

LUNOS Domestic Ventilation Systems With Heat Recovery

Innovations for new buildings and redevelopment

$e^2 + e^{go}$



LUNOS
energy-efficient

e² and e^{g0} in a decentralised system

System & planning



Ventilation with heat recovery:

In contrast to other ventilation systems, decentralised ventilation is focused more on effectiveness and efficient enhancement of the different fans of a system. To ensure ideal implementation of ventilation in bathrooms, WCs and kitchens, the e² has been enhanced with the e^{g0}.

The principle of e² + e^{g0}

LUNOS ventilation system with heat recovery can be used everywhere. On account of the decentralised system, the individual ventilation units can be installed exactly where they are required. Combinations with classical exhaust air systems are also possible and can be designed using LUNOS Planning Tool pursuant to EnEV (Energy Saving Regulation) and DIN 1946-6.

e² fans are mainly installed in living rooms. Two units are continuously in operation in pairs. Therefore, an even number of ventilation units always has to be installed to ensure the units function properly.

Functional rooms such as bathrooms and kitchens can be ventilated using e^{g0}. Operation in pairs is not required because, in simple terms, two small e² in one e^{g0} provide simultaneous supply and exhaust air with heat recovery.

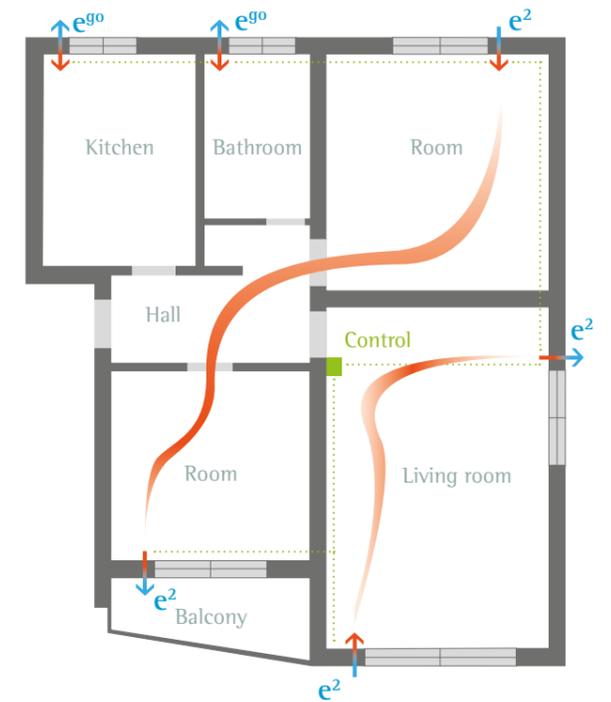
In the case of rooms with no walls to the outside, one exhaust air system (e.g. type Silvento) has to be installed, since the e²/e^{g0} systems cannot be linked to a shaft or to piping. This is on account of the construction of the units and is unavoidable.

Ventilation with e² in living rooms and bedrooms:

The e² operates in accordance with the method of a regenerative heat exchanger. A storage element is charged, similar to a battery, with heat energy in reversing operation and transfers the heat to the outside air supplied. The ventilation unit with heat recovery has a very low power consumption of just 1.4 Watts in base load operation (0.09 W/m³/h) and an almost silent measuring surface sound pressure level of 16.5 dB(A).

Ventilation with e^{g0} in the bathroom, the WC and the kitchen:

The e^{g0} also operates in accordance with the principle of the regenerative heat exchanger. A storage element is charged with heat as for the e². However, this is so skillfully distributed via two fans so that supply and exhaust air can be transferred simultaneously. A second unit is not required for operation. This system can also be switched in an exhaust air mode in which a very high flow rate of 45 m³/h is discharged in order to enable swift inflow of fresh air into a room (e.g. WC or bathroom).



Planning

Using LUNOS Planning Tool it is possible to intuitively design and plan domestic ventilation systems with heat recovery pursuant to DIN 1946-6. All algorithms used in this norm are implemented and are explained in a simple manner via interactive help. As a result, the program provides clearly presented material lists and records for building owners, chimney sweeps and energy consultants/development banks.

When planning with decentralised ventilation systems, pure heat recovery systems or so-called 'hybrid ventilation systems', a combination of exhaust air units and heat recovery, can be calculated. According to the calculation method developed by LUNOS, corrections to the efficiency are made for hybrid systems, the overall efficiency generated effectively in practice is displayed and prepared for the energy balance calculation.





The benefits of e² and e⁹⁰

Features & performance



› Features

SILENT



Highly efficient motors, with the latest ec technology combined with specially balanced fans which have been reworked with regard to fluid mechanics have almost completely eliminated any air noise. This has resulted in low measuring surface sound pressure levels.

ENVIRONMENT-FRIENDLY



e² and e⁹⁰ have a very low power consumption ensuring they are unique in terms of energy efficiency, making an active contribution to environmental protection and at the same time saving you money. The efficiency figures for e² and e⁹⁰ are far below the limits required pursuant to the current DIN 1946-6 for devices of efficiency grade E.

INNOVATIVE



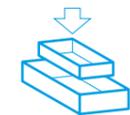
e² and e⁹⁰ operate in accordance with the well-known principle of the regenerative heat exchanger which has been almost perfected by the LUNOS company. The so-called acuvent storage stone is located at the center of the airflow of an ec motor with axial fan. By means of a reversing airflow arising via systematic change of direction of the fan, the ceramic is charged with the thermal energy of the room air and transfers this back to the outside air supplied.

SLIM



e² and e⁹⁰ are among the smallest decentralised fans for domestic ventilation with heat recovery in the world. By applying state of the art production processes we have managed to develop compact heat storage of ceramic composite material which provides a thermal efficiency of 90.6% or 81.4%.

COMPATIBLE



If a LUNOS ventilation system has already been installed, e² and e⁹⁰ can be used in existing outside wall air outlets of the types ALD-R 160. ALD-R 160 with LUNOthem can only be enhanced with e². The LUNOS e² can also be combined in new constructions with all LUNOthem elements. On account of its mode of operation, the e⁹⁰ cannot be combined with LUNOthem facade elements.

UNIVERSAL



e² and e⁹⁰ can be used in new constructions and in redevelopment work. In new constructions, they are installed between the bricks with the aid of a wall rack or installed subsequently e.g. in the case of redevelopment work using a 162 mm large core drill hole. The wall must be at least 300 mm thick.

e²

16,5 dB at 18 m³/h
19,5 dB at 31 m³/h
26 dB at 38 m³/h

(measuring surface sound pressure level)

1,4 W at 18 m³/h
2,8 W at 31 m³/h
3,3 W at 38 m³/h

One reversing airflow operates per e². At least two or one even number of e² should be used for a balanced supply and exhaust air balance.

Fan size: Ø x length 160 x 300 up to max. 700 mm heat recovery efficiency of 90.6%.

Compatible with all 160 systems inclusive LUNOthem as external closure.

Can be installed in new buildings and in redevelopment work, wall thickness at least 300 mm.

e⁹⁰

16,8 dB at 5 m³/h
24 dB at 10 m³/h
38,1 dB at 20 m³/h
38,1 dB at 45 m³/h exhaust air mode
(measuring surface sound pressure level)

1,0 W at 5 m³/h
1,7 W at 10 m³/h
4,5 W at 20 m³/h
4,9 W at 45 m³/h exhaust air mode

Two ec motors provide two reversing airflows at the same time for ventilation.

Fan size: Ø x length 160 x 300 up to max. 700 mm heat recovery efficiency of 81.4%.

Compatible with other 160 systems provided e⁹⁰ internal and external panels can be used.

Can be used in new buildings and in redevelopment work, wall thickness at least 300 mm.



e² and e⁹⁰ in detail

System engineering with HRV



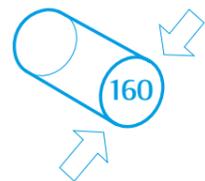
e²



- › Outside grille with insect screen
- › EPP heat insulation elements with 0.038 W/mk
- › Highly efficient ceramic heat storage with heat recovery efficiency of 90.6%

› Fan unit, quiet as a whisper, in sound-insulating EPP chassis

› Flow-optimized inside panel with washable G3 or pollen filter



e⁹⁰

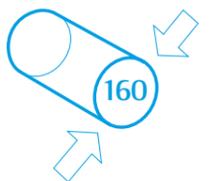


› Weather grille outside panel with separate airflow and insect screen

› Highly efficient ceramic heat storage with heat recovery efficiency of 81.4%

› Fan units, quite as a whisper, structured in counter-flow design for simultaneous supply and exhaust ventilation

› Flow-optimized inside screen with separate supply and exhaust air openings and washable G3 or pollen filter



› Improved efficiency as a result of the honeycomb structure of the storage stone

LUNOS again sets standards with the new e⁹⁰: the smallest fan with heat recovery with simultaneous supply and exhaust ventilation can also be operated in purely ventilation mode at 45 m³/h.



Accessories for the 160 series with heat recovery



› Controls:

Universal control

Control for e², e⁹⁰ and RA 15–60. Various switch functions can be selected per ventilation unit via a coding switch. Up to ten e² or up to five e⁹⁰ can be switched via one control. 0–10 V input for connection to TAC control or remote control.

Touch Air Comfort (TAC)

Control for e², e⁹⁰ and RA 15–60. AB 30/60 and the Silvento series can be connected via a 230 V module. Functions: energy-efficient E-Ink display, integrated humidity/temperature sensor, USB interface; convenience functions: night reduction and summer ventilation.

KNX

Bus system control for e² and e⁹⁰, other ventilation series are integrated successively. Functions: various programs can be connected (CO₂, humidity, temperature, etc.), complete integration into the energy-efficient KNX home automation concept is provided, can also be installed as a standalone solution.



› Sound insulation:

e²

Sound insulation jacket 9/IBS: increase of standardized sound level difference by up to 9 dB, reduction of intrinsic noise.

Sound insulation set 9/SW: increase of standardized sound level difference by up to 2 dB, reduction of intrinsic noise.



› Outside Grille/LUNOtherm

e²

Outside grilles are available in different colours and materials as well as special versions for plastering. The LUNOtherm can be used instead of an outside grille. By using the LUNOtherm, the outside grille can be removed from the facade.

e⁹⁰

Depending on the respective functions involved, only the standard inside and outside screens can be installed.



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