

HR1

DECENTRALIZED HEAT RECOVERY VENTILATOR

MUONIO HR1 is a decentralized heat recovery ventilation system. Two of these ventilators can work together to optimize ventilation, air quality and energy savings.

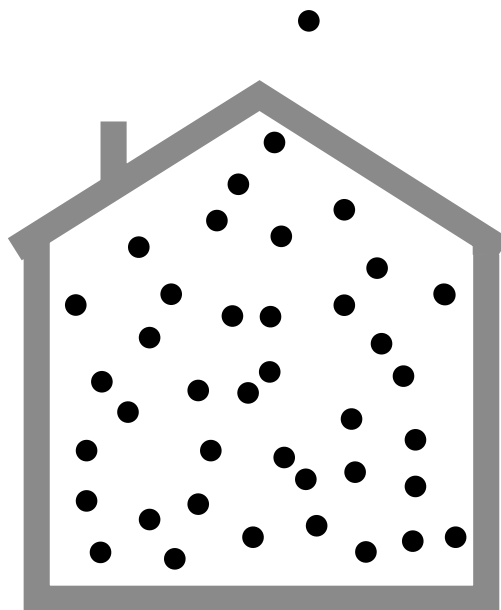
The System can be controlled locally or through the internet.

The system can work in demand-controlled alternate mode or as a very simple in/out ventilator.

The HR1 ventilator is part of a broader MUONIO system that combines ventilation with heating and cooling controls and brings comfort to your home.

Why Indoor Air Quality matters

THE AIR QUALITY INSIDE YOUR HOME OR BUILDING IS 2 TO 5 TIMES MORE TOXIC THAN OUTSIDE



People spend 90% of their time indoors but outdoor air quality is far superior to indoor air quality.



Sick building syndrome (SBS) is used to describe a situation in which the occupants of a building experience acute health or comfort-related effects that seem to be directly linked to the time spent in the building.



The better insulated a building is, the more energy-efficient it is but at the same time air quality is drastically reduced. The most visible signs of bad air quality are moulds and condensation.

Why Indoor Air Quality matters



In Europe, an estimated 10–50% (depending on the country) of indoor environments where we live, work and play have substandard air quality levels, resulting in symptoms such as dampness which nearly doubles the risk of asthma and other respiratory diseases (WHO - Damp and mould brochure).



In the 20 years to 2012, there was a 615% increase in the rate of hospital admissions for anaphylaxis in the UK (Turner, Paul J., et al, 2015).



More than 150 million Europeans suffer from chronic allergic diseases and the current prediction is that by 2025 half of the entire EU population will be affected (EAACI, 2016).



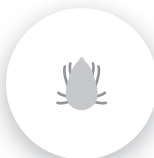
25% of houses in Europe have mould growth in at least one room, (WHO - Large Analysis and Review of European Housing and Health Status).



Low Rate of Natural Ventilation due to Air-Tight House.

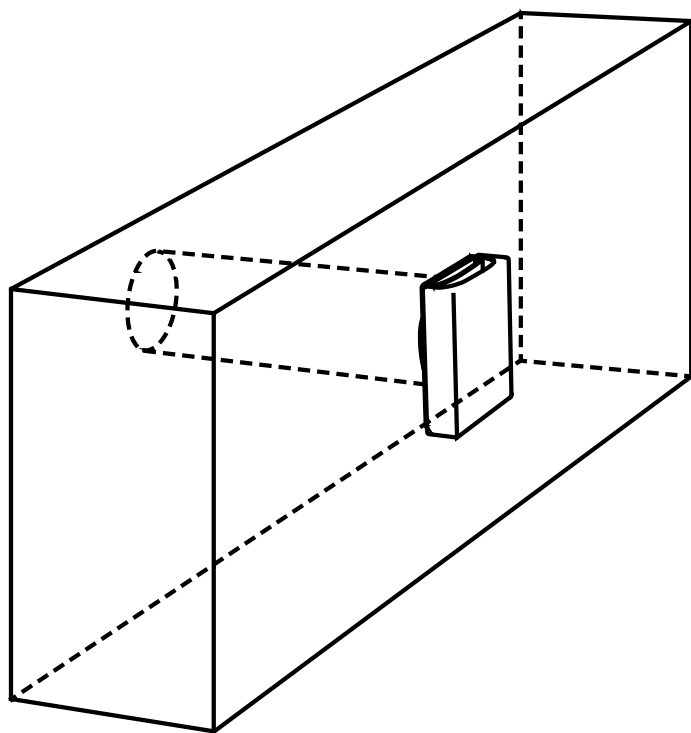


Allergy is the most common chronic disease in Europe (EAACI, 2016).



Indoor air can be full of viruses, mites, odours, moulds, humidity and CO2 which could cause a number of diseases like asthma, breathing problems, flu, headache and depression.

Heat Recovery Ventilator



Heat recovery ventilator.

Filter.

Two-way ventilation.

Easy installation.

No wires required between units, only 230 Vac power supply required per unit.



The Muonio heat recovery HR1 Ventilator device can reclaim up to 87.5% of heat from exhausted air.



The Muonio heat recovery HR1 Ventilator device can help to achieve European building regulations.

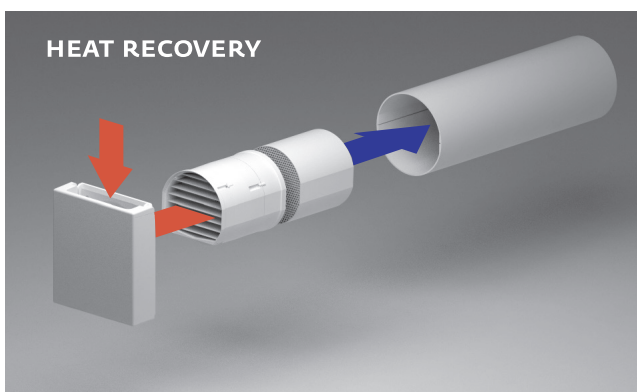
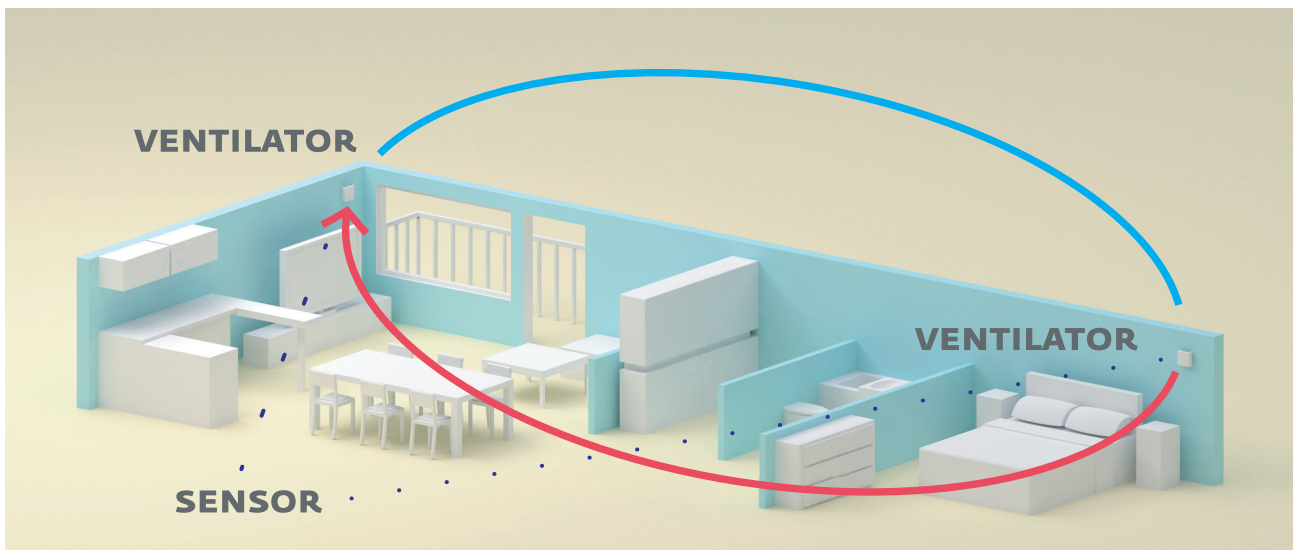


Muonio is raising awareness of indoor air quality.

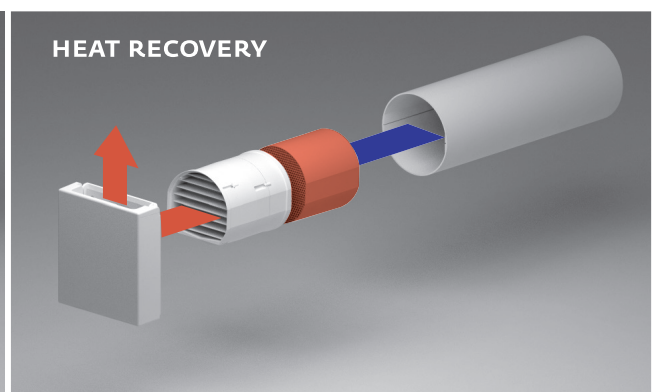
How It Works

Two ventilators are working in tandem. One is bringing fresh air in, the other is pushing stale air out and they alternate their direction in/out in 60-80 seconds periods. A ceramic ring inserted into the pipe is extracting heat from the exhausted air out and releasing that heat into the fresh air coming in, depending on the current direction of each ventilator. Since the ventilators are synchronized, the system will exchange the air in the space while recovering most of the heat from the exhausted air thus saving energy. An Air Quality Sensor (AQS1) is connected with the HR1 ventilator devices to create a ventilation zone. Depending on the humidity and/or VOC level (if the device is equipped with a VOC sensor) it is possible to determine a set point that will trigger the HR1 ventilation system (if humidity and/or air quality (VOC) deteriorates).

The HR1 devices communicate wirelessly with each other eliminating the need for complicated wiring between units.



Extraction Stage: Hot indoor air is extracted from the dwelling and heats the ceramic ring.



Supply Stage: Cold outdoor air is supplied to the dwelling and absorbs the heat stored in the ceramic ring.

Controls



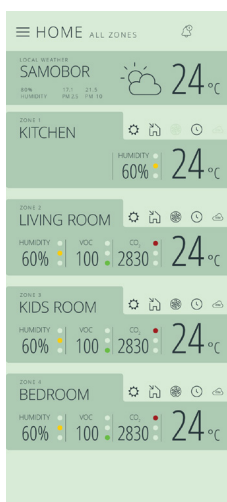
One zone/sensor can control one pair of ventilator devices.



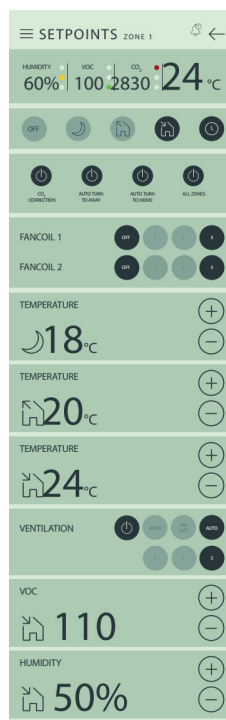
There can be 4 zones and 8 ventilators per gateway, it is possible to add more gateways if more zones are required.



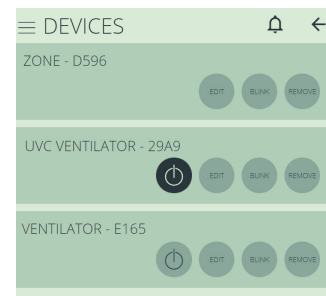
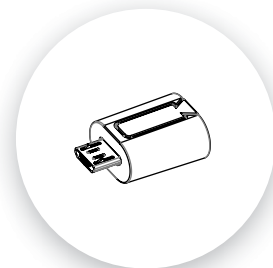
The Muonio devices are wireless, therefore, the installation is easier as there are no wires between the ventilators, sensors and gateways.



The Muonio app allows you to control your ventilation and heating devices.



Each zone is capable of controlling ventilation and heating devices (if your system has heating controls installed)



Pairing the units/ logical connection is done via an ID KEY by the click of a mouse, no engineers required.

Comparison to other ventilation solutions

DECENTRALIZED HEAT RECOVERY VENTILATION

Quicker and easier to install compared to centralized systems.

Due to the shorter ducts required, wind drafts in decentralized systems during windy days are more likely to be present.

Decentralized systems are much easier to clean and maintain than centralized systems. 300-500 mm duct per device means that cleaning is low-cost, fast, and can be done even by the homeowner without specialized robotic machines. Even unmaintained this system, due to its small size will never be a source of sick building syndrome.

MUONIO DECENTRALIZED HEAT RECOVERY VENTILATION

No wiring between devices, devices communicate wirelessly which leads to an easier installation. However, wireless communication may not work in every house (due to long-distance and other obstacles).

The Muonio HR1 Device has a built-in transformer and only requires a 230 VAC power supply and is much more accessible than a separated PS solution.

Demand controlled ventilation as standard, ventilate only when required. App as standard which integrates with your heating system also.

CENTRALIZED HEAT RECOVERY VENTILATION

Typically centralized systems are more energy-efficient and if driven properly, will result in a more energy-efficient home.

Centralized systems are much more difficult and time-consuming to install, and for some older buildings nearly impossible.

Due to complexity, these systems are much more expensive to purchase, install and later maintain / clean.

Centralized systems typically have long ducts which are major sources of indoor air pollution. Researchers estimate that at least 80% of asthma attacks are triggered by 1 common culprit: Dust Mite Feces (typically found in dust/ducts).

TYPICAL DECENTRALIZED HEAT RECOVERY VENTILATION

A communication cable is typically required between pairs of units working together. This requires a lot more installation work and is more destructive for a house.

Typically the ventilator itself is DC powered and must have a transformer somewhere in the wall. This again requires work and is destructive for a house.

Typical systems have no demand controls and are mechanical. Also does not integrate the heating system controls.

Technical information

HEAT RECOVERY VENTILATION HR1

POWER SUPPLY TERMINAL

IEC C8 SOCKET

DIMENSIONS

SEE FIGURE 1 BELOW

MOUNTABLE

160 MM DIAMETER PIPE

162 MM HOLE IN THE WALL

WEIGHT

3700 g

POWER SUPPLY

230 V ~, 50 Hz, Single Phase

VENTILATOR UNIT POWER SUPPLY (INTERNAL)

24 VDC

POWER CONSUPTION

UP TO 13 W FOR TOTAL UNIT

UP TO 4 W FOR INTERNAL

24 VDC PART OF THE UNIT

VOLUME FLOW

14 TO 51 m³/h

HEAT RECOVERY

UP TO 87.5 %

MAIN PARTS:

POWER SUPPLY UNIT,

CERAMIC PART, WALL BASE,

VENTILATOR UNIT

WIRELESS FREQUENCY

2.4 GHz

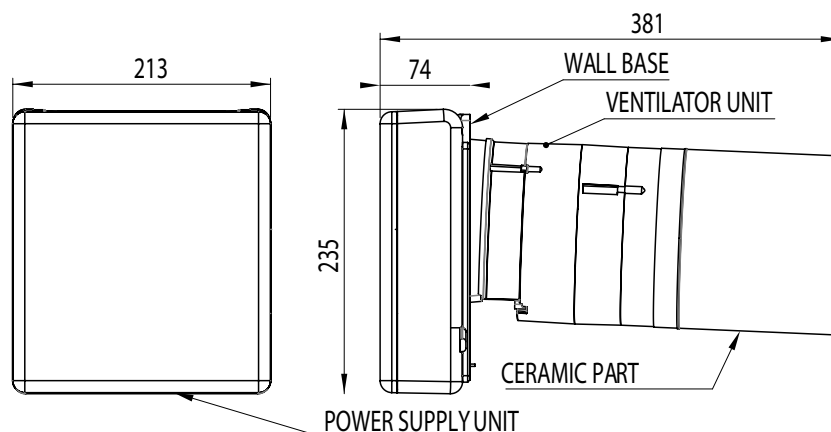


FIGURE 1. OVERALL DIMENSIONS