# Q-TON HIGH PERFORMANCE

Q-ton is a system that uses renewable aerothermal energy to significantly save energy and consumption.

## HIGH PERFORMANCE

- Especially suitable for DHW and heating production in cold outdoor temperatures, down to -25° C.
- Can produce up to 17,000 litres/day of mixed DHW at 45° C or at 90° C without mixing.
- Keeps nominal output down to -7° C.

-25°C
Operating limit

17000
Litres of DHW per day

-7°C
100% nominal output down to -7° C

90°C
DHW temperature without mixing

## ENVIRONMENTALLY RESPONSIBLE

- Minimises the environmental impact thanks to the low GWP value = 1 with CO2 refrigerant.
- ODP (ozone depletion coefficient) equal to zero.

1 GWP
Minimum Global Warming Potential

0 ODP
Zero Ozone Depletion Potential

## EFFICIENCY AT THE TOP

- The industry's highest energy efficiency coefficient in DHW production mode (COP 4.3).
- Maximum operating cost reduction.

High efficiency

4.3 COP
Maximum energy efficiency coefficient in DHW

## FLEXIBILITY AND RELIABILITY

- Modular up to 16 units.
- Durable, high-quality internal components.
- Boasts extreme versatility of use and easy operation and maintenance management.

16
Connectable Q-ton outdoor units

## OPERATION AT THE CLICK OF A BUTTON

- Touch screen control panel with user-friendly graphics.
- Possibility of sending notifications via MODBUS communication with the RCI-MDQE2 interface.

# **Q-TON**, DHW AND HEATING FROM FREE NATURAL ENERGY

Q-ton systems are the only ones on the market that use R744 gas and that can work on low temperature thermal systems having a seasonal energy efficiency class of A +. These systems, being ECO friendly, are attentive to the possible risks associated with the emission of climate-altering gases into the atmosphere and, to avoid possible gas leaks, are equipped with leakage control sensors.

**R744**

R744 (CO2) REFRIGERANT GAS

**90°C**

DOMESTIC HOT WATER PRODUCTION UP TO 90° C

**52°C**

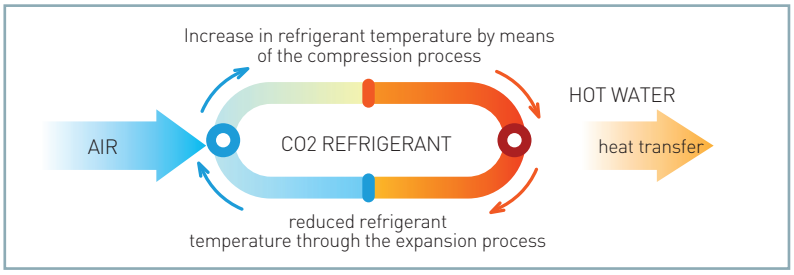
HOT WATER FOR HEATING UP TO 52° C

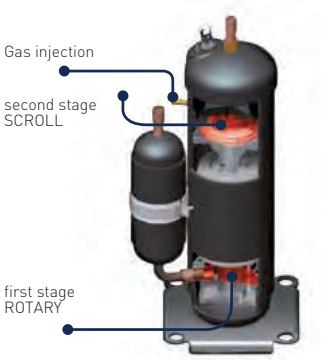

HEAT PUMP KEYMARK
Certificate of Approval for the Heat Pump KEYMARK Scheme

# Q-TON
# CO2 HEAT PUMP

## GSR dual stage compressor

Thanks to the action of its dual stage compressor, Q-ton makes it possible to produce a high amount of energy for heating or for domestic hot water production. The nominal thermal power generated is stable and constant even when outside temperatures lower.




## LCD touch panel

The management and main parameters of the system can be controlled both from the LCD wire control and remotely via MODBUS protocols.
The system independently selects the operating priority of the system (heating or domestic hot water) by means of the wire control.

The flow temperatures of the circuit can be set either as fixed way or by selecting the climate curve.

### EASY TO USE

LCD panel with lit buttons.

Wide 2.8-inch display.

Backlighting.

### PEAK-CUT TIMER

Possibility of setting a DHW production schedule based on peak demand.

### DAYLIGHT SAVINGS TIME UPDATE

The system automatically adapts to standard time for easy programming.

### PROGRAMMING

Daily, weekly and annual programming can be set.

### THE TANK

The tank can always be manually filled.

### CLIMATIC CURVE

In heating mode, you can set a customisable climate curve that automatically defines the flow temperature according to the outside temperature conditions.

### RC-Q1EH2 FOR Q-TON



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# Q-TON,
# DHW PRODUCTION MODE OPERATION

The Q-ton heat pump absorbs "free" heat from the outside air and amplifies it to quickly and efficiently generate hot water, up to 90° C without any need for an additional heating element.

Q-ton reduces operating costs and carbon emissions by 40 to 75% compared to conventional systems. It is suitable for installation in new buildings and does not require a backup heating system. In existing buildings with conventional heating systems, it is applicable with the domestic hot water production function only.

## DOMESTIC HOT WATER

Q-ton installation is ideal for replacing old heating systems such as boilers because it produces DHW according to the actual capacity required by the user.

PERFORMANCE

**Operational up to -25° C outside**

With DHW production up to 90° C

OUTPUT

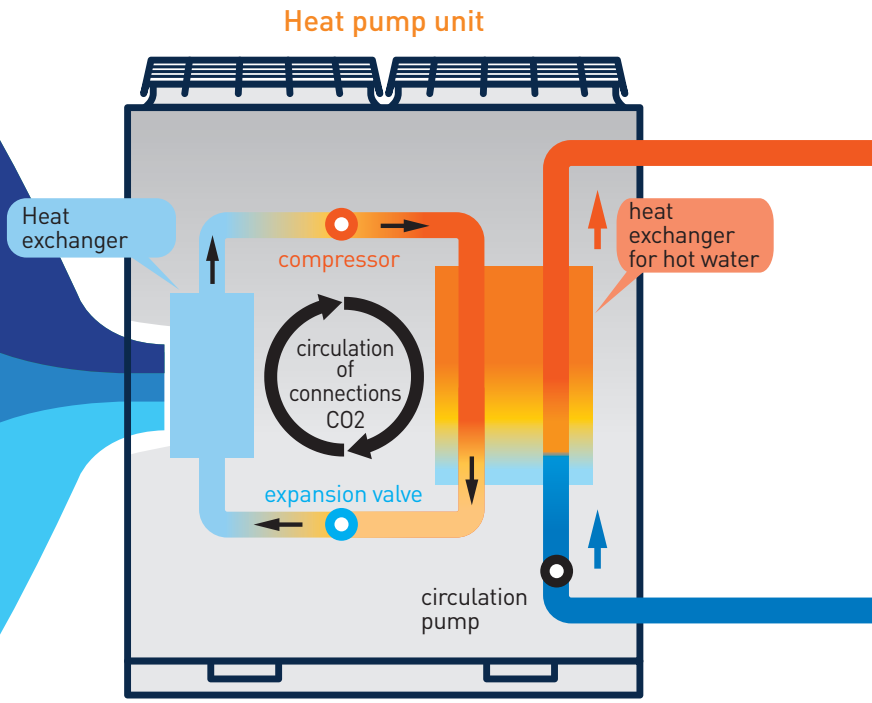
**100% up to -7° C**

Nominal output kept at 100% up to -7° C

EFFICIENCY

**COP 4.3**

The highest value on the market



90°C

Achievable temperature

16

Connectable outdoor units

480

Maximum modular power in kW

## HOW IT WORKS

Q-ton uses a cold refrigerant coil that absorbs heat from outside air and compresses the refrigerant with the exclusive 2-stage compressor to increase its temperature. The heat exchanger then uses the heat generated to produce domestic hot water.

## POWER AND DESIGN FLEXIBILITY

Up to 16 outdoor units can be controlled via a single control.

The maximum power that can be achieved by a combined system is 480 kW.

These outputs make Q-ton suitable for installation in large new apartment buildings or in very large apartment buildings with existing district heating systems.

## SENSORS IN THE TANKS

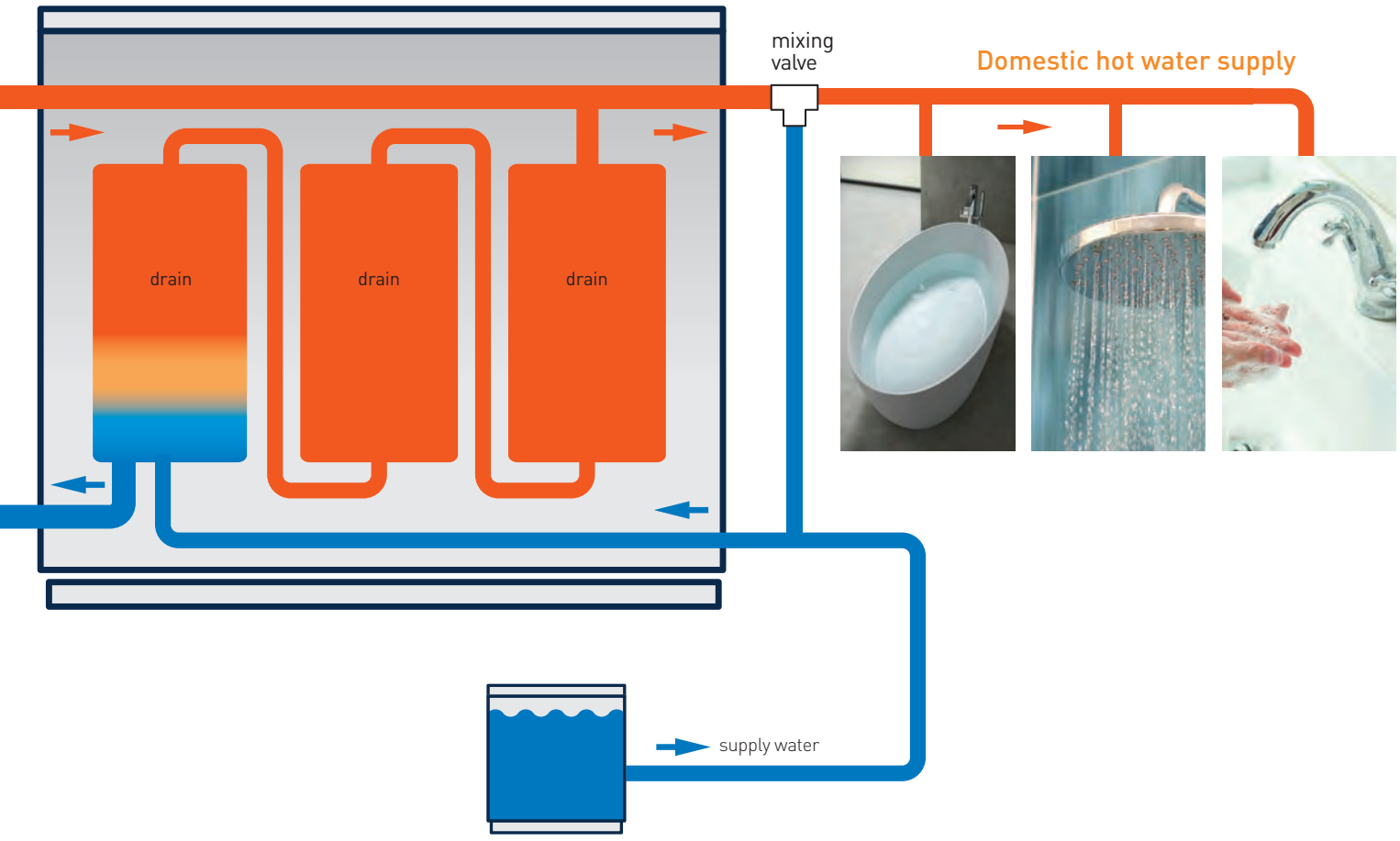
Each storage tank has five compartments into which temperature sensors can be inserted to detect the volume (in %) of hot water contained in the tank at a given time.

## PROGRAMMING

The control system is programmed to maintain specific volumes of hot water at different times of the day, according to user needs.

## LOWER COSTS

Further savings for users thanks to the possibility of heating and storing water at times when electricity rates are lower.



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# Q-TON, HEATING MODE OPERATION

The application of Q-ton for heating offers efficiency, low consumption and respect for the environment.

The use of CO2 as a refrigerant makes the heat pump much more environmentally friendly than conventional systems.

## HEATING

Possibility of heating rooms at low temperature with return temperatures below 30° C.

Q-ton allows combined use with radiant flooring systems and high efficiency radiators.

## POWER AND DESIGN FLEXIBILITY

Up to 16 outdoor units can be controlled via a single control.

The maximum power that can be achieved by a combined system is 480 kW.

These outputs make Q-ton suitable for installation in large new apartment buildings or in very large apartment buildings with existing district heating systems.

PERFORMANCE

Operational up to -25° C outside

OUTPUT

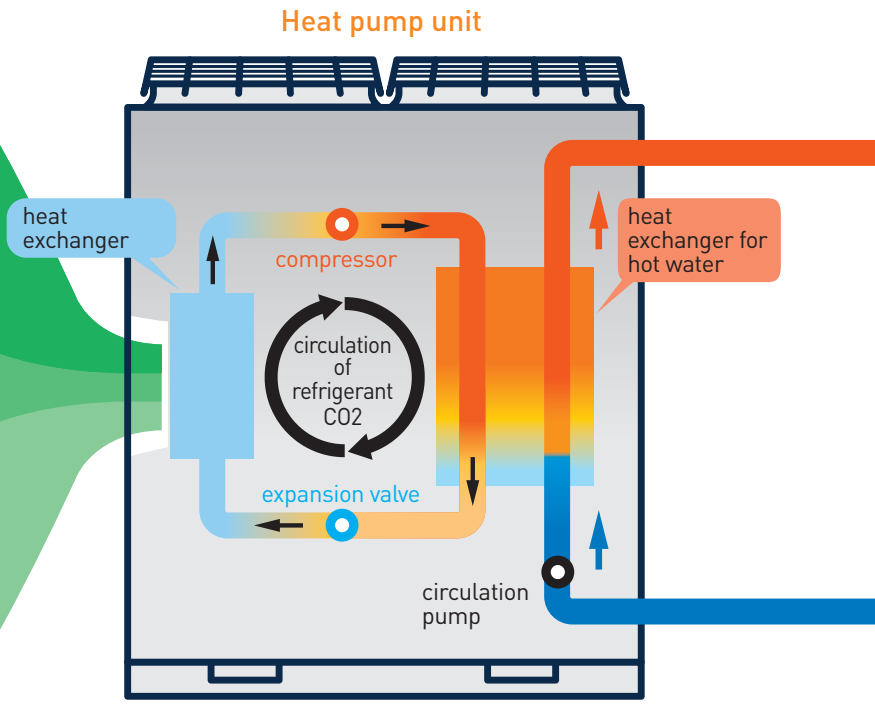
100% up to -7° C

Nominal output kept at 100% up to -7° C

EFFICIENCY

146%

In average climatic conditions



480

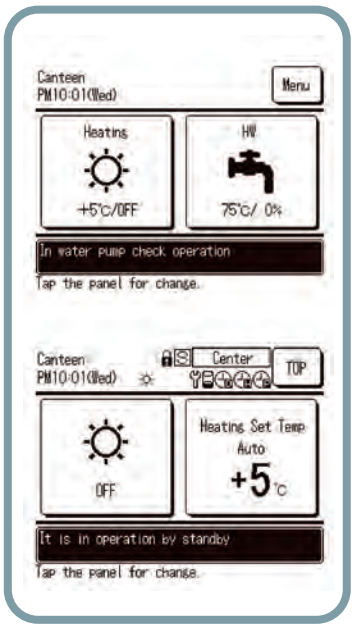
Maximum modular power in kW

52°C

Achievable temperature

For radiant flooring

For high efficiency hydronic terminals

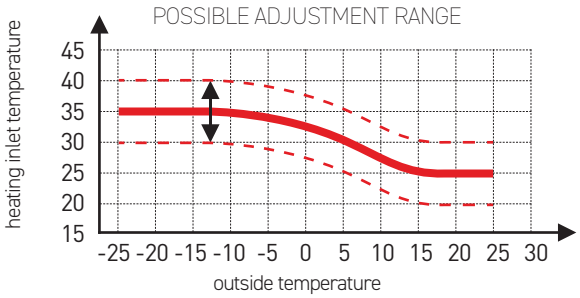



## OPERATING MODES

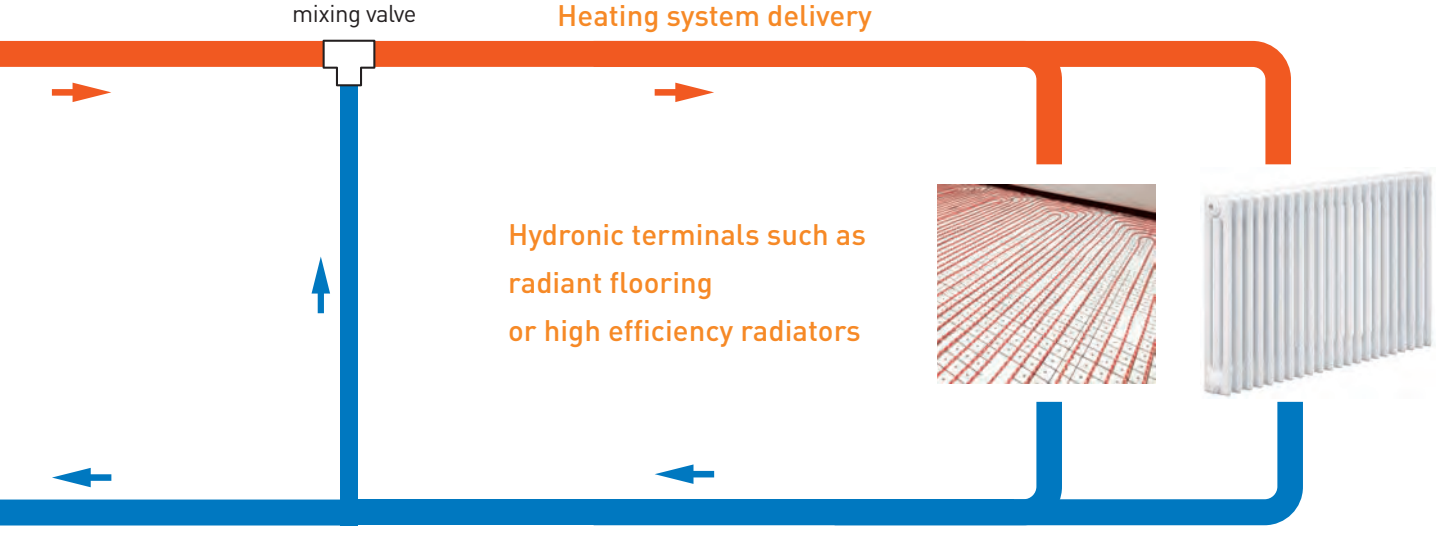
MHI has improved the touch screen control, updating the heating and domestic hot water settings

Two types of control can be set when using the system in heating mode.

**1. AUTO SETTING**: the hydronic system delivery temperature is automatically set according to a climate curve. This curve can be shifted lower or higher within a range of 5° C.




**2. MANUAL SETTING:** The inlet temperature can be set manually between 20° C and 52° C.



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# Q-TON, IN COMBINED MODE OPERATION

Q-ton is a high performance, flexible, environmentally-friendly system that is able to meet the many demands of the market.

Thanks to optimal energy management, maximum performance efficiency is ensured, even at low outside temperatures.

## HEATING AND DOMESTIC HOT WATER

Q-ton is a heat pump that can meets low temperature heating and DHW production demands.

The priority of use (heating or DHW) can also be selected.

PERFORMANCE

**Operational up to -25° C outside**

OUTPUT

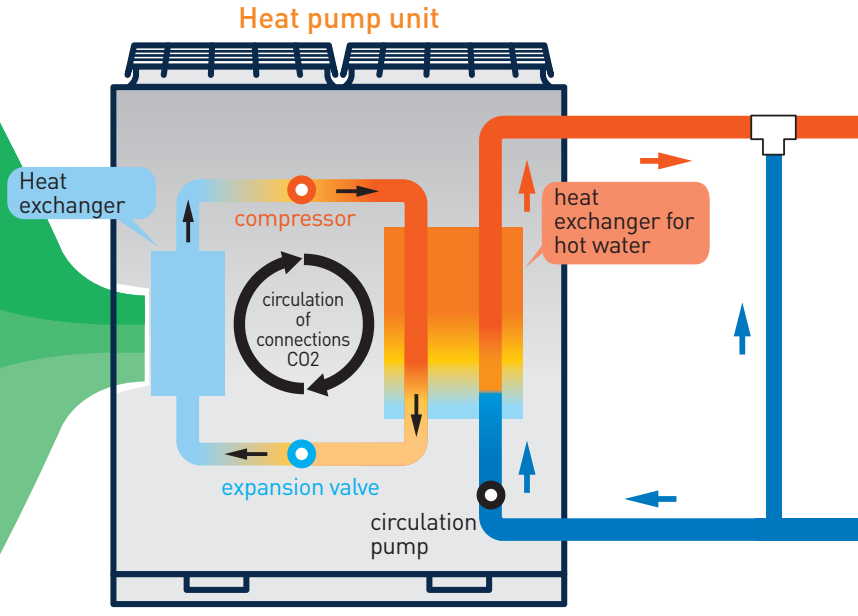
**100% up to -7° C**

Nominal output kept at 100% up to -7° C

FLEXIBILITY

**Heating + DHW**

A single system that meets all your needs



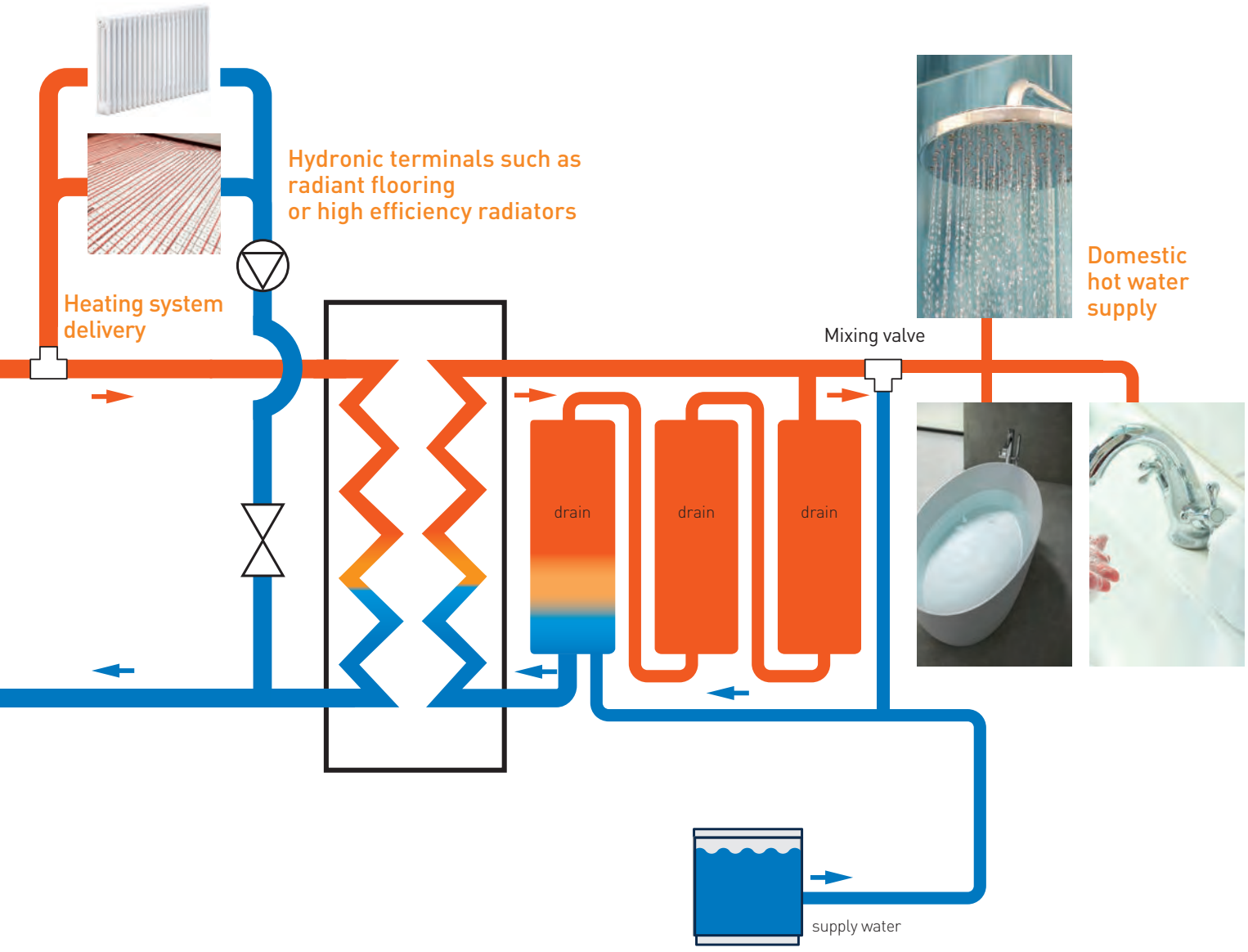
heating management


domestic hot water management

## CONTROL INSTALLATION

To make system installation flexible, an external PLC control must be installed to manage the operating and signal information coming from Q-ton, which will be transferred to the main system components (control valve, Inverter pump, mixing valve).

The operating parameters and information on real time system operation can also be managed remotely via MODBUS protocols.



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# Q-TON
# DHW AND HEATING

## 16 units controlled by a single command

THE BEST OF SAIE INNOVATION 2016 VERSO IMPATTO ZERO TOWARDS ZERO IMPACT

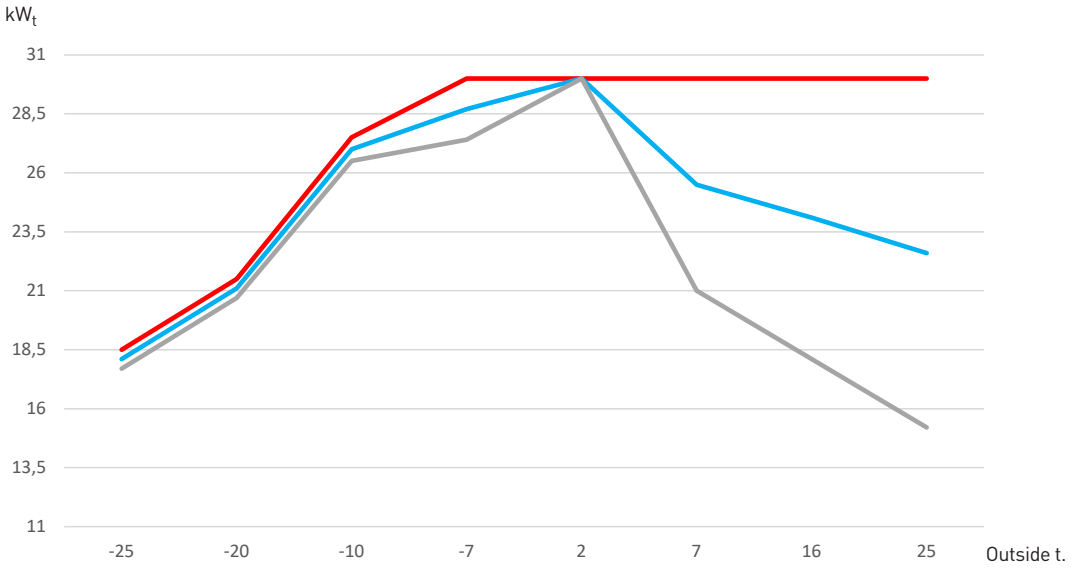
**Up to 480 kW of capacity, connecting 16 units, each of them 30 kW**.
The extremely flexible modular configuration makes Q-ton installation possible for heating and DHW production, adapting the power of the system to different applications. A single control device can be used to manage the entire system if all units are set to the same operating mode.

**Depending on the application and installation needs, a module of 30 kW can produce 17,000 liters of DHW per day.**

| Model | | | | ESA30EH2-25 |
|---|---|---|---|---|
| Heating | Output power (radiant flooring) | A7/W35[1] | kW | 30 |
| | Electrical absorption | | | 8.4 |
| | Performance coefficient | | COP | 3.57 |
| Domestic Water | Output power (DHW production) | A16/W65[2] | kW | 30 |
| | Electrical absorption | | | 7.0 |
| | Performance coefficient | | COP | 4.30 |
| Seasonal heating data | Theoretical load (Pdesignh) @-10°C | W35 | kW | 27 |
| | Seasonal energy efficiency (ns) | | % | 146 |
| | Energy efficiency class | | - | A+ |
| | Annual energy consumption | | kWh/a | 14822 |
| Seasonal domestic water data | Test cycle profile | | | XXL |
| | Energy efficiency (ndhw) | | % | 114 |
| | Energy efficiency class | | | A |
| | Annual energy consumption | | kWh/a | 1909 |
| Operating limits | Outside air temperature | Heating | °C | -25~25 |
| | | DHW | | -25~43 |
| | Delivery water temperature | Heating | °C | 25~45 |
| | | DHW | | 60~90 |
| Refrigerant circuit data | Refrigerant | | type (GWP) | R744 (1) |
| | Quantity (tons CO2) | | kg (t) | 8.5 (0.00) |
| | Compressor | | type | Dual Stage - DC Inverter |
| Hydraulic data | Heat exchanger | | type | Tube bundle |
| | Circulation pump | Prevalence | m (kPa) | 5 m (49 kPa) @ 17litres/min |
| | Water connections | Dimensions | inches | 3/4" (DN20) |
| | Operating pressure | Min/Max | bar | 1/5 |
| Electrical data | Power supply | | Ph-V-Hz | 3Ph-380~415V-50Hz |
| | Maximum current | | A | 21 |
| | Power cable (recommended) | | type | 5x6 mm² |
| Product specifications | Fan | Air flow | m³/h | 15600 |
| | | Prevalence | Pa | 50 |
| | Sound power level | | dB(A) | 77 |
| | Dimensions | LxDxH | mm | 1350x720x1690 |
| | Weight | Net | kg | 375 |
| Controls | Wire remote control | Not included | | RC-Q1EH2 |
| | Climatic curve | | | Available |
| | Modbus | Optional | | RCI-MDQE2 |

Notes: The data contained above refer to the following standards: EN14511:2013; EN14825:2013; EN50564:2011; EN12102:2011; (EU)No:811:2013; (EU)No:813:2013; OJ 2014/C 207/02:2014. 1. Water conditions: inlet 20° C, outlet 35° C. 2. Water conditions: inlet 17° C, outlet 65° C.

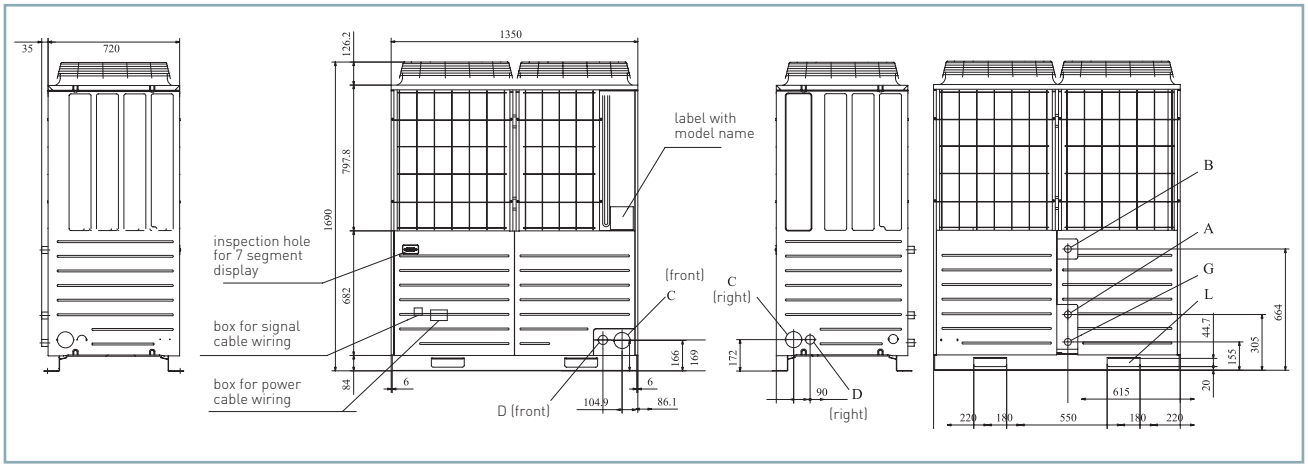
# Output curves in heating at 35° C




The data contained take into account the defrost cycles.

- Water conditions: inlet 20° C, outlet 35° C.
- Water conditions: inlet 25° C, outlet 35° C.
- Water conditions: inlet 30° C, outlet 35° C.

# ESA30EH2-25 diagrams and measurements




| Item | Description | |
|---|---|---|
| A | Water inlet port | RC 3/4 (20A copper pipe) |
| B | Hot water outlet port | RC 3/4 (20A copper pipe) |
| C | Output lines for connection between the heat pump and the tank | 0 88 (or 0 100) |
| D | Power cable inlet | 0 50 (right, front) bottom hole 40x80 |
| G | Drain water piping output | RC 3/4 (20A copper pipe) |
| L | Opening for movement | 180x44.7 |