture," said Lewis, "Because a good noise masking system you absolutely don't notice. If you don't listen for it, you don't hear it."

And that begs the question: if we can't see pink noise, how do we know it's pink? But then, if we can't see it, how do we know it's not?

