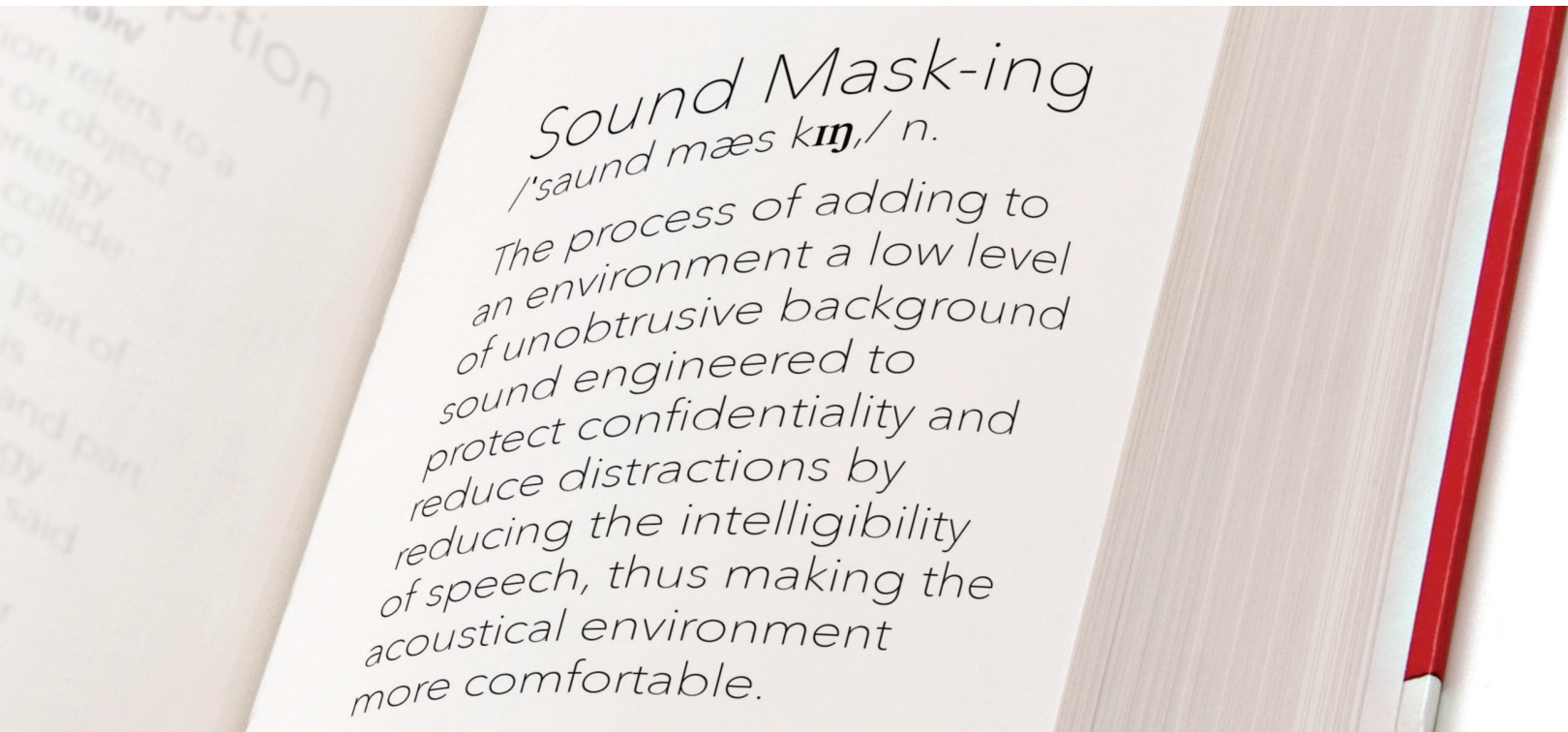# SOUND MASKING 101

REDUCE NOISE DISTRACTIONS
PROTECT SPEECH PRIVACY
INCREASE WORKPLACE PRODUCTIVITY

biamp.

WHAT IS SOUND MASKING?

Sound Mask-ing
/'saund mæs kɪŋ,/ n.
The process of adding to an environment a low level of unobtrusive background sound engineered to protect confidentiality and reduce distractions by reducing the intelligibility of speech, thus making the acoustical environment more comfortable.

SOUND MASKING IS A CRITICAL COMPONENT OF ACOUSTIC DESIGN

When designing an optimal acoustic environment, architects consider a variety of elements to address noise control and speech privacy. Elements added either Absorb, Block, or Cover sound, and are collectively called the ABC's of acoustic design.

A	**Absorb:** Acoustic wall panels, carpet, and ceiling tiles help absorb excess sound
B	**Block:** Solid barriers, partitions, and walls help block excess sound
C	**Cover:** Sound masking helps cover up excess sound

All of the ABC's of acoustic design can be used together or individually to achieve the desired acoustic environment, but absorbing and blocking materials are costly and underused. Sound masking, on the other hand, is a low-cost option for creating acoustical environments that both reduce noise distractions and increase speech privacy.

WHY DO YOU NEED SOUND MASKING?

OPEN FLOOR PLANS ARE THE NEW NORMAL

Most workplaces today feature more open spaces and smaller, and often shared, workstations. Fewer sound blocking and absorptive materials are being used such as lower or non-existent partitions, hard or glass surfaces, and thinner walls and doors. This creates acoustical challenges that negatively impact workplace satisfaction, productivity, and speech privacy.

Why Should I Care About Poor Acoustics?

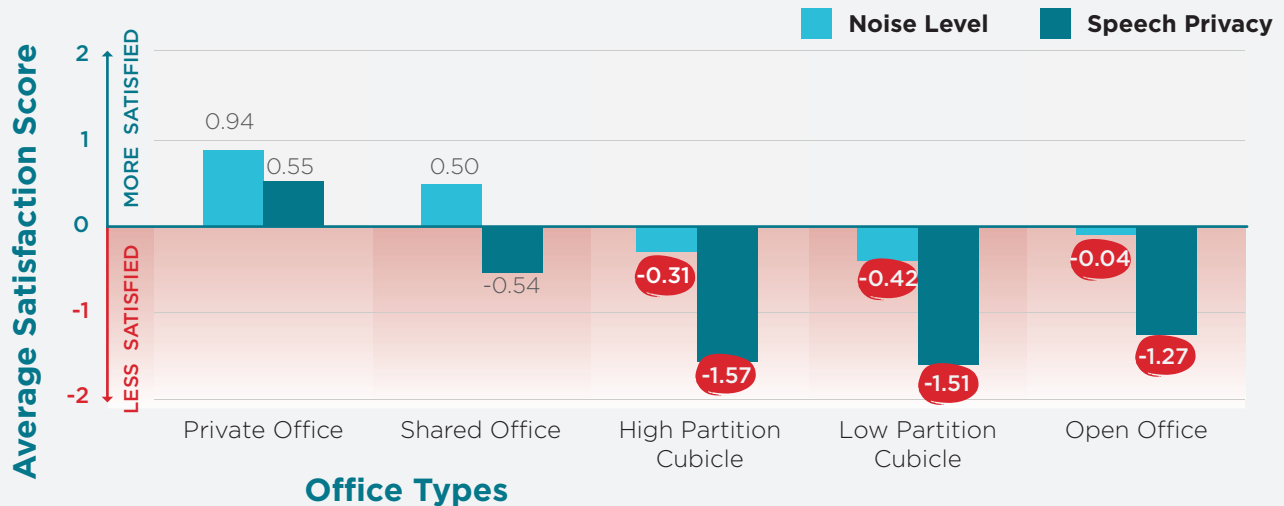|		
Noise distractions are driving your employees crazy (that's why they are wearing headphones)	The constant interruptions are making your employees less productive and costing you money	Sensitive data is being communicated and overheard in your work environment, and you are legally bound to protect it

SOUND MASKING INCREASES WORKER SATISFACTION

Approximately 24,000 office workers in private offices, shared offices, cubicles, and open offices were asked to rate their satisfaction with their noise and speech privacy levels. Those with private offices were the only ones satisfied with their speech privacy, and even they only rated them a .55 out of 2 on average.

How Satisfied Are You With Your Office's Acoustics?

Noise Level ■ **Speech Privacy** ■

Average Satisfaction Score

MORE SATISFIED / LESS SATISFIED

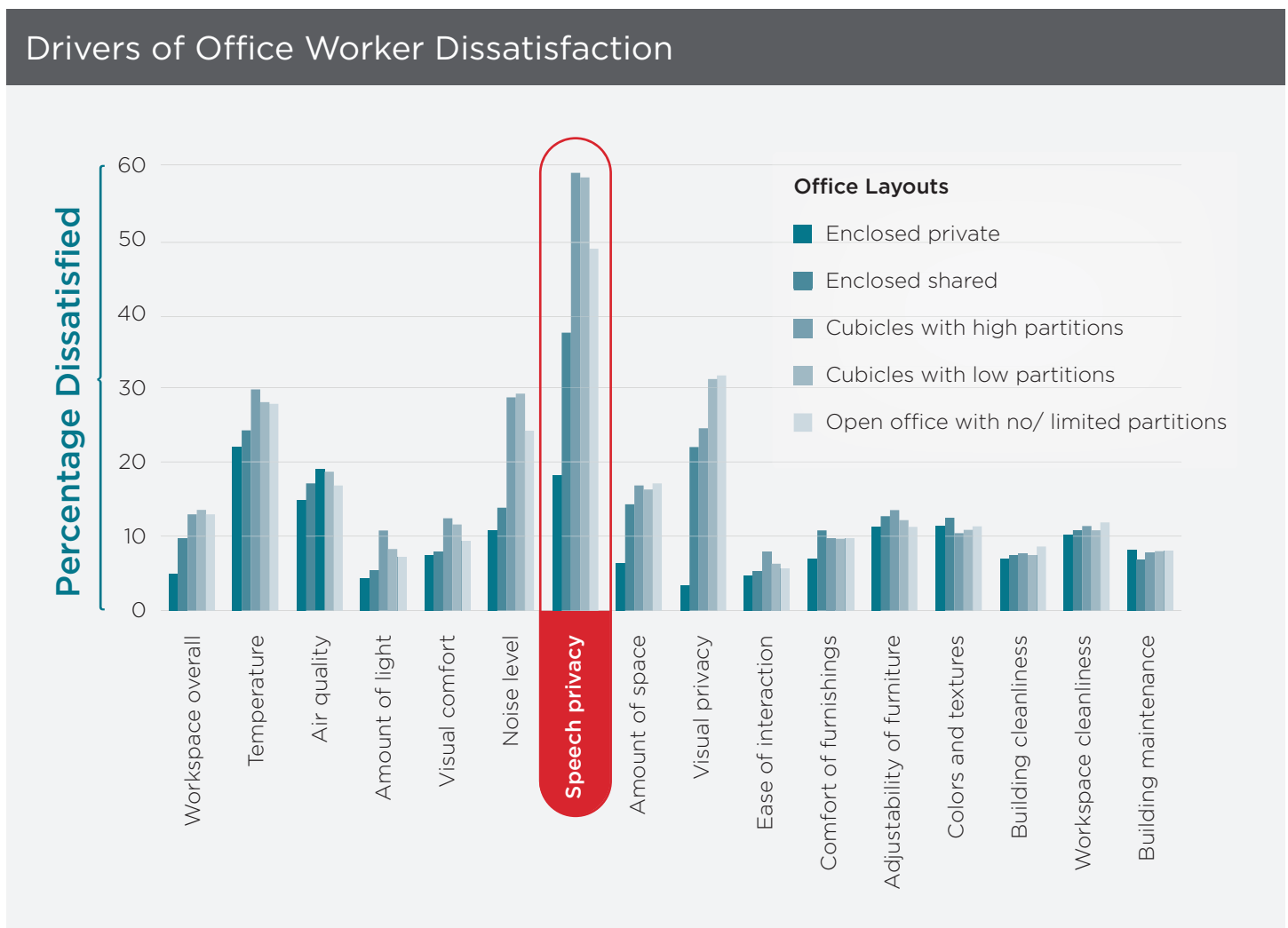| Office Types	Noise Level	Speech Privacy
Private Office	0.94	0.55
Shared Office	0.50	-0.54
High Partition Cubicle	-0.31	-1.57
Low Partition Cubicle	-0.42	-1.51
Open Office	-0.04	-1.27

Source: U.S. General Services Administration Study

As you can see, cubicle and open office employees were notably dissatisfied with their office's levels of speech privacy.

LACK OF SPEECH PRIVACY IS THE NUMBER ONE CONCERN OF EMPLOYEES

What's speech privacy? Simply put, it's the inability of an unintended listener to understand outside conversations. So someone with a lack of speech privacy is overhearing lots of conversations they shouldn't be and is also concerned that their conversation is being overheard by others.

The chart below says it all. The Center for the Built Environment in Berkeley, California, surveyed more than 25,000 workers in more than 2,000 buildings to determine what the key environmental issues were for workers. Of all of the factors workers encountered in their environment, speech privacy was far and away the factor they were the most dissatisfied with.

Drivers of Office Worker Dissatisfaction

Percentage Dissatisfied

Office Layouts
- Enclosed private
- Enclosed shared
- Cubicles with high partitions
- Cubicles with low partitions
- Open office with no/ limited partitions

Categories (x-axis): Workspace overall, Temperature, Air quality, Amount of light, Visual comfort, Noise level, Speech privacy, Amount of space, Visual privacy, Ease of interaction, Comfort of furnishings, Adjustability of furniture, Colors and textures, Building cleanliness, Workspace cleanliness, Building maintenance

Source: Analysis of data from the Center for the Built Environment by Jungsoo Kim and Richard de Dear, University of Sydney

DISTRACTIONS MAKE YOUR EMPLOYEES LESS PRODUCTIVE

Employees are interrupted once every 11 minutes according to research from UC Irvine, and it takes them up to 23 minutes to get back into the flow of what they were doing before they were interrupted.

THESE DISTRACTIONS COST MONEY

In a recent study presented to the International Congress of Noise as a Public Health Problem, researchers found that, on average, employees wasted 21.5 minutes per day due to conversational distractions, making lack of speech privacy the number one cause of reduced productivity. An additional 2014 Steelcase/Ipsos study found that employees lost as much as 86 minutes per day due to noise distractions.

Even using conservative estimates, this loss of productivity adds up to big monetary losses for companies. 21.5 minutes daily is roughly 4% of an average employee's work day (based on an 8 hour day). Some quick math shows that a company with 100 employees and an average employee salary cost of $50,000 is losing $200,000 a year in lost productivity.

$200K = **100** employees × **50K** avg salary cost × **4%**

Sound Masking Helps Your Employees Concentrate and Work More Efficiently

Increase of word and number recollection with sound masking

Researchers examined the effect of speech privacy on task performance in an open office environment without sound masking and with sound masking. Participants in offices with sound masking had better short-term memory recall than those without it.

+ 7.8%
Word Recollection

+ 8.7%
Number Recollection
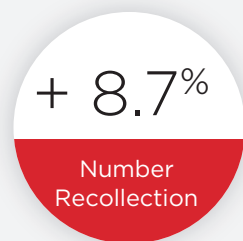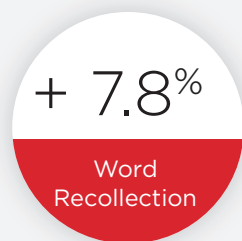
SOUND MASKING PROTECTS CONFIDENTIALITY AND REDUCES LIABILITY

- Closing the door to an office no longer guarantees speech privacy, in fact, it's probably worse because closing that door provides the illusion of privacy.

- Many private conversations could be HR nightmares if overheard by the wrong people.

- **Providing speech privacy is often encouraged, or outright mandated, by the legal and regulatory environment:**

HIPAA – Mandates that all employers (not just hospitals) "take reasonable safeguards to protect the privacy of protected health information."

GLBA – In many ways, the Gramm–Leach–Bliley Act (GLBA) is the HIPAA equivalent for the finance industry. GLBA requires financial institutions to protect their client's non-public financial information.

LEED – Ensuring proper speech privacy and sound isolation is a component of LEED certification. LEED is a set of rating systems for the design, construction, operation, and maintenance of green buildings, homes and neighborhoods. Many U.S. federal agencies and state and local governments require buildings to attain LEED certification.

HCAHPS – In the healthcare industry, the Hospital Consumer Assessment of Healthcare Providers and Systems Survey (HCAHPS) provides scores to hospitals based on a variety of criteria, including "quietness of patient environment." Hospitals with low HCAHPS scores risk loss of government funding and damaged reputation.

FERPA – In the education industry, the Family Educational Rights and Privacy Act (FERPA) mandates that colleges and universities take all reasonable efforts to safeguard student information including how the information is collected and disseminated.

WHO BENEFITS FROM SOUND MASKING?

Business Owners
Protect speech privacy and increase productivity by reducing noise distractions

Facility Managers
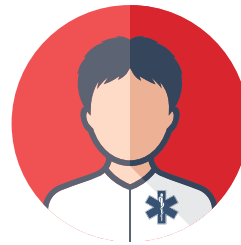Help increase worker satisfaction and reduce operating costs

Property Managers
Increase the value of your space

HR Managers and Privacy and Compliance Managers
Comply with the speech privacy requirements of HIPAA and GLBA regulations

Healthcare Managers
Increase HCAHPS scores and HIPAA compliance

Employees
A more comfortable work environment with fewer distractions

Architects
Improve the acoustical environment of new or retrofitted spaces

General Consultants
Create a collaborative work environment without sacrificing acoustics

Contractors
Improve speech privacy and lessen the level of distraction without adding further absorptive and blocking materials

WHERE SHOULD SOUND MASKING BE USED?

Corporate
Open Office
Private Office
Outside of Conference Rooms

Healthcare
Hospitals and Clinics
Offices and Counseling Areas
Pharmacies

Technology
Engineering and Research Labs
Co-share Spaces
Huddle Rooms
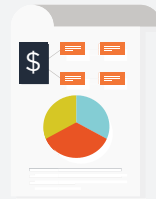
Financial Services
Retail Banks
Call Centers
Board Rooms

Education
Libraries
Classrooms
Testing Centers

Government & Law
Secured Facilities
Courtrooms
Law Offices

Hospitality
Hotel Rooms
Reception Areas
Spas

Venues
Airport Lounges
Houses of Worship (Back Office)
Conference Centers

HOW DOES SOUND MASKING WORK?

ADDING SOUND MAKES SPEECH LESS INTELLIGIBLE

Adding sound to a space actually makes the space seem quieter. It sounds counter-intuitive, but it's true. This is because the added sound reduces the intelligibility of speech. When you can't understand what someone is saying, their words are less distracting — in fact, you probably don't even notice them.

Here's an example of sound masking in everyday life. Have you ever had a conversation with someone while you are washing dishes and they are on the other side of the kitchen? When the water isn't running, you can hear the other person's words perfectly. When you turn the water on it becomes much harder to hear them and understand what they are saying. The person isn't speaking more softly, but they sound as if they are. This is because the noise of the running water is "masking" the sound of the person speaking to you.

Sound masking mimics this phenomenon on a much more sophisticated and effective scale. By adding ambient sound to an environment, (such as professionally engineered sounds that sound similar to water flowing or airflow) you help mask the other noises in the environment, making them less distracting. Sound masking doesn't eliminate all noises in an environment; it simply reduces the area where human speech is intelligible and distracting. We call this area the radius of distraction.
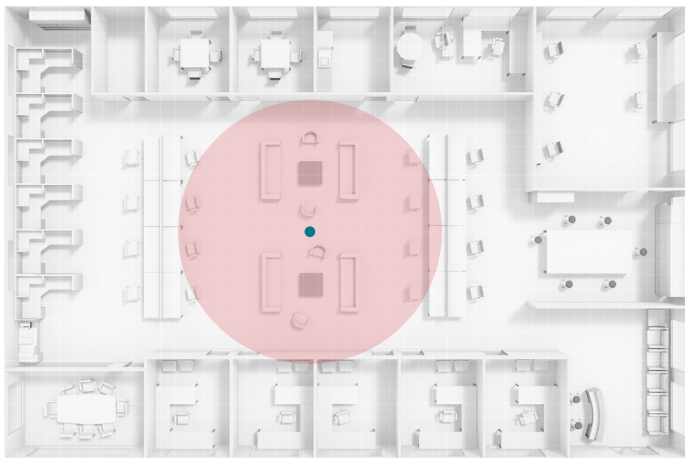
Radius of distraction without sound masking
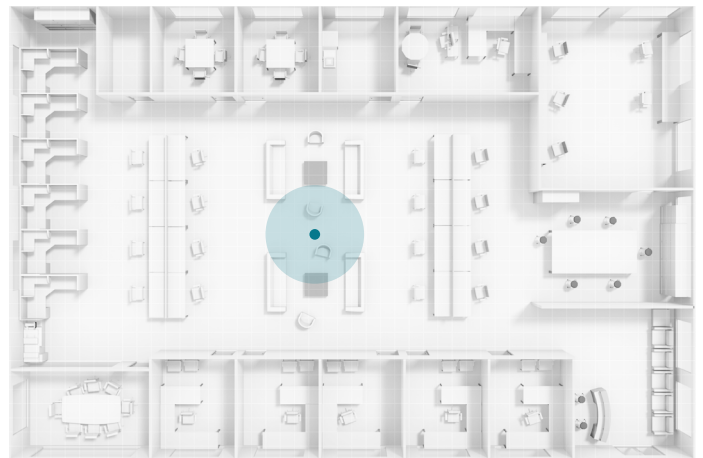
Radius of distraction is reduced with sound masking

Once masking is added, it becomes more challenging to understand conversations from across the room, and thus makes it less likely that conversations will distract you.

CAMBRIDGE QTPRO® SOUND MASKING TECHNOLOGY

Cambridge sound masking from Biamp offers the best performing masking technology that can meet the needs of any architectural space. Our commitment to delivering superior products and service has made us far and away the world's largest provider of sound masking solutions.

INNOVATORS OF DIRECT FIELD MASKING TECHNOLOGY

Biamp's Cambridge sound masking technology revolutionized the sound masking industry with the development of our direct field sound masking technology, QtPro. QtPro uniformly disperses a pre-tuned sound masking signal directly into the workspace. The result is a consistent and comfortable ambient sound throughout the space.
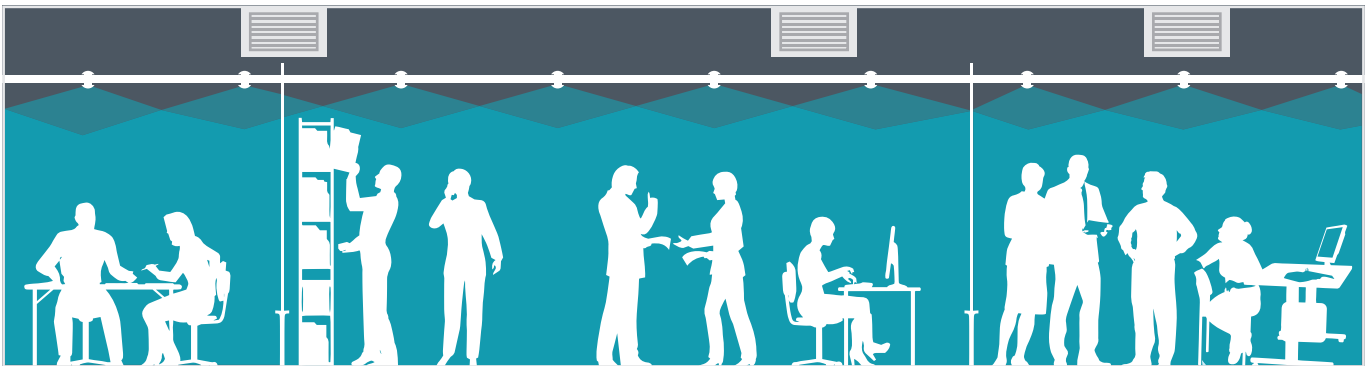
The QtPro system consists of three simple components: emitters (i.e. loudspeakers), a control module that powers and sends the audio signal to the emitter, and standard category cables that connect the emitters to the control modules.

CAMBRIDGE QT® EMITTER

Emitters are the backbone of QtPro. Qt Emitters are wide-dispersion direct field speakers with that are smaller than a coffee mug. They deliver four uncorrelated audio channels and provide uniform, unobtrusive sound masking.
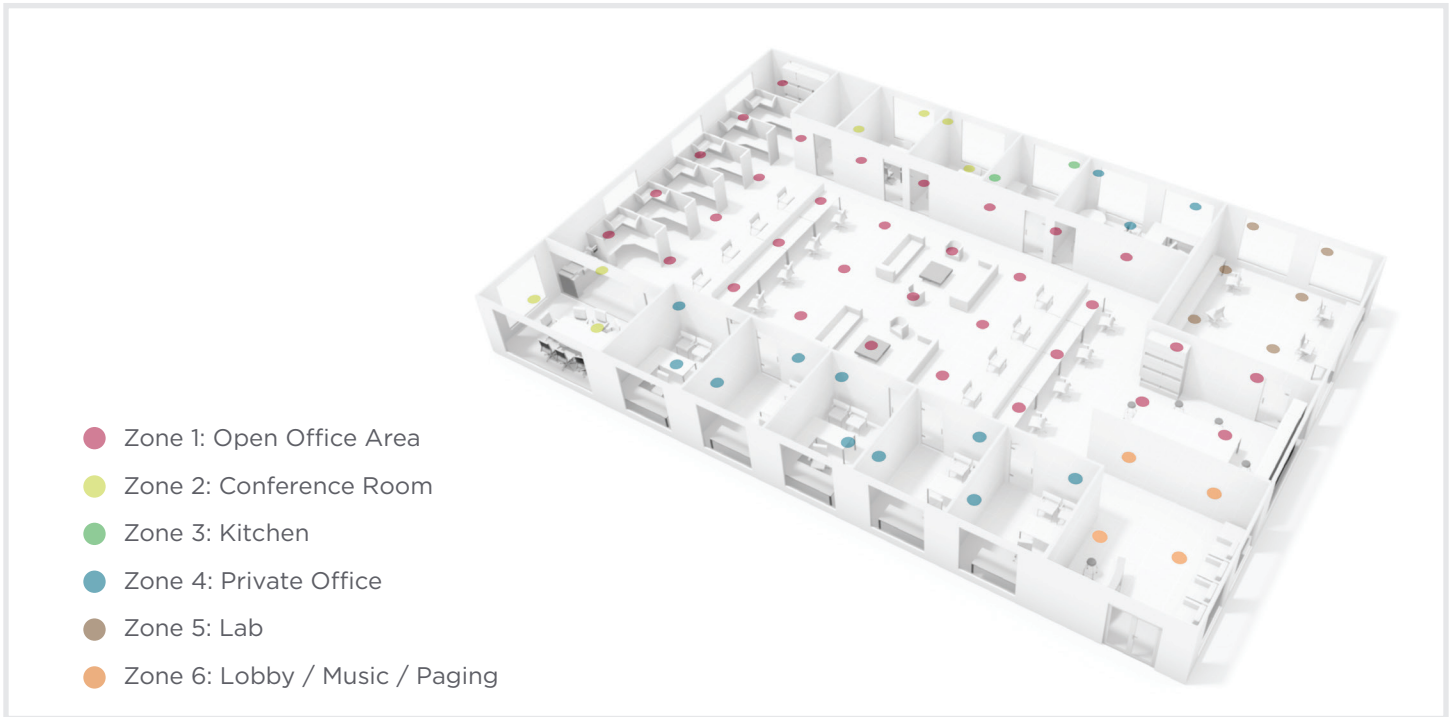
CAMBRIDGE QT® ACTIVE EMITTER

The Qt Active Emitter provides high sound level and a broader frequency range than the standard Qt Emitter, making it a great choice for workplaces in need of paging and background music capabilities in addition to masking. It utilizes the same control modules and similar cabling infrastructure as the standard emitter.
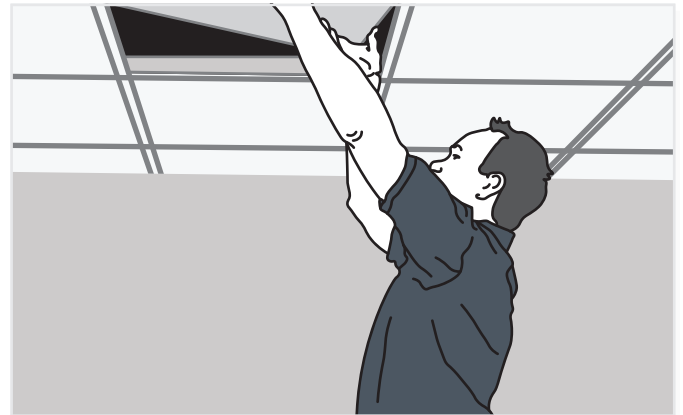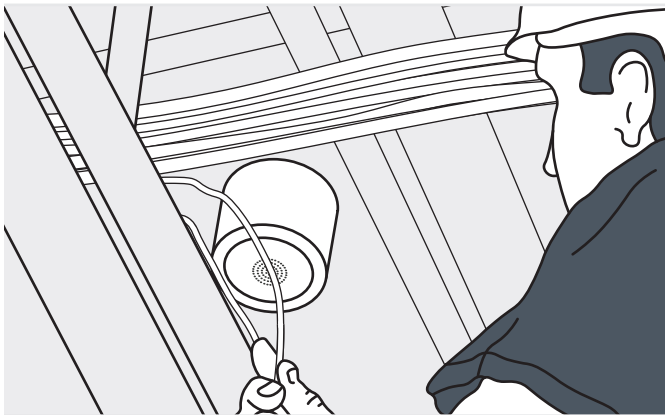
SIMPLE LAYOUT, ZONING, AND INSTALLATION

The Cambridge QtPro system is designed to meet the unique acoustic requirements of a space, whether large or small.

Emitters are easily installed by certified masking professionals in a simple grid pattern, determined by ceiling height. During the layout and design phase, the space is divided into zones based on acoustic requirements of the space. Zones can range from approximately 100 square feet (9.3 m^2) to 12,000 square feet (1,115 m^2). In the example below, the office space is separated into six zones, allowing for different volume levels for each unique space.

● Zone 1: Open Office Area

● Zone 2: Conference Room

● Zone 3: Kitchen

● Zone 4: Private Office

● Zone 5: Lab

● Zone 6: Lobby / Music / Paging

Versatile emitters are capable of being mounted in any ceiling type.

| **Universal Bracket** | **Beam Bracket** | **Drywall Conduit Mount** | **Drywall Mount** | **Plenum Back Can** |

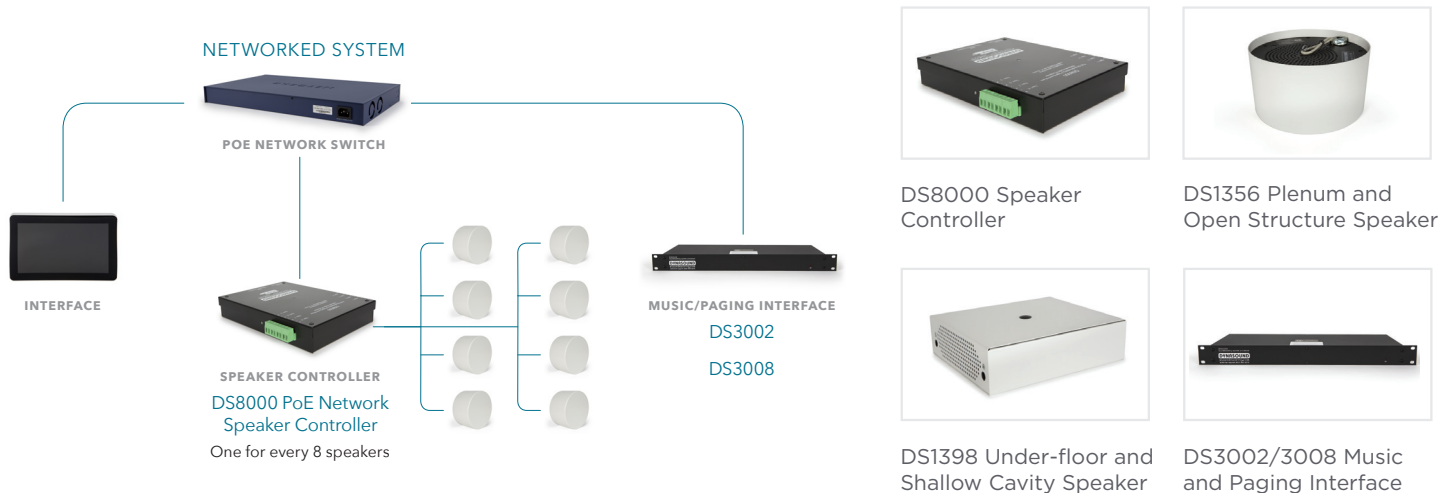## INNOVATORS OF INDIRECT FIELD MASKING TECHNOLOGY

Sound masking can also be emitted into an environment indirectly. In this method, speakers are installed above the ceiling tiles (or in some cases, under a raised access floor). The speakers point upwards, towards the ceiling deck. The masking noise hits the deck and then reverberates back down through the ceiling material into the workplace below.

To be as consistent as a direct field sound masking system, it's imperative that each speaker be controllable on an individual basis to account for items in the ceiling plenum or differences in ceiling materials.

The Cambridge DynasoundPro networked system is the only sound masking system that allows each speaker to be individually controlled remotely via software, which drastically improves the consistency of sound masking coverage and makes it the best indirect sound masking system available.

Like QtPro, the simplicity of the DynasoundPro networked system is one of its main advantages over legacy indirect systems. Power is delivered through standard Ethernet cable to a small signal processing box (DS8000) installed in the ceiling. Each DS8000 has 8 speaker outputs. A music and paging interface can also be added to the system, allowing masking, paging, music, all to be controlled at the individual speaker level.

NETWORKED SYSTEM

POE NETWORK SWITCH

INTERFACE

SPEAKER CONTROLLER
DS8000 PoE Network Speaker Controller
One for every 8 speakers

MUSIC/PAGING INTERFACE
DS3002
DS3008

DS8000 Speaker Controller

DS1356 Plenum and Open Structure Speaker

DS1398 Under-floor and Shallow Cavity Speaker

DS3002/3008 Music and Paging Interface

SOUND MASKING TECHNOLOGY FROM BIAMP

WHICH SOUND MASKING SYSTEM IS RIGHT FOR ME?

The best sound masking system for you depends on a variety of factors including ceiling architecture, ceiling height, paging/music needs, and more. Whether you are masking a small office or a multi-campus facility, we can help you decide which solution is the best for your workplace's needs.

ADVANTAGES OF WORKING WITH CAMBRIDGE SOUND MASKING

- **The world's largest provider of sound masking solutions with the most extensive network of worldwide certified installers and field engineers**

- **The most effective sound masking systems available**

- **The most installer-friendly sound masking solutions available**

- **Unmatched customer and partner support**

- **Lowest impact installation and perfect for both new construction and retrofits**

- **Completely scalable solutions suitable for any size space**

- **Office paging, background music, and sound masking capabilities all from a single loudspeaker**

- **Network capabilities for easy control, customization, and system integration**

- **An affordable alternative to expensive construction projects or sound blocking materials**

- **Offering products that are GreenSpec listed and the most energy efficient sound masking systems available**

- **Helps contribute to LEED Certifications**

- **Customized eavesdropping and SCIF protection services**

- **Deployed in hundreds of millions of square feet and trusted by over half of the Fortune 100**

HOW DO I GET SOUND MASKING?

Design, quotation, and installation of Cambridge sound masking systems from Biamp is handled by our staff and our international network of certified sound masking professionals.

Certified sound masking professionals include service providers your business may have already used before, such as:

Data, voice, and video cablers		Low-voltage cablers	
Audiovisual integrators		Security integrators	
Telecom integrators		Office furniture dealers	
Audiovisual consultants		Architects and designers	

To learn more or to request a free quote,
call **800.219.8199** or visit **www.soundmasking.com**

PRAISE FOR CAMBRIDGE SOUND MASKING

> " The employees were being distracted by conversations 60 feet away. When the system's on, speech becomes unintelligible at a distance of about 20 feet. "

Steve Shanks,
Manager of Audio, Video,
Surveillance and Security,
Denbury Resources, Inc.

Denbury

> " With Cambridge sound masking in place, there is less distraction from unwanted sounds and conversations. Patients and staff can now experience the positive ambiance we wanted to achieve through the open design concept, and we gained a greater level of patient satisfaction. "

Alison Brisson,
Plant Operations Manager,
Wentworth Douglas Hospital

WENTWORTH-DOUGLASS HOSPITAL
A Mass General Community Hospital

> " Libraries are supposed to be quiet, but whispers could be heard 40 feet away. With the help of Cambridge products, we now have a library that seems quieter and is still beautiful. We are delighted. "

Bob Jarvis,
Buildings and Grounds Manager,
Williams College

Williams

> " Utilizing Cambridge sound masking keeps the cross-talk between the offices and corridors down so you don't hear inter-office conversations. I highly recommend sound masking as a solution for open-concept office spaces. "

Charles Rechtsteiner,
Regional Facilities Manager,
Autodesk

AUTODESK.

> " The Bank of America National Helpline site in Boston houses over 200 associates. Even with all that talking, our work environment is private and productive, thanks to Sound Masking from Cambridge Sound Management. Their solution is straightforward and effective. I wouldn't open a call center without it. "

Edward Klemm,
Vice President
Bank of America National
Helpline

Bank of America

> " We installed QtPro in one of our branches years ago to cut down on overheard cross-talk and also to prevent conversations in private offices from being heard in the open office area. We've been so impressed with the results that QtPro is now installed every time we renovate or relocate a branch. It's now in most of our locations. "

Ron Rivet,
Network Operations Section Manager,
Amica Mutual Insurance Company

Amica
AUTO HOME LIFE

> " Once you have sound masking installed in your office, you wonder how you ever lived without it. "

Robert Hunt,
Facility Manager,
Benco Dental

Benco Dental
We deliver success smile after smile.

biamp.

Learn how sound masking from Biamp can benefit your facility, workforce, and customers by reducing noise distractions, protecting speech privacy, and increasing workplace productivity.

Visit **soundmasking.com** or call **800.219.8199** and request a quote today.