

HEAT RECOVERY SYSTEM

Awenta **PRO**



Why heat recovery

Breathing is a basic life function of every body, and air quality has a major impact on our health and well-being. The dynamic development of civilisation negatively affects the air quality, that is why taking care of its improvement at home and in the workplace will become more and more important every year. There are many types of pollutants in the air in the form of dust, allergens, exhaust gases, smoke, and most importantly, dangerous particulates or unpleasant odours.

One of the biggest threats to human health is particulate matter. According to the WHO report, fine dust pollution (PM2.5, i.e. particles with a diameter of no more than 2.5 micrometres) may pose a greater health risk than originally estimated. Therefore, in order to maintain an optimal climate in the house, it is necessary to safely ventilate the rooms.



Heat recovery – what is it?

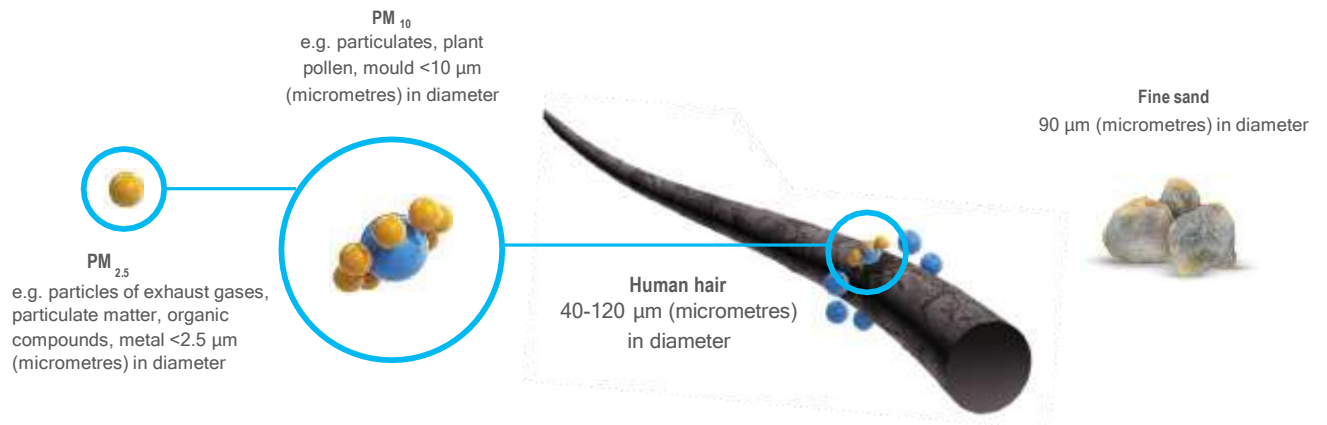
Heat recovery is a safe and environmentally friendly way to ventilate rooms, using the natural phenomenon of heat transfer. Heat recovery does not require the use of energy-consuming equipment or chemicals to treat and heat the air. Ventilation of rooms using heat recovery is based on the balanced exchange of air between the building and its surroundings, during which the used and heated air is removed to the outside and at the same time releases up to 95% of its temperature to the fresh air drawn from the outside.

In the process of heat recovery, the fresh air undergoes a double filtration process, allowing almost all harmful substances to be removed. At the same time, the use of heat recovery brings large savings in the cost of heating the building, thanks to a reduction in the demand for fuel or energy used to heat the building.

Benefits for health

Health and living comfort of residents:

- better sleep and well-being through adequate oxygenation of the rooms without opening windows
- reducing the penetration of harmful particulates, dust and smog components
- protection against the entry of birds, rodents and insects such as spiders, flies and mosquitoes
- the Nano-Silver bacteriostatic additive used in the production of air distribution elements allows for the elimination of up to 99.99% of bacteria
- positive effect on the environment - thanks to lower heating requirements and reduced CO₂ emissions prevention of moisture accumulation in the building and reduction of the causes of occurrence of mould and fungi



Recuperator components

HEAT EXCHANGER

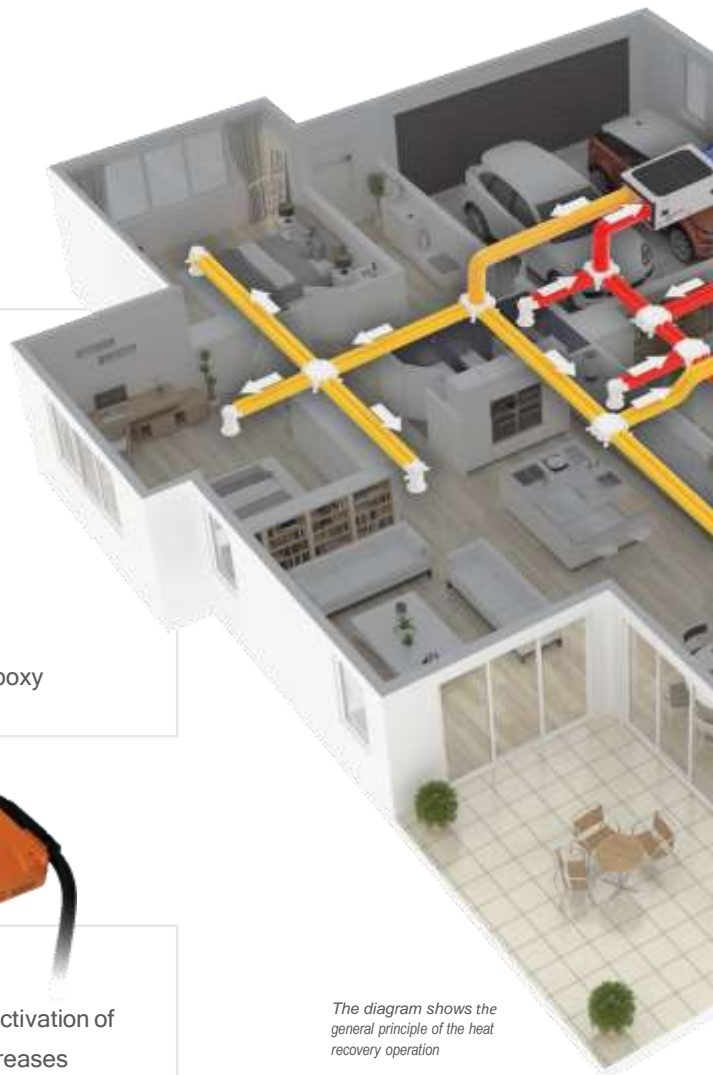
The central part of the recuperator responsible for heat recovery is a counterflow heat exchanger by RECAIR - a renowned Dutch manufacturer. Thanks to its patented channel system, the heat exchanger can recover up to 95% of the heat removed from the building by ventilation.



HOUSING

The housing is made of EPP, i.e. expanded polypropylene characterised by high thermal and acoustic insulation properties made by Knauff - a world leader in this field. EPP is characterised by high flexibility, low weight and high resistance to mechanical damage and resistance to chemical and biological factors such as mould, fungi and moisture.

Durability and aesthetics of the housing are increased by additional reinforcement made of galvanised metal sheet powder coated with epoxy paint.



The diagram shows the general principle of the heat recovery operation

BY-PASS

By-pass allows for a complete bypass of the heat exchanger and deactivation of the process of heating fresh air with the exhaust air. This function increases breathing comfort and is especially important during summer nights when it is much cooler outside than during the day; it is so-called night cooling.



FANS

Air movement in the recuperator and the whole system is ensured by two fans equipped with the highest class, highly efficient motors from the leading manufacturers in the industry. Ziehl-Abegg and EBM-Papst units are known for their reliability, high quality and exemplary performance parameters.



System diagram



FILTERS

The Awenta Pro recuperators are equipped with two high-quality M5 class filters as standard (optionally they can be equipped with an F7 class fine filter). Filter replacement is quick and easy thanks to special openings in the housing. The user can check the condition of the filters or replace them himself without the need to call for service. The need for filter replacement is indicated by a message displayed on the control panel.



CONTROL MODULE

The Awenta Pro Zephyr recuperators are equipped with online control modules, allowing for controlling the operation of the unit and controlling the air parameters, define daily and weekly operating schedules and set the desired parameters. The control panel is a 4.5-inch colour LCD touch screen display that is easy and intuitive to use. The panel displays information about current temperatures of supply and exhaust air, the efficiency of fans or the position of the By-pass flap among other things. The control panel also makes it possible to control the elements that can supplement the heat recovery system: ground-air heat exchanger, reheat coil or recool coil.



FROST PROTECTION

Condensation of water vapour in the heat exchanger in extreme cases associated with the occurrence of very low temperatures can cause its freezing. A preheat coil effectively counteracts this phenomenon: it heats the air before it enters the heat exchanger. The heat coil is switched on and off automatically. The control module determines the optimum operating time of the heat coil on the basis of current indications from temperature sensors placed inside the device. The preheat coil is an element of an additional accessory.



Savings compared to natural ventilation

- lower building heating costs
 - heat savings of up to 40%
- savings in construction costs
- additional building surface and volume recovered after elimination of natural ventilation chimneys
- low operating costs
- easy and unassisted operation
- possibility of including a heat recovery system in the smart home system

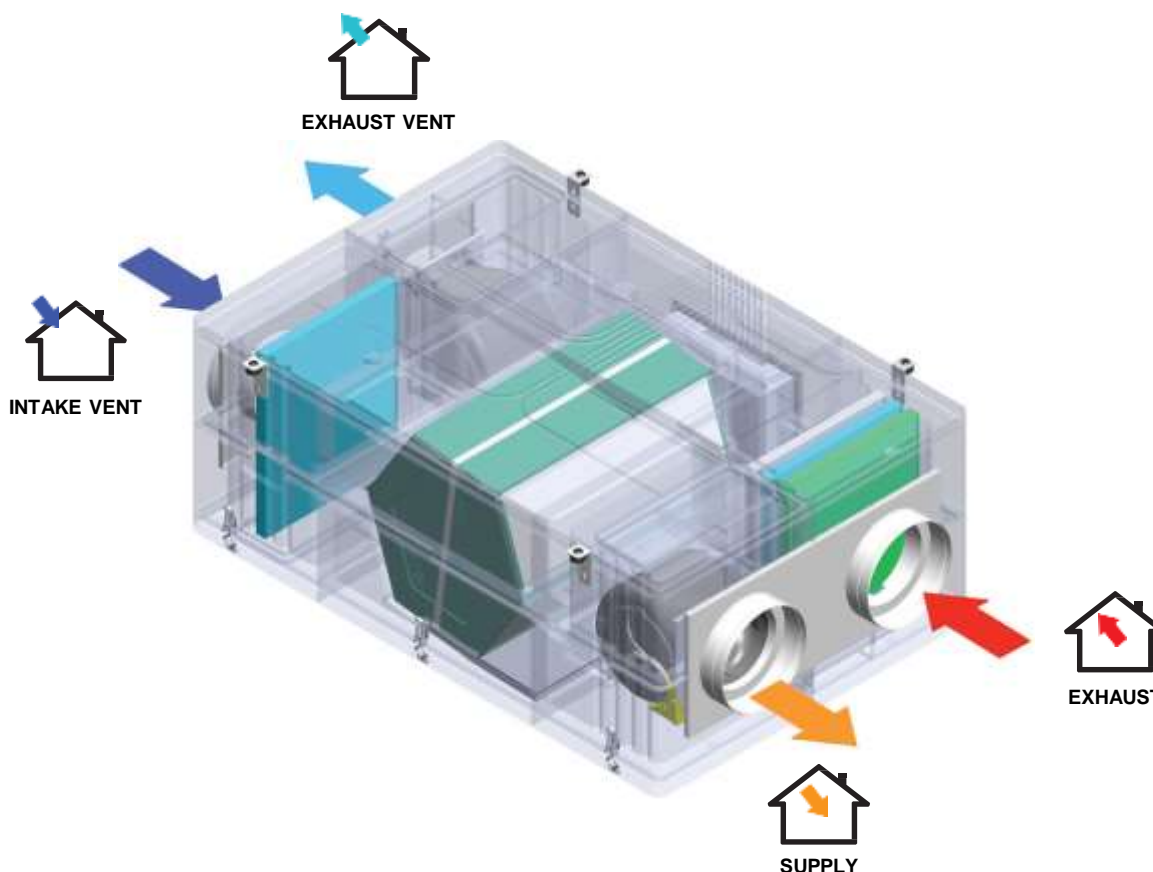


How heat recovery works

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The air movement in the system is the responsibility of the air handling unit - recuperator, installed in any discreet place of the building, for example: attic, basement, garage or utility room.

The air exchange parameters can be easily controlled via a touch panel in the control module located in a convenient place in the house. An additional Internet module allows you to control the ventilation parameters and heat recovery system remotely via a web browser.



Heat recovery is a system of ventilation of a building in which fresh air is heated by the heat of the used air exhausted to the outside. The exhaust and fresh air do not mix thanks to special insulated channels inside the recuperator. Thanks to filtration, many pollutants are removed from the air being drawn in, including: dangerous particulates, smokes, dust, bacteria and allergens present in smog. The heat recovery system is also an effective barrier against the entry of rodents, birds and insects such as flies, mosquitoes and spiders.

Fresh air, after being cleaned and heated in the recuperator, is sent through distribution boxes via ventilation ducts to habitable rooms, e.g. living room or bedroom. On the other hand, used and heated air is exhausted from the kitchen, bathroom or toilet. Such a solution forces the movement of air inside the building from the so-called clean rooms to utility rooms and at the same time limits the spread of moisture and odours inside the building. A constant inflow of fresh air and its circulation inside the house significantly increases the comfort of living and well-being of the residents and brings significant savings in heating costs.

AWENTA is one of the leading European manufacturers of ventilation components. Recuperators of the Awenta Pro series are Polish products created based on the company's 30-years of experience, developed in our own Research and Development Centre in cooperation with global manufacturers of components.

Apart from the recuperators, the company provides all the components of the heat recovery system, among which the most important are the plenum boxes, distribution boxes, ventilation ducts and a wide range of supply/exhaust air valves and intake vents. All Awenta Pro products are manufactured in a factory located in Stojadła near Warsaw, thanks to which the company ensures their constant availability and competitive prices.

The most important components of the heat recovery system:

Distribution box



Plenum box



Ducts



Air valve



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