EPAS Kp

AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION
WITH SEMIHERMETIC RECIPROCATED COMPRESSORS AND AXIAL FANS

Cooling capacity from 91 to 297 kW

The packaged air cooled heatpumps of EPAS Kp series are suitable for outdoor installation and can be used to cool pure fluid solutions for industrial applications or in air conditioning systems of the service industry, where it is necessary to grant excellent performances and a very low environmental impact.

The refrigerant used is Propane, a non-toxic hydrocarbon, even at high concentrations, with almost a null ozone depletion potential, negligible global warming potential and thermodynamic properties which allow to reach high efficiency values.

For this reason the units are designed for external installation, in compliance with the European standard EN 378 and his updates.

Depending on the required heating capacity, the units are available in mono or multi compressor with 1 or 2 independent cooling circuits. Thanks to the many available options, these heat pumps are particularly versatile and are easily adaptable to the different types of plant, where production of chilled water is required.

All the units are completely factory assembled, tested and supplied with refrigerant non-freezing oil charge; so, once on installation site, they only need to be positioned and connected to the hydraulic and power supply lines.

Units CE certified in compliance with the European regulation 2016/2281 ERP 2021.

MAIN COMPONENTS

STRUCTURE
Strong and compact structure, made of base and frame with high-thickness galvanized steel elements assembled with stainless steel rivets. All galvanized steel surfaces externally positioned are superficially coated by an oven powder-painting with colour RAL7035. The technical section which contains compressors and the other cooling circuit elements, exept the condensing part, is closed in a cabinet; if a refrigerant leak occurs the technical vane is automatically airy using an external axial fan which is able to clean all the air inside the cabinet 4 time/minute.
To reduce the sound level it is possible to insulate the technical section with a sound and fire proof standard thickness material or higher thickness material (CFU option).

COMPRESSORS
Semi hermetic alternative type optimized to operate with the hydrocarbons and realized in compliance with the safety regulation in force. The electrical motor, arranged for starts with low inrush current (PW option), is equipped with thermal protection module (installed in the electrical cabinet); the lubricating system, of forced type, is equipped with oil filters and check valves to survey the lubricating pressure and is made through a high pressure pump. Each compressor is installed on rubber type vibration dampers and is provided with switch-off valve on suction and discharge side, electronic differential pressure switch for the oil level control, crankcase heater and temperature probe on discharge side to control the compressor's discharge temperature. If the compressors are installed in "tandem" version each one is equipped with oil level sensor and oil recuperator; this device activates automatically when in one compressor the lubricant level goes down then minimum value.

EVAPORATOR
Stainless steel plates type mono or bi circuits, thermally insulated using a flexible closed cells mattress of high thickness. Is also provided with a safety differential pressure switch which does not allows the unit operation in case of water flow lack or reduction.

COILS
The external heat exchanger coils are made of micro-finned copper pipes placed in asymmetrical rows and mechanically expanded in an aluminium frame. The aluminium fin is supplied with standard hydrophilic treatment and is designed in order to ensure maximum heat exchange efficiency. The defrosting of the hot-gas finned exchangers is pressure controlled.

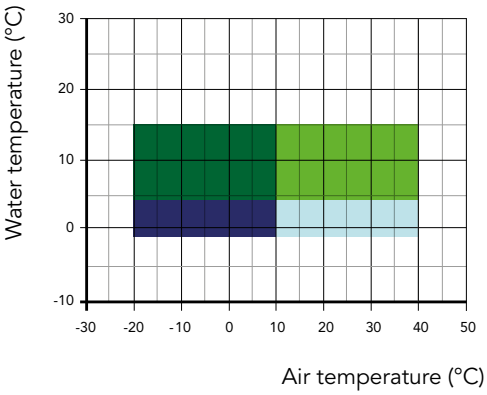
FANS
6 poles axial fans with electrical motor and external rotor directly coupled to the impeller; aluminium blades with wings profile are suitably designed to avoid any turbulence in the iar detachment zone, granting in this way the maximum efficiency with the minimum noise level. The fan is equipped with a galvanized steel protection grid painted after the construction; the fan motors are of totally closed type and have got a protection factor IP54 and winding-flooded protection thermostat.

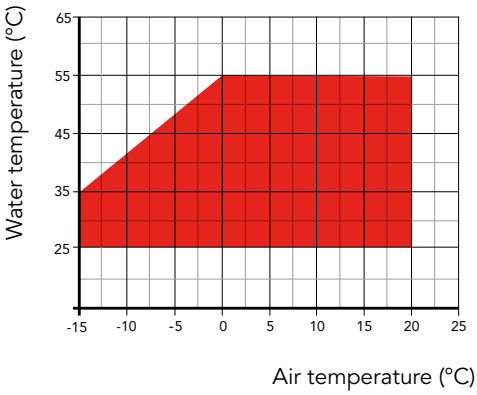
REGENERATIVE EXCHANGER
Heat regenerative exchanger gas/fluid of plates type, installed on each circuit to grant a suitable overheating value to the compressor sucked gas and at the same time to increase the cooling circuit efficiency thanks to higher sub-cooling of condensing coil leaving fluid.
Insulated thermally using a close cells mattress of great thickness.

COOLING CIRCUIT
Indipendent cooling circuits, each provided with a shut-off valve for refrigerant charge, antifreeze probe, sight glass, dehydrating filter for R290 with wide filtering surface, high pressure side safety valve equipped with connector to the discharge refrigerant conveying piping, electronic thermostatic valve (for 12010, 25020 and bigger frames), pressure switches and high/low pressure gauges for R290 specifically. All the units are equipped with a leak sensor which is able to turn off the compressors and turn on the extraction fan in case of a refrigerant leak occurs.

ELECTRICAL BOARD
Built in compliance with 61439-1 standards, inside of which all the control system elements and the ones required for electrical motors starting and protection are located, all the components are factory connected and testes.
The electrical cabinet has got a watertight structure, equipped with cable glands with protection factor of IP65/66.
Besides the electrical cabinet contains all the power and control devices, microprocessor electronic board complete with keyboard and display for visualizing several function available, main switch of lock-door type, isolation transformer for auxiliary circuits, automatic switches, fuses and protection switches for compressors and fans motors, terminals for general alarm and unit remote ON/OFF, spring type terminal board and the possibility to interface to BMS system.

OPERATING RANGE





- Standard unit, cooling mode with variable frequency fan speed control
- Standard unit, cooling mode
- Standard unit, cooling mode with glycol and variable frequency fan speed control
- Standard unit, cooling mode with glycol
- Standard unit, heating mode

ACCESSORIES

EPAS Kp		10010	12010	15020	17020
Amperometer + Voltmeter	**A+V**	o	o	o	o
Axial fan diffuser	**AXT**	o	o	o	o
Operation in cooling mode down to -20°C	**BF**	o	o	o	o
Soundproofed compressors cabinet with polyester material	**CFU**	o	o	o	o
Compressors inrush counter	**CS**	o	o	o	o
Axial fans with electronic commutated motor	**EC**	o	o	o	o
Condensing coil protection grid	**GP**	o	o	o	o
Victaulic insulation on pump side	**I1**	o	o	o	o
RS 485 Serial interface	**IH**	o	o	o	o
BACNET Protocol serial interface	**IH-BAC**	o	o	o	o
TCP/IP Protocol serial interface	**IWG**	o	o	o	o
Phase monitor	**MF**	o	o	o	o
Pump group	**P1**	o	o	o	o
Higher available pressure pump group	**P1H**	o	o	o	o
Double pump group	**P2**	o	o	o	o
Higher available pressure double pump group	**P2H**	o	o	o	o
Rubber-type vibration dampers	**PA**	o	o	o	o
Spring-type vibration dampers	**PM**	o	o	o	o
Remote display	**PQ**	o	o	o	o
Part-Winding	**PW**	o	o	o	o
Anti-freeze heater on evaporator	**RA**	o	o	o	o
Power factor correction system cosfi ≥0,9	**RF**	o	o	o	o
Compressor overload relays	**RL**	o	o	o	o
Batteria con alette preverniciate	**RM**	•	•	•	•
Partial heat recovery	**RP**	o	o	o	o
Copper/Copper coil	**RR**	•	•	•	•
Double layer treatment of the coil	**TDS**	•	•	•	•
Electronic thermostatic valve	**TE**	o	•	o	o
Inverter on compressor	**VSC**	o	o	o	o
Inverter for pump	**VSP1**	o	o	o	o
High pressure inverter for pump	**VSP1H**	o	o	o	o
Inverter for parallel pumps (only one running)	**VSP2**	o	o	o	o
High pressure inverter for parallel pumps (only one running)	**VSP2H**	o	o	o	o

• Standard, o Optional, -- Not available

EPAS Kp		21020	25020	29020	34020
Amperometer + Voltmeter	**A+V**	o	o	o	o
Axial fan diffuser	**AXT**	o	o	o	o
Operation in cooling mode down to -20°C	**BF**	o	o	o	o
Soundproofed compressors cabinet with polyester material	**CFU**	o	o	o	o
Compressors inrush counter	**CS**	o	o	o	o
Axial fans with electronic commutated motor	**EC**	o	o	o	o
Condensing coil protection grid	**GP**	o	o	o	o
Victaulic insulation on pump side	**I1**	o	o	o	o
RS 485 Serial interface	**IH**	o	o	o	o
BACNET Protocol serial interface	**IH-BAC**	o	o	o	o
TCP/IP Protocol serial interface	**IWG**	o	o	o	o
Phase monitor	**MF**	o	o	o	o
Pump group	**P1**	o	o	o	o
Higher available pressure pump group	**P1H**	o	o	o	o
Double pump group	**P2**	o	o	o	o
Higher available pressure double pump group	**P2H**	o	o	o	o
Rubber-type vibration dampers	**PA**	o	o	o	o
Spring-type vibration dampers	**PM**	o	o	o	o
Remote display	**PQ**	o	o	o	o
Part-Winding	**PW**	o	o	o	o
Anti-freeze heater on evaporator	**RA**	o	o	o	o
Power factor correction system cosfi ≥0,9	**RF**	o	o	o	o
Compressor overload relays	**RL**	o	o	o	o
Batteria con alette preverniciate	**RM**	•	o	•	•
Partial heat recovery	**RP**	o	o	o	o
Copper/Copper coil	**RR**	•	o	•	•
Double layer treatment of the coil	**TDS**	•	o	•	•
Electronic thermostatic valve	**TE**	o	•	•	•
Inverter on compressor	**VSC**	o	o	o	o
Inverter for pump	**VSP1**	o	o	o	o
High pressure inverter for pump	**VSP1H**	o	o	o	o
Inverter for parallel pumps (only one running)	**VSP2**	o	o	o	o
High pressure inverter for parallel pumps (only one running)	**VSP2H**	o	o	o	o

• Standard, o Optional, -- Not available

TECHNICAL DATA

EPAS Kp		10010	12010	15020	17020
Cooling capacity	kW	90,9	104,3	129,7	148,4
Total input power	kW	29,3	35,4	40,0	47,5
Nominal input current	A	52,0	63,8	74,8	83,6
EER	W/W	3,10	2,94	3,24	3,13
Circuits	n°	1	1	2	2
Compressors	n°	1	1	2	2
Refrigerant data R290					
Refrigerant charge	kg	13,0	13,0	14,5	19,5
Global warming potential (GWP)	-	3	3	3	3
Equivalent CO_2 charge	t	39,0	39,0	43,5	58,5
Axial fans (1)					
Quantity	n°	2	2	3	3
Total air flow	m^3/h	20850	20850	21570	20860
Total power input	kW	3,8	3,8	5,7	5,7
Total input current	A	7,8	7,8	11,7	11,7
Evaporator (2)					
Quantity	n°	1	1	1	1
Water flow	m^3/h	15,6	17,9	22,3	25,5
Pressure drop	kPa	23	29	15	19
Heat pump mode (3)					
Nominal heating capacity	kW	103,3	119,5	142,2	168,0
Total input power	kW	29,3	34,4	38,7	46,2
Total nominal current	A	52,3	62,5	73,6	82,2
SCOP	-	3,53	3,48	3,68	3,63
COP	-	3,45	3,35	3,30	3,25
Weight					
Transport weight	kg	1416	1466	1798	1876
Operating weight	kg	1422	1472	1812	1890
Dimensions					
Length	mm	2660	2660	3700	3700
Width	mm	1370	1370	1370	1370
Height	mm	2420	2420	2420	2420
Sound data					
Total LWA (4)	dB(A)	93	93	94	94
Total SPL 10m (5)	dB(A)	61	61	61	61
Power supply					
Voltage/phase/frequency	V/ph/Hz	3/400/50	3/400/50	3/400/50	3/400/50
General electrical data					
Maximum input power	[kW]	38	46	54	58
Maximum input current	[A]	69	82	100	106
Inrush current	[A]	281	329	280	298

(1) Ambient air temperature 35°C
(2) Fluid: Water - In/out Temperature: 12/7°C
(3) Air temperature 7°C, Humidity 87%, water temperature 40/45°C.
(4) Sound power level in accordance with ISO 3744.
(5) Sound pressure level at 10 mt from the unit in free field conditions in accordance with ISO 3744.

EPAS Kp		21020	25020	29020	34020
Cooling capacity	kW	180,6	209,5	248,2	296,8
Total input power	kW	58,7	70,9	78,4	96,0
Nominal input current	A	104,0	128,2	145,5	169,8
EER	W/W	3,08	2,96	3,17	3,09
Circuits	n°	2	2	2	2
Compressors	n°	2	2	4	4
Refrigerant data R290					
Refrigerant charge	kg	37,5	38,0	45,0	57,0
Global warming potential (GWP)	-	3	3	3	3
Equivalent CO_2 charge	t	112,5	114,0	135,0	171,0
Axial fans (1)					
Quantity	n°	4	4	5	5
Total air flow	m^3/h	20850	20850	20850	25050
Total power input	kW	7,6	7,6	9,5	12,4
Total input current	A	15,6	15,6	19,5	25,8
Evaporator (2)					
Quantity	n°	1	1	1	1
Water flow	m^3/h	31,1	36,0	42,7	51,1
Pressure drop	kPa	27	24	32	26
Heat pump mode (3)					
Nominal heating capacity	kW	209,3	239,8	280,1	333,8
Total input power	kW	58,8	68,0	76,7	94,2
Total nominal current	A	104,5	123,9	144,1	168,4
SCOP	-	3,56	3,53	3,65	3,54
COP	-	3,29	3,29	3,38	3,27
Weight					
Transport weight	kg	2246	2366	2918	3106
Operating weight	kg	2260	2388	2940	3138
Dimensions					
Length	mm	4850	4850	5890	5890
Width	mm	1370	1370	1370	1370
Height	mm	2420	2420	2420	2420
Sound data					
Total LWA (4)	dB(A)	95	95	95	95
Total SPL 10m (5)	dB(A)	63	63	63	63
Power supply					
Voltage/phase/frequency	V/ph/Hz	3/400/50	3/400/50	3/400/50	3/400/50
General electrical data					
Maximum input power	[kW]	76	92	106	116
Maximum input current	[A]	138	165	196	214
Inrush current	[A]	350	412	376	406

(1) Ambient air temperature 35°C
(2) Fluid: Water - In/out Temperature: 12/7°C
(3) Air temperature 7°C, Humidity 87%, water temperature 40/45°C.
(4) Sound power level in accordance with ISO 3744.
(5) Sound pressure level at 10 mt from the unit in free field conditions in accordance with ISO 3744.