GPH S Kp

AIR COOLED MULTIFUNCTION UNITS FOR 4-PIPE SYSTEMS FOR OUTDOOR INSTALLATION

WITH SCREW COMPRESSORS AND AXIAL FANS

Cooling capacity from 340 kW to 600 kW

VERSIONS

GPH S Kp - standard version
GPH VS HE S Kp - High efficiency version (Full inverter)

Multipurpose units, ideal for all installed applications where simultaneous production of hot and cold water is required, through the use of dedicated, independent circuits in 2- or 4-pipe hydronic systems. The polyvalent represents an effective and convenient alternative to traditional solutions (Boiler + Chiller) with a particular energy benefit in the conditions of demand for both fluids, hot and cold, concurrently.

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.

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 813/2013, average conditions, low temperature, fixed

MAIN COMPONENTS

FRAME
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 color RAL7035. The technical section which contains compressors and the other cooling circuit elements is closed in a sound-proofed and insulated cabinet. The technical section which contains compressors and the other cooling circuit elements is closed in a sound-proofed and insulated cabinet. Both compressors are equipped with an oil level safety switch, an opto-electronic device that operates if the oil level inside the compressor falls below the minimum level.

COMPRESSOR
Semi-hermetic screw compressors, optimized for operation with hydrocarbons and manufactured in accordance with current safety regulations. The compressors, one for each circuit, are with motor thermal protection, rotation direction control, crankcase heater, liquid injection, suction and discharge shut-off valves, compressor overload relays and vibration kit. Lubrication is of the forced type without a pump and to avoid excessive oil migration to the cooling circuit, there is an oil separator incorporated in the delivery. The electric motor is equipped with an automatic partial load starting system and mechanical interlock of the starting contactors, to avoid accidental short circuits.

HEAT EXCHANGER
The user-side heat exchangers are stainless steel plate type with a double circuit on the refrigerant side. They are factory-insulated using closed-cell material and can be equipped with an electric antifreeze resistor (optional). A temperature sensor used as anti-freeze protection preserves each exchanger. The exchangers are also equipped with a paddle flow switch that does not allow the unit to operate in case of lack or excessive reduction of the water flow rate.

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.

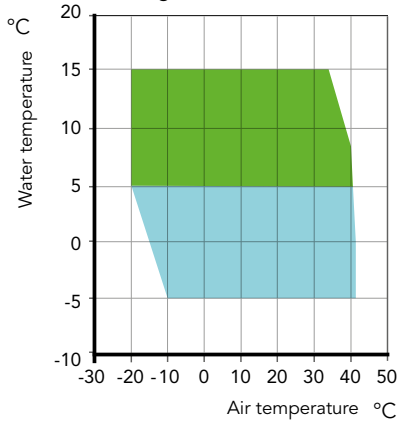
FANS
With external rotor directly coupled to a three-phase electronically commutated motor (EC) they have the possibility of a continuous regulation of the speed by means of a 0-10V signal completely managed by the microprocessor. Aluminum blades with wings profile are suitably designed to avoid any turbulence in the air detachment zone, granting in this way the max efficiency with the minimum noise level. The fan is equipped with galvanized steel protection grid painted after the construction. the fan motors are of totally closed type and have a protection factor IP54 and winding-flooded protection thermostat.

COOLING CIRCUIT
Indipendent cooling circuits each provided with a shut-off valve for refrigerant charge, 4-way cycle inversion valve, antifreeze probe, sight glass,dehydrting filter for R290 with wide filtering surface, high pressure sude safety valve equipped with connector to the discharhe refrigerant conveying piping, liquid receiver, liquid separator on suction, electronic thermostatic valve, pressure switches and high/low pressure gauges for R290 specifically.

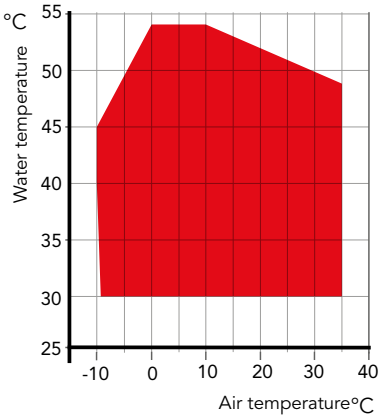
ELECTRICAL BOARD
The electrical board is designed in accordance with the European standards 61439-1 EN 60204. Its structure is watertight and it contains all the components of the control system, those required for starting the unit, and the thermal protection of the electric motors, connected and factory-tested.
It houses all the power and control components: the microprocessor electronic board, with keyboard and display for the visualization of the various functions, main disconnecting switch for the door lock, and isolation transformer for the auxiliary circuit supply.
It also contains circuit breakers, fuses, and contactors for the compressor and fan motors, the terminals for the cumulative alarms and remote ON/OFF, the terminal board of the spring-type control circuits, and the possibility of connection to BMS management systems.
In case of a lack of ventilation in the compressor compartment, the unit blocks all the electrical drives.

OPERATING RANGE

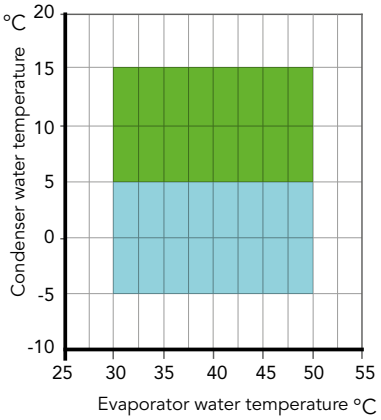
Cooling mode



Heating mode



Cooling during heating



Cooling mode

Cooling with glycol

Heating mode

EMICON
INNOVATION AS ENERGY

ACCESSORIES

GPH S Kp		352	402	452	552	602
Amperometer + Voltmeter	A+V	o	o	o	o	o
Soundproofed compressors cabinet with higher thickness material	CFU	●	●	●	●	●
Compressors hour counter	CO	●	●	●	●	●
Compressors inrush counter	CS	o	o	o	o	o
Refrigerant leakage detector	DR	●	●	●	●	●
Axial fans with electronic commutated motor	EC	●	●	●	●	●
Condensing coil protection grid	GP	o	o	o	o	o
Anti-intrusion grid	GP1	o	o	o	o	o
Web application	HiPro.web	o	o	o	o	o
Visograph interface accessory	HMI.Pro	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o
Phase monitor	MF	●	●	●	●	●
Pressure gauges	MT	●	●	●	●	●
Oil flow safety switch	OS	●	●	●	●	●
Single pump warm user side	P1C	o	o	o	o	o
Single pump cold user side	P1F	o	o	o	o	o
Two pumps warm user side	P2C	o	o	o	o	o
Two pumps cold user side	P2F	o	o	o	o	o
Two high-pressure pumps warm user	P2HC	o	o	o	o	o
Two high-pressure pumps cold user side	P2HF	o	o	o	o	o
Rubber-type vibration dampers	PA	◊	◊	◊	◊	◊
Spring-type vibration dampers	PM	◊	◊	◊	◊	◊
Remote display	PQ	◊	◊	◊	◊	◊
Twin pump for warm user side	PTC	o	o	o	o	o
Twin pump for cold user side	PTF	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	●	●	●	●	●
Shut-off valve on compressors suction side	RH	●	●	●	●	●
Compressor overload relays	RL	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o
Electronic thermostatic valve	TE	●	●	●	●	●

• Standard, o Optional, ◊ Optional (external kit),-- Not available

TECHNICAL DATA

GPH S Kp		352	402	452	552	602
Cooling [1]						
Cooling capacity	kW	341	400	448	509	602
Total input power	kW	145	162	189	205	239
Total nominal current	A	236	260	306	335	387
EER	-	2,35	2,47	2,37	2,48	2,52
Water flow	m^3/h	58,7	68,8	77,1	87,5	103,0
Pressure drop	kPa	26,0	21,8	22,9	21,9	26,4
Heating [2]						
Heating capacity	kW	390	451	497	567	676
Total input power	kW	135	150	172	190	223
Total nominal current	A	222	243	281	313	364
COP	-	2,89	3,01	2,89	2,98	3,03
Water flow	m^3/h	67,7	80,0	86,3	98,5	117,0
Pressure drop	kPa	32,1	27,0	26,6	25,4	32,0
Cooling while heating [3]						
Cooling capacity	kW	351	410	474	524	617
Heating capacity	kW	476	552	635	699	825
Total input power	kW	127	143	163	177	211
Current consumption	A	204	227	261	286	336
TER	-	6,51	6,73	6,80	6,91	6,83
Water flow	m^3/h	60,4	70,6	81,5	90,1	106,0
Pressure drop	kPa	27,4	22,8	25,3	23,1	27,7
Water flow	m^3/h	82,5	95,6	110,0	121,0	143,0
Pressure drop	kPa	45,9	37,2	41,1	36,9	45,5
Refrigerant circuits	n°	2	2	2	2	2
Compressors	n°	2	2	2	2	2
Refrigerant data R290						
Refrigerant charge	kg	60	78	78	88	114
Global warming potential (GWP)		0,02	0,02	0,02	0,02	0,02
Equivalent CO_2 charge	kg	1,20	1,56	1,56	1,76	2,28
Axial fans						
Number	n°	8	8	8	12	12
Total air flow	m^3/h	178100	172500	171900	267300	258800
Total fan power input	kW	15,6	16,0	15,9	23,4	24,0
Total fan current	A	26,2	26,9	26,7	39,3	40,3
Weights						
Transport weight	kg	4726	4962	5000	6904	7123
Operating weight	kg	4804	5058	5105	7028	7259
Dimensions						
Length	mm	5940	5940	5940	8660	8660
Depth	mm	2240	2240	2240	2240	2240
Height	mm	2650	2650	2650	2650	2650
Sound data						
Sound pressure level [4]	dB(A)	99	99	99	101	101
Sound power level [5]	dB(A)	66,5	66,5	66,5	67,9	67,9
Power supply						
Voltage/Phase/Frequency	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data						
Maximum input power	kW	182	192	222	252	282
Maximum input current	A	357	387	427	491	545
Inrush current	A	602	700	737	803	887

(1) Fluid: water - in/out temperature: 12/7°C - air 35°C.
(2) Fluid: water - in/out temperature: 40/45°C - air 7°C - UR.87%
(3) Cold in/out temperature: 12/7°C – Hot in/out 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.