Understanding

Sound
Masking

Why sound masking? How does it work? Where is it used? What's the payback?

And more...

WHY SOUND MASKING?

Disruptive noises and conversations make tasks harder to complete. Errors happen more often. That adds to stress.

More than 40 million North Americans work in open plan offices featuring partial height panels. Granted, these cubicles make better use of space and improve communication flow, but they're an acoustical challenge.

Traditional walls have given way to modular furniture systems, more employees use the same space, and everyone is seated closer together. At the same time, absorptive treatments, quieter air handling and office equipment, and new construction methods have lowered the background sound level.

That may seem like a good thing – and to some extent, it is – but without background sound, it's easier to hear the distracting activities happening around your desk.

Think of a library. Due to the lack of background sound, even normal voice levels seem louder than they really are. You can understand a conversation taking place up to 50 feet away!

Are closed offices the solution? It seems you get privacy, but in fact, sound often leaks from one office to the next through the ceiling or air transfer components. Then a closed door means nothing.

A sound masking system helps to address these problems by distributing a comfortable, engineered background sound throughout your workplace.

The benefits?

Speech privacy and acoustic comfort.
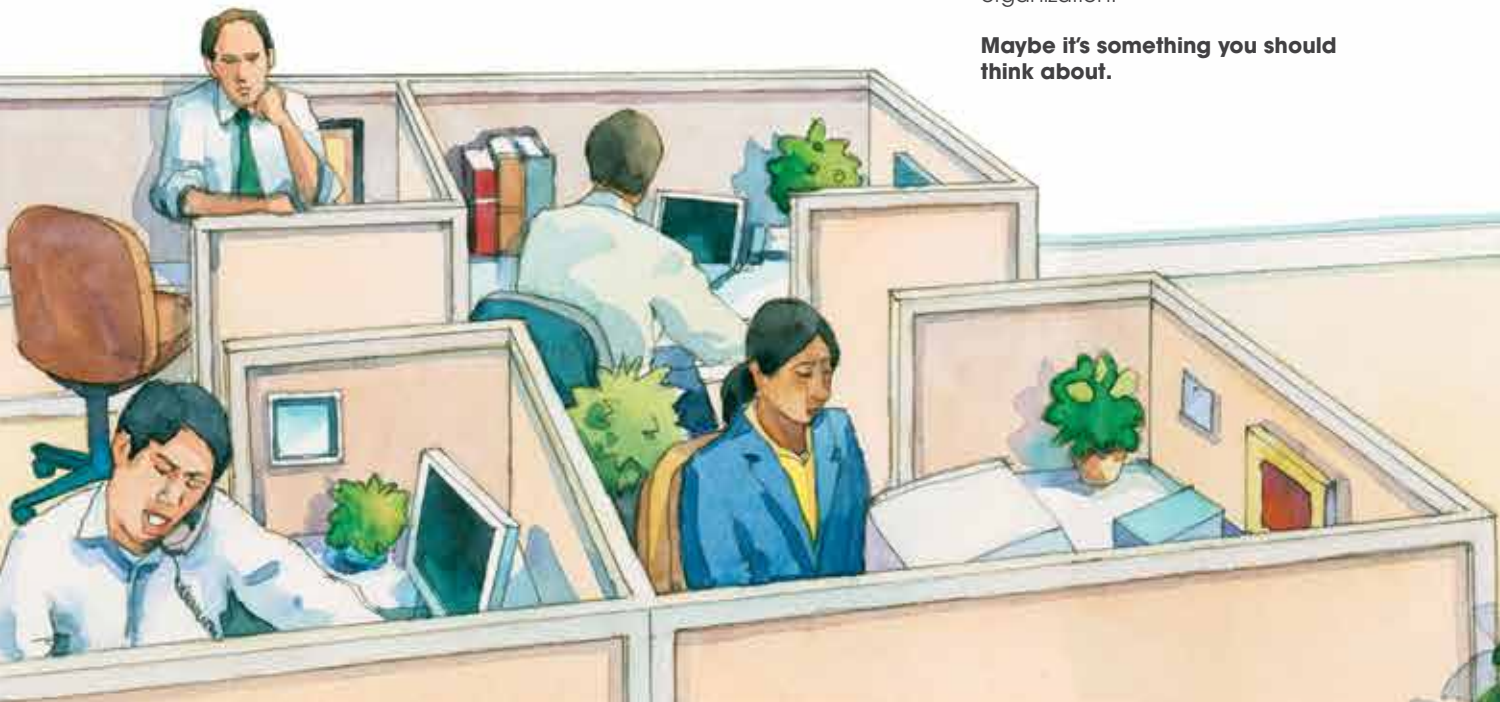
Are acoustics really that important?

Research conducted over the last decade by the Center for the Built Environment (CBE) and others shows that poor acoustics is the **number one** cause of workplace dissatisfaction and the most significant factor affecting employee performance.

If you work in a modern office, you can likely relate. Usually, you're spending time on work that requires concentration. Disruptive noises and conversations make tasks harder to complete. Errors happen more often. And it takes more effort to focus - which tires you out, affecting your mood and, ultimately, your productivity.

It's not something to be taken lightly. A survey of 400 business managers conducted by the Building Owners and Managers Association (BOMA) and the University of Maryland identifies noise control as the greatest opportunity for productivity improvements. And in an American Institute of Interior Designers' (ASID) study, more than 70 percent of respondents said they would be more productive if their office was quieter.

The CBE also found a strong link between workplace dissatisfaction and speech privacy levels. Many employees are disturbed by people talking on telephones or in surrounding areas. And they're concerned by the fact others can overhear their private conversations. Maintaining confidentiality can also be essential to your organization.

Maybe it's something you should think about.

HOW DOES IT WORK?

If you've ever ran water at your kitchen sink while trying to talk to someone in the next room, you'll understand. You can tell your conversational partner is speaking, but it's difficult to comprehend what they're saying. That's because the running water has raised the noise floor in your area.

The **noise floor** is the level of constant sound present in a space. If it is too high, you'll find it irritating. Too low, and you can easily overhear conversations and noises.

How do you use **sound** to cover up **sound?**

Sound masking creates a noise floor high enough to mask unwanted noises, and low enough for comfort. It works because the human ear can't separate, or distinguish, sounds of similar volume and frequency.

So, you can reduce distractions and achieve privacy. A more consistent sound volume across your facility also makes it feel quieter. Movements from one area to another become less disruptive.

How is the solution **implemented?**

A sound masking system uses loudspeakers to distribute a comfortable, engineered background sound. This makes it difficult to hear incidental noises or conversations.

The LogiSon Acoustic Network's loudspeakers are usually installed in a grid-like pattern above the ceiling tiles (shown below).

You can control the Network from a central control panel (shown below) or a computer. If you need on-demand audio control in private offices or meeting rooms, you can install keypads and remote controls.

If you'd like to page employees (selectively, or across a wide area), or even provide music, you can do both through the same set of loudspeakers. The Network also protects against eavesdropping and electronic espionage by employing multiple independent sound generators.

In short, the LogiSon Acoustic Network is a complete audio package.

The LogiSon Acoustic Network's loudspeakers are usually installed in a grid-like pattern above the ceiling tiles. Its contemporary design also makes the Network the best choice for open ceilings.

WILL I HEAR IT?

Common misconceptions

Can't music provide masking?

Music alone does not provide the frequency spectrum required to consistently mask conversations and noises. Music preferences are a matter of personal taste, and because music contains variations and patterns, it becomes inherently distracting.

What about my airflow system?

Your airflow system turns on and off throughout the day in order to regulate building temperature. It can't be relied on to provide constant coverage. And, when it is on, the sound it produces is not at an appropriate volume level or in the correct frequency spectrum to mask speech.

Isn't a sound masking system the same thing as white noise?

The term white noise describes a specific type of sound used in early masking systems during the 1970s. These systems were inflexible and the hissing quality of their sound prevented widespread acceptance, but the term became widely adopted.

The LogiSon Acoustic Network makes an engineered sound comparable to that of soft airflow. If you'd like to hear the system in action, contact your LogiSon Representative for a demo or site tour.

Does masking cancel noise?

No. Noise-cancellation technology uses microphones to detect noise, which in turn signal a computer (connected with a loudspeaker) to produce an equal and opposite sound wave. This sound wave is projected in the same direction as the noise, which eliminates it.

Noise cancellation is effective for continuous, low-frequency sounds such as engines and traffic. Its applications are limited because the noise source and the listener must always be in the same position for the effects to be experienced. Cancellation is not useful in the office because it can't address the variable and high-frequency nature of speech, or the movement of employees.

Noise-cancelling headphones – a popular item these days – are used to eliminate background sound. That makes surrounding conversations **easier** to hear.

The masking sound should be **specifically designed** for your space.

You must be able to hear the masking sound for it to be effective. But it's designed to be as unnoticeable as possible. It doesn't contain distracting patterns, and it's tuned so you don't hear volume changes as you move through your facility. Employees come to consider it a natural part of their environment over a short period of time.

The LogiSon Acoustic Network offers the highest masking uniformity in the industry. It provides zone sizes of 1 to 3 speakers, or 225 to 675 square feet. Such small zone sizes mean the masking sound can be specifically designed for your space.

There are two additional elements for enhancing comfort:

The **Ramp-Up Feature** is ideal for installing the Network in an already-occupied facility. It automatically increases the sound masking volume over the course of 15 days, allowing workplace occupants to acclimatize to the new conditions.
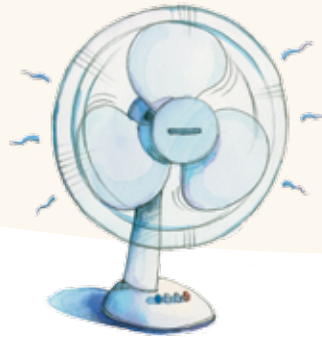
The **Timer Feature** schedules the masking volume to match expected activity levels throughout the day. It ensures the masking is loud enough to be effective during busy times, and low enough to be comfortable at quieter times.

HOW EFFECTIVE IS IT?

Sound masking allows easy communication over short distances while
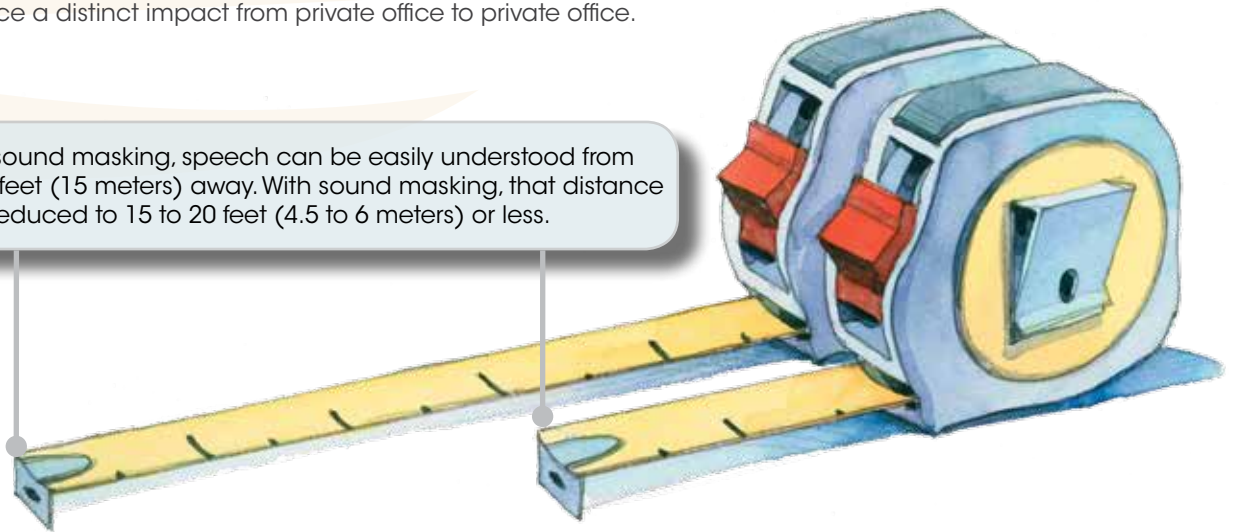
protecting employees

from the noises coming from surrounding offices and workstations.

As noise travels, its volume decreases to a level that is covered up by the masking sound, so it follows that this technology requires some distance to work.

In open-plan spaces, for example, you can expect the radius of speech intelligibility to be reduced to approximately two workstations. However, the exact distance depends on the masking system's volume and your building's construction, as well as other noise control methods and materials used in the space.

You'll notice a distinct impact from private office to private office.

Without sound masking, speech can be easily understood from up to 50 feet (15 meters) away. With sound masking, that distance can be reduced to 15 to 20 feet (4.5 to 6 meters) or less.

Will software show me what I can achieve?

Software that predicts general acoustic performance can help you determine which design choices may have the largest impact on noise and speech privacy in your facility. But these programs don't take enough factors into account to accurately predict the impact these choices will have across your entire space. They give you an overall rating.

For this reason, software can be used to guide a conversation about acoustic design. But it shouldn't be used to replace sophisticated 3D-modeling packages - or better yet, the advice of an acoustical consultant.

Will software help me with product selection?

All predictive programs show sound masking is an effective acoustic treatment, but they can't model the differences between products. So they aren't recommended for use in determining which system you buy.

When making your decision, compare features such as how the system is controlled, the size and types of zones it offers, how the masking sound is generated, the frequency and volume adjustment capabilities, timer functions, and installation versatility. In open-ceiling applications, even the system's appearance can be important.

Will I be able to hear my neighbor?

The background sound level in offices is often so low that voices carry over a distance of 30 to 50 feet (9 to 15 meters) or more. A masking system dramatically reduces that distance. The exact distance is affected by office layout and any other resident acoustic treatments, but 15 to 20 feet (4.5 to 6 meters), or approximately 2 workstations, is a good expectation. It can be less.

Over shorter distances, masking may not prevent you hearing that someone is speaking, but it will prevent you from understanding what is being said. This is a key benefit, because understandable speech is the least private and causes the most distraction.

Can the results be measured?

Yes. The acoustic performance of your space before and after the introduction of sound masking can be measured using a sound analyzer. These measurements include volume, contour, spatial and temporal consistency, dynamic range, and speech privacy levels. All measurements and analysis should be provided by a qualified acoustical engineer.

WHERE IS IT USED?

A sound masking system is intended for use in areas where poor noise control exists due to low background sound levels. In these types of spaces, you can hear noises and conversation across long distances. Sound masking will not improve acoustics in areas with high background sound levels of 50 dBA or more.

The primary goal of a sound masking system is to cover up speech, but it also masks other noises within the same frequency range as the masking sound. These include exterior traffic, general office activities, and ventilation. The system does not address very high or very low frequency sounds.

Which sectors can use sound masking?

- Banks
- Call Centers
- Commercial Offices
- Courthouses
- Dealerships
- Healthcare Facilities
- Hotels
- Houses of Worship
- Libraries
- Military Facilities
- Schools

Here are a few specific cases:

Call Centers

Daily, agents must deal with distractions caused by other agents talking on the telephone or holding meetings by their workstations. Combine that with the noise of people walking by, phones ringing, office equipment churning, and building mechanicals droning - it's a cacophony.

Reducing these distractions can help employees provide better customer service. It can also pay off in terms of error reduction, employee retention, and financial performance.

Retail Banks

The branch is the location where staff members process transactions and provide advice. A high level of speech privacy is crucial because clients expect their conversations with staff to remain confidential. Privacy is also necessary for staff to negotiate effectively. If they're working in an acoustically comfortable environment, they tend to be less fatigued, suffer less stress, and be more welcoming - all essential to first-rate customer service.

Law Offices & Courthouses

In law firms, a positive acoustic ambience can convey an atmosphere of control, professionalism and stability.

Speech privacy helps to reduce clients' fear of being overheard. Controlling noise can assist staff members engaged in tasks that require concentration, such as researching, reading and writing.

In courtrooms, jury box masking can achieve speech privacy for sidebar conversations and bench conferences. Sound masking is also a natural fit for jury deliberation rooms, or within the administration and support areas in courthouses.

Hospitals

Conversations, footfall, medical equipment, televisions, telephones, carts and mechanical systems - noise is ever-present in healthcare facilities. That can add to patient stress and prevent healing rest Staff members have a hard time concentrating on their work in a noisy environment. It can be easier to make errors.

Speech privacy is also a concern. Patients know if they can overhear conversations occurring in neighboring areas, others may hear *their* exchanges as well. That can make them uncomfortable and less likely to speak freely with caregivers.

Will sound masking work in restaurants?

Locations such as airport lounges and members clubs, which are similar to open-plan office environments, can benefit. However, most restaurants are characterized by high background sound levels and a lot of echo. These issues should be addressed with absorptive materials.

What about industrial applications?

Sound masking addresses noise problems caused by low background sound levels. Because industrial environments usually feature high background sound levels, introducing masking won't have an impact.

Talk to your LogiSon Representative about using sound masking in your particular application.
For contact information, call 1.866.LOGISON or visit www.logison.com.

HOW IS IT INSTALLED?

Masking should be installed throughout your space. If the masking sound is present in one area and not in another, it will draw attention as occupants move about.

Your LogiSon Representative selects the LogiSon Acoustic Network components and designs a layout.

Installation can be handled by your LogiSon Representative's in-house technicians, by a third-party installation company, or your own contractor. Though the loudspeakers are typically installed above the ceiling tiles, they can also be used in open or hard ceilings such as gypsum. They're usually placed 15 feet apart in a grid-like pattern so each one covers approximately 225 square feet. A single line of cable connects all components, keeping installation straightforward and costs low.

Your LogiSon Representative sets up and tunes the Network to meet your requirements, either independently or together with your acoustical consultant.

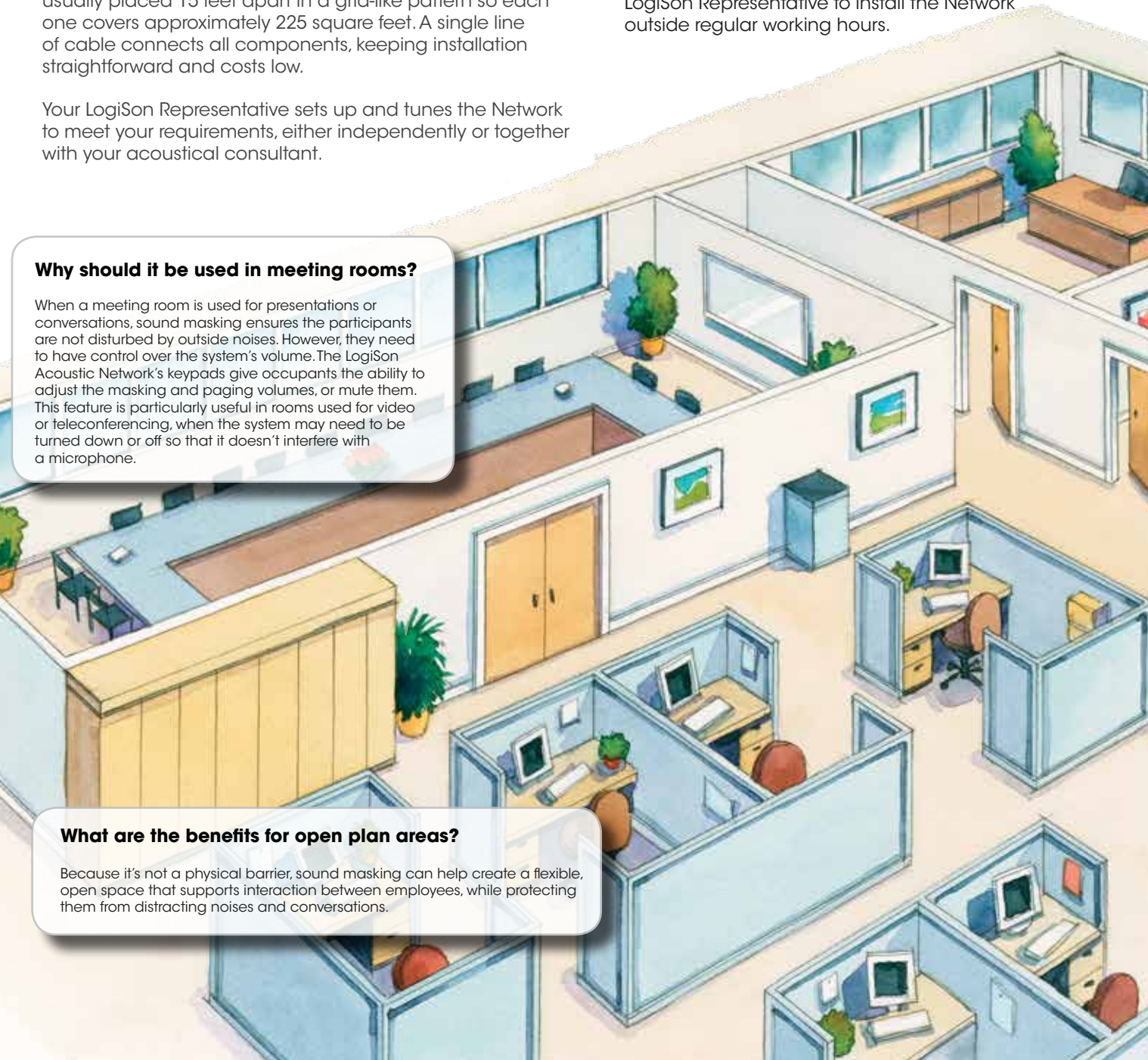### Is it difficult to install in existing spaces?

Many people believe acoustic materials need to be installed prior to project completion. However, the LogiSon Acoustic Network is easily installed in existing facilities, addressing acoustical concerns without requiring a large-scale renovation. If needed, arrangements can be made with your LogiSon Representative to install the Network outside regular working hours.

Why should it be used in meeting rooms?

When a meeting room is used for presentations or conversations, sound masking ensures the participants are not disturbed by outside noises. However, they need to have control over the system's volume. The LogiSon Acoustic Network's keypads give occupants the ability to adjust the masking and paging volumes, or mute them. This feature is particularly useful in rooms used for video or teleconferencing, when the system may need to be turned down or off so that it doesn't interfere with a microphone.

What are the benefits for open plan areas?

Because it's not a physical barrier, sound masking can help create a flexible, open space that supports interaction between employees, while protecting them from distracting noises and conversations.

WHAT ABOUT CONTROL?

Imagine you **couldn't adjust** your office chair to suit your **individual needs.** How comfortable would you be?

To ensure maximum acoustic comfort®, your sound masking system should be adjusted to suit the unique needs of your facility – and re-adjusted if you renovate, move furniture or personnel.

LogiSon Representatives offer the following client services:

- Site inspection
- System design
- Quotation
- Installation
- Programming
- Maintenance
- Relocation

Why should I use it in private offices?

Conversations that require privacy usually take place in closed rooms. But air transfer components, poor door seals, gaps between the wall and ceiling, and breaks in the plenum barriers provide clear paths for overhearing these conversations in neighboring offices. Although the level of acoustic satisfaction experienced by employees in private offices is generally higher than those in cubicles, almost one third still feel noise interferes with their ability to do their job. And many people keep the doors to their offices open. In this case, they may have less noise control than employees occupying cubicles.

Can I just treat the noisy areas in my workplace?

Masking should be installed throughout your space. If the masking sound is present in one area and not in another, it will draw attention as occupants move about. Treatment of individual private offices or selected areas in an open plan is not recommended. Partial masking installations should occur only when there is a physical break between two areas, such as a wall, doorway or corridor.

Is the system easy to control?

Yes. The LogiSon Acoustic Network's settings – for an individual loudspeaker or an entire campus – can be managed from a control panel or a computer equipped with Acoustic Network Manager software.

Can I adjust the masking sound?

Sound masking works because occupants come to consider it a natural feature of the space they're in. If the masking system is turned on and off, or the volume is often adjusted, it will call attention to the system, which could then become a distraction.

The LogiSon Acoustic Network has a Timer Feature that can be programmed to gradually adjust the masking volume to match expected changes in activity levels throughout the day.

If you change your facility's layout, your LogiSon Representative should make the required changes to the masking sound. Properly altering the volume or frequency requires both training and specialized equipment.

You can alter other settings using any of the control options the Network offers.

What kind of support is available?

It's important to choose a sound masking system supported by professionals who can properly design the system and provide you with ongoing support as your organization grows and changes.

LogiSon Representatives pride themselves not only on state-of-the-art technology, but also their firm commitment to customer satisfaction. No matter the size of your operation, they have the knowledge and capabilities to meet your needs. And international coverage means they can assure you the same high standard of service no matter where you're located.

WHAT'S THE PAYBACK?

The LogiSon Acoustic Network is economical to operate. A 13,500 square foot installation uses the same energy as a light bulb.

Economic pressures lead many organizations to minimize the cost of their physical space. But design choices that result in poor working environments can end up costing more in the long run.

"People" costs – including recruitment, salaries, training and benefits – make up the majority of an organization's expenses, usually costing 10 times more than the building and its maintenance combined. So, creating a space where employees are comfortable and productive can really impact your bottom line.

Sound masking is part of a proactive approach that provides employees with the type of workplace they need to excel. It's also likely to be one of the smallest investments you make in your facility.

Are there any material savings?

Early consideration of a sound masking system in your construction plans has benefit. It can reduce costs by eliminating the need for extra insulation, layers of drywall or plenum barriers, and high-spec or permanent walls around private offices. Sound masking is very effective when used in combination with floor-to-ceiling wall systems and is comparable to increasing their Sound Transmission Class (STC).

Fewer slab-to-slab walls mean reduced HVAC zone requirements and a less interrupted ceiling grid. In this way, masking also maintains the flexibility of your space for future renovations!

Sound masking can also reduce the need to purchase other acoustical treatments. The nature of these reductions varies and should be discussed with your LogiSon Representative.

Is it expensive to operate and maintain?

Churn rates and renovations call for building systems that can be quickly, easily and cost-effectively readjusted. Investing in a flexible system such as the LogiSon Acoustic Network increases the efficiency of long-term maintenance. Because you can use a control panel or computer to manage the settings, changes can be made in minutes. And you won't need to open the ceiling or hire an electrical contractor to alter the cabling.

You can also upgrade software more often, and much more economically, than if you had to regularly change your physical equipment to take advantage of new features.

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How long is the warranty period?

The LogiSon Acoustic Network is covered by a five-year warranty.

Can I expand or relocate the system?

The LogiSon Acoustic Network can be expanded or relocated with ease.

More questions?

The LogiSon Acoustic Network is provided through **certified representatives** across North America and Europe. You can find contact information at www.logison.com.

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ACOUSTIC NETWORK

Your Networked Solution
For Speech Privacy and Noise Control

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