

# ASD

ADVANCED SOUND DESIGN



ASD PRIVACY SYSTEM  
ADVANCED OFFICE ACOUSTICS

# DEVELOPMENT OF ACOUSTIC SCIENCE IN OFFICE ENVIRONMENTS



A privacy system produces soft, harmonious, non-locatable background sounds to reduce intelligibility of words. The natural sounds used for this are familiar to us from everyday life.

What other people are talking about becomes less comprehensible. Your own conversations likewise become less easy for others to understand.

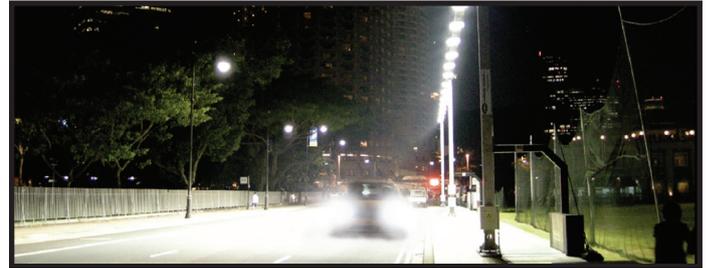
# THE PRIVACY SYSTEM EXPLAINED

HOW DOES A PRIVACY SYSTEM WORK?

A COMPARATIVE EXAMPLE OF CONTRASTS FROM EVERYDAY LIFE

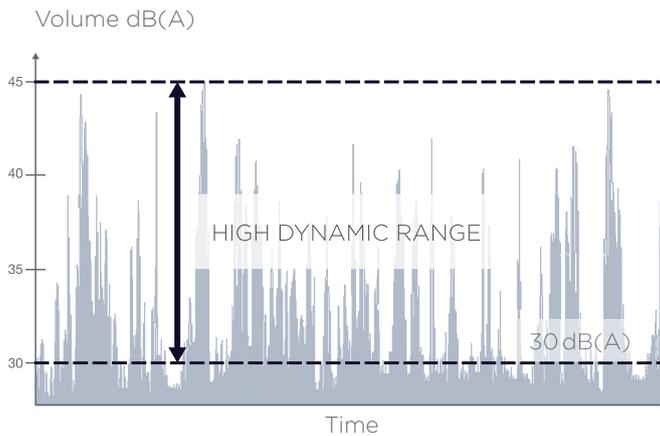


- Bright headlights
- Total darkness
- Great contrast = High dynamic range  
UNPLEASANT, DISHARMONIOUS SITUATION

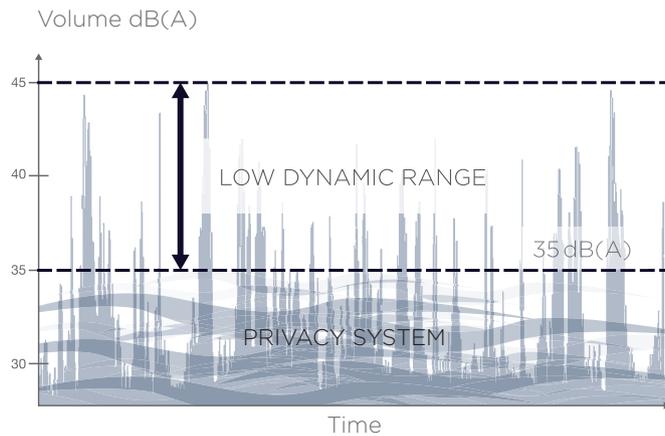


- Bright headlights
- Street lighting
- Low contrast = Low dynamic range  
PLEASANT, HARMONIOUS SITUATION

## HOW IT WORKS - BACKGROUND PHYSICS



Typical differences in speech sound levels over a given time



A layer of sound playing in the background reduces the dynamic range appreciably.

# PROJECT EXAMPLE

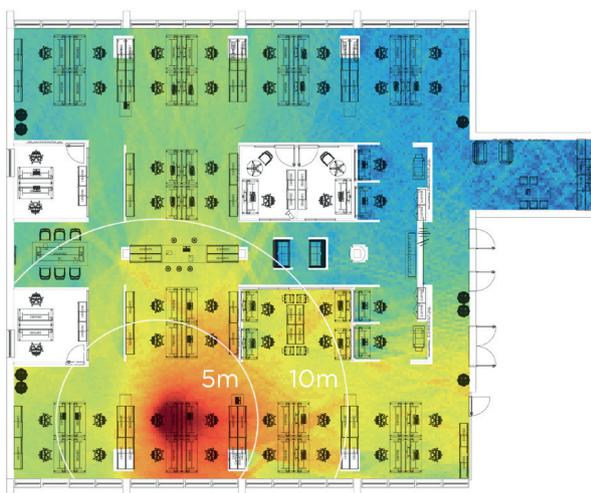


- The installation of a privacy system was incorporated into the planning of the room acoustics and its effectiveness simulated on computer.
- The planning of fixtures and fittings was done using a room acoustics 3D model.
- The use of a privacy system significantly improved the different groups' acoustic working conditions across the open-plan area.

SOUND SOURCE

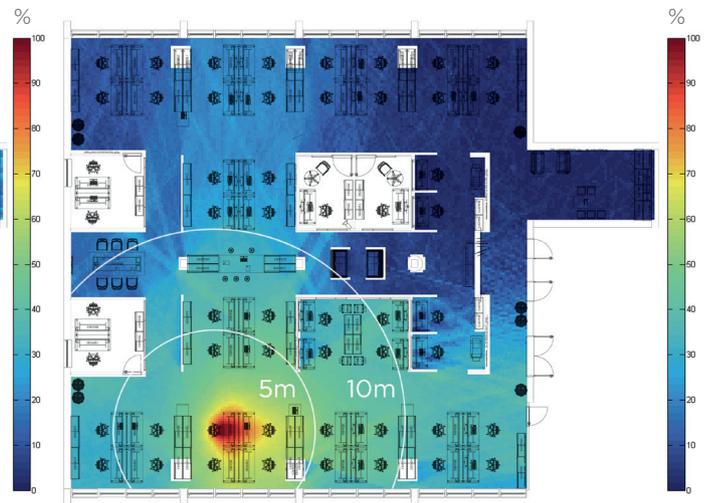
## SPEECH INTELLIGIBILITY WITH NO PRIVACY SYSTEM

Within a radius of ten metres from the person speaking (red centre) up to 70% of what is being said is still intelligible.



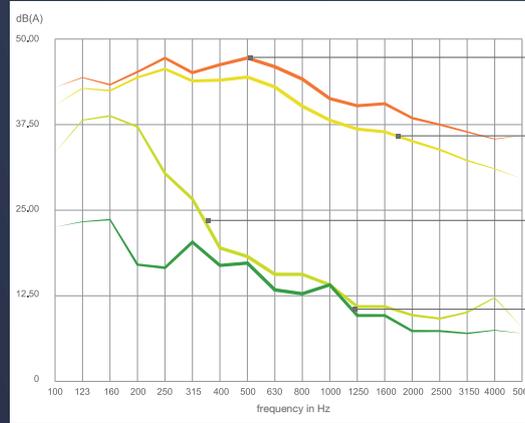
## SPEECH INTELLIGIBILITY WITH PRIVACY SYSTEM

Beyond a radius of five metres from the person speaking only 50% or less of what is being said is still intelligible. The requirements of ISO 3382-3 in relation to distraction distance are fulfilled.



## THE PRIVACY SYSTEM IN USE: COMPARISON OF EQUIVALENT CONTINUOUS SOUND LEVEL AND BACKGROUND NOISE LEVEL

Analysis of the equivalent continuous sound level shows that in addition to reducing the intelligibility of the content of conversations the use of a privacy system also makes conversation situations more harmonious and tranquil through a reduction in the sound level.



EQUIVALENT CONTINUOUS SOUND LEVEL  $L_{Aeq}$  without privacy system

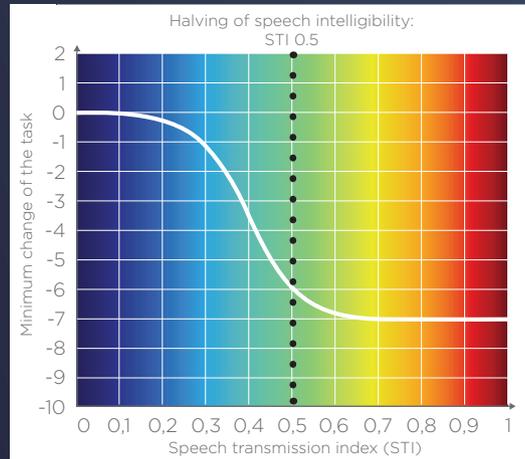
EQUIVALENT CONTINUOUS SOUND LEVEL  $L_{Aeq}$  with privacy system

BACKGROUND NOISE LEVEL  $L_{Aeq}$  without privacy system

BACKGROUND NOISE LEVEL  $L_{Aeq}$  with privacy system

## CORRELATION BETWEEN STI AND LOSS OF PRODUCTIVITY

ISO 3382-3 (Appendix A) covers the area of room acoustics specifically tailored to the issues of open-plan offices. This standard specifies that understandable speech has a disruptive and distracting effect and thus can significantly reduce productivity levels, especially in the case of concentrated work.



This correlation is illustrated in the diagram above. The negative effects of speech on productivity quickly begin to disappear when the STI (speech transmission index) falls below 0.5. A STI value of 0.5 means that beyond a radius of five metres speech intelligibility is reduced by half.

# ASD PRIVACY SYSTEM

The ASD Privacy System aids acoustic privacy and reduces the intelligibility of speech in modern working environments.







## SPECIAL FEATURES

- Sounds of nature
- Can be used free-standing in the room
- Maximum planning freedom
- Only mains power required
- Individual adaptation
- Conforms to regulations
- Developed and made in Germany



- CE CE certification
-  WEEE mark as per German Electrical and Electronic Equipment Act (ElektroG)
-  SELV – safety extra-low voltage (protection class III)
-  For indoor use only

The ASD Privacy System is a flexible system independent of any specific room parameters or furniture, which represents a modern, forward-looking approach to room acoustics. It creates within the room a natural, modulating, dephased and asynchronous beat, which is impossible to pinpoint and reduces intelligibility of the spoken word. The system is able to achieve the target value (Appendix A ISO 3382-3) for distraction distance of  $r_D \leq 5$  m.



## TECHNICAL DESCRIPTION:

- Dual, omnidirectional loudspeaker
- 230 volts power supply
- 12V/1.2A mains adapter included
- Power consumption typically 5 watts
- Maintenance-free thanks to long-lasting electronics
- Length: 155 mm; width: 65 mm; height: 65 mm
- Weight: 675 grams
- Individually adjustable
- Adaptable to space and human frequency spectrum

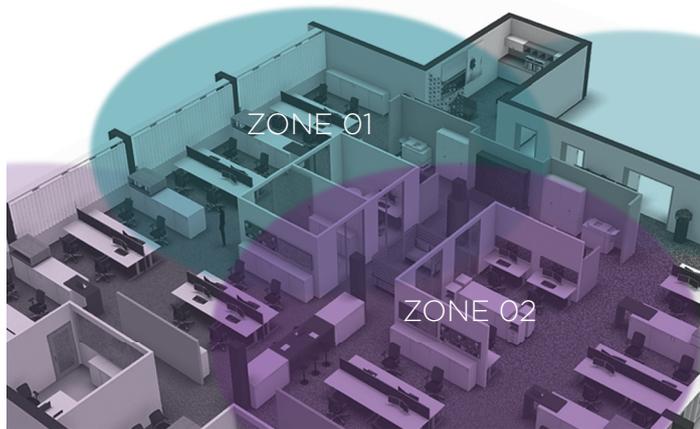


## MULTIVARIABLE FIXING:

- 1 Magnet fixing
- 2a Clip-on plastic bracket
- 2b Top-hat rail for plastic bracket

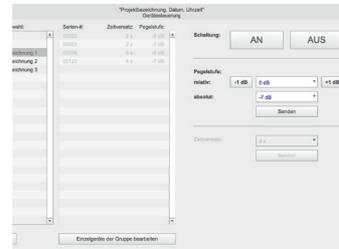
# ASD PRIVACY SYSTEM

The ASD Privacy System provides maximum flexibility, both in terms of installation and assembly.



## ZONING

- Possible to split large office environments into zones of activity
- Establishment of communication zones
- Creation of confidentiality



## CALIBRATION

- Configuration and adaptation by calibration engineer using Android-based tablet control system (Wi-Fi)
- Individual control of the devices
- Adaptation to space and activity
- Activity-related sound selection

## DEFINITIONS

### EQUIVALENT CONTINUOUS SOUND LEVEL

The equivalent continuous sound level is the average sound level over a specific length of time. Depending on the application, this can be a few seconds or even several hours (e.g. a whole working day). For measurements in an office, the equivalent continuous sound level encompasses all noises that occur, including employees' conversations and telephone calls.

### BACKGROUND NOISE LEVEL

The background noise level describes the permanent exposure to noise in any given environment. In an office the background noise level is determined by, for instance, air-conditioning units and other devices, plus the impact of noise from outside (constant traffic, etc.). Employees' conversations and telephone calls are not part of background noise.

### INTELLIGIBILITY / STI

The speech transmission index (STI) is a measurement of the quality of speech transmission between a transmitter (speaker) and receiver (listener). STI values can be measured on site and also calculated using appropriate software. To measure the STI values a loudspeaker calibrated to the speech volume is set up at the transmission site. Using appropriate filtering, a signal with male or female voice characteristics can be emitted. At the receiving site the incoming signal is measured and the intelligibility calculated. The path of the sound's spread and the background noise in the room are evaluated as well. The aim is to achieve the lowest possible value for the STI in order to ensure the highest possible level of workplace privacy.

**ASD**

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[www.advanced-sound-design.de](http://www.advanced-sound-design.de)