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Россия +7(495)268-04-70
Казахстан +7(7172)727-132
Киргизия +996(312)96-26-47

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KSW P

HiRef
Innovators above the standards

SERVICES
INDUSTRY

Multi-purpose water cooled heat pumps

KSW P

for high temperatures, user side and source side

Range: 10-150.7 kW

The multi-purpose KSW P units are Water/Water heat pumps used for production of domestic hot water, designed for both services and industrial applications. They ensure **production of hot water up to 80°C**, **without using an electric** (element) **or gas booster**. The main feature of the KSW P range is being able to manage, on the heat source side, **very different thermal levels**: these heat pumps can use groundwater, usually available at 10-15°C, or water from thermal waste up to 45°C. The versions available for 2-pipe or 4-pipe systems and the number of refrigeration configurations provided, ranging from **single-circuit solutions** with single or tandem compressors up to **two-circuit solutions** with tandem compressors, allow the **best redundancy and maximum efficiency to be achieved, even simultaneously, at partial loads**.

Main advantages

Multi-purpose: Total Recovery

All sizes of the KSW P series can be coupled to both 2 and 4-pipe systems. In the former case system-side production of hot or cold water and the simultaneous total recoveryside production of hot water is ensured; in the latter case the simultaneous production of hot and cold water for heating and cooling is ensured.

More space in the heating unit

A KSW P unit can be used to produce domestic hot water, heating and cooling water from a single machine. This optimises the use of space in the heat station, avoiding the need to install cascade-connected units and additional hydronic modules that would reduce the space available for the installation of other equipment.

Operation safety

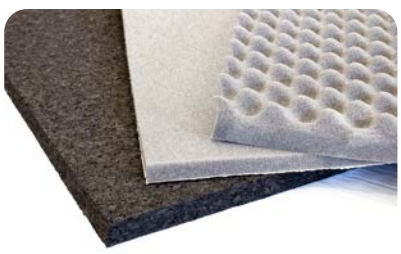
In KSW P units water up to 80°C can be produced to avoid having to run antilegionella cycles or, in the event that the water is stored at a lower temperature, to be able to run them more efficiently than via a boiler or an electrical heater.

Multi-purpose: Heating

All sizes of the KSW P series can be coupled to both 2 and 4-pipe systems. In the former case system-side production of hot or cold water and the simultaneous total recoveryside production of hot water is ensured; in the latter case the simultaneous production of hot and cold water for heating and cooling is ensured.

Multi-purpose: Cooling

All sizes of the KSW P series can be coupled to both 2 and 4-pipe systems. In the former case system-side production of hot or cold water and the simultaneous total recoveryside production of hot water is ensured; in the latter case the simultaneous production of hot and cold water for heating and cooling is ensured.



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.

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. In particular, depending on the size of the machine and any special plant requirements, the units may include:

- single circuit solutions with single compressor;
- single circuit solutions with compressors in a tandem arrangement, for high system efficiency;
- dual circuit solutions with one compressor per circuit, for high system redundancy;
- dual circuit solutions with four compressors (in a dual tandem arrangement) on two circuits, for a system that is both redundant and efficient at partial loads.

Maximum efficiency at partial loads

The KSW P range uses scroll compressors, electronically controlled expansion valves for each circuit and plate heat exchangers: all these features ensure high efficiencies at partial loads and accurate tracking of cooling load trends in all conditions of use.

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

POLYVALENT FOR 2-PIPE SYSTEM

POLYVALENT FOR 4-PIPE SYSTEM

Types of system

WATER/WATER16.5

Additional benefits

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

Technical table

KSW P		040P	050P	060P	081P	082P	091P	092P	101P	102P	121P	122P	151P	152P	171P	172P	174P
UTILITY WATER TEMPERATURE 12/7°C, RECOVERY WATER TEMPERATURE 60/70°C																	
COOLING CAPACITY	kW	10	13.1	16	10	20	11.2	22.4	13.1	26.2	16	32	20.5	40.9	20.5	47.9	22.4
TOTAL POWER INPUT	kW	6.9	8.9	11.3	6.8	13.7	7.7	15.3	8.9	17.9	11.3	22.5	13.7	27.5	13.7	31.8	15.3
THERMAL POWER	kW	16.5	21.6	26.7	16.5	33.1	18.5	37	21.6	43.2	26.7	53.4	33.5	67	33.5	78.1	37
TOTAL COP	-	3.87	3.88	3.79	3.88	3.87	3.88	3.88	3.89	3.88	3.8	3.79	3.93	3.93	3.93	3.96	3.88
USER WATER VALUES 12/7°C, 40/45°C SOURCE WATER SIDE																	
COOLING CAPACITY	kW	15.9	20.7	25.5	16.5	32.8	18.5	36.4	21.6	41.8	26.4	52.4	31.3	61	31.3	70.5	36.9
TOTAL POWER INPUT	kW	4.2	5.5	6.9	4	8.2	4.5	9.2	5.3	10.8	6.6	13.5	8.3	17	8.3	19.3	9
EER	-	3.83	3.79	3.73	4.09	4.01	4.1	3.96	4.1	3.87	3.98	3.89	3.75	3.59	3.75	3.65	4.09
USER WATER VALUES 60/70°C, 15/10°C SOURCE WATER SIDE																	
TOTAL POWER INPUT	kW	6.9	9	11.3	6.9	13.7	7.7	15.3	8.9	17.9	11.3	22.6	13.7	27.4	13.7	31.6	15.3
THERMAL POWER	kW	18.5	24.2	29.9	18.5	37	20.7	41.4	24.2	48.3	29.8	59.7	37	74	37	86	41.3
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
COP	-	2.69	2.7	2.64	2.7	2.69	2.7	2.7	2.7	2.7	2.65	2.65	2.71	2.7	2.71	2.72	2.7
SOUND POWER LEVEL	dB	74		78	77						81		84		85		80
SOUND POWER LEVEL LOW NOISE	dB	70		74	73						77		80		79		74
DIMENSIONS [LxHxD]	mm	804x1462x607			1174x1594x772										1644 x1594 x772		2374 x1854 x877

KSW P		201P	202P	204P	221P	222P	241P	242P	244P	301P	302P	304P	344P	404P	444P	484P	554P	604P
UTILITY WATER TEMPERATURE 12/7°C, RECOVERY WATER TEMPERATURE 60/70°C																		
COOLING CAPACITY	kW	27.5	54.9	26.2	27.5	61.4	34	68	32	42.2	84.5	40.9	40.9	54.9	54.9	68	84.5	84.5
TOTAL POWER INPUT	kW	18	36.1	17.9	18	40.7	22.7	45.4	22.5	27.7	55.5	27.4	27.4	36	36	45.4	55.5	55.5
THERMAL POWER	kW	44.6	89.1	43.2	44.6	100.1	55.5	111.1	53.4	68.6	137.2	67	67	89.1	89.1	111	137.2	137.2
TOTAL COP	-	4	3.99	3.89	4	3.97	3.95	3.95	3.8	4	3.99	3.93	3.93	4	4	3.95	4	4
USER WATER VALUES 12/7°C, 40/45°C SOURCE WATER SIDE																		
COOLING CAPACITY	kW	41.2	78.9	43.2	41.2	87	51	99.3	52.8	63.4	120.1	62.6	62.6	82.4	82.4	102	126.8	126.8
TOTAL POWER INPUT	kW	10.5	21.7	10.5	10.5	24.8	13.2	27.1	13.3	16.2	33.7	16.7	16.7	21.1	21	26.5	32.4	32.4
EER	-	3.91	3.63	4.1	3.91	3.51	3.85	3.66	3.98	3.91	3.57	3.75	3.75	3.91	3.92	3.85	3.91	3.91
USER WATER VALUES 60/70°C, 15/10°C SOURCE WATER SIDE																		
TOTAL POWER INPUT	kW	17.9	35.8	17.9	17.9	40.6	22.5	45	22.5	27.5	55.2	27.4	27.4	35.8	35.8	45	55	55
THERMAL POWER	kW	49	97.9	48.3	49	109.2	61	122	59.7	75.3	149.9	74	74	97.9	97.9	122	150.7	150.7
SCOP	-	4.67	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	-	2.74	2.74	2.7	2.74	2.69	2.71	2.71	2.65	2.74	2.72	2.71	2.71	2.74	2.74	2.71	2.74	2.74
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 | Hot user IN water temperature 40°C | Hot user OUT water temperature 45°C | Cold user IN water temperature 16°C | Cold user OUT water temperature 10°C

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