

## QVANTUM QE Series

### Exhaust air heat pump

The Quantum QE is an energy efficient exhaust air heat pump, providing heating, cooling, ventilation, and hot water. The heat pump is inverter controlled and has an integrated buffer tank. The exhaust air unit extracts energy from the outgoing ventilation air. The inverter control automatically adjusts to the comfort demands of the home, thus minimising energy consumption.

Domestic hot water is produced instantaneously with heat from the integrated buffer tank. The buffer tank can also be used to avoid energy peak prices for both heating and hot water. The QE heat pump is available in 4 kW and 6 kW output and supports both single- and three phase connections. The heat pump can also provide cooling.

The compact and flexible design of the QE heat pump makes it easy to install, not only in newly build homes, but also as an upgrade for existing exhaust air heat pumps. The heat pump is well suited to replace gas boilers in low temperature systems. The heat pump is easy to operate and has a low noise level, which makes it an asset to any home.



System efficiency class  
room heating, 35/55 °C.



Product's efficiency class  
and load profile for  
hot water.



#### THERMAL BATTERY

A patented new solution where the accumulator tank can be used as a thermal battery, enabling your heat pump to provide HP2G® support services to the grid.



#### BUILT FOR THE FUTURE

As Quantum's software develops, your heat pump will automatically be upgraded with new features.



#### BALANCING SERVICES

All of Quantum's residential heat pumps are prepared for the flexibility market. This means that the electricity market can purchase flexibility from its customers.



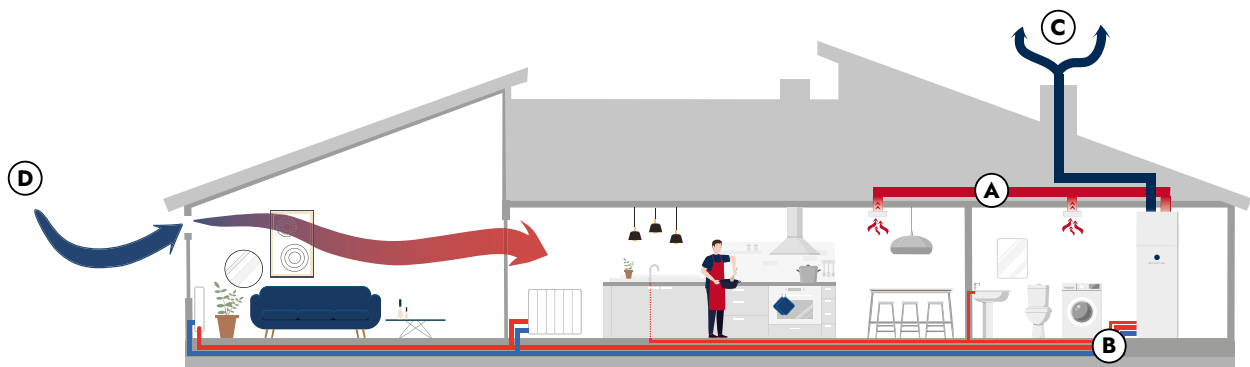
# HOW DOES AN EXHAUST AIR HEAT PUMP WORK?

## PRINCIPLE

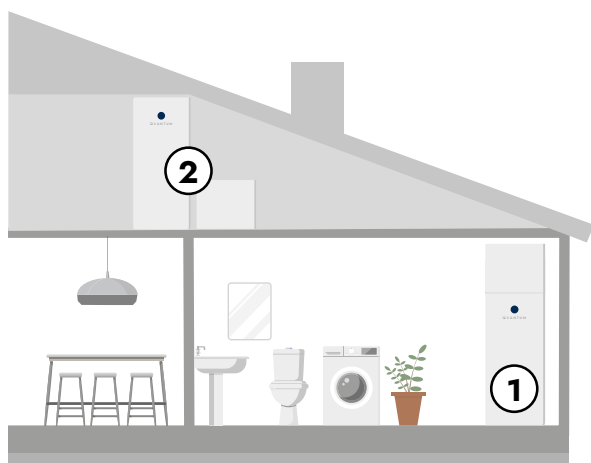
The room tempered exhaust air passes through a filter to the heat pumps evaporator. As the air passes through the evaporator, the refrigerant evaporates due to its low boiling point. This causes the air to release energy into the refrigerant. The refrigerant is then compressed in the compressor and the temperature rises considerably. The discharge is led to the condenser, where the refrigerant releases its energy into the water of the heating system, transforming the refrigerant from gas to liquid.

The heat pump distributes the heat to heating or domestic hot water via a diverting valve. The refrigerant then passes to the expansion valve where the pressure and temperature are reduced. The circuit is now complete, and the refrigerant passes back through the evaporator. In very cold weather, or at high consumption of hot water, the compressor's heat production can be supplemented by the immersion heater which is switched on in stages as needed.

- A** Indoor air is drawn into the air duct system and fed to the Quantum QE. The energy in the indoor air is transformed to the heating.
- B** Quantum QE supplies the home with heat and hot water.
- C** The air is discharged with a temperature down to 30 degrees lower than the indoor air.
- D** Fresh outdoor air is drawn in via the outside air ducts, as the exhaust air heat pump creates a slight negative pressure in the house via the duct system. Air is transported from rooms with outdoor air devices to the exhaust air valves located in the house.



## INSTALLATION POSSIBILITIES



Installation can be made in several different ways due to the modular concept.

- 1** Complete All-in-one installation (A).
- 2** Modular installation as separate units (M).

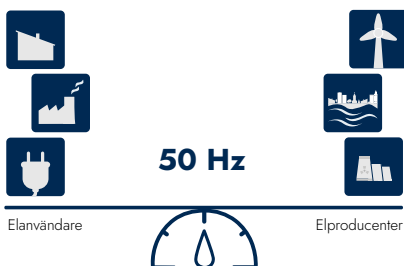
## KEY FEATURES

- Available in 4 kW and 6 kW output and inverter control to meet the comfort demands of the home.
- Future proof for 4-pipe cooling.
- Instantaneous domestic hot water for comfort as well as efficient legionella prevention.
- Future proof connectivity.
- Integrated buffer tank that enables true energy peak price shaving for both hot water and heating.
- Suitable for single - and three phase connections.
- Simple installation through low weight and compact dimensions.
- Modular design which enables multiple installation options.

# FUTURE PROOF

Quantum's heat pumps are prepared to adapt to the energy market and enable more utilisation of unplanned and climate-smart energy.

By using the heat pump as a thermal battery and with an AI control that responds quickly to flex market fluctuations, Quantum's heat pumps contribute to load balancing and the stabilisation of the electricity grid. By being able to use stored energy when the price is high, you don't have to sacrifice your comfort to reduce your electricity bill.



## INTEGRATED THERMAL BATTERY + FLEXREADY®

Quantum's patented system converts the hot water tank into a thermal battery. The battery has a capacity of up to 12 kWh and enables the heat pump to deliver HP2G® ancillary services to the grid.

Quantum heat pumps are all prepared for the flexibility markets of the energy market. You can then be paid to stabilise the frequency of the electricity grid, ease the load on the grid and reduce the climate impact of the electricity grid.

## ECONOMIC OPTIMISATION – eCOP®

By combining the thermal storage with intelligent control towards electricity prices, weather forecasts (*coming soon*) and expected consumption, economic optimisation is ensured eCOP®

Q charge allows you to avoid the highest hourly electricity prices and benefit from the lowest, sometimes even negative ones. The thermal battery, in combination with solar cells, increases the share of self-consumption of renewable electrons and further increases the eCOP® of the heat pump.

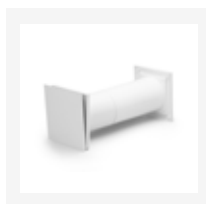
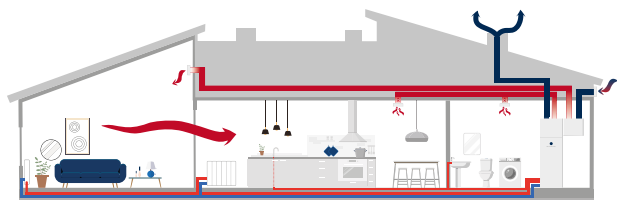
# ACCESSORIES



## QUANTUM QS\*

Our supply air unit is designed to preheat centrally supplied air together with Quantum QE. This accessory requires central air supply to the rooms.

\* coming soon



## FRESH AIR VENTS

In cases where Quantum QS is not used, fresh air vents with cold draft protection must be installed. We do not supply these, but we recommend the FRESH TL 100 DE with one vent per 20 m<sup>2</sup> of living space.

\* the product is not yet released

PRELIMINARY TECHNICAL DATA		QE-4	QE-6
<b>Ventilation</b>			
Recommended ventilation flow	l/s	25–50	40–70
<b>Heating efficiency and capacity</b>			
Space heating efficiency class of the system 35°C / 55°C		A+++/A++	A++/A++
Space heating efficiency class 35°C / 55°C		A+++/A++	A++/A++
SCOP <sub>EN14825</sub> average climate, 35°C / 55°C		4,6/3,8	3,8/3,2
Nominal heating output <sub>(P<sub>designh</sub>)</sub>	kW	1–4	1,5–6
Operational range source side/sink side	°C	5–35/ 25–60	
<b>Electrical data</b>			
Rated voltage	V	400V 3N ~ 50Hz / 230V 1N ~ 50Hz	
Max power immersion heater	kW	5.0 kW ( 1+2+2)	
<b>Sound</b>			
Sound effect level <sub>EN12102 (LWA)</sub>	dB(A)	40–52	40–54
Sound pressure level in the installation room (L <sub>P(A)</sub> )*	dB(A)	36–48	36–50
<b>Hot water efficiency and capacity</b>			
Amount of hot water (40°C) <sub>EN16147</sub> **	l	235	
Efficiency class hot water heating / declared tap profile		A+/XL	
<b>Refrigerant circuit</b>			
Type of refrigerant (GWP)		R134a (1 430)	
CO <sub>2</sub> -equivalent	kg	1 573	1 787.5
Refrigerant quantity	kg	1.1	1.25
<b>Weight and dimensions</b>			
Ventilation connections Ø	mm	125	
Dimensions (W x D x H)***	mm	600 x 620 x 2 050	
Weight	kg	190	195

\* Declared value is applicable with a 4 dB noise damping. The sound pressure level is dependant on the soundproofing properties of the room.

\*\* Depending on the system settings and tap water flow rate. \*\*\* Height without ventilation connections.

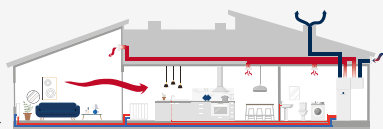
## ACCESSORIES



\*Coming soon

### QUANTUM QS\*

The supply air conditioner is designed to pre-heat and supply air together with the Quantum QE. This accessory requires a central air flow into the rooms.



Principle with Quantum QE and QS.



### FRESH AIR VENTS

If Quantum QS is not installed, it's crucial to use wallmounted fresh air vents, that reduce the risk of backdraught.

We do not provide these, but we recommend FRESH TL 100 DE, with one vent per 20 m<sup>2</sup> of living space.

# More than just a HEATPUMP

Quantum is a Swedish heat pump company that has been manufacturing customised industrial heat pumps since its beginning in 1993.

Since 2022, we also develop products for the residential market, with production in Åstorp outside Helsingborg. Quantum not only offers new heat pumps, but we also present the start of a completely new heat pump approach.

## QUANTUM

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