



# Sound Insulation

Maximum Sound Insulation



# Maximum Sound

with our new

Fresh air & tranquillity

## › Just leave the noise outside

A representative survey conducted by the German Federal Environment Agency (Umweltbundesamt) of 2,000 participants showed that more than half of the German population feels disturbed or annoyed by street noise. Approximately the same number of people are actually exposed to a high noise level and thus suffer from health problems. Special sound insulation is essential to ensure well-being within one's own four walls and to protect oneself from street noise.

LUNOS Lüftungstechnik GmbH für Raumlufsysteme recognised this problem years ago and has been working constantly on new products to help you feel comfortable in your own four walls.

On the following pages we will inform you in detail about sound insulation and what products we have to achieve this. The fans and components can be combined with one another so that the right ventilation system can be found for every building project.

## › Why settle for less?

As the market leader for decentralised home ventilation with 60 years of experience in the ventilation industry, we naturally know all the standards and guidelines. So you can always be sure that the ventilation concept meets the current requirements.

Our sound values are always documented by measurement protocols according to valid standards. In most cases, independent institutes have also been entrusted with the measurement and have issued corresponding certificates, which can be viewed on request. This is important to avoid unpleasant surprises after successful planning. For your individual offer, our Technical Customer Service will gladly be there to assist you personally:

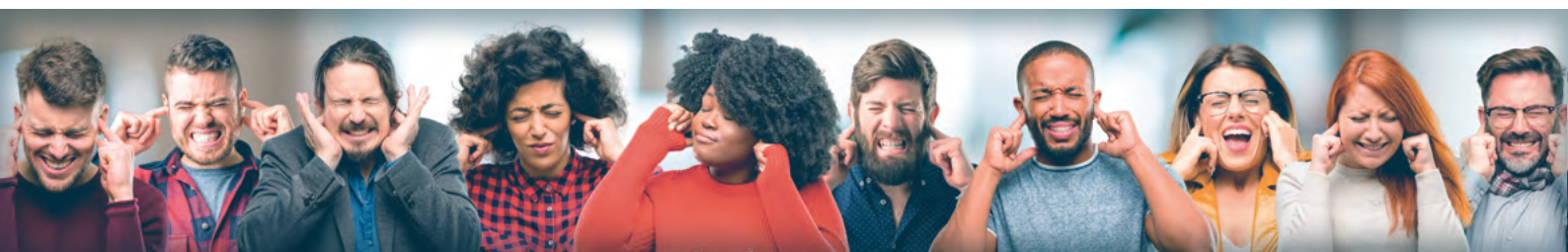
@ [planung@lunos.de](mailto:planung@lunos.de)  
☎ +49 (0)30 362001-91

During the planning phase, make sure you know precisely the air-flow volumes that can actually be achieved in combination with particular sound values and wall thicknesses. Only the right combination of these values will lead to the desired success in ventilation and sound insulation planning.

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## You can rely on us

...and, naturally, on the technical data from LUNOS. This means, that we measure and check sound values with the ventilation unit open. A closed device may allow less sound to pass through, but ventilation is all about supplying fresh air. And that is precisely what LUNOS has been committed to for 60 years.



# Insulation products



Maximum sound insulation

## › The new LUNOS sound insulation products

LUNOS has been synonymous with quality, innovation and tradition since 1959. For this purpose, LUNOS engineers have developed several new products in the field of sound insulation:

- The **ALD-S** is the first choice for particularly high sound insulation requirements in the exhaust air system, because in combination with the **LUNOtherm-S** it achieves values of up to 70 dB standard sound level difference.
- The sound insulation package from LUNOS is complemented by the **soundproof inner screens** and **soundproof outer hoods**. LUNOS thus offers a wide range so that noises simply remain outside. It goes without saying that all LUNOS devices are EnEV-compliant.

## › Facts about ventilation with sound insulation

The standard sound level difference is a measure in decibels [dB] for the sound attenuation of a component from external noise. It describes how much noise can penetrate the component from the outside to the inside. In this context, higher values are advantageous because the attenuation of sounds is stronger. **The higher the standard sound level difference, the more noise is absorbed by the component.** 3 dB more corresponds to a reduction of the volume by 50%, since the standard sound level difference is specified logarithmically and not in linear terms.

It is also important to distinguish between sound from outside and sound from the device itself. A distinction is practically impossible without comparative measurements. The filtering of ambient noise is also difficult. There are often, for example, sound components that cannot be perceived, but which the measuring instrument shows as an average value. The positioning of the ventilation units is also decisive. Depending on the installation location and the possible sound reflections associated with it, the sound volume of a fan can vary greatly.

Fans in a corner of a room can be up to 9 dB louder than when positioned directly on a free wall. The size and condition or furnishings of a room also play a role in the development and perception of sound. For example, a sound source in a small, sound-reflecting room such as a tiled bathroom can be much louder than in a large living room, which has various sound-absorbing surfaces such as carpets, curtains and upholstered furniture.














# Sound Insulation

## Intelligent combination

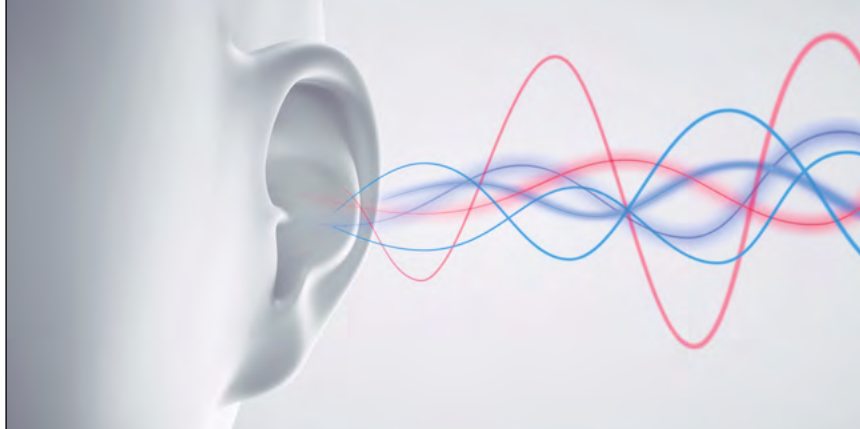
### Our values

#### > Standard sound level differences

Maximum achievable standard sound level difference $D_{n,e,w}$ (dB) according to DIN EN ISO 140-2, measured at a wall thickness of 500 mm*	ALD 	ALD-S 	RA 15-60 	Serie e <sup>2</sup> 
Inner screen & Outer grille 	56	67	52	42
Inner screen & LUNOtherm 	58	69	57	49
Inner screen & LUNOtherm-S 	63	70	59	54
Inner screen & Outer hood 	57	68	56	46
Soundproof screen & Outer grille 	57	68	55	45
Soundproof screen & Outer hood 	58	68	57	47
Soundproof screen & LUNOtherm 	58	69	59	51
Soundproof screen & LUNOtherm-S 	64	71	61	55

# Overview

## of sound-absorbing ventilation



Maximum achievable standard sound level difference $D_{n,e,w}$ (dB) according to DIN EN ISO 140-2, measured at a wall thickness of 500 mm*	e <sup>90</sup>	Ne <sup>xt</sup>
Outer screen	43	49
Outer hood	43	49

### Sound insulation analysis

As a general rule, the weakest link in the overall sound insulation analysis is decisively responsible for the success of a sound insulation measure. For example, it does not make sense to combine a ventilation system with maximum sound insulation with windows, for example, which do not make a significant contribution to sound insulation. It also does not make sense to use a highly soundproof ventilation system which has values exceeding the overall sound insulation (without ventilation system) for a location with limited sound insulation (considering the living unit or the room without a ventilation system). A coordination of all components is essential. A ventilation system should always have a higher sound insulation than, for example, a window in the immediate vicinity or in

the same room. This makes sense because otherwise the human ear tends to "locate" a noticeable sound source. If, for example, the sound insulation of the ventilation system were lower than that of the window, the user would have the feeling that the entire sound input from the outside would be introduced purely through the ventilation system. Thus it can happen that even if the ventilation system meets all the requirements for sound insulation, it is perceived as disturbing. If, however, the ventilation system has a higher sound insulation than the window, the overall impression is completely different and the ventilation system is not perceived as disturbing.

\* For further sound values related to the wall thickness, please refer to the sound insulation report.



# Excellent

ALD, ALD-SV & ALD-S

## › Standard sound level difference of up to 70 dB

The **ALD**, **ALD-SV** and **ALD-S** outer-wall air vents serve as passive air intake sections for living rooms and bedrooms. They are mainly used in combination with LUNOS exhaust air units of the Silvento series. The exhaust fans in functional rooms such as bathrooms and kitchens create a constant negative pressure and thus transport fresh air into the house via the outer wall air vents

**This ensures user-independent ventilation in accordance with DIN 1946-6 if planning is carried out according to all standards.**

### New flexible material of the sound insulation element

The sound insulation elements were revised by LUNOS. The new flexible material made of granulate is a combination of technical foams which achieve a high specific weight due to the manufacturing process, while at the same time retaining their high flexibility. This allows sound insulation values to be achieved that were previously not possible in this way.

The new sound-insulating elements, which consist of insulating materials of different densities, significantly reduce the amount of sound entering the building via the ventilation system. It is precisely this modular property of the new multi-component foam that optimises the sound insulation properties of the outer wall air vents over the entire frequency range. In addition, the geometry and the staggered arrangement of the star-shaped sound absorbers ensure a large sound-absorbing surface and thus more effective sound insulation. Thanks to the new material, the ALD-S no longer requires the sound reflector.

The ALD and ALD-SV are equipped for all applications. Three airflow volumes can be set using the reduction screen: 15, 20 and 25 m<sup>3</sup>/h. In this way, different room sizes with different air requirements can be optimally and comfortably ventilated by the ALD and ALD-SV.

If high airflow volumes with better sound insulation are required, the ALD-SV ensures an adequate supply of fresh air.

**The ALD-S is the first choice for particularly high sound insulation requirements, because in combination with the LUNOtherm-S it achieves values of up to 70 dB with a volume flow of 10 to 15 m<sup>3</sup>/h.**



ALD



ALD-SV



ALD-S

# Sound Insulation

## Outer wall air vents



### › Technical data & features

#### ALD

**Length of built-in device** 360 mm **Diameter** 154 mm

#### Adjustable airflow volume

15, 20 and 25 m<sup>3</sup>/h at 8 Pa negative ventilation pressure  
10, 13.5 and 18 m<sup>3</sup>/h at 4 Pa negative ventilation pressure

#### Standard sound level difference $D_{n,e,w}$

Up to 52 dB at 360 mm wall thickness  
Up to 57 dB at 500 mm wall thickness

#### ALD-SV

**Length of built-in device** 360 mm **Diameter** 154 mm

#### Adjustable airflow volume

15, 20 and 25 m<sup>3</sup>/h at 8 Pa negative ventilation pressure  
10, 13.5 and 18 m<sup>3</sup>/h at 4 Pa negative ventilation pressure

#### ALD-S

**Length of built-in device** 360 mm **Diameter** 154 mm

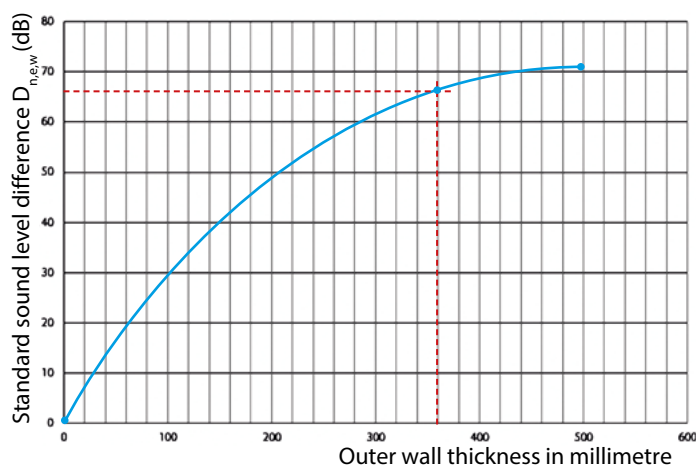
#### Airflow volume

15 m<sup>3</sup>/h at 8 Pa negative ventilation pressure  
10 m<sup>3</sup>/h at 4 Pa negative ventilation pressure

#### Standard sound level difference $D_{n,e,w}$

Up to 67 dB at 360 mm wall thickness  
Up to 70 dB at 500 mm wall thickness

### › Sound diagram\* of ALD-S



The standard sound level difference of the ventilation unit is required at an outer wall thickness of 360 mm.

1. The value of the existing outer wall thickness is determined (360 mm) on the horizontal axis (x-axis)
2. The intersection of the vertical and the graph is vertically above it.
3. From this point, you change horizontally to the vertical axis (y-axis).
4. At this point, the corresponding standard sound level difference of 67 dB can now be read.



The specified sound insulation values apply to the airflow volumes listed above with the wall-tube completely filled with sound absorbers.

\* Please refer to the sound insulation report for further information.



# The New Façade Element

## Soundproof ventilation

### Façade elements

#### > LUNOtherm-S: New façade element with significantly higher sound insulation

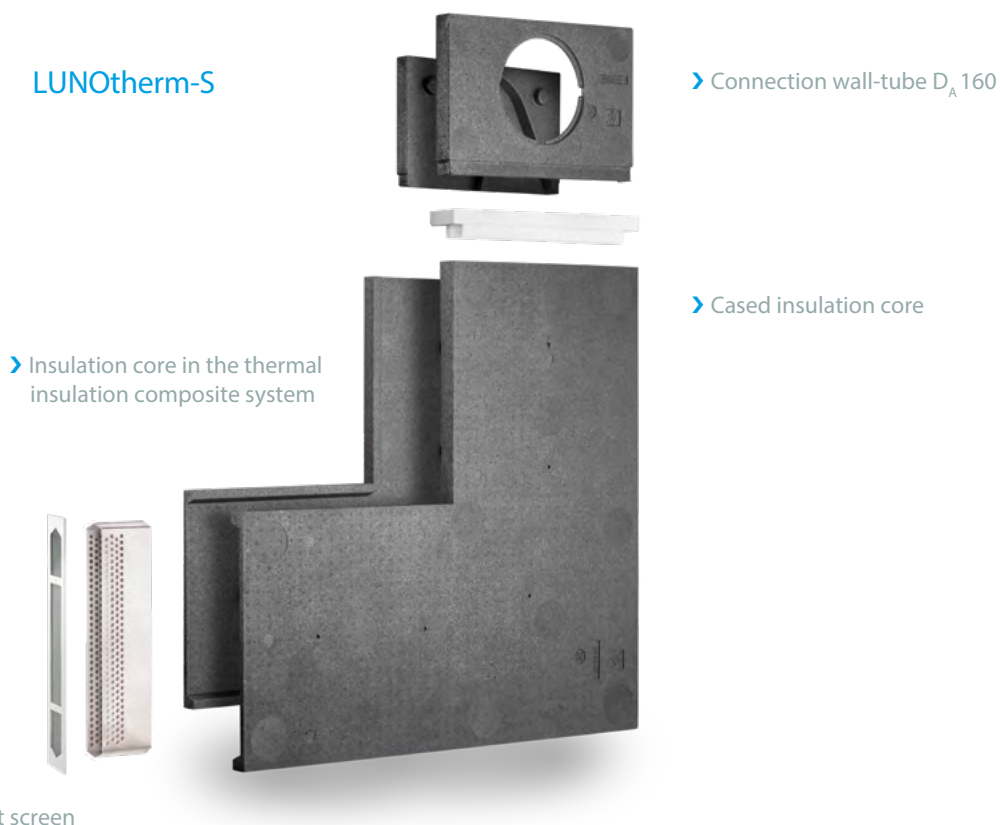
With the development of the patented LUNOtherm façade element, LUNOS has responded to the wish for a smooth façade that is only interrupted by the windows. Here, all the advantages of outer wall air vents, such as high air throughput, draught-free design, hygiene and sound insulation, can be made reality in conjunction with an almost invisible outer appearance. As a final element, the LUNOtherm is inserted into the insulation layer of the thermal insulation composite system (ETICS). The supply air or exhaust air opening is then located in the lintel or window reveal. The LUNOtherm can be installed above or beside the window, so that the combination with a roller shutter box is also possible without any problems.

The LUNOtherm has a general building authority approval according to DIBt. Thus the LUNOtherm A in ETICS may be used with fire behaviour of class A1 or A2-S according to DIN-EN 13501-1 and LUNOtherm B in flame resistant ETICS according to DIN 4102-1 B1.

The new facade element LUNOtherm-S has been optimised for significantly higher sound insulation and is even easier to work with. The deflection of the air and thus also of the sound by a further 90° ensures the high sound insulation properties of the LUNOtherm-S. A significantly lower weight and an adaptable standard size also ensure better handling in logistics and on the construction site.

**In combination with the ALD-S, the LUNOtherm-S can achieve a standard sound level difference of up to 70 dB.**

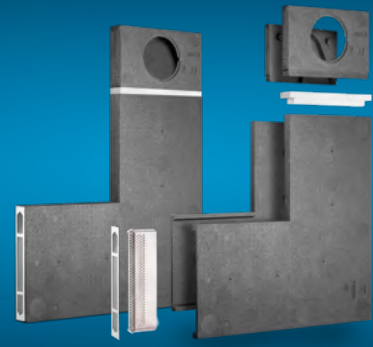
LUNOtherm-S





# LUNOtherm-S

almost invisible



## > Technical data & features

### LUNOtherm A

Use in non-combustible ETICS.

**Dimensions** insulation thickness: 60-300 mm  
(H x W) 980 x 490 mm

### LUNOtherm B

Use in flame-retardant ETICS. The insulation core is protected by a mineral encapsulation.

**Dimensions** insulation thickness: 60-300 mm  
(H x W) 1000 x 500 mm

### LUNOtherm-S

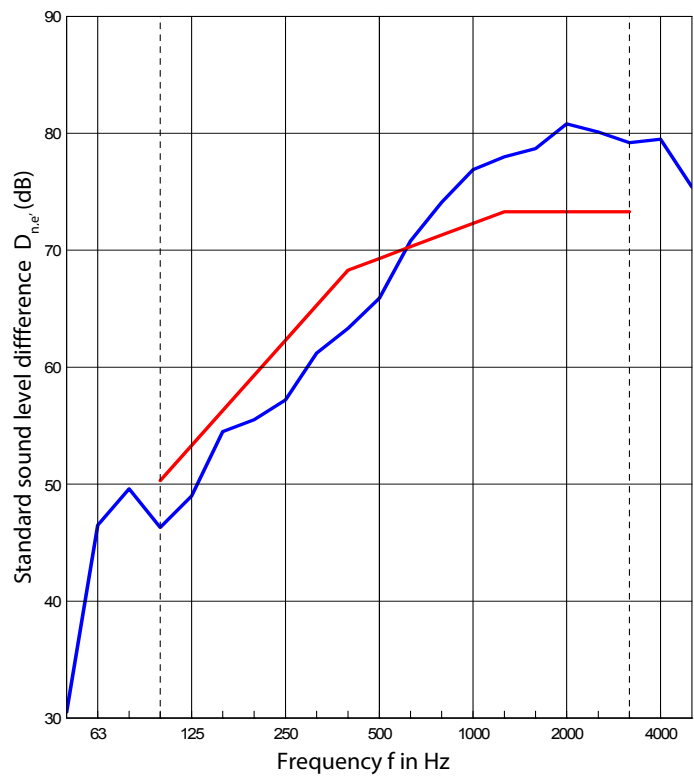
Suitable for installation in an ETICS approved by the building authorities. Installation with over-insulation or under-insulation possible.

**Dimensions** (H x W x D) 930 x 700 x 60 mm

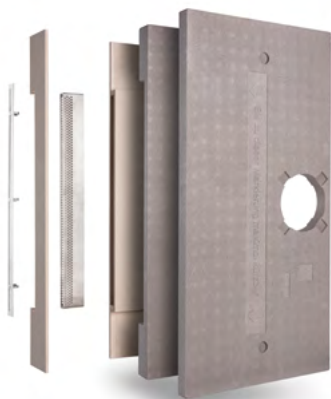
**Dimensions**  
**outer grille** (H x W) 345 x 53 mm

## > Sound diagram of LUNOtherm-S

The frequency range corresponding to the curve of the shifted reference values (ISO 717-1)



### LUNOtherm A



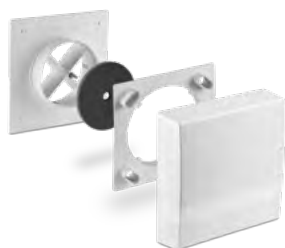
### LUNOtherm B





## Inner screen & outer hoods

# Inner and outer closures with Soundproof inner screen and



### > Soundproof inner screen from LUNOS

The soundproof inner screen further increases the standard sound level difference by up to 6 dB, depending on the ventilation component and the length of the wall-tube. It is particularly suitable for the e<sup>2</sup> series and not only reduces the sound input but also the already low self-noise of the ventilation unit. The soundproof inner screen is supplied as standard with washable filters of filter class G2 and G3 and can be closed by a simple locking function using a spring element.

Dimensions (H x W x D): 250 mm x 250 mm x 70 mm



### > Additional sound insulation for the outer hoods

The aluminium outer hoods are available for single-channel and dual-channel ventilation. This means that in addition to the e<sup>2</sup> series and the outer wall air vents, the e<sup>90</sup> and Ne<sup>xt</sup> series can also be equipped with them. The additional sound insulation allows the standard sound level difference to be increased by up to 6 dB compared to the standard outer grille. In addition, an elaborate sealing system ensures a controlled outflow of humid exhaust air.

Dimensions (H x W x D): 235 mm x 205 mm x 72 mm

> Filter included for ALD, RA 15-60 and the e<sup>2</sup>-series

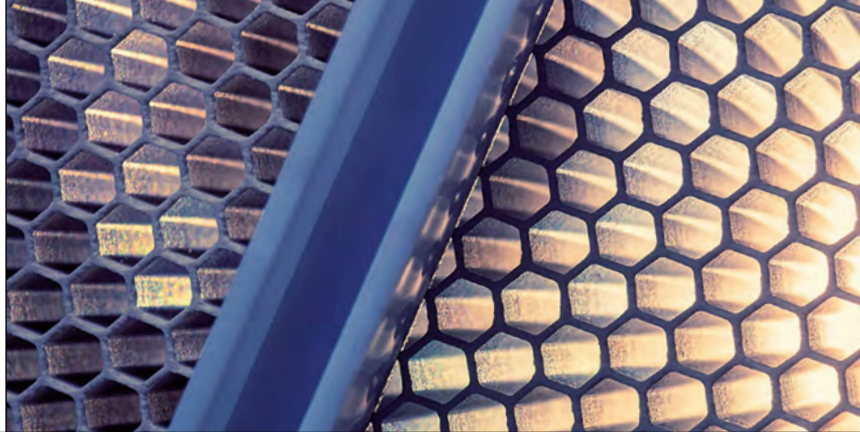


> Soundproofed design panel with intelligent sound-reducing air ducting

> Easy to use closing mechanism

# sound insulation

## soundproof outer hoods



### › Technical data & features

#### Soundproof inner screen

Opening and closing by spring element with locking function.

**Dimensions** (H x W x D) 250 x 250 x 78 mm

**Filter** one piece each filter class G2 and G3

#### Outer hood

**Dimensions** (H x W x D) 235 x 205 x 72 mm

**For wall-tubes** Ø 160 mm

**Types** 1/HWE and 1/HAZ for single-channel ventilation  
1/HWE-2 and 1/HAZ-2 for dual-channel ventilation

### › Possible Applications

It is the e<sup>2</sup> family in particular that can be excellently combined with the sound insulation products:



e<sup>2</sup> with LUNOtherm-S Standard sound level difference  $D_{n,e,w}$  up to 55 dB at 500 mm wall thickness



**LUNOS Lüftungstechnik GmbH**  
**für Raumlufsysteme**

Wilhelmstraße 31 · 13593 Berlin

Phone +49 30 362001-0

Fax +49 30 362001-89

[info@lunos.de](mailto:info@lunos.de)

[www.lunos.de](http://www.lunos.de)