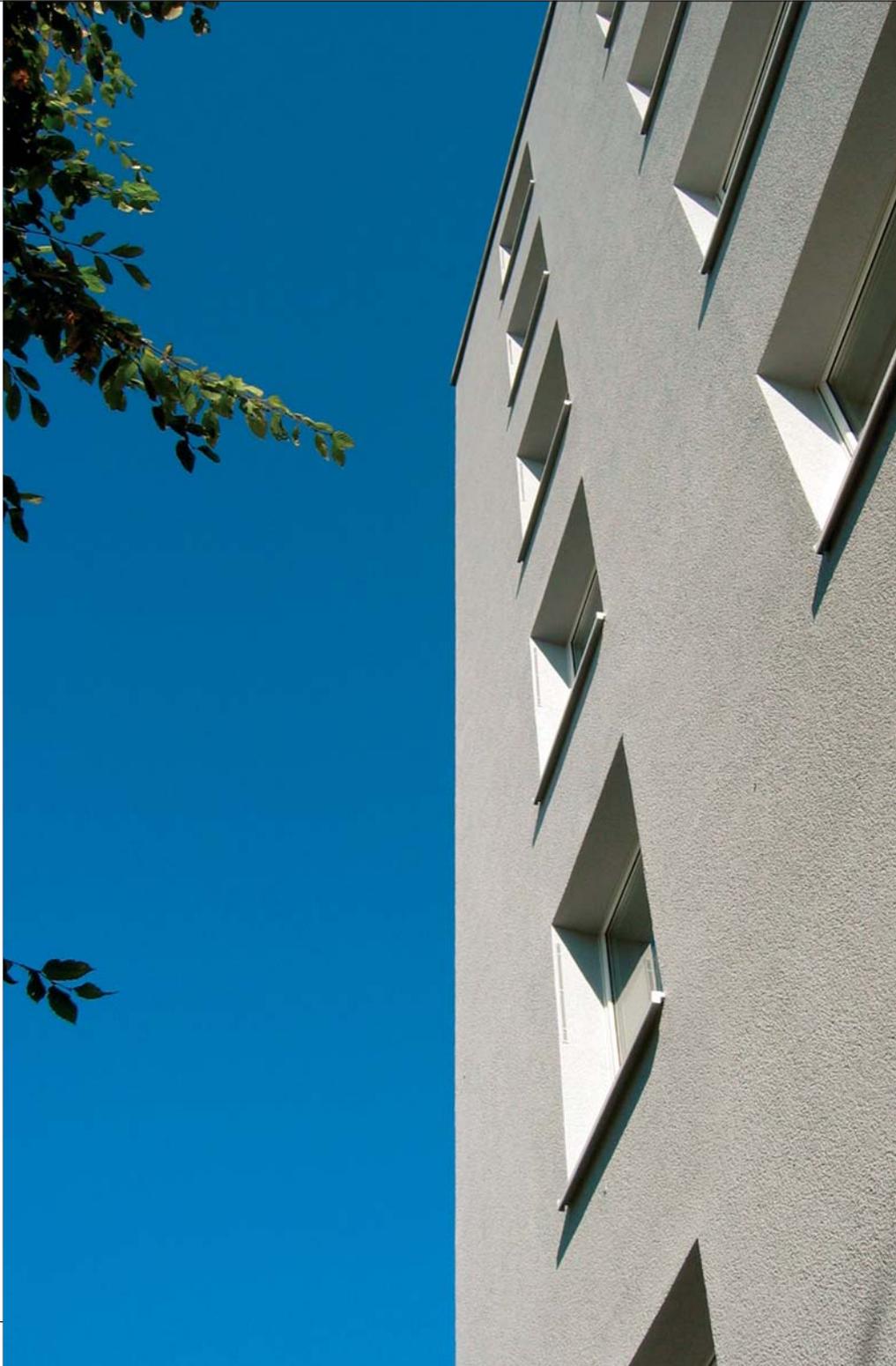


# Fresh Air Comfort

Comfortable residential ventilation  
with LUNOS air transfer devices



**LUNOS**  


# With LUNOS,

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LUNOS ventilation system

## ❖ Pleasant climate in sealed buildings

A sufficient supply with fresh air without any resulting drafts is the basis for a pleasant, healthy room climate. Furthermore, a decisive factor in comfort is the temperature and moisture content of the room air. With the LUNOS ventilation system, this comfort is assured with a continuous, intelligent air exchange.

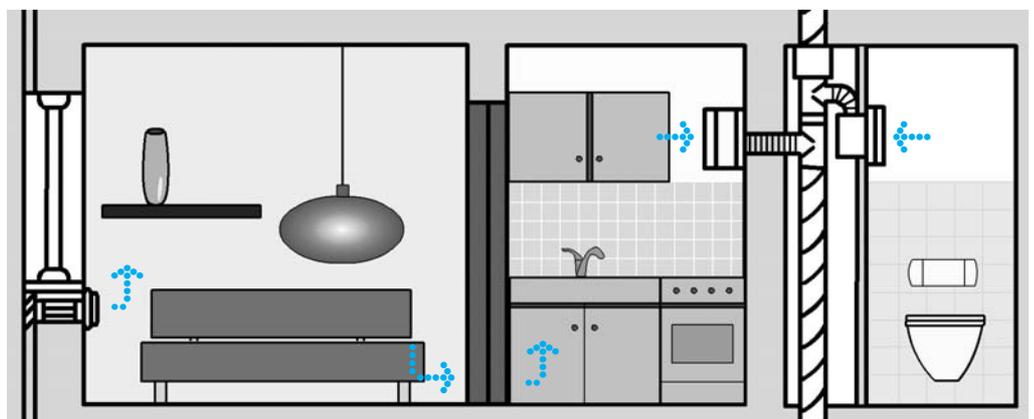
Our houses are sealed. Regardless of whether they are modernized or newly built, they indicate a very low level of building leakage. This is because only with sealed buildings energy-saving can be achieved, as in the low-energy house according to the EPBD (EU directive on the energy performance of buildings). However, a sealed building excludes free ventilation over joint sealing. This has as a result that in more than 20% of all redeveloped apartments in Germany, mold formation can be found due to inadequate ventilation; with increasing tendency. With the innovative LUNOS ventilation system, a healthy room climate can be permanently guaranteed in this case.

## ❖ Comfort through acoustic insulation

Inter-urban and extra-urban traffic impairs our quality of life. Streets, railway lines or airports are built near family housing areas in order to guarantee favorable traffic interconnections. Furthermore, the volume of traffic is constantly increasing. For a high standard of living comfort, sound insulation must be integrated into the buildings, as well in the wall construction and windows, as in the supply of fresh air. Also in this subject, an air change without loss of comfort is achieved as a result of the high acoustic insulation standards of the LUNOS ventilation system.

## ❖ Demand controlled residential ventilation from LUNOS

The system for demand controlled ventilation of dwellings from LUNOS frees the user from any responsibility for providing ventilation: Using sensors, the moisture content of the exhaust air is measured and exactly as much moisture-loaded air is carried off as is required to ensure healthy climate. Using sound-absorbing, storm-proof, external wall air transfer devices, the outside air is slipstreamed into the rooms to be ventilated. In this way, a continuous, draft-free ventilation of the entire living area is guaranteed without wasting energy. And this also applies for severely noise-polluted, inter-urban areas.



# there is always a climate for a feeling of wellness

Fresh air in every room without noise from outside



## ❖ Quiet and fresh air are factors promoting quality of life

Therefore: The air exchange in the apartment must also be guaranteed under acoustic-insulation conditions. With LUNOS residential ventilation, not just a bedroom can be ventilated individually but several rooms, which are exposed to the noise sources, can be integrated into this system in the simplest way: Fresh air in the entire apartment without opening a window. LUNOS air transfer devices are equipped with effective acoustic absorption dampers as standard.

If these elements are employed instead of the outside weather-protection screen, together with the LUNOthem facade elements, the excellent acoustic damping characteristics are further increased due to the additional diversion. Thus even noise protection measures with the highest demands can be realized with LUNOS.

### **Calculation of the resulting sound insulation level of a compounded external wall in accordance with DIN 4109 (German standard for sound insulation):**

The entire compounded external wall part is considered for acoustic calculation. The module assemblies, which include external wall, window and air transfer devices, are summed together with their acoustic-damping characteristics and specific area and form the resulting sound insulation level of the external wall. The intrinsic acoustic-damping characteristic due to the room geometry is incorporated into the requirement on the acoustic insulation level. LUNOS offers an Excel-based calculation tool for that. This enables you to make a fast calculation of the critical spaces.



© Phequiste

# The LUNOS comfort

Comfort with high

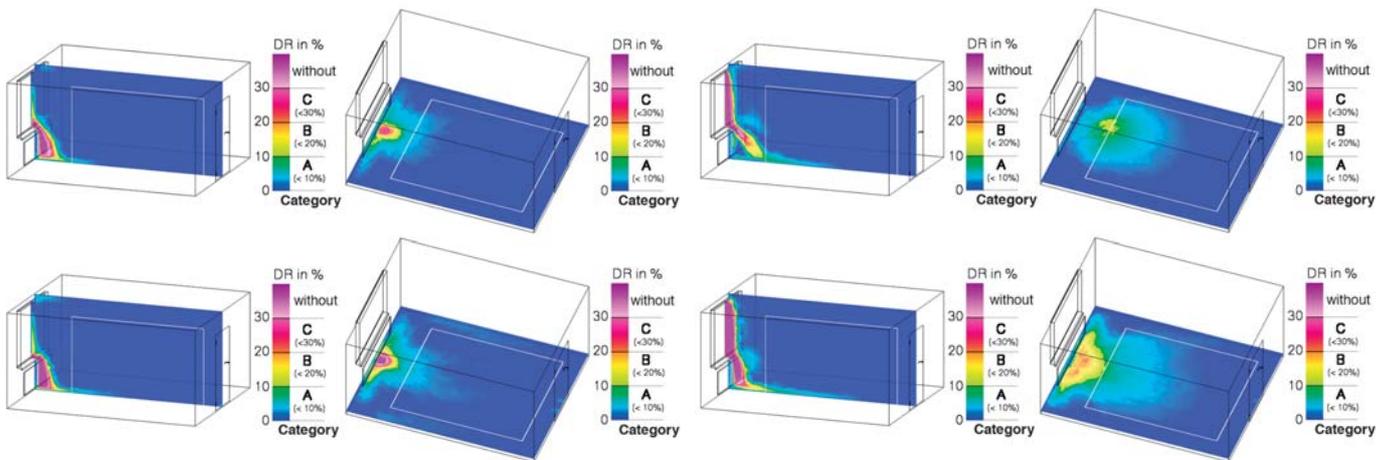
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ATD positioning

## Comfort with air transfer devices

Comfort in the living spaces depends to a large degree on the positioning and composition of the air transfer devices (ATD). All LUNOS ATD's are therefore equipped with wind draft shutters and streamlined panels, in order to enable a draft-free, diffuse air inflow. Nevertheless, careful planning of the mounting position must be carried out.

If the inflowing air is warmed up with maximum rapidity and outside of the accommodation zone, the risk of any draft occurring is excluded. For this reason, an optimal arrangement of the ATD is necessary in relation to the heating surface. The Draft Risk (DR) was therefore selected as a quality criterion in case of simulations of the TU-Dresden\* mentioned below. It must not exceed 15% in the living area (white frame). This means that it is to be expected that there will be complaints of drafts at this location in the room in case of 15 out of 100 persons. An outside temperature of  $-5^{\circ}\text{C}$  (cold winter resource) has been selected for the representations.



With the optimal position, the ATD is installed above the radiator under the window. The inflowing air can be warmed up by the radiator immediately, and no draft risk is to be expected in the living area. The difference between an air change of  $0.25\text{ h}^{-1}$  (above) and  $0.5\text{ h}^{-1}$  (below) does not become noticeable in the living area.

Also, a positioning of the ATD above the radiator over the window is non-critical. The fresh air flows in over the window, drops down and is warmed up by the radiator until it reaches the living zone. There is a very low draft risk on the floor locally ( $< 5\%$ ). In this case also, the difference between an air change of  $0.25\text{ h}^{-1}$  (above) and  $0.5\text{ h}^{-1}$  (below) in the living area is scarcely noticeable. Only directly below the ATD can a higher draft risk be identified in case of an air change of  $0.5\text{ h}^{-1}$  (up to 20%).

### Real installed situation

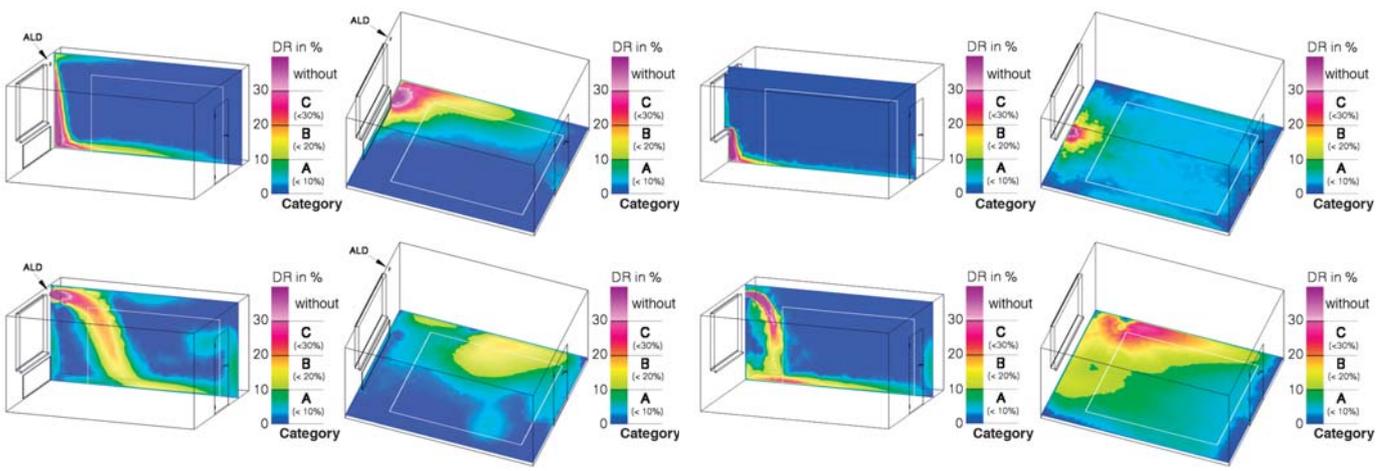
The simulations are all calculated for empty rooms. In real use the furnishings and curtains positively influence the outside air inflow at the ATD. Thus e.g. curtains act as a chimney and guarantee a faster heating of the outside air.

\* Richter, Prof. Dr. Engineering, TU (Tech. Univ.) Dresden, Institute for Thermodynamics and TGA

# air quality



e Phequile



A positioning of the ATD over the radiator, to the side above and near the window, can also be classified as non-critical in case of more detailed consideration. In case of a basic air change of  $0.25 \text{ h}^{-1}$  (above), the air mainly falls down at the ATD. A small part settles on the ceiling. However, the heating continues outside of the living area so that a draft risk of fewer than 15% results in a corner in the living area.

In case of an air change of  $0.5 \text{ h}^{-1}$  (below), the inflowing air is carried further into the room. The critical area lies still outside of the living area. The draft risk in the living area is under 15% and is limited to a small side area.

A combination of ATD with under floor heating is also possible. Due to the lower level of convection, there result somewhat worse room flows which, however, can be classified as non-critical in case of an air change of  $0.25 \text{ h}^{-1}$  (above and below).

With the positioning of the ATD under the window (above), the air at the ATD falls down. A heating effect is also implemented here outside of the living area.

In case of positioning the ATD to the side above and near the window (below), the situation is a little more unfavorable. The inflowing air is carried further into the room and, in proximity to the floor, a draft risk up to 20% can occur in a corner of the living area.

# LUNOS air transfer devices

## Your project is

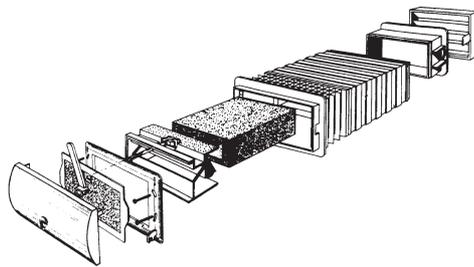
### Solution 1: ATD with weather-protection screen

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LUNOS solutions

#### LUNOS ATD with weather-protection screen for remediation and new building

These air supply elements are an important component part of the residential ventilation from LUNOS. Only by using them, a draft-free flow of the outside air into the living room can be implemented without disturbing environmental impacts, such as draft, noise and dirt reaching the living area. The ATD's are available in rectangular or round designs. While the rectangular type can be adapted to the usual brick dimensions, the round types are optimally used for cases of building upgrading, where work is generally carried out with core bores. A weather-protection screen, which is available in different designs, forms the facade-sided closure.



#### ALD 36,5

Rectangular ATD with acoustic damper, wind draft shutter and filter

LxWxH: 360x250x125 mm

$\dot{V}$ : 24 m<sup>3</sup>/h at 8 Pa

18 m<sup>3</sup>/h at 4 Pa

$D_{n,W,open}$ : 46 dB



#### ALD-R 110

Round ATD with acoustic damper, wind draft shutter and filter

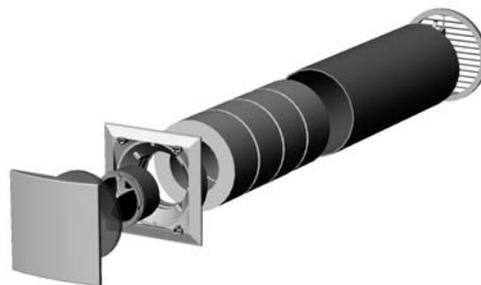
L: 305-535 mm

Ø: 110 mm

$\dot{V}$ : 10 m<sup>3</sup>/h at 8 Pa

7 m<sup>3</sup>/h at 4 Pa

$D_{n,W,open}$ : 48 dB



#### ALD-R 160

Round ATD with acoustic damper, wind draft shutter and filter

L: 500 mm

Ø: 160 mm

$\dot{V}$ : 30 m<sup>3</sup>/h at 8 Pa

21 m<sup>3</sup>/h at 4 Pa

$D_{n,W,open}$ : 52 dB

# the deciding factor

- ❖ The wind draft shutter guarantees freedom from drafts
- ❖ The integrated acoustic damper leaves traffic noise outside
- ❖ Modern design
- ❖ Manually closeable
- ❖ Insect protection
- ❖ Air filter
- ❖ Internal parts are easily detachable for cleaning

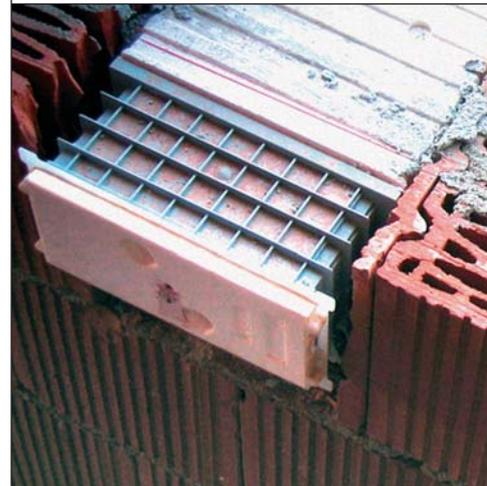
Weather-protection screens for LUNOS ATD's are available in the most varied shapes and colors, and can thus be optimally adapted to every facade.

The core bore can be retrofitted into the building shell quickly and simply, even in an inhabited condition.

In new buildings, the ATD's are inserted effectively with the brickwork. For this, LUNOS offers ATD's in brick dimensions and with adapter for the round ALD-R 110 and ALD-R 160.



ALD-R 160



# LUNOS air transfer Your project

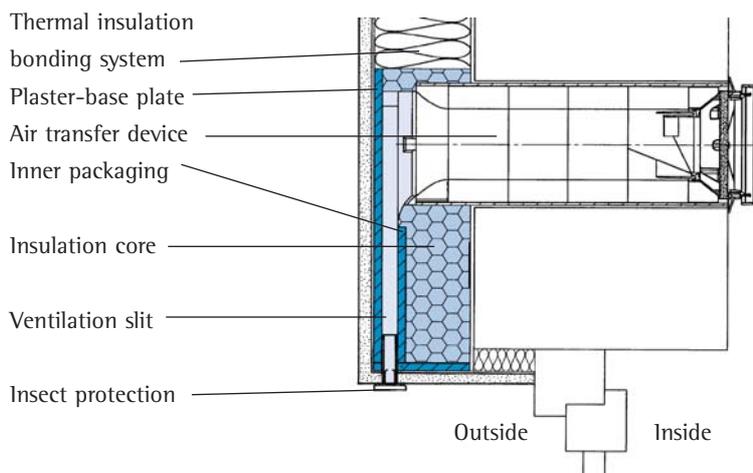
## Solution 2: ATD with LUNOthem

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LUNOS solutions

### ❖ LUNOS ATD with LUNOthem for remediation and new building

Air transfer devices in the external wall are often regarded as disturbing elements in the exterior appearance. With the new LUNOthem facade element, the inflow opening now disappears from the wall surface. With the development of the LUNOthem facade element, LUNOS has accommodated the desire for undisturbed facade structuring. For the first time, all the advantages of external wall air transfer devices, such as high airflow, freedom from drafts, hygiene and acoustic insulation, are realized in combination with an almost invisible external visibility. For that, the LUNOthem is inserted in the insulation layer of the thermal insulation bonding system instead of the weather protection screen. The air-supply opening is then located in the window lintel or the window soffit. It can be mounted over the window, or to the side near the window, so that a combination is also possible with a roller shutter enclosure. The LUNOthem is supplied in insulation material thickness and processed by the facade builder exactly the same as an insulating board of the thermal insulation bonding system. Detailed assembly instructions facilitate the planning and implementation in this case.



#### ALD-R 160 L with LUNOthem A

Employment in non-combustible insulation systems in accordance with DIN 4102-A. The insulation core is protected by an inside mineral packaging.

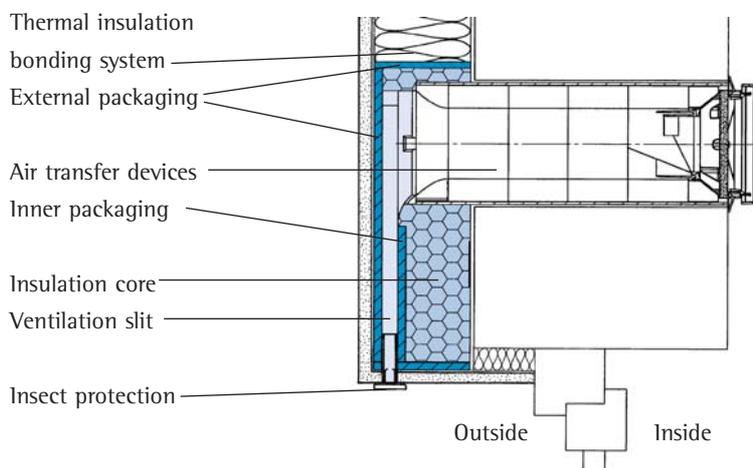
Insulation thickness: 60-300 mm

WxH: 980 x 490 (min. 300) mm

$\dot{V}$ : 21 m<sup>3</sup>/h at 4 Pa

30 m<sup>3</sup>/h at 8 Pa

$D_{n,W,open}$ : 53 dB



#### ALD-R 160 L with LUNOthem B

Employment in flame retardant insulation systems in accordance with DIN 4102-B1. The insulation core is protected by an inside and outside mineral packaging.

Insulation thickness: 60-300 mm

WxH: 1000 x 500 (min. 310) mm

$\dot{V}$ : 21 m<sup>3</sup>/h at 4 Pa

30 m<sup>3</sup>/h at 8 Pa

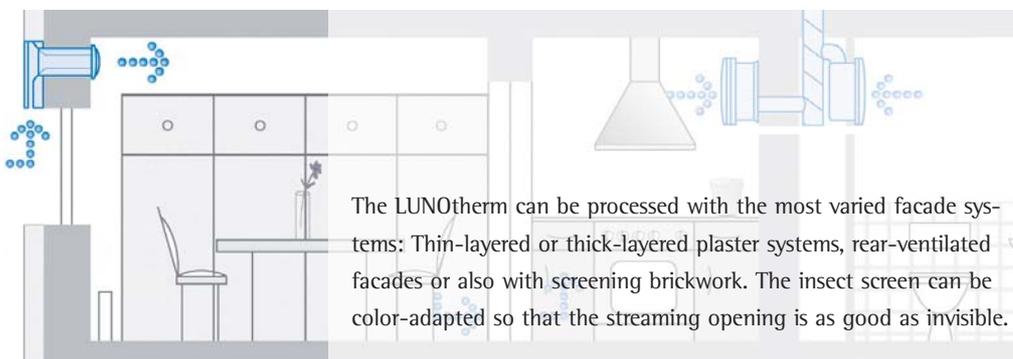
$D_{n,W,open}$ : 53 dB

# devices is the deciding factor

Since the LUNOthem is mounted in the fire flash-over area, its suitability was tested within the framework of the General Construction Supervision Certification of the DIBt (German institute for building technology). Thus the LUNOthem A may be mounted in non-combustible insulation systems in accordance with DIN 4102-A and the LUNOthem B may be mounted in flame retardant insulation systems according to DIN 4102-B1, up to an insulation thickness of 300 mm.

Due to the very low thermal conductivity of the insulation core of the LUNOthem of  $\lambda = 0.03 \text{ W/mK}$ , the decrease of the thermal insulation layer in the area of the ventilation slit is compensated. The temperature difference on the facade has a value of max. 2.5 K.

The LUNOthem A 60 can also be well fitted into the brickwork in case of new buildings. The brickwork is correspondingly opened up.



The LUNOthem can be processed with the most varied facade systems: Thin-layered or thick-layered plaster systems, rear-ventilated facades or also with screening brickwork. The insect screen can be color-adapted so that the streaming opening is as good as invisible.

ALD-R 160 L with LUNOthem



# Air transfer

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LUNOS products

## ❖ ATD with weather-protection screen

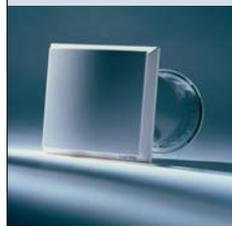
## ❖ Wall installa-



### ALD 36,5

Air transfer device with rectangular design, weather-protection screen, wind draft shutter, filter and acoustic damper

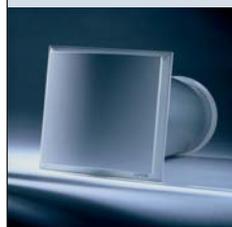
Cross-section: 125 x 250 mm  
Volume flow at 4 / 8 Pa: 18 / 24 m<sup>3</sup>/h  
Standard sound-level difference in the opened status: 46 dB



### ALD-R 110

Air transfer device with round design, weather-protection screen, wind draft shutter, filter and acoustic damper

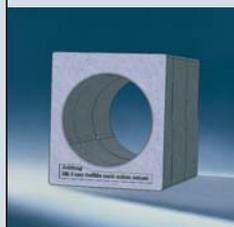
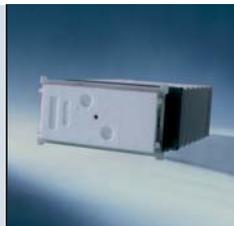
Cross-section: 110 mm  
Volume flow at 4 / 8 Pa: 7 / 10 m<sup>3</sup>/h  
Standard sound-level difference in the opened status: 48 dB



### ALD-R 160

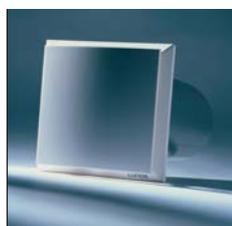
Air transfer device with round design, weather-protection screen, wind draft shutter, filter and acoustic damper

Cross-section: 160 mm  
Volume flow at 4 / 8 Pa: 21 / 30 m<sup>3</sup>/h  
Standard sound-level difference in the opened status: 52 dB



## ❖ ALD-R with LUNOtherm

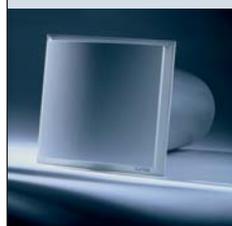
## ❖ Wall installa-



### ALD-R 110 L

Air transfer device with round design, wind draft shutter, filter and acoustic damper

Cross-section: 110 mm  
Volume flow at 4 / 8 Pa: 7 / 10 m<sup>3</sup>/h  
Standard sound-level difference in the opened status: 48 dB



### ALD-R 160 L

Air transfer device with round design, wind draft shutter, filter and acoustic damper

Cross-section: 160 mm  
Volume flow at 4 / 8 Pa: 21 / 30 m<sup>3</sup>/h  
Standard sound-level difference in the opened status: 52 dB



# devices

## Product description

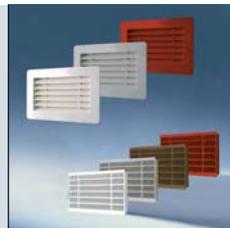
### tion stone for new building

### Weather-protection screen

#### 9/VEW

Wall installation housing for installation in concrete or masonry walls. Included in the scope of delivery of the ALD 36.5

Dimensions in mm (H x W x T): 130 x 250 x 377  
(Can be shortened in length or extendable according to installation situation)



#### 9/1W

Exterior grid angular, color white, for screwing on, also available in light-gray or reddish brown

Cross-section: 153 x 245 mm

#### 9/1D

Exterior grid angular, color white, also available in light-gray, sanded or reddish brown

Cross-section: 115 x 195 mm



#### 1/RW 145

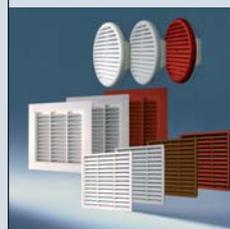
Standard external grid round, plug-in attachment, color white, including insect protection, also available in light-gray and reddish brown.

Diameter: 145 mm

#### 1/JD

Exterior grid angular, plug-in attachment into pipes d=98 mm, color white, also available in light-gray, sanded or reddish brown

Cross-section: 110 x 110 mm



#### 1/RW 180

Standard external grid, plug-in attachment, color white, including insect protection, also available in light-gray and reddish brown.

Diameter: 180 mm

#### 1/W

Exterior grid angular, color white, for screwing on, also available in light-gray or reddish brown. Cross-section: 240 x 240 mm

#### 1/D

Exterior grid angular, color white, also available in light-gray, sanded or reddish brown. Cross-section: 180 x 180 mm

#### 9/MRD

Wall installation housing for installation in concrete or masonry walls for reception of the air transfer devices ALD-R 160 und ALD-R 160 L

Dimensions in mm (H x W x T): 240 x 210 x masonry thickness  
(Different lengths available in 6 cm steps)

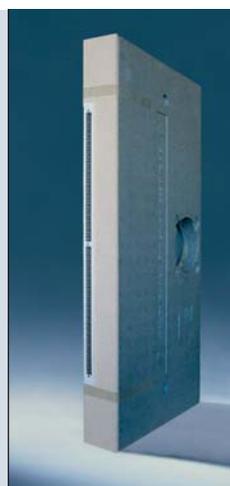
### tion stone for new building

### LUNOtherm

#### 9/MRD

Wall installation housing for installation in concrete or masonry walls for reception of the air transfer devices ALD-R 160 und ALD-R 160 L

Dimensions in mm (H x W x T): 240 x 210 x masonry thickness  
(Different lengths available in 6 cm steps)



#### LUNOtherm A

Facade close-off for air transfer devices ALD-R and for ventilators. The LUNOtherm A type is employed in non-combustible facades class A1 or A2, in accordance with DIN 4102.

Dimensions in mm (H x W x T): 980 x 490 x insulation thickness of the insulation system  
(Can be shortened in width according to installation situation)

Standard sound-level difference: According to length of the ATD, increase by 1 - 2 dB

#### LUNOtherm B

Facade close-off for air transfer devices ALD-R and for ventilators. The LUNOtherm B type is employed in flame retardant facades class B1, in accordance with DIN 4102.

Dimensions in mm (H x W x T): 1000 x 500 x insulation thickness of the insulation system  
(Can be shortened in width according to installation situation)

Standard sound-level difference: According to length of the ATD, increase by 1 - 2 dB



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