ERAS N MC VS Kp

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

Cooling capacity from 54 to 353 kW

The packaged air cooled chillers of RAS Kp series are suitable for outdoor installation and are particularly indicated 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 capacity required the units are available with 1 or 2 independents cooling circuits equipped with 1 or 2 compressors for each circuit.

Thanks to the many available options, these chillers are particularly versatile and are easily adaptable to the different types of plants, 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 exchanger coils are made of microchannel aluminium extruded pipes and brazed aluminium fins.
Thanks to the reduced whole volume and the high external surfaces, the microchannel coils allow a great reduction of refrigerant charge and an high heat exchange capacity.

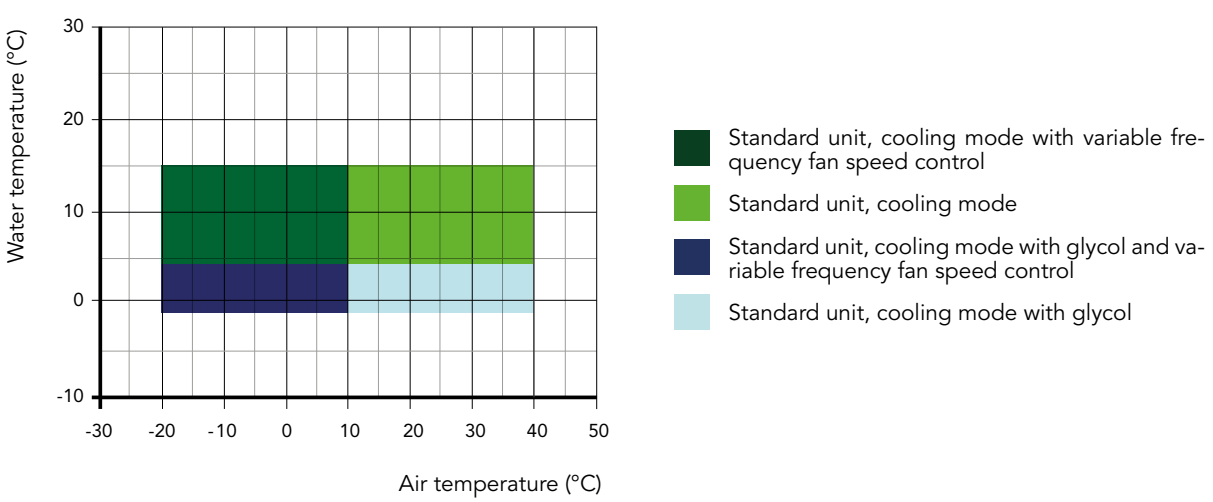
FANS
6 poles axial fans with electrical motor and external rotor directly coupled to the impeller; aluminium blades with wings profile are suitably designed to avoid any turbulence in the iar detachment zone, granting in this way the maximum efficiency with the minimum noise level. The fan is equipped 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 10010,24020 and folowing 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



ACCESSORIES

ERAS N MC VS Kp		5210	5910	7210	8710	10010
Amperometer + Voltmeter	**A+V**	o	o	o	o	o
Axial fan diffuser	**AXT**	o	o	o	o	o
Operation in cooling mode down to -20°C	**BF**	o	o	o	o	o
Operation in cooling mode down to -10°C	**BT**	o	o	o	o	o
Soundproofed compressors cabinet with higher thickness material	**CFU**	o	o	o	o	o
Compressors inrush counter	**CS**	o	o	o	o	o
Axial fans with electronic commutated motor	**EC**	o	o	o	o	o
Anti-corrosive protection of the condensing coils	**ECP**	o	o	o	o	o
Condensing coil protection grid	**GP**	o	o	o	o	o
High pressure double safety valve	**HRV2**	o	o	o	o	o
Victaulic insulation on pump side	**I1**	o	o	o	o	o
Victaulic insulation buffer tank side	**I2**	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
TCP/IP Protocol serial interface	**IWG**	o	o	o	o	o
Phase monitor	**MF**	o	o	o	o	o
Buffer tank module	**MV**	o	o	o	o	o
Pump group	**P1**	o	o	o	o	o
Pump + tank	**P1+MV**	o	o	o	o	o
Higher available pressure pump group	**P1H**	o	o	o	o	o
Higher available pressure pump group + tank	**P1H+MV**	o	o	o	o	o
Double pump group	**P2**	o	o	o	o	o
Double pump group + tank	**P2+MV**	o	o	o	o	o
Higher available pressure double pump group	**P2H**	o	o	o	o	o
Higher available pressure double pump group + tank	**P2H+MV**	o	o	o	o	o
Rubber-type vibration dampers	**PA**	o	o	o	o	o
Anti-corrosive protection of the condensing coils (Powder coating)	**PCP**	o	o	o	o	o
Spring-type vibration dampers	**PM**	o	o	o	o	o
Remote display	**PQ**	o	o	o	o	o
Part-Winding	**PW**	o	o	o	o	o
Anti-freeze heater on evaporator	**RA**	o	o	o	o	o
Power factor correction system cosfi ≥0,9	**RF**	o	o	o	o	o
Compressor overload relays	**RL**	•	•	•	•	•
Partial heat recovery	**RP**	o	o	o	o	o
Electronic thermostatic valve	**TE**	o	o	o	o	--
Inverter on compressor	**VSC**	--	--	--	--	--
Inverter for pump	**VSP1**	o	o	o	o	o
High pressure inverter for pump	**VSP1H**	o	o	o	o	o
Inverter for parallel pumps (only one running)	**VSP2**	o	o	o	o	o
High pressure inverter for parallel pumps (only one running)	**VSP2H**	o	o	o	o	o

• Standard, o Optional, -- Non disponibile

ERAS N MC Kp		14020	17020	21020	24020	29020	34020
Amperometer + Voltmeter	**A+V**	o	o	o	o	o	o
Axial fan diffuser	**AXT**	o	o	o	o	o	o
Operation in cooling mode down to -20°C	**BF**	o	o	o	o	o	o
Operation in cooling mode down to -10°C	**BT**	o	o	o	o	o	o
Soundproofed compressors cabinet with higher thickness material	**CFU**	o	o	o	o	o	o
Compressors inrush counter	**CS**	o	o	o	o	o	o
Axial fans with electronic commutated motor	**EC**	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils	**ECP**	o	o	o	o	o	o
Condensing coil protection grid	**GP**	o	o	o	o	o	o
High pressure double safety valve	**HRV2**	o	o	o	o	o	o
Victaulic insulation on pump side	**I1**	o	o	o	o	o	o
Victaulic insulation buffer tank side	**I2**	o	o	o	o	o	o
RS 485 Serial interface	**IH**	o	o	o	o	o	o
BACNET Protocol serial interface	**IH-BAC**	o	o	o	o	o	o
TCP/IP Protocol serial interface	**IWG**	o	o	o	o	o	o
Phase monitor	**MF**	o	o	o	o	o	o
Buffer tank module	**MV**	o	o	o	o	o	o
Pump group	**P1**	o	o	o	o	o	o
Pump + tank	**P1+MV**	o	o	o	o	o	o
Higher available pressure pump group	**P1H**	o	o	o	o	o	o
Higher available pressure pump group + tank	**P1H+MV**	o	o	o	o	o	o
Double pump group	**P2**	o	o	o	o	o	o
Double pump group + tank	**P2+MV**	o	o	o	o	o	o
Higher available pressure double pump group	**P2H**	o	o	o	o	o	o
Higher available pressure double pump group + tank	**P2H+MV**	o	o	o	o	o	o
Rubber-type vibration dampers	**PA**	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils (Powder coating)	**PCP**	o	o	o	o	o	o
Spring-type vibration dampers	**PM**	o	o	o	o	o	o
Remote display	**PQ**	o	o	o	o	o	o
Part-Winding	**PW**	o	o	o	o	o	o
Anti-freeze heater on evaporator	**RA**	o	o	o	o	o	o
Power factor correction system cosfi ≥0,9	**RF**	o	o	o	o	o	o
Compressor overload relays	**RL**	o	o	o	o	o	o
Partial heat recovery	**RP**	o	o	o	o	o	o
Electronic thermostatic valve	**TE**	o	o	o	--	--	--
Inverter on compressor	**VSC**	o	o	o	o	o	o
Inverter for pump	**VSP1**	o	o	o	o	o	o
High pressure inverter for pump	**VSP1H**	o	o	o	o	o	o
Inverter for parallel pumps (only one running)	**VSP2**	o	o	o	o	o	o
High pressure inverter for parallel pumps (only one running)	**VSP2H**	o	o	o	o	o	o

• Standard, o Optional, -- Non disponibile

TECHNICAL DATA

ERAS N MC VS Kp		5210	5910	7210	8710	10010
Cooling capacity	kW	54,2	61,0	74,8	92,9	107,1
Total input power	kW	16,4	19,2	23,3	29,2	34,1
Nominal input current	A	35,1	38,2	42,5	52,1	63,2
EER	W/W	3,30	3,19	3,21	3,18	3,15
SEPR (5)	W/W	4,17	4,12	4,24	4,17	4,14
Circuits	n°	1	1	1	1	1
Compressors	n°	1	1	1	1	1
Refrigerant data R290						
Refrigerant charge	kg	4	4	8	8	8
Global warming potential (GWP)	-	3	3	3	3	3
Equivalent CO_2 charge	t	12	12	24	24	24
Axial fans (1)						
Quantity	n°	2	2	2	2	2
Total air flow	m^3/h	17760	17690	20020	40220	40070
Total power input	kW	1,2	1,2	1,2	3,9	3,9
Total input current	A	5,2	5,2	5,2	7,8	7,8
Evaporator (2)						
Quantity	n°	1	1	1	1	1
Water flow	m^3/h	9,3	10,5	12,9	16,0	18,4
Pressure drop	kPa	29	35	17	24	31
Weight						
Transport weight	kg	1094	1096	1206	1304	1310
Operating weight	kg	1098	1100	1212	1310	1316
Dimensions						
Length	mm	2590	2590	2590	2590	2590
Width	mm	1370	1370	1370	1370	1370
Height	mm	2570	2570	2570	2570	2570
Sound data						
Total LWA (3)	dB(A)	86,3	88,1	88,1	92,2	92,2
Total SPL 10m (4)	dB(A)	54,3	56,1	56,1	60,2	60,2
Power supply						
Voltage/phase/frequency	V/ph/Hz	400/3/50+N+PE	400/3/50+N+PE	400/3/50+N+PE	400/3/50+N+PE	400/3/50+N+PE
General electrical data						
Maximum input power	[kW]	21.2	25.2	28.2	37.9	45.9
Maximum input current	[A]	42.3	49.4	52.4	68.8	82.4
Inrush current	[A]	42.3	49.4	52.4	68.8	82.4

(1) Ambient air temperature 35°C
(2) Fluid: Water - In/out Temperature: 12/7°C
(3) Sound power level in accordance with ISO 3744.
(4) Sound pressure level at 10m from the unit in free field conditions, in accordance with ISO 3744
(5) SEPR: Medium temperature process chiller.

ERAS N MC Kp		14020	17020	21020	24020	29020	34020
Cooling capacity	kW	155,5	182,8	215,7	252,1	289,7	352,9
Total input power	kW	47,5	56,4	68,2	77,0	96,5	114,1
Nominal input current	A	85,5	103,7	126,6	145,5	166,3	205,7
EER	W/W	3,27	3,24	3,16	3,28	3,00	3,09
SEPR (5)	W/W	4,15	4,14	4,12	4,26	4,13	4,24
Circuits	n°	2	2	2	2	2	2
Compressors	n°	2	2	2	4	4	4
Refrigerant data R290							
Refrigerant charge	kg	15	15	17	17	16	21
Global warming potential (GWP)	-	3	3	3	3	3	3
Equivalent CO_2 charge	t	45	45	51	51	48	63
Axial fans (1)							
Quantity	n°	4	4	4	4	4	6
Total air flow	m^3/h	80770	80470	80110	79850	79400	119920
Total power input	kW	7,8	7,8	7,8	7,8	7,8	11,6
Total input current	A	15,6	15,6	15,6	15,6	15,6	23,4
Evaporator (2)							
Quantity	n°	1	1	1	1	1	1
Water flow	m^3/h	26,7	31,4	37,1	43,4	49,8	60,7
Pressure drop	kPa	21	28	26	33	26	36
Weight							
Transport weight	kg	2002	2098	2156	2522	2598	3100
Operating weight	kg	2016	2112	2178	2544	2630	3132
Dimensions							
Length	mm	4840	4840	4840	4840	4840	4430
Width	mm	1370	1370	1370	1370	1370	2260
Height	mm	2570	2570	2570	2570	2570	2480
Sound data							
Total LWA (3)	dB(A)	92,6	95,7	95,7	96,0	96,0	99,2
Total SPL 10m (4)	dB(A)	60,4	63,4	63,4	63,7	63,7	66,9
Power supply							
Voltage/phase/frequency	V/ph/Hz	400/3/50+N+PE	400/3/50+N+PE	400/3/50+N+PE	400/3/50+N+PE	400/3/50+N+PE	400/3/50+N+PE
General electrical data							
Maximum input power	[kW]	59.8	75.8	91.8	104	112	148
Maximum input current	[A]	110	138	165	192	204	267
Inrush current	[A]	302	350	412	372	396	479

(1) Ambient air temperature 35°C
(2) Fluid: Water - In/out Temperature: 12/7°C
(3) Sound power level in accordance with ISO 3744.
(4) Sound pressure level at 10m from the unit in free field conditions, in accordance with ISO 3744
(5) SEPR: Medium temperature process chiller.