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KSW

HiRef
Innovators above the standards

SERVICES

Water/Water heat pumps

KSW

for high evaporation and condensation temperatures

Range: 38-589.7 kW

HiRef's range of KSW Water/Water heat pumps is designed for all applications where the cold source is at medium temperatures and at the same time, very hot water is required at the condenser - up to 80°C. This particular feature makes KSW units the ideal solution in the event of medium heat (up to 45°C) waste heat, which can be used to produce water at higher temperatures in both residential and industrial applications, e.g. district heating systems. All this while ensuring partial load efficiency, redundancy, compact footprint in utility rooms, low noise levels, auxiliary system management and easy installation.

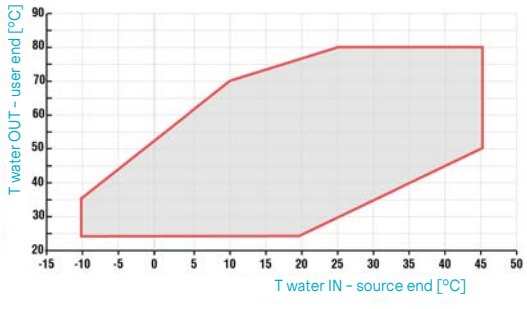
Main advantages

More space in the heating unit

The adoption of compact plate heat exchangers facing the unit right side panel maximise the use of the available internal space thanks to reduced unit footprint.

Ideal design for medium temperature heat sources

Thanks to the special features of the KSW range, heat sources at temperatures between 30° and 45°C (and therefore, unsuitable for direct use) are used by heat pumps to produce hotter water. This is true for industrial heat waste, which can be reused to produce, for example, district heating. Similarly, in residential applications, KSW heat pumps can, for example, use in wintertime fan coil loop water as a heat source to produce water to feed to high temperature terminals, produce hot water or run anti-legionella cycles.



Optimised units for high temperature water production (80°C)

The KSW range units can produce water up to 80°C even when associated with a source of medium-temperature water (up to 45°C). This is thanks to an accurate sizing of the heat exchangers and to the use of Scroll compressors specially developed for high evaporation and condensation temperatures.

Attention to detail and low noise operation

Scroll compressors, which are the main noise source in the unit, are fitted on rubber feet; these dampen vibration and therefore attenuate the noise transmitted to the various system parts. On request, the compressor compartment can be lined with special sound absorbing material and the compressors encased in special insulating hoods to reduce airborne noise emissions.

Maximum efficiency at partial loads

The KSW range adopts a multiscroll solution also on single circuits, electronically controlled expansion valves, plate heat exchangers and the option to control the (external) circulation pumps via dedicated software: all these characteristics allow high energy efficiency to be achieved at partial loads.

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.

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.

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.

Available versions

HEATING ONLY

Types of system

WATER/WATER38

Additional benefits

- Refrigerant R134a
- Electronically controlled expansion valve supplied as standard
- Optional Vic-Taulic hydraulic couplings
- Optional integrated energy meter via Modbus, for metering the energy absorbed by the machine
- Remote pump control according to constant T or constant ΔT logic

Technical table

KSW		040K	050K	060K	081K	082K	091K	092K	101K	102K	121K	122K	151K	152K	171K	172K	174K	201K
USER WATER VALUES 70/80°C, 45/40°C SOURCE WATER SIDE																		
TOTAL POWER INPUT	kW	8.5	11.2	14.1	16.9	16.9	19	19	22.4	22.3	27.9	27.8	35	35	40.2	40.1	38.3	45.2
THERMAL POWER	kW	38	49.5	61.1	75.6	75.8	83.9	84.1	97.1	97.3	121.3	121.5	148.8	149.3	171	171.3	166.4	191.2
SCOP	-	4.18	4.2	4.17	4.91	4.92	4.89	4.94	4.84	4.95	4.86	4.87	4.52	4.59	4.62	4.65	5.15	4.67
COP	-	4.45	4.41	4.33	4.47	4.49	4.41	4.44	4.34	4.35	4.35	4.37	4.25	4.26	4.26	4.27	4.35	4.23
SOUND POWER LEVEL	dB	74		78			77				81		84		85		80	86
SOUND POWER LEVEL LOW NOISE	dB	70		74			73				77		80		79		74	80
DIMENSIONS [LxHxD]	mm	804x1462x607					1174x1594x772								1644 x1594 x772		2374 x1854 x877	1644 x1594 x772

KSW		202K	204K	221K	222K	241K	242K	244K	301K	302K	304K	344K	404K	444K	484K	554K	604K
USER WATER VALUES 70/80°C, 45/40°C SOURCE WATER SIDE																	
TOTAL POWER INPUT	kW	45.2	45.1	51.4	51.3	56.5	56.4	56.3	69.9	69.9	70.4	80.6	91.2	102.3	114.5	126.3	139.8
THERMAL POWER	kW	191.3	192	211.4	211.8	240.9	241.7	239.5	291.5	292.3	296.1	339.5	380.5	431.7	474.7	537.1	589.7
SCOP	-	4.84	5.14	4.68	4.84	4.72	4.82	5.05	4.65	4.85	4.74	4.84	4.98	5	4.93	4.98	5.01
COP	-	4.24	4.25	4.12	4.13	4.26	4.28	4.26	4.17	4.18	4.2	4.21	4.17	4.22	4.14	4.25	4.22
SOUND POWER LEVEL	dB	86	80	87		88		84	90		87	88	89	90	91	92	93
SOUND POWER LEVEL LOW NOISE	dB	80	74	81		82		78	82		79	80	81	82	83	84	85
DIMENSIONS [LxHxD]	mm	1644 x1594 x772	2374 x1854 x877	1644x1594x772				2374 x1854 x877	1644 x1594 x772		2374x1854x877						

Also available with 60 Hz power supply

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