

Zoning for heat recovery ventilation

HRQ-2ZONE



Description

HRQ-2ZONE is a device designed for residential ventilation systems, dividing the air supply into two controlled and monitored zones. The air flow is controlled by motorized dampers, which are adjusted according to the demand sent by CO₂ sensors installed in each zone. Such a system allows for the detection of the inhabitant's presence and provides the right amount of fresh air in the right place at the right time. HRQ-2ZONE is compatible with all PremAIR-CF and SlimAIR-CF (with Constat Flow) residential air handling units. Wireless communication with the RAHU and CO₂ sensors reduces installation time and costs, while Demand Controlled Ventilation (DCV) is the key to high performance and low energy consumption.

Available materials:

- HRQ-2ZONE** - t-piece made of galvanized steel, rubber insulation 19mm
- HRQ-2ZONE-SET** - t-piece made of galvanized steel, rubber insulation 19mm + 2x sensor HRQ-SENS-I-CO2

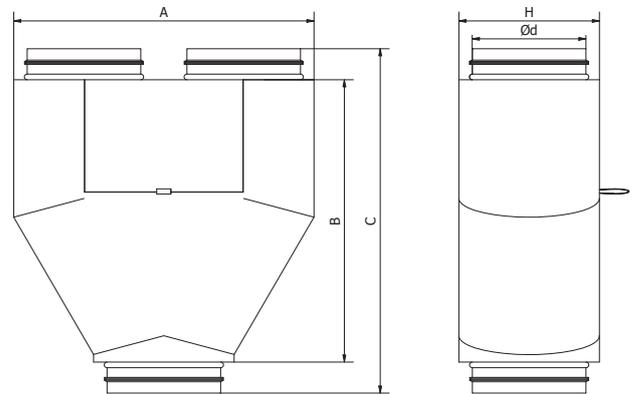
Product code example

Product code: HRQ-2ZONE - 160

type

diameter

Dimensions



Type	Ød [mm]	H [mm]	A [mm]	B [mm]	C [mm]
HRQ-2ZONE-160	160	195	440	400	490
HRQ-2ZONE-200	200	245	500	445	535

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How its work

When you analyze the lifestyle of household members and the layout of the rooms in the house, you can create 2 zones: daytime and nighttime.

Through readings from CO₂ sensors in both zones, the HRQ-2ZONE smart air damper distributes airflow as needed. As a result, the HRQ-2ZONE will direct a greater stream of fresh air towards the zone where the household members are currently residing, as opposed to the second zone, temporarily less used. When both zones are used, the HRQ-2ZONE will proportionally distribute the fresh air flow according to the readings of local CO₂ sensors. Unused areas are ventilated to a minimum (about 10-15%). By setting up the system in this way, it continuously monitors air quality, and if a household member enters a particular zone, the algorithm will open the damper and increase the fan speed in the HRU. In a similar way, if someone moves to the second zone, the second damper blade will be opened and the first closed. With the HRQ-2ZONE, the heat recovery unit will deliver the right amount of fresh air in the right place at the right time.

The review study on the Ecodesign and Energy Regulations on ventilation units found that on average, householders spend 63% of their day in half of the house. That means that the airflow could be temporarily reduced by 70%!

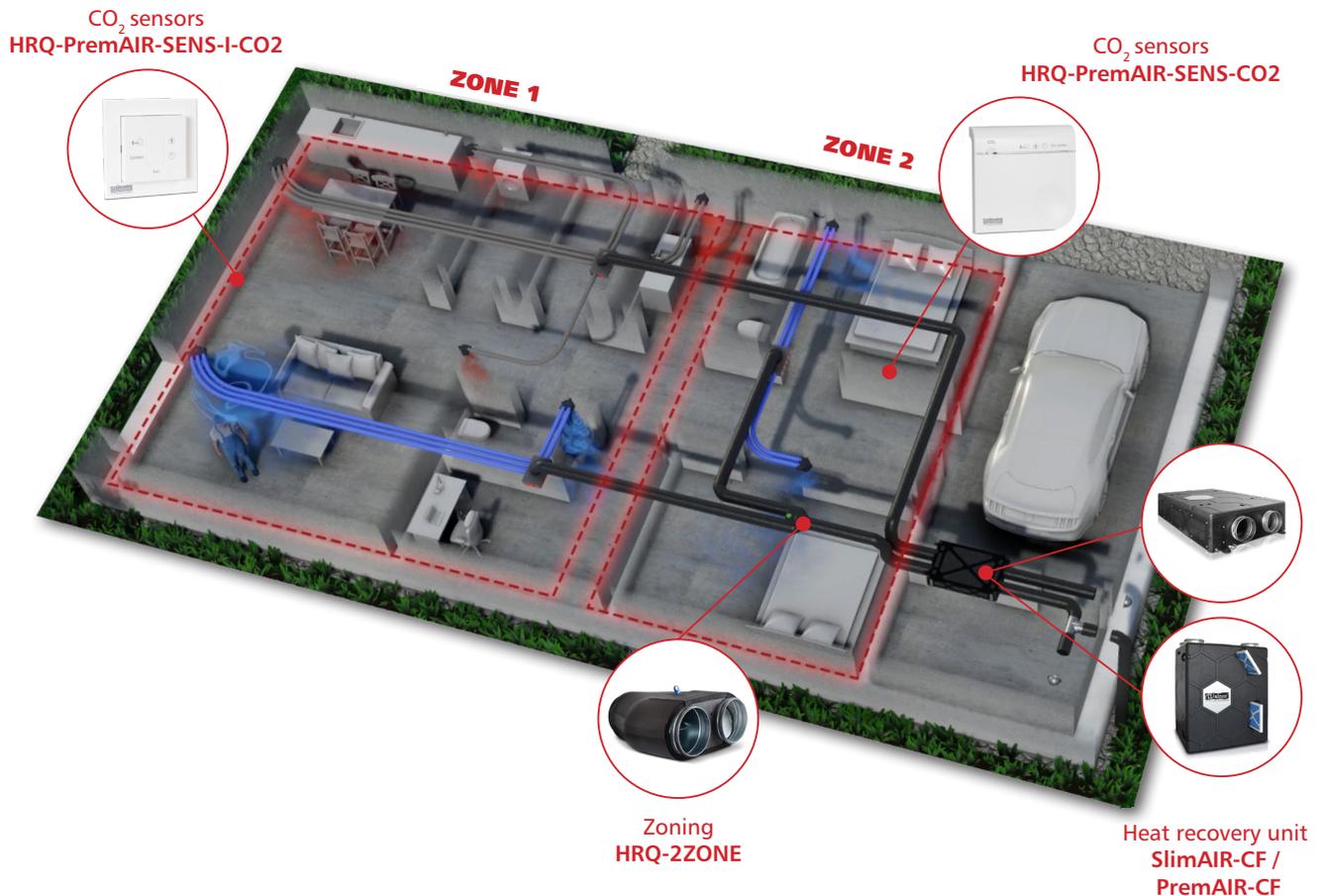
Benefits of zoning:

- energy savings - the heat recovery unit consumes less energy.
- improved comfort - the heat recovery unit works more quietly.
- high efficiency - a controlled level of fresh air, as required.
- **less energy needed for heating.**
- ECO - the most energy-efficient way to control heat recovery ventilation.
- SMART - the system designed to adapt to your needs.
- You are always in control - check out the parameters in the application.

Diagram

PremAIR-CF / SlimAIR-CF + HRQ-2ZONE + 2x HRQ-PremAIR-SESN-CO2*

*At least 2 CO₂ sensors are needed for the system to work properly.



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Technical data

Data from the sample simulation:

Airflow: 300m³/h

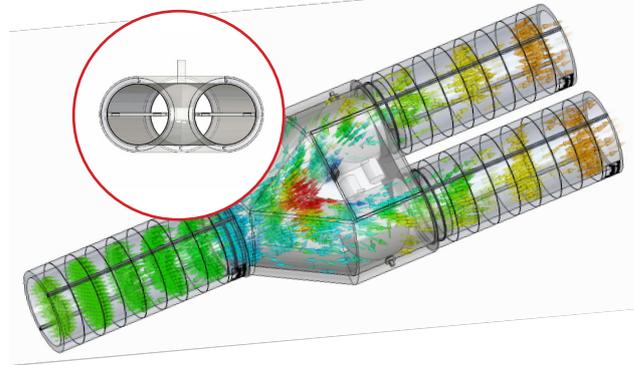
Duct diameter: 160mm

100% - fully open damper,

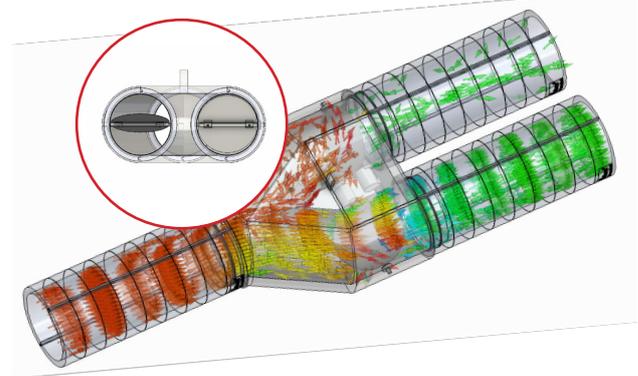
0% - fully closed damper.

Zone 1 [%]	Zone 2 [%]	Pressure drop [Pa]	Airflow [m ³ /h]	
			Zone 1	Zone 2
100	100	1,5	151,2	148,8
70	30	17,5	258,0	42,0
80	20	10,5	279,1	20,9

Damper opening 100% - 100%



Damper opening 20% - 80%



Damper opening 30% - 70%

