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KVW

INDUSTRY



KVW

with two-stage compressors

Range: 535-2208 kW

 High temperature heat pumps

KVW is HiRef's range of water-condensed high-temperature heat pumps with two-stage screw compressors, spray flooded shell and tube evaporator and shell and tube condenser. The units are available with traditional refrigerant R134a or R1234ze, with a very low GWP (Global Warming Potential) value. The range covers the thermal power range from 400 to 2000kW\* and reaches COP values of 2.50 producing water at +90°C (with R1234ze) from a source at -2°C. The KVW extra high temperature heat pump series is ideally suitable for low-medium temperature heat recovery to produce hot water for district heating networks or industrial processes.

## Main advantages

### Power and flexibility

Screw compressor allows achievement of high cooling capacities with load modulation via the special slide valve, with obvious advantages in terms of energy efficiency.



### Production of hot water up to 90°C

The units of the KVW range can produce water at a temperature of 90°C even from a very cold source. Thanks to this feature, the heat pumps can be integrated into the district heating circuits even in replacement of traditional heat generators.

### Economiser, power and flexibility

The integration of the refrigeration circuit with the economiser allows the heat output of the heat pump and also the efficiency (COP) to be increased.



### Two-level evaporation

The evaporator with spray technology and single pass on the water side guarantees up to 5% more efficiency than traditional shell and tube versions, thanks to the permanently countercurrent heat exchange on two separate evaporation levels - and with a smaller refrigerant charge than a standard flooded shell and tube model.

### Optimised installation space

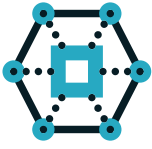
The unit is available in both standard and 'mirrored' layout versions. When ordered together, the two versions can be placed adjacent to each other on the long side in order to occupy as little space as possible in the heating plant and facilitate maintenance operations.

### Standard touch screen display

The KVW series comes with a touch screen display and customized software and screens as standard. On request, total web monitoring can be integrated through an Ethernet card



## Technological components



### Multi-protocol communication interface

HiRef units can be integrated with the customer's external supervision Building Management System (BMS), using the most popular communication protocols, including Modbus RTU, Modbus/IP, BacNet, LonWorks, SNMP.



### Screw compressors

Screw compressors are suitable for handling large volumes of refrigerant and are therefore suitable for use with low density and pressure refrigerants, while still producing a remarkable cooling effect. The internal double screw construction allows work in all conditions with less vibration and greater stability compared to single screw compressors. On request, it is possible to install compressors equipped with inverters - ensuring constant power modulation and high energy efficiency even at partial loads.



### Fast restart

The fast restart function (on request) allows the unit to restart quickly after a mains power outage. This optional feature is available with dual power to minimise restart times.



### Corrosion resistant material

The HiRef outdoor units are protected by a metal structure resistant to corrosion and weathering. They are also made of galvanised steel sheet, with epoxy-polyester powder coating, oven-polymerised at 180°C, to offer a C3 degree of protection. On request, it is possible to order specific paint finishing treatments or a metalwork structure built entirely in stainless steel, to obtain a higher degree of protection from high impact adverse weather events.



### Class A

Internal high-tech components suitably chosen and sized allow the units to operate with outstanding levels of efficiency.



### Low GWP refrigerant

The Global Warming Potential (GWP) index is a numerical indicator that identifies the environmental impact of a substance. It measures the extent to which a gas contributes to the greenhouse effect, in relation to carbon dioxide (CO<sub>2</sub>) whose baseline value is equal to 1. This parameter is used to determine the amount in kilograms of CO<sub>2</sub> corresponding to the environmental impact of the release of a refrigerant gas into the atmosphere. The use of low GWP refrigerants, such as R513A, R454B, R1234ze, CO<sub>2</sub>, allows the environmental impact of air conditioning systems to be significantly reduced.



### Spray flooded shell and tube

A spray flooded shell and tube construction guarantees effectiveness and efficiency thanks to the minimal approach temperature between refrigerant and water. It requires about 30% less refrigerant charge compared to traditional flooded shell and tube configurations: a solution that benefits the environment and results in costs savings, in terms of both CapEx and OpEx.

## Available versions



HEATING ONLY

## Types of system



WATER/WATER535

## Additional benefits

- Refrigerant R1234ze
- Also available with R515B refrigerant on request
- Available in version: heating only heat pumps for high temperatures and chiller with total high temperature recovery.
- Monitoring and limitation of the maximum absorbed power
- Available with screw compressors driven by inverters on both compressors
- Thermal insulation hoods on the compressors for the high temperature heat pump versions (optional)
- Modularity and supervision managed by the software
- Available in a single-circuit version with a single compressor and a dual-circuit version with two compressors
- External inverter for compressor modulation from 50% to 100%

## Technical table

KVV		500K	1001K	2001K
<b>USER WATER TEMPERATURE 65/85°C, SOURCE WATER TEMPERATURE 4/1°C 20% ETHYLENE GLYCOL</b>				
<b>THERMAL POWER</b>	<b>kW</b>	535	1104	2208
<b>TOTAL POWER INPUT</b>	<b>kW</b>	227.6	460	920
<b>SOUND POWER LEVEL</b>	<b>dB</b>	99	102	96
<b>DIMENSIONS [LxHxD]</b>	<b>mm</b>	5180X2574X1800	5180X2574X3600	3045X2574X1800

The 2000kW unit includes two 1000kW modules.

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