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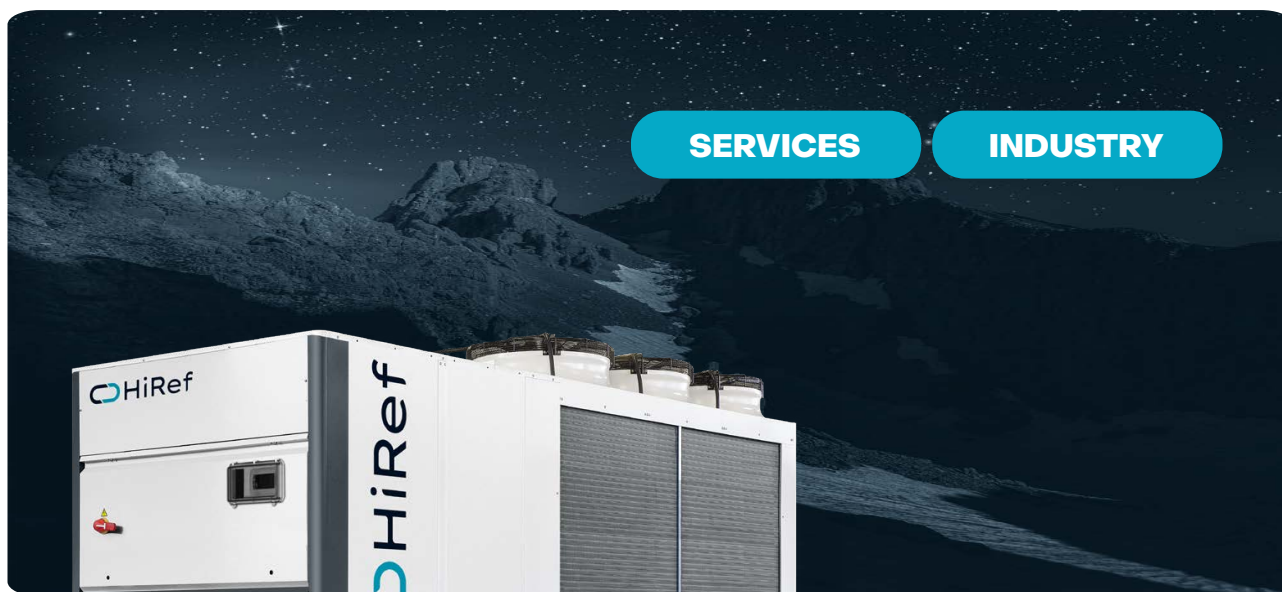
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MHPS



Reversible and multi-purpose air conditioned heat pumps

# MPS

for low outdoor temperatures

Range: 38.5–248.3 kW

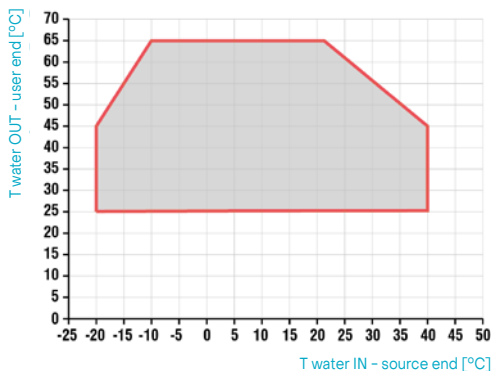


MPS is the HiRef range of air-to-water multipurpose reversible heat pumps designed for operation in very cold climates. The use of compressors with EVI steam injection technology allows the production of hot water up to 65 °C and operation with outdoor temperatures down to -20 °C. This is combined with special focus on Low Noise (the “Low-Noise” silenced version is supplied as standard) and the use of different refrigeration circuit architectures to meet the needs of many different system applications.

## Main advantages

### Efficiency and reliability in line with system requirements

The available refrigerating circuit configurations have been designed to ensure, also simultaneously, redundancy and efficiency at partial loads. More specifically, the units – depending on the size of the machine and on specific plant engineering requirements – consist of two compressors on two circuits for high system redundancy or four compressors (double tandem) on two circuits for a system that is simultaneously redundant and efficient at partial loads.

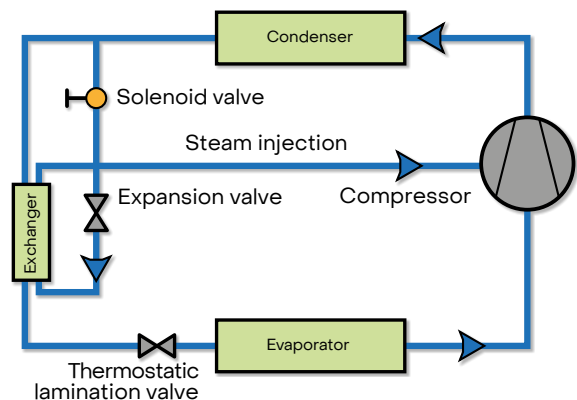


### Production of hot water up to 65 °C

The units of the MPS range are capable of producing water at 65°C, as well as operating with outdoor air temperatures down to -20°C.

### Units optimised for climates with T down to -20°C

The Scroll compressors of the MPS range use steam injection technology: a light flow of refrigerant in a medium-pressure vapour state is “injected” into the coils in the compression chamber. This system allows for both an increase in the cooling (and therefore, also the heating) capacity and efficiency and, above all, an extension of the operating range of the heat pump; this makes of the MPS range the ideal solution in case of extremely low outdoor temperatures.





### Extra low noise

All units in the MPS range are, as standard, “Low Noise”, which means fan speed is controlled, anti-vibration piping is used on the refrigeration circuit, and the compressors and pumping kit are compartmentalised in a box lined with soundproofing material. All this ensures minimum noise emissions throughout the system.

### Smart Defrost System

A factor that heavily weighs on the costs of managing the entire plant is finned pack evaporator defrosting during wintertime operation. The (patented) Smart Defrost System by HiRef is able to identify a decline in the exchanger performance caused by the formation of ice and to minimise the duration of the defrosting process. The use of coils treated with hydrophilic surface coating speeds up the defrosting process so that melting of just the first, thin ice layer on the fins is only required for cleaning.



## 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.



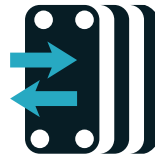
### Axial fans

In axial fans air moves in a parallel direction to the rotation axis and allows large air flows to be processed. Thanks to their low head compared to radial fans, they are used on remote condensers and on components with free outlet into the atmosphere, where there are no high pressure drops due, for example, to ducting.



### 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.



### Plate heat exchanger

Brazed plate heat exchangers ensure efficient heat transfer with minimised footprint, eliminate the need for thick frame plates and seals, and ensure high thermal power density. They have a long life cycle, are maintenance-free and withstand both high temperatures and extremely high pressures. This type of exchanger is used in a wide range of applications including cooling, heating, evaporation and condensation.



### EVI Scroll compressors

Scroll compressors with E.V.I. (Enhanced Vapor Injection) technology are equipped with an extra port for the injection of superheated steam, in order to reduce the compressor exhaust temperature and increase its working range. They can be used, for example, in air-source heat pumps to produce hot water, even with very low outside temperatures, which standard compressors would not withstand. The regulation of the steam flows is managed through an electronic expansion valve controlled by the unit's software, via an algorithm designed to optimise the working range and at the same time, ensure heat pump operating stability.

## Additional benefits

- Refrigerant R410A
- EVI compressors with steam injection
- Electronically controlled expansion valve
- "Cold" start Smart Kit
- Hydrophilic coated coils with wider fin pitch
- Defrost ice disposal chutes with heating elements
- Optional EC electronic switching fans
- Available in multipurpose version for 2 and 4 pipe systems

## Available versions

## Types of system



POLYVALENT FOR  
2-PIPE SYSTEM



POLYVALENT FOR  
4-PIPE SYSTEM



AIR/WATER

## Technical table

MPS		O41PL	O51PL	O71PL	O81PL	O101PL	134PL	164PL	204PL
<b>USER WATER VALUES 12/7°C, 35°C OUTSIDE AIR, 40% U.R.</b>									
<b>COOLING CAPACITY</b>	<b>kW</b>	39.5	49.1	66.7	73.9	86	131	148.8	188.1
<b>POTENZA ASS. TOTALE</b>	<b>kW</b>	12	15.1	19.6	23.4	25.5	40.1	49	62.5
<b>EER</b>	-	3.29	3.24	3.41	3.16	3.37	3.27	3.03	3.01
<b>UTILITY WATER TEMPERATURE 12/7°C, RECOVERY WATER TEMPERATURE 40/45°C</b>									
<b>COOLING CAPACITY</b>	<b>kW</b>	38.5	47.8	64.9	72	83.7	127.3	144.4	182.2
<b>THERMAL POWER</b>	<b>kW</b>	51.135	63.6	85.8	96.89	110.4	170.3	196.46	248.3
<b>TOTAL POWER INPUT</b>	<b>kW</b>	13.3	16.7	22	26.2	28.2	45.3	54.8	69.6
<b>COP TOTALE</b>	-	6.74	6.67	6.85	6.45	6.89	6.57	6.22	6.19
<b>USER WATER VALUES 40/45°C, 7°C OUTSIDE AIR, 89% U.R.</b>									
<b>THERMAL POWER</b>	<b>kW</b>	43.6	53.9	72.5	81.6	92.2	140.3	158	202.2
<b>TOTAL POWER INPUT</b>	<b>kW</b>	13	15.7	21.2	24.4	26.8	41.1	48.6	61.5
<b>COP</b>	-	3.34	3.42	3.41	3.35	3.44	3.41	3.25	3.29
<b>SCOP</b>	-	2.83	2.96	2.91	2.9	2.91	3.2	2.85	3.05
<b>SOUND POWER LEVEL</b>	<b>dB</b>	79	78	80	81	80	80	82	
<b>DIMENSIONS [LxHxD]</b>	<b>mm</b>	2440x1735x1183		2792x1735x1183		3540 x1679 x1183	3538x1884x1653		3538 x2284 x1653

Also available with 60 Hz power supply

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