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RSW

HiRef

Innovators above the standards

Multipurpose water-condensed heat pumps

RSW

with scroll compressors

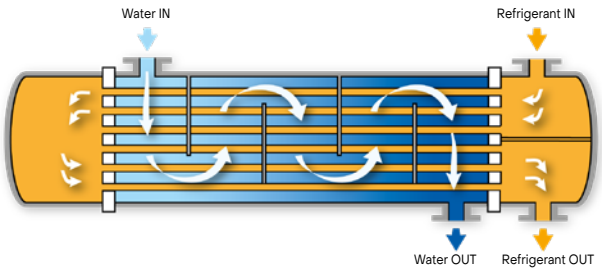
Range: 329.3-866.6 kW

RSW reversible heat pump units are used to produce hot and cold water, both independently and simultaneously, to meet the cooling and heating needs of both industrial and commercial applications. All units are available with two refrigerant circuits and shell and tube exchangers, for a high level of unit reliability. The arrangement of the components allows easy access during maintenance, while the hydraulic connections all on the same side allow for easy installation and reduced installation space requirements.

Main advantages

Maximum efficiency at partial loads

Accurate selection of the components allows high efficiency to be obtained at partial loads; this is thanks above all to the use of scroll compressors and to the use of electronically controlled electric expansion valves (one for each circuit), optimised to track refrigerant load trends in all conditions of use. The shell and tube heat exchanger also ensures low water/refrigerant approach temperatures during operation, all to the advantage of heat exchange efficiency.



Reliability: shell and tube

The use of shell and tube exchangers with water flow on the shell side implies a lower risk of blocking the flow due to exchanger clogging - compared to units with plate heat exchangers. This is ascribable to larger throughsections - the exchanged power being the same. Additionally, the dual-pass heat exchanger ensures high heat exchange efficiency both in “chiller” and in “heat pump” modes, with lower consumption figures for the user.

Reduced footprint

The RSW series has a compact layout thanks to the optimised arrangement of the compressors and heat exchangers. The power density reaches very high values, exceeding 100kW/m^2. The lower weight compared to units with screw compressors facilitates installation and maintenance operations.

Low noise levels

Thanks to the scroll compressors used, the RSW units feature lower noise levels than other compressor technologies used for similar applications. Also, thanks to the use of multi-scroll technology, at partial loads unnecessary compressors are turned off which results in a further noise reduction. For extra soundproofing, the Low Noise version is available with soundproofed sheet metal enclosures to compartmentalise the compressors.

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.

Scroll compressors

Scroll compressors include a mobile scroll, driven by the motor, which completes orbital revolutions and a fixed scroll that is coupled to it. The orbital motion creates a series of gas pockets that move from one scroll to the other. When moving closer to the centre of the scroll, where exhaust takes place, the gas is compressed to smaller and smaller volumes until the desired delivery pressure is reached. Scroll technology improves volumetric efficiency and flow continuity, reduces noise and leakage and eliminates harmful volumes and downtime.

Class A

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

A2L Ready

Some ranges of liquid chillers, in addition to safety class A1 refrigerants R410A and R134a, can also be supplied with class A2L slightly flammable refrigerants with low environmental impact R454B and R1234ze. HiRef makes these product sub-ranges available also in the "A2L Ready" version, filled with a safety class A1 refrigerant, factory-ready and equipped with all the necessary safety sensors to allow, if the customer requests it, fast refrigerant switching at a later stage.

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_2) whose baseline value is equal to 1. This parameter is used to determine the amount in kilograms of CO_2 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_2, allows the environmental impact of air conditioning systems to be significantly reduced.

Shell and tube heat exchanger

Some chiller and heat pump product ranges are equipped with a shell and tube exchanger. These heat exchangers are ideally suitable for units to be installed in high-tech industrial sites, thanks to their high reliability and operating stability. Their large volumes also make them less sensitive to thermal stress and capable of ensuring unit operation stability. Finally, the dual-pass exchanger configuration allows both cooling and heat pump operation to be optimised. According to the range chosen, it is possible to have either dry expansion tube exchangers or flooded shell and tube exchangers with spray technology.

Available versions

COOLING ONLY

REVERSIBLE HEAT PUMP

HEATING ONLY

Types of system

WATER/WATER

Additional benefits

- Electronically controlled expansion valve supplied as standard
- Optional VicTaulic hydraulic couplings
- Available in Standard and Low Noise versions
- Programmable electronic control as part of standard equipment
- Smart management of several units in parallel
- Easy access to components for routine maintenance
- Compliance with ERP regulations
- Available in multipurpose version for 4 pipe systems

Technical table

RSW		324H	374H	444H	484H	506H	566H	646H	706H
USER WATER VALUES 12/7°C, 30/35°C SOURCE WATER SIDE									
COOLING CAPACITY	kW	329.3	374.4	445.6	459.9	498.4	561.4	648.7	692
TOTAL POWER INPUT	kW	61.9	72.1	84	87.2	92.9	108.3	121.1	130.9
EER	-	5.32	5.2	5.31	5.27	5.34	5.18	5.36	5.29
USER WATER VALUES 12/7°C, 40/45°C SOURCE WATER SIDE									
COOLING CAPACITY	kW	329.3	374.4	445.6	459.9	498.4	561.4	648.7	692
TOTAL POWER INPUT	kW	61.9	72.1	84	87.2	92.9	108.3	121.1	130.9
EER	-	5.32	5.2	5.31	5.27	5.34	5.18	5.36	5.29
USER WATER VALUES 40/45°C, 12/7°C SOURCE WATER SIDE									
THERMAL POWER	kW	370.8	423.9	503.6	521.4	558.1	635.7	730.2	866.6
TOTAL POWER INPUT	kW	77.1	89.9	105.1	109.4	115.7	135.1	151.2	190.3
COP	-	4.81	4.72	4.79	4.77	4.82	4.71	4.83	4.55
SOUND POWER LEVEL	dB	89		90			91		90
SOUND POWER LEVEL LOW NOISE	dB	85	85	86	86	87	87	87	86
DIMENSIONS [LxHxD]	mm	3500X2100X1800							

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