www.ecso-klimatechnik.de

Fresh solutions in the world of climate

CHILLERS

ECSO GMBH
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OPERATING MODE

- Only cooling
- Cooling – heating
- Only Heating

CONDENSER

- Air cooled
- Water cooled
- Condenserless

COMPRESSOR

- Scroll
- Reciprocating
- Twin screw or screw

MOUNTING METHOD

- External (Outside)
- Internal (Inside)
- Roof top

OPTIONS

- Reversal on water
- FC — Free-Cooling
- Anti-freeze
- HYDRO PACK — Hydro pack
- Soft fan — ECSO Soft Fan
- EEV — Electronic thermotatic valve
- Direct connect fan
- Variable expense
- Thermo dynamic heat recycling

VENTILATION (ROOF TOPS)

- Filtration
- Fan
- Mixing
- Recovery
- Heating
- Cooling
- Heat pump
- Noise reduction
- Moisture

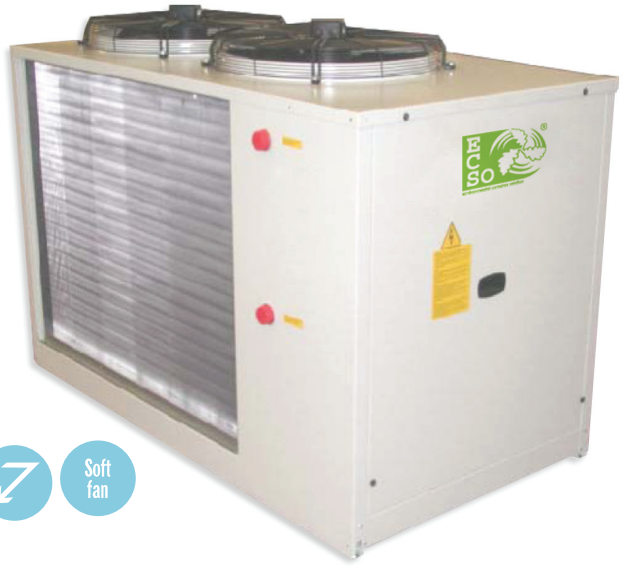
We have devised this table of symbols, indicating all the basic functions and characteristics of the unit, to make the use of this guide easy.

EMCAE

Air cooled water chillers

Air cooled reversible heat pumps from 19 kW to 40 kW

EMCAE air cooled water chillers
EMCAE…H air cooled reversible heat pumps



General features

FRAME
Self-supporting galvanized steel frame protected with polyester powder painting. Panels are easly removable for maintenance and service activities.

COMPRESSORS
Hermetic “scroll” type with overload protection by a klixon and complete with oil sight glass. They are installed on vibrations absorbing rubber and placed within a closed compartment to reduce sound level and to allow service and maintenance activities while unit is in operation.

EVAPORATOR
Brazewelded plate type. The circuits are made to garantee an homegeneous cooling of all the water flow even during partial load. The insulation is made of flexible closed-cells lining. It is advisable to fit a differential pressure switch which will stop the unit in case there is no water circulation on the plate to plate evaporator.

CONDENSER
Copper tube and aluminium finned coil. As option a protection grid is available.

FANS
Axial fans with aerodynamic outline blade section made of Al/Mg, directly coupled to a single-phase electric motor with external rotor. A safety fan guard is fitted on air flow discharge.

REFRIGERANT CIRCUIT
Each unit is supplied with: filter dryer, sight glass, thermostatic expansion valve, service valve.
To protect the refrigerant circuit the following devices are installed: manual reset high pressure switch and automatic reset low pressure switch, antifreeze thermostat.
The heat pump units version (EMCAE…H) contain, in addition: crankase heater, safety thermostat on compressor discharge line, 4-ways valve, check valve, solenoid valve, liquid receiver.

ELECTRICAL BOARD
Weather proof type with protection grade IP54 installed in the compressor box to enable service and maintenance activities while unit is in operation.
It Includes:
- Main circuit automatic breaker with locking door device, main fuses, compressor contactor, fans fuses and contactors, auxiliary circuits trafo.
- Microprocessor to control automatically the unit with a visual system to display the function as well as failures.

Versions

DS
Partial condensing heat recovery. It includes a desuperheater insulated and installed in series between the compressor and the condenser.

RCS - RCP
On request.

P
Hydraulic kit version. It includes: one pump, expansion vessel, safety valve, hydraulic circuit insulated and flowswitch. Relevant electrical circuit. As option, pumps with higher ESP are available.

PAC
Version with hydraulic kit and storage tank. It includes, further to what included in the P version, a storage tank installed on the return line.

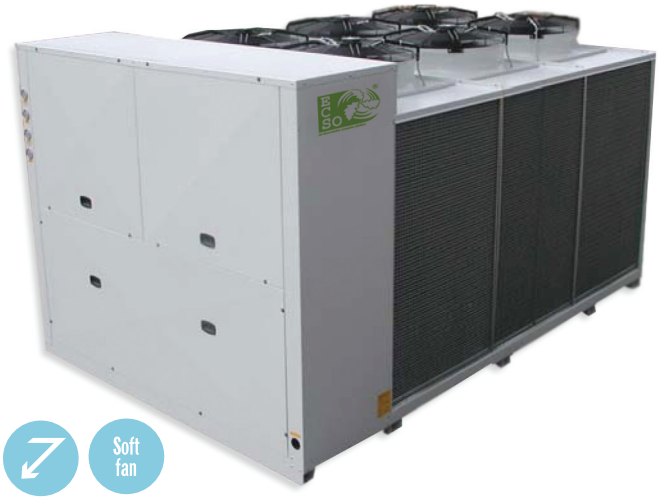
LN
Low noise version, it includes: pressostatic fan speed control, compressor insulated with a high sound absorbing layer.

VLN
On request.

Options
- Fans speed regulator.
- Cu/Cu condensing coils.
- Coils protection grid.
- Flowswitch (standard mounted on P and PAC
- versions).
- Water pumps with higher ESP.
- Compressor suction and discharge shut-off valves.
- Gauges with shut-off valves.
- Programmer clock.
- Remote control panel.
- Evaporator electric heater.
- Evaporator electric heater for PAC version.
- Rubber antivibrators.
- Wooden crate packing.

SIZE		21/1	25/1	30/1	40/1	45/1
COOLING MODE EMCAE						
Cooling capacity (1)	kW	19,8	22,7	27,6	32,7	40
Abs. Power (2)	kW	6,5	8,3	8,5	11,4	13,5
HEATING MODE EMCAE…H						
Heating capacity (1)	kW	21	25	29	37	43
Abs. Power (2)	kW	7	8,8	10,5	13	15
COMPRESSORS (SCROLL TYPE)						
Quantity	n°			1		
Refrigerant circuits	n°			1		
Capacity steps	n°			1		
Refrigerant				R407C		
EVAPORATOR PLATE-TO-PLATE TYPE (3)						
Water flow	m^3/h	3,2	3,7	4,5	5,3	6,5
Pressure drop	kPa	16	21	26	28	30
Water volume	l	0,7	0,8	1	1,3	1,5
Water connections	Ø	1¼	1¼	1¼	1¼	1¼
CONDENSER (STD/LN VERSION) (4)						
Axial fans	n°	1	1	2	2	2
Nominal air flow (5)	m^3/s	2,1	2,1	4,7	4,7	4,2
Max abs. power	kW	0,5	0,5	0,5	0,5	0,5
Max abs. current	A	2,5	2,5	2,5	2,5	2,5
CONDENSER (VLN VERSION)						
Axial fans	n°			(9)		
Nominal air flow	m^3/s					
Max abs. power	kW					
Max abs. current	A					
UNIT ELECTRICAL DATA (6)						
Max abs. current	A	18	21	23	28	33
LRC	A	100	124	128	168	199
Electrical supply	V/f/Hz			400/3+N/50		
PAC VERSION						
Storage tank water volume	l	100	100	100	100	100
Water pump nominal power	kW	0,55	0,55	0,55	0,55	0,55
Water pump nominal current	A	1,7	1,7	1,7	1,7	1,7
ESP	kPa	130	130	130	130	130
DS VERSION (7)						
Heating capacity	kW	5	5	6	8	9
Water flow	m^3/h	0,7	0,7	1	1,4	1,6
Pressure drop	kPa	20	20	20	20	20
SOUND PRESSURE LEVEL AT 1 M (6) (8)						
STD version	dB(A)	58	58	61	61	61
LN version	dB(A)	55	55	58	58	58
VLN version	dB(A)			(9)		
DIMENSIONS						
Length	mm	1860	1860	1860	1860	1860
Width	mm	1000	1000	1000	1000	1000
Height	mm	1200	1200	1200	1200	1200
Weight	kg	740	755	770	780	840

Remarks:
1) Cooling mode: water temperature 12/7°C; air temperature 35°C;
Heating mode : water temperature 40/45°C; air temperature 7°C db, 6°C wb.
2) Compressors + fans only. No water pump.
3) It becomes condenser in EMCAE…H (heat pump) version.
4) It becomes evaporator in EMCAE…H (heat pump) version.
5) Max. air flow in case of LN version.
6) Without water pump.
7) Water temperature from 40°C to 50°C.
8) Compressors site and according to ISO 3744.
9) Available on request.



ESCAE

Air cooled water chillers
Air cooled reversible heat pump
from 40 kW to 310 kW

ESCAE air cooled water chillers with scroll compressors
ESCAE…H air cooled reversible heat pumps

General features

FRAME
Self-supporting galvanized steel frame protected with polyester powder painting. Panels are easily removable for maintenance and service activities.

COMPRESSORS
Hermetic “scroll” type with overload protection by a klaxon and complete with oil sight glass. They are installed on vibrations absorbing rubber and placed within a closed compartment to reduce sound level and to allow service and maintenance activities while unit is in operation.

EVAPORATOR
Brazewelded plate type with two independent refrigerant circuits and one water circuit. The circuits are made to guarantee an homogeneous cooling of all the water flow even during partial load. The insulation is made of flexible closed-cells lining. As protection, a differential pressure switch is mounted to stop the unit in case of no water circulation.
As option, a shell and tube evaporator type is available.

CONDENSER
Copper tube and aluminium finned coil. As option a protection grid is available.

FANS
Axial fans with aerodynamic outline blade section made of Al/Mg, directly coupled to a three phase electric motor with external rotor. A safety fan guard is fitted on air flow discharge.

REFRIGERANT CIRCUIT
Each unit is supplied with two independent refrigerant circuits; each one includes: filter dryer, sight glass, thermostatic expansion valve, service valve.
To protect the refrigerant circuit the following devices are installed: automatic reset high and low pressure switch, antifreeze thermostat. Besides, only on the sizes from 212 to 292: manual-reset high and safety pressostat and safety valve.
The heat pump units version (ESCAE…H) contain, in addition: crankcase heater, safety thermostat on compressor discharge line, 4-ways valve, non return valve, double expansion valve, liquid receiver. A liquid separator on compressor suction line is installed on sizes from 182 to 292.

ELECTRICAL BOARD
Weather proof type with protection grade IP54 installed in the compressor box to enable service and maintenance activities while unit is in operation.
It Includes:
- Main circuit automatic breaker with locking door device, main fuses, compressor contactor, fans fuses and contactors, auxiliary circuits trafo.
- Microprocessor to control automatically the unit with a visual system to display the function as well as failures.

Versions

DS
Partial condensing heat recovery. Each refrigerant circuit includes a desuperheater insulated and installed in series between the compressor and the condenser.

RCS
Condensing heat recovery from 70% to 90%. Each refrigerant circuit includes a heat exchanger insulated and mounted in series between compressor and condenser. Condensing control through pressure transducer.

RCP
100% condensing heat recovery. Each refrigerant circuit includes: a heat exchanger insulated and mounted in parallel to the condenser and the relevant solenoid valves.

P
Hydraulic kit version. It includes: one or two pumps (the second as stand-by pump), expansion vessel, safety valve, hydraulic circuit insulated and with: flow switch, shut-off / flow-controll valves. Check valves are fitted in case of stand-by pump. Relevant electrical circuit. As option, pumps with higher ESP are available.

PAC
Version with hydraulic kit and storage tank. It includes, further to what included in the P version, a storage tank installed on the return line.

LN
Low noise version, it includes: pressostatic fan speed control and soundproof material covering the compressor.

VLN
Very low noise version. Further to the LN devices, this version is equipped with a bigger surface condensing coil and low speed fans.

Options

- Power factor condensing capacitors.
- Fans speed regulator.
- Cu/Cu condensing coils.
- Coils protection grid.
- Flowswitch (standard mounted on P and PAC versions with shell and tube evaporator).
- Water pumps with higher ESP.
- Compressor suction and discharge shut-off valves.
- Gauges with shut-off valves.
- Programmer clock.
- Remote control panel.
- Evaporator electric heater.
- Evaporator electric heater for PAC version.
- Rubber antivibrators.
- Double expansion valve. (STD. on H version)
- Shell and tube evaporator.
- Wooden crate packing.

SIZE		52	62	82	92	112	132	152
COOLING MODE ESCAE								
Cooling capacity (1)	kW	43	53	65	75	90	102	122
Abs.Power (2)	kW	16,7	18,8	25,8	29,8	35,3	40,8	46,1
HEATING MODE ESCAE…H								
Heating capacity (1)	kW	49	58	74	85	98	111	132
Abs.Power (2)	kW	17,7	21,5	26,4	30,8	35,2	38,7	45,5
COMPRESSORS (SCROLL)								
Quantity	n°				2			
Refrigerant circuits	n°				2			
Capacity steps	n°				2			
Refrigerant					R407C			
EVAPORATOR PLATE TO PLATE TYPE (3)								
Water flow	m^3/h	7,4	9,1	11,2	12,9	15,5	17,5	21
Pressare drop	kPa	37	38	35	37	26	33	45
Water volume	l	1,7	2,0	2,6	3,0	6,6	6,6	6,6
Water connections	Ø	2”1/2	2”1/2	2”1/2	2”1/2	2”1/2	2”1/2	2”1/2
EVAPORATOR SHELL AND TUBE TYPE(OPTIONAL) (3)								
Water flow	m^3/h	7,4	9,1	11,2	12,9	15,5	17,5	21
Pressure drop	kPa	20	30	38	27	36	45	45
Water volume	l	15	15	16	19	30	30	30
Water connections	Ø	1½”	2½”	2½”	2½”	3”	3”	3”
CONDENSER (STD/LN VERSION) (4)								
Axial fans	n°	1	2	2	2	2	2	3
Nominal air flow (5)	m^3/s	3,66	6,77	6,77	6,53	10,1	9,44	9,42
Max abs. power	kW	0,98	1,96	1,96	1,96	4	4	2,94
Max abs. current	A	1,75	3,50	3,50	3,50	7	7	5,25
CONDENSER (VLN VERSION) (4)								
Axial fans	n°	2	2	2	2	3	3	3
Nominal air flow (5)	m^3/s	3,47	5,28	5,28	8	7,66	7,66	8,8
Max abs. power	kW	0,32	1,4	1,4	4	2,1	2,1	6
Max abs. current	A	0,90	2,3	2,3	7	3,45	3,45	10,5
UNIT ELECTRICAL DATA (6)								
Max abs. current	A	42	47	57	68	80	89	111
LRC	A	145	152	197	233	264	273	331
Electrical supply	V/f/Hz				400/3/50			
PAC VERSION – PLATE-TO-PLATE AND SHELL AND TUBE (OPTIONAL)								
Storage tank water volume	l	260	260	260	470	470	470	470
Water pump nominal power	kW	0,9	0,9	1,10	1,10	1,5	1,5	1,85
Water pump nominal current	A	2,6	2,6	2,7	2,7	3,5	3,5	5
ESP (plate-to-plate)	kPa	140	150	135	120	180	165	135
ESP (shell and tube)	kPa	150	160	135	125	185	175	150
Water connections	Ø	1½”	1½”	2”	2”	2”	2½”	2½”
DS VERSION (7)								
Heating capacity	kW	11	12	16	18	21	24	33
Water flow	m^3/h	0,95	1,0	1,4	1,6	1,8	2,0	2,8
Pressure drop	kPa	10	10	15	15	15	15	15
SOUND PRESSURE LEVEL AT 1 M (6) (8)								
STD version	dB(A)	69	72	72	72	77	77	74
LN version	dB(A)	66	69	69	69	74	74	71
VLN version	dB(A)	61	64	64	64	66	66	66
DIMENSIONS								
Length	mm	2550	2550	2550	2550	2550	2550	3550
Width	mm	1150	1150	1150	1150	1150	1150	1150
Height	mm	2030	2030	2030	2030	2260	2260	2030
Weight	kg	710	750	785	870	1050	1110	1200

Remarks:
1) Cooling mode: water temperature 12/7°C; air temperature 35°C.
Heating mode : water temp. 40/45°C; air temp. 7°C db, 6°C wb.
2) Compressors + fans only. No water pump(s).
3) It becomes condenser in ESCAE…H (heat pump) version.
4) It becomes evaporator in ESCAE…H (heat pump) version.
5) Max. air flow in case of LN version.
6) Without water pump(s).
7) Water temperature from 40°C to 50°C.
8) Compressors site and according to ISO 3744.

ESCAE TECHNICAL DATA

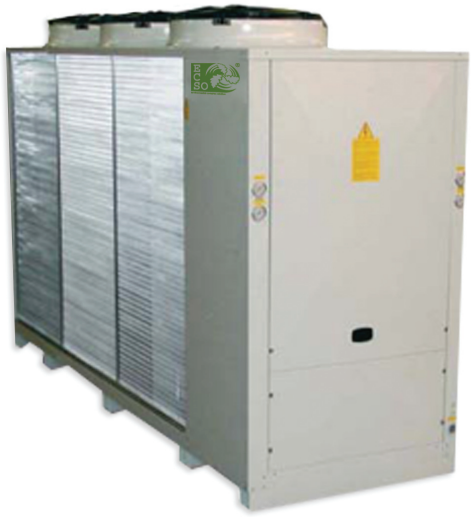
SIZE		182	212	242	262	292	322	352
COOLING MODE ESCAE								
Cooling capacity (1)	kW	152	177	204	224	244	276	304
Abs.Power (2)	kW	59,5	69	78,5	85,3	86,1	107,2	118
HEATING MODE ESCAE…H								
Heating capacity (1)	kW	169	197	225	245	265	309	338
Abs.Power (2)	kW	60,6	69,4	79,8	85,7	91,5	113	121
COMPRESSORS (SCROLL)								
Quantity	n°	2	4					
Refrigerant circuits	n°	2						
Capacity steps	n°	2	4					
Refrigerant		R407C						
EVAPORATOR PLATE-TO-PLATE TYPE (3)								
Water flow	m³/h	25,8	30,4	35,1	38,5	42	47,5	52,3
Pressare drop	kPa	48	46	58	45	53	50	52
Water volume	l	8,2	9,8	9,8	13	13	18	21
Water connections	Ø	2½”	2½”	2½”	2½”	2½”	2½”	2½”
EVAPORATOR SHELL AND TUBE TYPE (OPTIONAL) (3)								
Water flow	m³/h	25,8	30,4	35,1	38,5	42	47,5	52.3
Pressure drop	kPa	26	24	33	32	35	51	58
Water volume	l	51	55	55	105	105	81	81
Water connections	-	DN100PN10	DN100PN10	DN100PN10	DN125PN10	DN125PN10	DN125PN16	DN125PN16
CONDENSER (STD/LN VERSION) (4)								
Axial fans	n°	3	5	6	6	6	6	6
Nominal air flow (5)	m³/s	14,4	16	20	19,41	18,83	28,9	28,9
Max abs. power	kW	6	5	5,88	5,88	5,88	12,0	12,0
Max abs. current	A	10,5	9,5	10,5	10,5	10,5	21,0	21,0
CONDENSER (VLN VERSION) (4)								
Axial fans	n°	3	6	6	6	6	(9)	(9)
Nominal air flow	m³/s	13,06	15,72	15,33	23,12	23,12		
Max abs. power	kW	3,9	4,2	4,2	9,6	9,6		
Max abs. current	A	7	6,9	6,9	16,8	16,8		
UNIT ELECTRICAL DATA (6)								
Max abs. current	A	135	175	175	196	219	250	271
LRC	A	383	358	358	416	438	497	518
Electrical supply	V/f/Hz	400/3/50						
PAC VERSION – PLATE-TO-PLATE AND SHELL AND TUBE (OPTIONAL)								
Storage tank water volume	l	660	660	660	660	660	660	660
Water pump nominal power	kW	1,85	2,2	2,2	3	3	3	3
Water pump nominal current	A	5	5	5	6,5	6,5	6,5	6,5
ESP (plate-to-plate)	kPa	150	140	125	130	115	105	98
ESP (shell and tube)	kPa	175	160	155	150	145	104	82
Water connections	Ø	2½”	3”	3”	3”	3”	4”	4”
DS VERSION (7)								
Heating capacity	kW	42	50	55	62	66	75	83
Water flow	m³/h	3,6	4,3	4,7	5,3	5,6	6,4	7,1
Pressure drop	kPa	16	16	18	18	20	21	22
SOUND PRESSURE LEVEL AT 1 M (6) (8)								
STD version	dB(A)	79	75	77	77	77	82	82
LN version	dB(A)	72	72	74	74	74	79	79
VLN version	dB(A)	67	67	68	-	-	-	-
DIMENSIONS								
Length	mm	3550	3550	3550	3550	3550	3550	3550
Width	mm	1150	2295	2295	2295	2295	2295	2295
Height	mm	2030	2030	2030	2030	2030	2260	2260
Weight	kg	1520	1950	2150	2250	2300	2700	2900

Remarks:
1) Cooling mode: water temperature 12/7°C; air temperature 35°C;
Heating mode: water temperature 40/45°C; air temperature 7°C db, 6°C wb.
2) Compressors + fans only. No water pump(s).
3) It becomes condenser in ESCAE…H (heat pump) version.
4) It becomes evaporator in ESCAE…H (heat pump) version.
5) Max. air flow in case of LN version.
6) Without water pump(s).
7) Water temperature from 40°C to 50°C.
8) Compressors site and according to ISO 3744.
9) Available on request.

ESCAE-FC

Air cooled water chiller

Free-Cooling
from 40 kW to 365 kW



The ESCAE-FC free-cooling units are particularly suitable where chilled water all year long is required, so also by low ambient air temperature. The free-cooling system utilises the low outside temperature for chilling water in the coil starting from 15°C ambient air temperature.

THE FREE-COOLING PRINCIPLE

The units series ESCAE-FC are designed to cool down water/glycol fluid.
This units are equipped, further to the chiller components. The control system consists of a modulating three-way valve and of a certain number of probes allowing the water coil functioning and therefore the "free-cooling" operation. In the standard chiller the return water/glycol fluid is cooled down through the shell and tube evaporator. In the ESCAE-FC units working in free-cooling mode, the water/glycol fluid runs through the free-cooling coil which is cooled by means of the external air, thus reducing the load on the compressors or even completely substituting them. The control system consists of a microprocessor, an inlet water temperature probe, an external air temperature probe, a working probe and a no-freezing probe.

BENEFITS

- Your overheads would reduce in the mid season.
- Your free cooling system could run automatically when required.
- There would be less wear and tear due to the reduced hours of operation.
- Your maintenance costs would reduce.

General features

FRAME

Self-supporting, galvanized steel frame protected with polyester powder painting. Panels are easily removable for maintenance and service activities.

COMPRESSORS

Hermetic "scroll" type with overload protection by a klixon and complete with oil sight glass. They are installed on vibration absorbing rubber and placed within a closed compartment to reduce sound level and to allow service and maintenance activities while unit is in operation.

EVAPORATOR

Braze-welded plate type with one or two independent refrigerant circuits and one water circuit.
The circuit are made to guarantee an homogeneous cooling of all the water flow even during partial load. The insulation is made of flexible closed-cells lining.
As protection, a differential pressure switch is mounted to stop the unit in case of no water circulation.
As option, a shell and tube evaporator type is available.

CONDENSER / FREE-COOLING

Condenser: one or two condensers made of copper tubes and aluminium finned coils.
Water free-cooling coil: one or two coils made of copper tubes and aluminium finned coils.

FANS

Axial fans with aerodynamic outline blade section directly coupled to a three phase electric motor with external rotor. A safety fan guard is fitted on air flow discharge.

REFRIGERANT CIRCUIT

Each unit is supplied with one or two independent refrigerant circuits; each one includes: filter dyer, sight glass, thermostatic expansion valve, service valve.
To protect the refrigerant circuit the following devices are installed: man. reset HP-switch, aut. reset LP- switch and anti-freeze thermostat. Besides, only from mod. 131 to 352, man. reset safety pressure switch and safety valve.

ELECTRICAL BOARD

Weather proof type with protection grade IP54 installed in the compressor box to enable service and maintenance activities while unit is in operation.
It includes:

- Main circuit automatic breaker with locking door device, main fuses, compressor contactor, auxiliary circuits trafo.
- Microprocessor to control automatically the unit with a visual system to display the function as well as failures.

Versions

RCP

100% condensing heat recovery. Each refrigerant circuit includes: a heat exchanger insulated and mounted in parallel to the condenser. Moreover the relevant solenoid valves.

P

Hydraulic kit version. It includes: one or two pumps (one as stand-by pump), expansion vessel, safety valve, air purger, hydraulic circuit insulated and with flowswitch, shut-off valves and, in case of stand-by pump, non- return pump. Relevant electrical circuit. As option, pumps with higher ESP are available.

PAC

Version with hydraulic and inertial storage tank. It includes, further to what included in the P version, a storage tank installed on the return line.

LN

Low noise version, it includes fan speed control and special soundproofing for the compressors chamber.

Options

- Power factor correction.
- Cu/Cu condensing coils.
- Protection grid on the coils
- Flowswitch (STD on P and PAC versions)
- Pumps with higher ESP.
- Compressor shut-off valves.
- HP/LP gauges with shut-off valves.
- Programmer clock.
- Remote control panel.
- Rubber antiv. mountings.
- Shell and tube evaporator.

SIZE		51	61	81	91	111	131	151
COOLING MODE								
Nominal cooling capacity (1)	kW	47	57	68	89	99	112	137
Abs. power (2)	kW	18,6	20,4	26,3	28,9	34,7	39,3	52,2
FREE-COOLING								
Amb. temp. (50% FC-capacity)	°C	9.5	8.2	7	8.2	7.5	7.2	7.3
Amb. temp. (100% FC-capacity)	°C	2.9	0.3	-2.1	0.2	-1.1	-1.7	-1.1
Ab. power (3)	kW	2.2	2.2	2.2	3.3	3.3	3.3	6.6
COMPRESSOR (SCROLL)								
Quantity	n°				2			
Refrigerant circuit	n°				1			
Capacity steps	n°				2			
Refrigerant	-				R407C			
HYDRAULIC CIRCUIT – PLATE-TO-PLATE EVAPORATOR								
Water flow - 30% glycol	m^3/h	7.2	8.9	10.6	13.8	15.3	17.4	21.2
Pressure drop	kPa	90	105	120	100	115	70	120
Water/glycol volume	l	36	37	38	55	56	72	67
Water connections	Ø	2”1/2	2”1/2	2”1/2	2”1/2	2”1/2	2”1/2	2”1/2
HYDRAULIC CIRCUIT – SHELL AND TUBE EVAPORATOR								
Water flow - 30%	m^3/h	7.2	8.9	10.6	13.8	15.3	17.4	21.2
Pressure drop	kPa	65	90	100	80	95	55	100
Water/glycol volume	l	45	46	49	84	84	102	111
Water connections	Ø	2”1/2	2”1/2	2”1/2	2”1/2	2”1/2	2”1/2	2”1/2
CONDENSING SECTION / FREE-COOLING								
Axial fans	n°	2	2	2	3	3	3	3
Nominal air flow	m^3/h	20.500	19.500	19.500	30.000	30.000	27.600	45.000
Max abs. power	kW	2.2	2.2	2.2	3.3	3.3	3.3	6.6
Max abs. current	A	5	5	5	5	5	5	11.7
UNIT EL. DATA (4)								
Max operating abs. current	A	43.5	47.5	57.5	69.25	78.25	87.25	116
Max LRC	A	146.5	152.5	197.5	235.25	262.25	271.25	336
El. supply	V/f/Hz				400/3/50			
PAC - VERSION								
Tank volume	l	260	260	260	660	660	660	660
Pump abs. power	kW	0.55	0.55	1.5	1.5	1.85	1.85	1.85
Pump abs. current	A	1.6	1.6	3.5	3.5	5	5	5
ESP pump	kPa	75	100	130	140	125	160	95
SOUND PRESSURE LEVEL AT 1 M (5)								
STD Version	dB(A)	72	72	72	74	74	74	79
LN Version	dB(A)	70	70	70	72	72	72	77
DIMENSIONS								
Length	mm	2550	2550	2550	3550	3550	3550	3550
Width	mm	1150	1150	1150	1150	1150	1150	1150
Height	mm	2030	2030	2030	2030	2030	2030	2260
Weight	kg	900	950	1000	1045	1210	1280	1340

Remarks:
1) Water temp. 16°C / 10°C; ambient air temp. 32°C; glycol 30%;
2) Compressor + fans; except pumps.
3) Abs. Power in free-cooling operation; except pumps.
4) Except pumps.
5) Compressor side according to ISO 3744.

SIZE		181	212	242	262	292	322	352
COOLING MODE								
Cooling capacity (1)	kW	181	198	227	254	274	309	360
Abs. power (2)	kW	59,6	67,6	78,6	92	104,4	110,2	118
FREE-COOLING								
Amb. Temp. (50% FC-capacity)	°C	8.2	7.5	7.2	8	7.5	7.6	8.2
Amb. Temp. (100% FC-capacity)	°C	0.3	-1.1	-1.8	0.0	-1.1	-1.0	0.4
Abs. power (3)	kW	8.8	6.6	6.6	13.2	13.2	13.2	17.6
COMPRESSORS (SCROLL)								
Quantity	n°	2						4
Refrigerant circuits	n°	1						2
Capacity steps	n°	2						4
Refrigerant	Type	R407C						
HYDRAULIC CIRCUIT – PLATE-TO-PLATE EVAPORATOR								
Water flow - 30% glycol	m³/h	26.2	28.6	32.8	36.7	39.6	44.8	52.1
Pressure drop	kPa	125	125	85	125	135	135	135
Water/glycol volume	l	100	115	145	130	130	175	200
Water connections	Ø	2”1/2	3”	3”	3”	4”	4”	4”
HYDRAULIC CIRCUIT – SHELL AND TUBE EVAPORATOR								
Water flow - 30% glycol	m³/h	26.2	28.6	32.8	36.7	39.6	44.8	52.1
Pressure drop	kPa	95	105	55	105	115	105	105
Water/glycol volume	l	200	205	230	220	220	300	315
Water connections	Ø	2”1/2	3”	3”	3”	4”	4”	4”
CONDENSING SECTION / FREE-COOLING								
Axial fans	n°	4	6	6	6	6	6	8
Nom. Air flow	m³/h	64.500	60.000	55.200	90.000	90.000	84.000	129.000
Max abs. power	kW	8.8	6.6	6.6	13.2	13.2	13.2	17.6
Max abs. current	A	15.6	15	15	23.4	23.4	23.4	31.2
UNIT EL. DATA (4)								
Max operating abs. current	A	141	156.5	174.5	210	232	253	282
Max LRC	A	388.5	340.5	358.5	430	452	500.5	529.5
El. supply	V/f/Hz	400/3/50						
PAC - VERSION								
Tank volume	l	1100	1100	1100	1100	1100	1100	1250
Pump abs. power	kW	2.2	2.2	2.2	3.0	4.0	4.0	4.0
Pump abs. current	A	4.5	4.5	4.5	6.0	7.4	7.4	7.4
ESP pump	kPa	110	90	120	100	145	115	100
SOUND PRESSURE LEVEL AT 1 M (5)								
STD Version	dB(A)	80	77	77	82	82	82	84
LN Version	dB(A)	78	75	75	80	80	80	82
DIMENSIONS								
Length	mm	5100	3550	3550	3550	3550	3550	5100
Width	mm	1150	2300	2300	2300	2300	2300	2300
Height	mm	2260	2030	2030	2260	2260	2260	2260
Weight	kg	1900	2110	2420	2560	2540	2950	3250

Remarks:
1) Water temp. 16°C / 10°C; ambient air temp. 32°C; glycol 30%;
2) Compressor + fans; except pumps.
3) Abs. Power in free-cooling operation, except pump
4) Except pump.
5) Compressor side according to ISO 3744.

ELCAE-X

Air cooled water chillers

Air cooled reversible heat pumps from 350 kW to 1600 kW

ELCAE-X air cooled water chillers
ELCAE-X..H air cooled reversible heat pumps

General features

FRAME
Open self-supporting galvanized steel frame protected with polyester powder painting. The open frame makes easy maintenance and service activities while the unit is in operation. As option a protection grid is available.

COMPRESSORS
Semi-hermetic «double screw» type with a built-in thermal switch protection motor complete with: suction and discharge shut-off valves (option), oil separator, step control, crankcase heater, oil level switch (option), oil sight glass, safety thermostat, oil strainer, suction strainer, liquid injection device.

EVAPORATOR
Shell and tube type, made by copper tube and steel shell and with two independent refrigerant circuits and one water circuit. The thermal insulation is made of flexible closed-cells lining. As protection

CONDENSERS
Double circuits made of several copper tube and aluminum finned coils. They are connected to make two refrigerant circuits.

FANS
Axial fans with aerodynamic outline blade, directly couplet to a three phase electric motor with external rotor. A safety fan guard is fitted on air flow discharge.

REFRIGERANT CIRCUITS
Each unit is supplied with two or more independent refrigerant circuits; each one includes: filter dryer, refrigerant sight glass, solenoid valve, thermostatic electronic valve with external equalizer, liquid line shut-off valve, service valve, HP/LP gauges with shut-off valves. To protect the refrigerant circuit the following devices are installed: automatic reset low pressure switch, manual reset high and safety pressure switches, safety valve, antifreeze thermostat.

ELECTRICAL BOARD
Weather proof type with protection grade IP 54. It includes:
- Main circuit automatic breaker with locking door device, main fuses, compressor contactor and fuses for the star/delta start or part winding;
- Fans contactors and fuses, auxiliary circuits transformer;
- Microprocessor to control automatically the unit with a visual system to display the function as well as failures.

Versions

DS
Partial condensing heat recovery. Each refrigerant circuit includes a desuperheater insulated and installed in series between the compressor and the condenser.

RCS
Condensing heat recovery from 70% to 90%. Each refrigerant circuit includes a heat exchanger shell and tube type insulated and mounted in series between compressor and condenser. Condensing control through pressure transducer.

RCP
100% condensing heat recovery. Each refrigerant circuit includes: a heat exchanger shell and tube type insulated and mounted in parallel to the condenser and the relevant solenoid valves.

P
Hydraulic kit version. It includes: one or two pumps (one as stand-by pump) expansion vessel, safety valve, air purger, hydraulic circuit insulated and with flowswitch, shut-off valves and, in case of stand-by pump, non-return pump. Relevant electrical circuit. As option, pumps with higher ESP are available.

PAC
Version with hydraulic and inertial storage tank. It includes, further to what included in the P version, a storage tank installed on the return line. The storage tank includes the evaporator.

LN
Low noise version, it includes pressostatic fan speed control and special soundproofing for the compressor chamber.

VLN
Very low noise version. Further to the LN devices, this version is equipped with very low speed fans and extra insulated compressor box.

Options

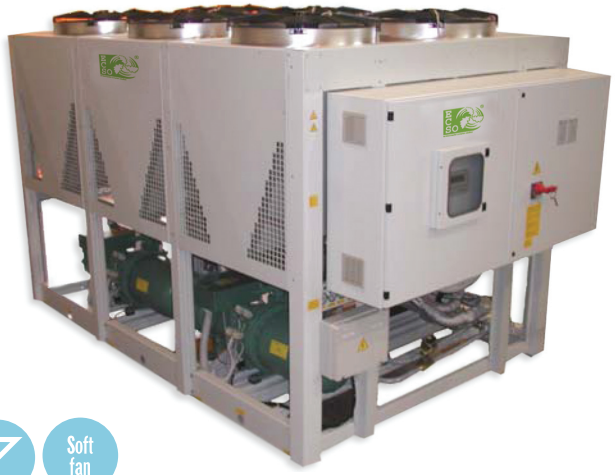
- Power factor correction.
- Fan speed control.
- Remote control panel.
- Clock card.
- RS 485 card.
- Evaporator electrical heater.
- El. Heater for PAC version.
- Compressor shut of valves.
- Cu/Cu condensing coils.
- Flowswitch (STD on P and PAC versions).
- Pump shut off valve.
- Oversized evaporator.
- Pumps with higher ESP.
- Protection grid on compressor/coils chamber.
- Rubber antivibration mounts.
- High sensibility AV mounts.

UNIT MODEL		462	542	612	702	812	922	942	982
COOLING MODE ELCAE-X									
Cooling capacity (1)	kW	387	445	515	583	688	754	794	850
Abs. power (2)	kW	138	173	184	217	253	291	281	303
EER	-	2,8	2,6	2,8	2,65	2,7	2,6	2,8	2,8
COMPRESSORS (SEMI-HERMETIC SCREW TYPE)									
Number of compressors	n°	2							
Number of circuits	n°	2							
Capacity steps	n°	4							
Refrigerant	Type	R134a							
Refrigerant charge	Kg	102	105	136	138	170	170	204	208
SHELL AND TUBE EVAPORATOR									
Water flow	m³/h	66,5	76,5	88,5	100,2	118,3	129,6	136,5	146,2
Pressure drop	kPa	58	47	62	60	65	54	60	48
Water content	l	111	113	113	240	195	268	268	330
Water connections	PN 10	DN125	DN125	DN125	DN150	DN150	DN200	DN200	DN200
CONDENSER (VERSION STD/LN)									
Axial fans	n°	6	6	8	8	10	10	12	12
Nominal air flow (3)	m³/s	31,8	31,8	42,4	42,4	53	53	63,6	63,6
Max abs. power	kW	12	12	16	16	20	20	24	24
Max abs. current	A	24	24	32	32	40	40	48	48
CONDENSER (VERSION VLN)									
Axial fans	n°	6	6	8	8	10	10	12	12
Nominal air flow	m³/s	24,5	24,5	32,6	32,6	40,8	40,8	49	49
Max abs. power	kW	6,6	6.6	8.8	8.8	11	11	13,2	13,2
Max abs. current	A	13,8	13,8	18,4	18,4	23	23	27,6	27,6
UNIT ELECTRICAL DATA (VERSION STD/LN)									
Max abs. current	A	365	393	441	493	565	635	643	673
Max Locked current	A	692	857	600	626	679	793	801	906
Electrical supply	V/f/Hz	400/3/50							
UNIT ELECTRICAL DATA (VERSION VLN)									
Max abs. current	A	355	383	427	479	548	618	623	653
Max Locked current	A	682	847	586	612	662	776	781	886
Electrical supply	V/f/Hz	400/3/50							
PAC VERSION									
Storage tank water volume	l	1100	1250	1500	1500	1500	2000	2000	2000
Water pump nominal power	kW	3	4	5.5	5.5	7.5	11	11	11
Water pump nominal current	A	6	8	11	11	15	22	22	22
ESP	kPa	75	110	115	100	130	190	170	170
DS VERSION (4)									
Heating capacity	kW	104	119	139	157	184	203	215	230
Water flow	m³/h	8,9	10,2	12	13,2	15,8	17,5	18,5	19,8
Pressure drop	kPa	26	28	32	28	34	35	38	40
SOUND PRESSURE LEVEL AT 1 M (5) (1)									
STD version	dB(A)	78	78	79	79	80	80	80	80
LN version	dB(A)	75	75	76	76	77	77	77	77
VLN version	dB(A)	70	70	71	71	72	72	73	73
DIMENSIONS									
Length	mm	3850	3850	4950	4950	6050	6050	7150	7150
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2450	2450	2450	2450	2560	2560	2560	2560
Weight	kg	4770	5015	5960	6940	7700	8275	8970	9675

Remarks: 1) Cooling mode: water 12°C / 7°C; air temp. 35°C.
2) Compressors + fans only. No water pump(s).
3) Max air flow in case of LN version.
4) Water temp. from 40°C to 50°C.
5) Compressor site and according to ISO 3744 (water pump(s) not included)

UNIT MODEL		1022	1042	1102	1382	1482	1552	1843	1963
COOLING MODE ELCAE-X									
Cooling capacity (1)	kW	895	975	1075	1150	1260	1370	1490	1550
Abs. power (2)	kW	330	369	406	395	451	471	586	641
EER	-	2,7	2,65	2,65	2,9	2,8	2,9	2,55	2,4
COMPRESSORS (SEMI-HERMETIC SCREW TYPE)									
Number of compressors	n°				2				3
Number of circuits	n°				2				3
Capacity steps	n°				4				6
Refrigerant					R134a				
Refrigerant change	Kg	208	212	238	272	306	340	348	352
SHELL AND TUBE EVAPORATOR									
Water flow	m^3/h	153,9	167,7	184,9	197,8	216,7	235,6	256,2	266,6
Pressure drop	kPa	44	49	61	66	56	67	79	84
Water content	l	370	570	540	570	540	540	540	540
Water connections	PN 10	DN200							
CONDENSER (VERSION STD/LN)									
Axial fans	n°	12	12	14	16	18	20	20	20
Nominal air flow (3)	m^3/s	63,6	63,6	74,2	84,8	95,4	106	106	106
Max abs. power	kW	24	24	28	32	38	40	40	40
Max abs. current	A	48	48	56	64	72	80	80	80
CONDENSER (VERSION VLN)									
Axial fans	n°	12	12	14	16	18	20	20	20
Nominal air flow	m^3/s	49	49	57	65,3	73,5	81,6	81,6	81,6
Max abs. power	kW	13,2	15,4	17,6	19,8	19,8	22	22	22
Max abs. current	A	27,6	27,6	32,2	36,8	41,4	46	46	46
UNIT ELECTRICAL DATA (VERSION STD/LN)									
Max abs. current	A	723	681	739	962	1007	1007	1265	1325
Max Locked current	A	983	914	999	1120	1240	1240	1423	1558
Electrical supply	V/f/Hz				400/3/50				
UNIT ELECTRICAL DATA (VERSION VLN)									
Max abs. current	A	703	657	712	932	977	977	1231	1291
Max Locked current	A	973	890	972	1090	1210	1210	1389	1524
Electrical supply	V/f/Hz				400/3/50				
PAC VERSION									
Storage tank water volume	l	-	-	-	-	-	-	-	-
Water pump nominal power	kW	11	11	11	15	18,5	20	20	20
Water pump nominal current	A	22	22	22	30	37	40	40	40
ESP	kPa	180	170	130	170	170	190	160	150
DS VERSION (4)									
Heating capacity	kW	238	265	278	319	341	364	395	409
Water flow	m^3/h	20,5	22,8	23,9	27,4	29,3	31,3	33,9	35,1
Pressure drop	kPa	33	32	33	36	38	40	41	40
SOUND PRESSURE LEVEL AT 1 M (5) (1)									
STD version	dB(A)	80	81	82	82	82	82	83	83
LN version	dB(A)	77	78	79	79	79	79	80	80
VLN version	dB(A)	73	74	75	76	76	76	77	77
DIMENSIONS									
Length	mm	7150	8250	9350	10450	10450	10450	11550	11550
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560
Weight	kg	7880	8210	8610	9050	9540	9860	12050	12650

Remarks:
1) Cooling mode: water 12°C / 7°C; air temp. 35°C.
2) Compressors + fans only. No water pump(s).
3) Max air flow in case of LN version.
4) Water temp. from 40°C to 50°C.
5) Compressor site and according to ISO 3744 (water pump(s) not included)



ELCAE-V

Air cooled water chillers
Air cooled reversibile heat pump
from 400 kW to 1050 kW

ELCAE-V air cooled water chillers with screw compressors
ELCAE-V…H air cooled reversible heat pumps

General features

FRAME
Open self-supporting galvanized steel frame protected with polyester powder painting. The open frame make easy maintenance and service activities while the unit is in operation.

COMPRESSORS
Semihermetic “double screw” type with a built-in thermal switch protection motor, discharge check valve and complete with: suction and discharge shut-off valve, suction strainer, oil strainer, oil separator on the discharge site to separate oil from refrigerant, oil level sight glass, lubricant heater, 4 stages or linear control system, liquid injection device.

EVAPORATOR
Shell and tube type, made by copper tube and steel shell and with two indipendent refrigerant circuits and one water circuit. The thermal insulation is made by flexible closed-cells lining.

CONDENSERS
Made by several copper tube and aluminium finned coils, twin connected.

FANS
Axial fans with aerodynamic outline blade section made of Al/Mg, directly coupled to a three phase electric motor with external rotor. A safety fan guard is fitted on air flow discharge.

REFRIGERANT CIRCUIT
Each unit is supplied with two indipendent refrigerant circuits; each one includes: filter dryer, refrigerant sight glass, liquid solenoid valve, external equalised thermostatic expansion valve, schrader service valves, high and low pressure gauges with shut-off valve.
To protect the refrigerant circuit the following devices are installed: automatic reset low pressure switch, antifreeze thermostat, manual-reset high and safety pressostat and safety valve.
The heat pump units version (ELCAE-V…H) contain, in addition: safety thermostat and pressostatic valve on compressor discharge line, 4-ways valve, check valves, solenoid valve, liquid receiver and a liquid separator on compressor suction line.

ELECTRICAL BOARD
Weather proof type with protection grade IP55. It Includes:
- Main circuit automatic breaker with locking door device, main fuses, contactor and thermal rele for compressors star/delta starting, fans fuses and contactors, auxiliary circuits trafo.
- Microprocessor to control automatically the unit with a visual system to display the function as well as failures.

Versions

DS
Partial condensing heat recovery. Each refrigerant circuit includes a desuperheater insulated and installed in series between the compressor and the condenser.

RCS
Condensing heat recovery from 70% to 90%. Each refrigerant circuit includes a heat exchanger insulated and mounted in series between compressor and condenser. Condensing control through pressure transducer.

RCP
100% condensing heat recovery. Each refrigerant circuit includes: a heat exchanger insulated and mounted in parallel to the condenser and the relevant solenoid valves.

P
Hydraulic kit version. It includes: one or two pumps (the second as stand-by pump), expansion vessel, safety valve, hydraulic circuit insulated and with flow switch, shut-off / flow-control valves. Check valves are fitted in case of stand-by pump. Relevant electrical circuit. As option, pumps with higher ESP are available.

PAC
Version with hydraulic kit and inertial storage tank, with evaporator installed into the tank. It includes, further what included in the P version, a storage tank installed on the return line.

LN
Low noise version, it includes: pressostatic fan speed control, compressor box insulated by high sound absorbing layer.

VLN
Very low noise version. Further to the LN devices, this version is equipped with a bigger surface condensing coil and low speed fans.

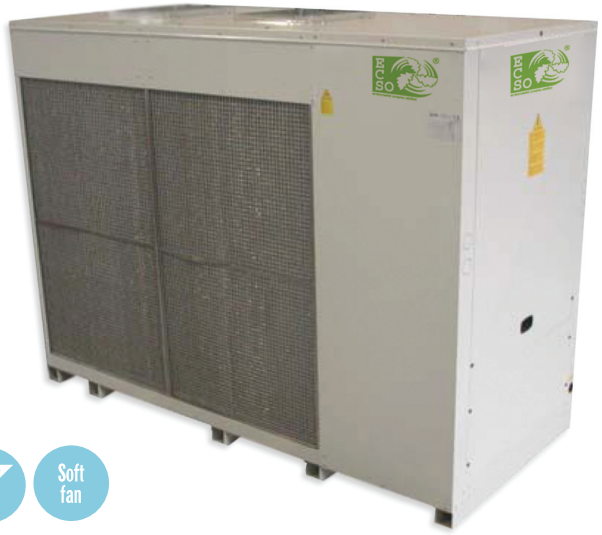
OPTIONS
- Power factor condensing capacitors.
- Fans speed regulator.
- Compressors space protection grid.
- Cu/Cu condensing coils.
- Flowswitch (standard on P and PAC versions)
- Water pumps with higher ESP.
- Programmer clock.
- Remote control panel.
- Evaporator electric heater.
- Evaporator electric heater for PAC version.
- Rubber antivibrators.
- Double expansion valve.
- Wooden crate packing

SIZE		312	362	472	572	672	732
COOLING MODE ELCAE-V							
Cooling capacity (1)	kW	270	325	418	510	592	658
Abs. Power (2)	kW	108,6	131,4	166,6	198,4	228,8	246,1
HEATING MODE ELCAE-V….H							
Heating capacity (1)	kW	318	402	510	610	710	770
Abs. Power (2)	kW	123	141	182	218	253	275
COMPRESSORS (SCREW)							
Quantity	off	2					
Refrigerant circuits	off	2					
Capacity steps	off	4					
Refrigerant type		R407C					
EVAPORATOR (SHELL AND TUBE) (3)							
Water flow	m³/h	46,4	55,9	71,9	87,7	101,8	113,2
Pressure drop	kPa	29	36	29	31	41	44
Water volume	l	105	90	134	230	230	216
Water connections	PN 10	DN125	DN125	DN150	DN200	DN200	DN200
CONDENSER (VERS. STD/LN) (4)							
Axial fans	n°	6	6	8	10	12	14
Nominal air flow (5)	m³/s	32,83	32,83	43,77	54,72	65,66	76,61
Max. abs. power	kW	12	12	16	20	24	28
Max. abs. current	A	24	24	32	40	48	56
CONDENSER (VERS. VLN) (4)							
Axial fans	n°	6	8	10	12	14	16
Nominal air flow	m³/s	23,33	31,11	38,88	46,66	54,44	62,22
Max. abs. power	kW	5,6	7,4	9,3	11,2	13	14,9
Max. abs. current	A	12	16	20	24	28	32
UNIT ELECTRICAL DATA (VERS. STD/LN)							
Max. abs. current	A	234	274	342	410	478	526
LRC	A	320	375	465	580	650	730
Electrical supply	V/f/Hz	400/3/50					
UNIT ELECTRICAL DATA (VERS. VLN)							
Max. abs. current	A	222	266	330	394	458	502
LRC	A	305	365	455	565	630	705
Electrical supply	V/f/Hz	400/3/50					
PAC VERSION							
Storage tank water volume	l	1100	1350	1450	1450	1450	1450
Water pump nominal power	kW	3	4	5,5	7,5	9,2	11
Water pump nominal current	A	6,6	9,6	12	16	20	23
ESP	kPa	131	154	161	189	199	216
DS VERSION (6)							
Heating capacity	kW	87	105	133	160	183	197
Water flow	m³/h	7,5	9	11,4	13,7	15,7	16,9
Pressure drop	kPa	22	31	21	48	52	50
SOUND PRESSURE LEVEL AT 1 M (7)							
STD version	dB(A)	78	78	79	79	80	80
LN version	dB(A)	75	75	76	76	77	77
VLN version	dB(A)	70	71	71	72	72	73
DIMENSIONS							
Length	mm	3850	4950	4950	4950	6050	7150
Width	mm	2300	2300	2300	2300	2300	2300
Height	mm	2450	2450	2450	2450	2450	2550
Weight	kg	4600	5500	6500	6650	6900	7340

Remarks:
1) Cooling mode: water 12/7°C; air temp. 35°C;
Heating mode: water temp. 40/45°C; air temp. 7°C db, 6°C wb.
2) Compressors + fans only. No water pump(s).
3) It becomes condenser in ELCAE-V…H (heat pump) version.
4) It becomes evaporator in ELCAE-V…H (heat pump) version.
5) Max. air flow in case of LN version.
6) Water temp from 40°C to 50°C.
7) Compressors site and according to ISO 3744 (water pump(s) not included).

SIZE		772	892	962	1052	1142
COOLING MODE ELCAE-V						
Cooling capacity (1)	kW	690	800	862	943	1020
Abs. Power (2)	kW	266,4	304,3	342	369,3	395,8
HEATING MODE ELCAE-V….H						
Heating capacity (1)	kW	830	-	-	-	-
Abs. Power (2)	kW	294	-	-	-	-
COMPRESSORS (SCREW)						
Quantity	off			2		
Refrigerant circuits	off			2		
Capacity steps	off			4		
Refrigerant	type			R407C		
EVAPORATOR (SHELL AND TUBE) (3)						
Water flow	m^3/h	118,5	137,5	148,3	162	175,3
Pressure drop	kPa	48	44	50	44	51
Water volume	l	216	210	210	298	298
Water connections	PN 10	DN 200	DN125	DN150	DN200	DN200
CONDENSER (VERS. STD/LN) (4)						
Axial fans	n°	14	16	16	18	20
Nominal air flow (5)	m^3/s	76,61	87,55	87,55	98,50	109,44
Max. abs. power	kW	28	32	32	36	40
Max. abs. current	A	56	64	64	72	80
CONDENSER (VERS. VLN) (4)						
Axial fans	n°	16	18	20	-	-
Nominal air flow	m^3/s	62,22	70	77,77	-	-
Max. abs. power	kW	14,9	16,7	18,6	-	-
Max. abs. current	A	32	38	40	-	-
UNIT ELECTRICAL DATA (VERS. STD/LN)						
Max. abs. current	A	566	634	694	757	840
LRC	A	770	885	945	1050	1135
Electrical supply	V/f/Hz			400/3/50		
UNIT ELECTRICAL DATA (VERS. VLN)						
Max. abs. current	A	542	606	670	-	-
LRC	A	745	860	920	-	-
Electrical supply	V/f/Hz			400/3/50		
PAC VERSION						
Storage tank water volume	l	1450	1900	1900	1900	1900
Water pump nominal power	kW	11	11	11	15	15
Water pump nominal current	A	23	23	23	30	30
ESP	kPa	182	186	170	226	189
DS VERSION (6)						
Heating capacity	kW	215	240	275	295	315
Water flow	m^3/h	18,5	20,6	23,6	25,4	27,1
Pressure drop	kPa	47	50	55	58	60
SOUND PRESSURE LEVEL AT 1 M (7)						
STD version	dB(A)	80	81	81	81	81
LN version	dB(A)	77	78	78	78	78
VLN version	dB(A)	73	73	73	-	-
DIMENSIONS						
Length	mm	7150	8350	8350	9450	10550
Width	mm	2300	2300	2300	2300	2300
Height	mm	2550	2550	2550	2550	2550
Weight	kg	7540	8050	8370	8670	9500

Remarks:
1) Cooling mode: water 12/7°C; air temp. 35°C;
Heating mode: water temp. 40/45°C; air temp. 7°C db, 6°C wb.
2) Compressors + fans only. No water pump(s).
3) It becomes condenser in ELCAE-V…H (heat pump) version.
4) It becomes evaporator in ELCAE-V…H (heat pump) version.
5) Max. air flow in case of LN version.
6) Water temp from 40°C to 50°C.
7) Compressors site and according to ISO 3744 (water pump(s) not included).



ESCAC

Air cooled water chillers

Air cooled reversible heat pumps from 40 kW to 155 kW

ESCAC air cooled water chillers
ESCA..H air cooled reversible heat pumps

General features

FRAME
Self-supporting, galvanized steel frame coated with polyester powder paint. Panels can be easily removed for maintenance and service.

COMPRESSORS
Hermetic “scroll” type with overload protection and complete with oil sight glass. The compressors are mounted on rubber shock absorbers and installed within a closed compartment to reduce sound level and to allow service and maintenance while unit is operating.

EVAPORATOR
Braze welded plate to plate type with two independent refrigerant circuits and one water circuit. The circuits are designed to guarantee a homogeneous cooling of the entire water flow even during partial load. The insulation is with a flexible closed-cell lining. A differential pressure switch is fitted as a protection which will stop the unit in case there is no water circulation.
As an option, a shell and tube evaporator type is also available.

CONDENSER
Copper tube and aluminium finned coil. As an option a protection grill is also available.

CENTRIFUGAL FANS
Centrifugal fans directly coupled to a three-phase belt driven motor.

REFRIGERANT CIRCUIT
Each unit is supplied with two independent refrigerant circuits, each one includes: filter dryer, sight glass, thermostatic expansion valve, service valve. To protect the refrigerant circuit the following devices are fitted: manual reset high pressure switch and automatic reset low pressure switch, antifreeze thermostat.
The heat pump units version (ESCAC…H) contain, in addition: crankcase heater, safety thermostat on the compressor discharge line, 4-way valve, non-return valve, liquid receiver.

ELECTRICAL BOARD
Weather proof type protected to IP54 standard and installed within the compressor box to enable service and maintenance while the unit is in operation.
The board contains:
- Main circuit automatic breaker switch with door locking device, main fuses, compressor contactor, fan fuses and contactors, auxiliary circuit transformer.
- Microprocessor to automatically control the unit with a display to indicate the functions as well as alarm conditions.

Versions

DS
Partial condensing heat recovery. Each refrigerant circuit includes an insulated desuperheater installed in series between the compressor and the condenser.

RCS
Condensing heat recovery from 70% to 90%. Each refrigerant circuit includes an insulated heat exchanger installed in series between compressor and condenser. Condensing control through pressure transducer.

RCP
100% condensing heat recovery. Each refrigerant circuit includes: an insulated heat exchanger installed in parallel to the condenser and the relevant solenoid valve.

P
Hydraulic kit version. This includes one or two pumps (the second as stand-by pump), expansion vessel, safety valve, insulated hydraulic circuit and also with shut-off valves and, in case of stand-by pump, non-return valve. Relevant electrical circuit.
As an option, pumps with higher ESP are available.

PAC
Version with hydraulic kit and storage tank. This includes, in addition to what is included in the P version, a storage tank installed on the return line.

LN
Low noise version. This includes compressors insulated with a high sound absorbing layer.

VLN
Very low noise version. Not available.

Options

- Power factor condensing capacitors.
- Cu/Cu condensing coils.
- Coil protection grill (without metal filter in H version).
- Flowswitch (standard fitting on P and PAC versions with shell and tube evaporator).
- Water pumps with higher ESP.
- Compressor suction and discharge shut-off valves.
- Guages with shut-off valves.
- Programmable clock.
- Remote control panel.
- Condensing control.
- Evaporator electrical heater.
- Evaporator electrical heater for PAC version.
- Rubber shock absorbers.
- Double expansion valve.
- Shell and tube evaporator.
- Oversized evaporator.
- Wooden crate packing.

SIZE		52	62	82	92	112	132	152	182
COOLING MODE ESCAC									
Cooling capacity (1)	kW	43	53	65	75	90	102	122	152
Abs. Power (2)	kW	15,7	16,8	23,8	27,8	32,3	36,8	43,2	55,7
HEATING MODE ESCAC…H									
Heating capacity (1)	kW	49	58	74	85	98	111	132	169
Abs. Power (2)	kW	16,8	19,5	24,5	28,8	32,3	35,8	42,5	56,7
COMPRESSORS (SCROLL TYPE)									
Quantity	off	2							
Refrigerant circuits	off	2							
Capacity steps	off	2							
Refrigerant	-	R407 C							
EVAPORATOR PLATE- TO- PLATE (3)									
Water flow	m³/h	7,4	9,1	11,2	12,9	15,5	17,5	21	25,8
Pressure drop	kPa	37	38	35	37	26	33	45	48
Water volume	l	1,7	2	2,6	3	6,6	6,6	6,6	8,2
Water connections	Ø	2½”	2½”	2½”	2½”	2½”	2½”	2½”	2½
EVAPORATOR SHELL AND TUBE TYPE (OPTIONAL) (3)									
Water flow	m³/h	7,4	9,1	11,2	12,9	15,5	17,5	21	25,8
Pressure drop	kPa	30	30	38	27	36	45	43	26
Water volume	l	12	15	16	19	30	30	30	51
Water connections	Ø	1½”	2½”	2½”	2½”	3”	3”	3”	3”
CONDENSER (VERS. STD/LN) (4)									
Centrifugal fans	n°	1	2	2	2	2	2	2	2
Nominal air flow (5)	m³/s	3,66	6,77	6,77	6,53	10	10	9,42	10,5
Nominal power	kW	2,2	2 x 3	2 x 3	2 x 3	2 x 4	2 x 4	2 x 5,5	2 x 5,5
Nominal current	A	4,5	2 x 6,5	2 x 6,5	2 x 6,5	2 x 8,5	2 x 8,5	2 x 10,5	2 x 10,5
External pressure	Pa	150							
Condenser (vers. VLN) (4)		VLN Version : not available							
UNIT ELECTRICAL DATA (6)									
Max abs. current	A	46	60	70	80	90	99	125	147
LRC	A	150	165	207	245	258	283	348	394
Electrical supply	V/f/Hz	400 / 3 / 50							
PAC VERSION PLATE-TO-PLATE; PAC VERSION SHELL AND TUBE (OPTIONAL)									
Storage tank water volume	L	260	260	260	470	470	470	660	660
Water pump nominal power	kW	0,55	0,75	0,75	0,75	1,5	1,5	1,5	1,85
Water pump nominal current	A	1,7	2,3	2,3	2,3	4,3	4,3	4,3	5
ESP (plate-to-plate)	kPa	140	150	135	120	180	165	135	150
ESP (shell and tube)	kPa	147	158	132	130	170	153	137	175
Water connections	Ø	1½”	1½”	2”	2”	2”	2½”	2½”	2½”
DS VERSION (7)									
Heating capacity	kW	11	12	16	18	21	24	33	42
Water flow	m³/h	0,95	1	1,4	1,6	1,8	2	2,8	3,6
Pressure drop	kPa	10	10	15	15	15	15	15	16
SOUND PRESSURE LEVEL AT 1 M (6) (8)									
STD version	dB(A)	70	73	73	73	75	75	75	75
LN version	dB(A)	65	68	68	68	70	70	70	70
VLN version	dB(A)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
DIMENSIONS									
Length	mm	2550	2550	2550	2550	3550	3550	3550	3550
Width	mm	1150	1150	1150	1150	1150	1150	1150	1150
Height	mm	2030	2030	2030	2030	2030	2030	2030	2030
Weight	kg	1120	1395	1450	1520	1694	1860	2060	2155

Remarks:
1) Cooling mode: water temp. 12/7°C; air temperature 35°C
   Heating mode: water temp. 40/45°C; air temp. 7°C db, 6°C wb.
2) Abs. power compressors only without fans.
3) This becomes condenser in ESCAC…H (heat pump) version.
4) This becomes evaporator in ESCAC…H (heat pump) version.
5) Max. air flow in case of LN version.
6) Compressors + fans, without water pump(s).
7) Water temperature from 40°C to 50°C.
8) Compressors site and ducted air discharged (according to ISO 3744).

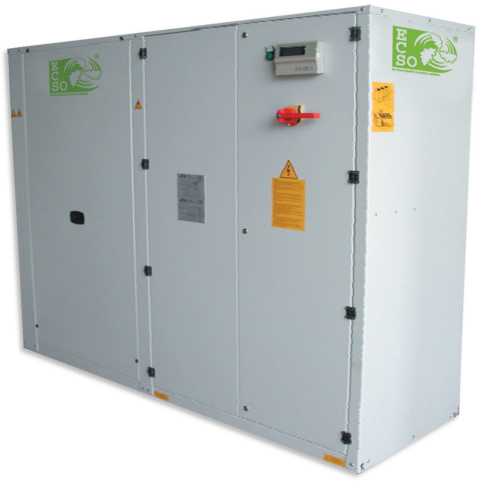
n.a. – Not available

ESCW

Water cooled water chillers

Reversible heat pumps water cooled from 50 kW to 350 kW

ESCW water cooled water chiller with scroll compressors
ESCW…H water cooled reversible heat pumps
with scroll compressors.



General features

FRAME
ESCW/P: self-supporting, galvanized steel frame coated with polyester powder paint.
ESCW/F: steel frame.

COMPRESSORS
Hermetic “scroll” type with crankcase heater and klaxon for overload protection. The compressors are mounted on rubber shock absorbers.

EVAPORATOR
ESCW/P: Braze welded plate to plate type.
ESCW/F: Shell and tube type.
Both series are with two independent refrigerant circuits and one water circuit. The insulation is with a flexible closed-cell lining. It is advisable to fit a differential pressure switch which will stop the unit in case there is no water circulation on the plate to plate evaporator.

CONDENSERS
One or two depending on the model.
ESCW/P: plate to plate condensers.
ESCW/F: shell and tube condensers.
Ground water version for well water use on condenser, both plate to plate and shell and tube type.

REFRIGERANT CIRCUIT
Each unit is supplied with one or two independent refrigerant circuits; each one includes: filter dryer, sight glass, thermostatic expansion valve, service valve.
To protect the refrigerant circuit the following devices are fitted: manual reset high pressure switch, automatic reset low pressure switch, antifreeze thermostat.
Besides, only on the sizes from 212 to 352: manual reset safety pressure switches and safety valve.
The heat pump unit version (ESCW…H) contains, in addition: 4-way valve, non-return valve.

ELECTRICAL BOARD
Weather proof type protected to IP54 standard. It Includes:
- Main circuit automatic breaker switch with door locking device, main fuses, compressor contactor, auxiliary circuits transformer.
- Microprocessor to automatically control the unit with a display to indicate the functions as well as alarm conditions.

Versions

DS
Partial condensing heat recovery. Each refrigerant circuit includes a desuperheater insulated and installed in series between the compressor and the condenser.

RCS
Condensing heat recovery from 70% to 90%. Each refrigerant circuit includes a heat exchanger insulated and mounted in series between compressor and condenser.

RCP
100% condensing heat recovery. Each refrigerant circuit includes: a heat exchanger insulated and mounted in parallel to the condenser and the relevant solenoid valves.

PAC
Version with hydraulic kit and storage tank installed on the return line. This includes, insulated storage tank, one or two pumps (one as stand-by), expansion vessel, safety valve, air release valve, setting valves and, in case of two pumps, non return valve. Relevant electrical circuit. As an option, pumps with higher ESP are available.

LN
Low noise version equipped with soundproof material covering the compressors.

VLN
Very low noise version. In addition to the LN devices the ESCW/P and ESCW/F are equipped with insulated panels on the compressor box.

Options

- Power factor condensing capacitors.
- Differential pressure valve.
- Oversized evaporator.
- Flowswitch not mounted (standard mounted on ESCW/F…PAC versions)
- Shut off valves
- Water pumps with higher ESP.
- Compressor suction and discharge shut-off valves.
- Gauges with shut-off valves.
- Programmable clock.
- Remote control panel.
- Evaporator electric heater.
- Evaporator electric heater for PAC version.
- Rubber shock absorbers.
- Wooden crate packing.

SIZE		52	62	82	92	112	132	152
COOLING MODE ESCW								
Cooling capacity (1)	kW	49	57	73	86	103	115	135
Abs. Power (2)	kW	11.9	13.9	18.3	21.3	24.1	27.2	32.6
HEATING MODE ESCW…H								
Cooling capacity (1)	kW	62	72	92	108	128	142	170
Abs. power (2)	kW	15	17.4	22.6	26.4	29.8	33.8	40
COMPRESSORS (SCROLL TYPE)								
Quantity	Off	2			4			
Capcity steps	Off	2			4			
Refrigerant	Type				R407C			
EVAPORATOR PLATE-TO-PLATE (3)								
Water flow	m³/h	8.4	9.6	12.6	14.8	17.4	19.5	22.7
Pressure drop	kPa	44.4	45.3	56.4	51.5	36.5	44.3	48
Water volume	l	2.9	3.4	3.8	4.7	7	7	7.9
Water connections	Ø	2½”	2½”	2½”	2½”	2½”	2½”	2½”
EVAPORATOR SHELL AND TUBE (OPTIONAL) (3)								
Water flow	m³/h	8.4	9.6	12.6	14.8	17.4	19.5	22.7
Pressure drop	kPa	32.9	30.1	42.6	30.4	37.1	46.5	63
ater volume	l	12	15	16	19	30	30	30
Water connections	Ø	1½”	2½”	2½”	2½”	3”	3”	3”
PLATE TO PLATE CONDENSER (4)								
Water flow	m³/h	8.7	10	13	15.4	18.2	20.4	24
Pressure drop	kPa	47	47.7	59.9	54.8	37.8	46.2	51
Water volume	l	2.9	3.4	3.8	4.7	7	7	7.9
Water connections	Ø	2½”	2½”	2½”	2½”	2½”	2½”	2½”
SHELL AND TUBE CONDENSER (4)								
Water flow	m³/h	8.7	10	13	15.4	18.2	20.4	24
Pressure drop	kPa	27	36	40	55	27	28	41
Water volume	l	10.2	10.2	12.4	12.4	13.9	15.4	17
Water connections	Ø	1½”	1½”	1½”	1½”	2”	2”	2”
UNIT ELECTRICAL DATA (5)								
Max abs. Current	A	40	58	58	70	85	100	138
LRC	A	150	159	164	210	250	265	339
Electrical supply	V/f/Hz				400/3/50			
PAC VERSION - SHELL AND TUBE EXCHANGERS								
Storage tank water volume	l	260	260	470	470	470	470	470
Water pump nominal power	kW	0.55	0.55	0.75	1.5	1.5	1.5	1.5
Water pump nominal current	A	1.7	1.7	2.3	4.3	4.3	4.3	4.3
LRC	A	8	8	12.6	22.3	22.3	22.3	22.3
ESP pump	kPa	137	125	117	180	163	143	102
DS VERSION (6)								
Heating capacity	kW	11	12	16	18	21	24	33
Water flow	m³/h	0,95	1,0	1,4	1,6	1,8	2,0	2,8
Pressure drop	kPa	10	10	15	15	15	15	15
PLATE TO PLATE VERSION SOUND PRESSURE AT 1 M (5)								
STD version	dB(A)	65	65	68	70	72	73	73
LN version	dB(A)	60	60	63	65	67	68	68
VLN version	dB(A)	57	57	60	62	64	65	65
DIMENSIONS								
Length	mm	1750	1750	2400	2400	2400	2400	2400
Width	mm	710	710	710	710	710	710	710
Height	mm	1490	1490	1610	1610	1610	1610	1610
Weight	kg	505	585	620	700	870	980	1075

Remarks: 1) Cooling mode : evaporator water temperature 12/7°C ; condenser water temperature 29/35°C.
Heating mode: user circuit inlet water temperature 40°C; well water temperature 15/10°C.

2) Compressors only, no water pump(s).
3) This becomes condenser in ESCW…H (heat pump) version.
4) This becomes evaporator in ESCW…H (heat pump) version.
5) Without water pump(s).

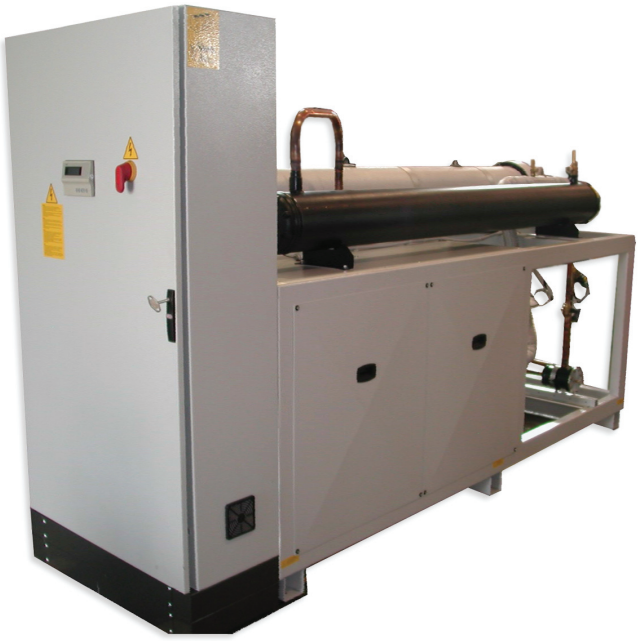
SIZE		182	212	242	262	292	322	352
COOLING MODE ESCW								
Cooling capacity (1)	kW	169	199	222	247	264	309	337
Abs. Power (2)	kW	42.5	48,5	54,6	60	65,6	78.4	84.8
HEATING MODE ESCW…H								
Cooling capacity (1)	kW	213	249	278	310	334	400	443
Abs. power (2)	kW	52,7	61	68	73,6	80	95	103
COMPRESSORS (SCROLL TYPE)								
Quantity	Off	2	4					
Capcity steps	Off	2	4					
Refrigerant	Type	R 407C						
EVAPORATOR PLATE TO PLATE								
Water flow	m³/h	28,7	33,7	37,8	42	45	53.1	58
Pressure drop	kPa	56	50	60	54	60	60	62
Water volume	l	9,2	12	12	15,1	15,1	21	23.6
Water connections	Ø	2½”	2½”	2½”	2½”	2½”	2½”	2½”
EVAPORATOR SHELL AND TUBE (3)								
Water flow	m³/h	28,7	33,7	37,8	42	45	53.1	58
Pressure drop	kPa	24	26.7	33,8	33,8	39	41	48
Water volume	l	51	55	55	105	105	81	81
Water connections	PN 10	DN 100	DN 100	DN 100	DN 125	DN 125	DN 125	DN 125
PLATE TO PLATE CONDENSER								
Water flow	m³/h	30,3	35,5	39,6	44	46,9	55.5	60.5
Pressure drop	kPa	60	54	67	57	67	65	68
Water volume	l	9,2	12	12	15,1	15,1	21	23.6
Water connections	Ø	2½”	2½”	2½”	2½”	2½”	2½”	2½”
SHELL AND TUBE CONDENSER (4)								
Water flow	m³/h	30,3	35,5	39,6	44	46,9	55.5	60.5
Pressure drop	kPa	44	42	38	40	41	41	39
Water volume	l	21	25	29,5	31,5	33,2	33.2	37
Water connections	Ø	2”	2½”	2½”	2½”	2½”	2½”	2½”
UNIT ELECTRICAL DATA (5)								
Max abs. Current	A	125	150	170	190	215	235	255
LRC	A	372	335	353	415	435	477	498
PAC VERSION - SHELL AND TUBE								
Storage tank water volume	l	660	660	660	660	660	660	660
Water pump nominal power	kW	1,5	2,2	3	3	3	3	3
Water pump nominal current	A	4,3	5,3	6,6	6,6	6,6	6.6	6.6
LRC	A	22,3	24,9	51,5	51,5	51,5	105	98
ESP pump	kP	116	128	144	136	125	104	82
DS VERSION (6)								
Heating capacity	kW	42	50	55	62	66	79	85
Water flow	m³/h	3,6	4,3	4,7	5,3	5,6	6.8	7.3
Pressure drop	kPa	16	16	18	18	20	20	20
PLATE TO PLATE VERSION SOUND PRESSURE LEVEL AT 1 M (5)								
STD version	dB(A)	77	75	76	78	79	79	79
LN version	dB(A)	72	70	71	73	74	74	74
VLN version	dB(A)	69	67	68	70	71	71	71
DIMENSIONS								
Length	mm	3000	3000	3000	3000	3000	3000	3000
Width	mm	710	710	710	710	710	710	710
Height	mm	1610	1610	1610	1610	1610	1610	1610
Weight	kg	1270	1421	1568	1700	1810	1940	2035

Remarks: 1) Cooling mode: evaporator water 12/7°C; condenser water 29/35°C.
Heating mode: user circuit inlet water temperature 40°C; well water temperature 15/10°C.
2) Compressors only, no water pump(s).
3) This becomes condenser in ESCW…H (heat pump).
4) This becomes evaporator ESCW…H (heat pump).
5) Without water pump(s).

ELCW

Water cooled water chillers from 340 kW to 1250 kW

ELCW water cooled water chiller with screw compressors



General features

SELF-SUPPORTING STRUCTURE
Made of strong welded steel frame protected with polyester powder painting.

COMPRESSORS
Semi-Hermetic “screw” type they are mounted on rubber shock absorbers and equipped with an electronic integrate module to protect against overheating, discharge shut off valve and crankcase heater.

EVAPORATOR
With shell and tube evaporator with one or two refrigerant circuits and one water circuit. The insulation is with a flexible closed-cell lining. As protection the end user or the installer will foresee a flowswitch or differential pressure switch in order to stop the compressors in case of no water flow.

CONDENSERS
One or two shell and tube type.
As Option, the “ground water” version is available for well water. In case of sea water, a special Cu/Ni condenser is available.

REFRIGERNT CIRCUIT
Each unit is supplied with one or two independent refrigerant circuits; filter dryer, sight glass, thermostatic expansion valve, solenoid valve, service Schrader valve.
To protect the refrigerant circuit the following devices are fitted: man reset high pressure switch, man. Reset safety switch, aut. reset low pressure switch, antifreeze thermostat and safety valve.

ELECTRICAL BOARD
Weather proof type protected to IP54.
It includes:
- Main circuit automatic breaker switch with door locking device, main fuses, compressor contactor, auxiliary circuits transformer.
- Microprocessor to automatically control the unit with a display to indicate the functions as well as alarm conditions.

Versions

DS
Partial condensing heat recovery. Each refrigerant circuit includes a desuperheater insulated and installed in series between the compressors and the condenser.

RCS
Condensing heat recovery from 70% to 90%. Each refrigerant circuit includes: a heat exchanger insulated and mounted in series to the condenser.

RCP
100% condensing heat recovery. Each refrigerant circuit includes: a heat exchanger insulated and mounted in parallel to the condenser and the relevant solenoid valves.

PAC
Version with hydraulic kit and storage tank installed on the return line. This includes, insulated storage tank, one or two pumps (one as stand-by), expansion vessel, safety valve, air release valve, relevant hydraulic circuit suitably insulated and equipped with gauges, shut off valves and, in case of two pumps, non return valve. Moreover: relevant electrical circuit. As option, pumps with higher ESP are available.

LN
Low noise version equipped with soundproof material for the compressor chamber.

Options
- Power factor condensing capacitors.
- Numbered wires.
- Pressostatic valves.
- Oversized evaporator.
- Flowswitch not mounted (standard mounted on ELCW PAC version).
- Water pumps with higher ESP.
- Compressor suction shut off valves.
- Gauges with shut off valves.
- Programmable clock.
- Remote control panel.
- Evaporator electric heater.
- Evaporator electric heater for PAC version.
- Rubber shock absorbers.

SIZE		362	371	411	422	451	501
OPERATION WITH COOLING TOWER USE							
Cooling capacity (1)	kW	340	344	384	392	420	478
Abs. power (3)	kW	94,8	92,8	103	107,4	112,2	123,8
EVAPORATOR							
Water flow	m³/h	58,5	59,3	66,1	67,5	72,4	82,5
Pressure drop	KPa	39	40	51	52	61	55
Water volume	L	105	105	99	99	99	143
Water connections	PN 10	DN125	DN125	DN125	DN125	DN125	DN150
CONDENSER SUITABLE FOR COOLING TOWER							
Water flow	m³/h	37,5+37,5	75,1	83,8	43+43	91,6	103
Pressure drop	kPa	65	53	54	60	44	60
Water volume	l	17+17	38,3	41,8	21+21	51	52
Water connections	Ø	2”1/2	DN80	DN80	2”1/2	DN100	DN100
OPERATION WITH DRY COOLER USE 30% GLYCOL							
Cooling capacity (2)	kW	285	290	326	331	363	411
Abs. power (3)	kW	117,2	112,8	124,1	107,4	135,6	150,6
EVAPORATOR							
Water flow	m³/h	49,0	49,8	56,1	56,9	62,4	70,7
Pressure drop	kPa	28	29	37	38	43	40
Water volume	l	105	105	99	99	99	143
Water connections	PN 10	DN125	DN125	DN125	DN125	DN125	DN150
CONDENSER SUITABLE FOR DRYCOOLER							
Water flow	m³/h	37,4+37,4	75,6	84,5	43,1+43,1	93,6	105,5
Pressure drop	kPa	47,5	52	43	38,5	44	48
Water Volume	l	17+17	38.3	41.8	21+21	51	52
Water connections	Ø	2”1/2	DN80	DN80	2”1/2	DN100	DN100
COMPRESSER (SCREW TYPE)							
Quantity	off	2	1	1	2	1	1
Capacity step	off	4	3	3	4	3	3
Refrigerant Type		R407C					
UNIT ELECTRICAL DATA (4)							
Max operating abs. current	A	232	221	240	269	262	288
Max LRC	A	469	357	373	487	456	546
PAC VERSION							
Tank volume	l	1100	1100	1250	1250	1250	1100
Water pump nominal power	kW	4	4	5.5	5.5	5.5	5.5
Water pump nominal current	A	8.14	8.14	11	11	11	11
ESP	kPa	120	110	115	120	110	120
DS VERSION (5)							
Heating capacity	kW	68	69	77	78	84	96
Water flow	m³/h	5.85	5.93	6.62	6.71	7.23	8.25
Pressure drop	kPa	13	13	13	16	13	13
SOUND PRESSURE LEVEL AT 1 M (4)							
STD Version	dB(A)	74	80	80	74	80	80
LN Version	dB(A)	71	77	77	71	77	77
DIMENSIONS							
Length	mm	3000	3000	3200	3200	3200	3400
Width	mm	1000	1000	1200	1200	1200	1200
Height	mm	1650	1650	1710	1710	1710	1800
Weight	kg	1900	1930	2050	2080	2210	2280

Remarks:
1) Cooling mode : evaporator water temp. 12°C / 7°C; condenser water temp. 30°C / 35°C.
2) Cooling mode : evaporator water temp. 12°C / 7°C; condenser water temp. 40°C / 45°C.
3) Compressor only, no water pump(s).
4) Without water pump(s).
5) Water temperature 40°C / 50°C.

SIZE		512	531	572	622	651	732
OPERATION WITH COOLING TOWER USE							
Cooling capacity (1)	kW	485	508	535	580	627	692
Abs. power (3)	kW	131,6	131,5	145,2	158	161,7	186,4
EVAPORATOR							
Water flow	m³/h	83,9	87,9	92,5	100,3	108,6	119,9
Pressure drop	kPa	57	61	69	59	78	60
Water volume	l	143	143	143	134	121	230
Water connections	PN 10	DN150	DN150	DN150	DN150	DN150	DN200
CONDENSER SUITABLE FOR COOLING TOWER							
Water flow	m³/h	53+53	110	58,5+58,5	63,5+63,5	135,7	75,5+75,5
Pressure drop	kPa	55	55	61	50	39	53
Water volume	l	28+28	56,5	28,5+28,5	33,2+33,2	83,2	38,3+38,3
Water connections	Ø	DN80	DN100	DN80	DN80	DN125	DN80
OPERATION WITH DRY COOLER USE - 30% GLYCOL							
Cooling capacity (2)	kW	410	440	455	495	555	590
Abs. power (3)	kW	160,6	159,7	177,2	192,4	194,1	226,2
EVAPORATOR							
Water flow	m³/h	70,5	75,6	78,2	85,1	95,4	101,4
Pressure drop	kPa	40	46	50	42	59	41
Water volume	l	143	143	143	134	121	230
Water connections	PN 10	DN150	DN150	DN150	DN150	DN150	DN200
CONDENSER SUITABLE FOR DRY-COOLER							
Water flow	m³/h	53,4+53,4	113,0	59,1+59,1	64,1+64,1	141,2	76,1+76,1
Pressure drop	kPa	40,7	39,2	37,9	38,2	39,4	53
Water volume	l	28+28	56,5	28,5+28,5	33,2+33,2	83,2	38,3+38,3
Water connections	Ø	DN80	DN100	DN80	DN80	DN125	DN80
COMPRESSOR (SCREW TYPE)							
Quantity	off	2	1	2	2	1	2
Capacity step	off	4	3	4	4	3	4
Refrigerant Type		R407C					
UNIT ELECTRICAL DATA (4)							
Max operating abs. current	A	327	312	353	383	379	439
Max LRC	A	660	598	496	511	598	575
PAC VERSION							
Tank volume	l	1100	1100	1100	1250	1250	1100
Water pump nominal power	kW	5,5	5,5	7,5	7,5	7,5	11
Water pump nominal current	A	11	11	14,6	14,6	14,6	21,6
ESP	kPa	105	110	125	120	120	110
DS VERSION (5)							
Heating capacity	kW	97	102	108	116	125	140
Water flow	m³/h	8,34	8,77	9,29	9,98	10,75	12,04
Pressure drop	kPa	16	14	14	12	14	13
SOUND PRESSURE LEVEL AT 1 M (4)							
STD Version	dB(A)	79	79	78	78	79	81
LN Version	dB(A)	76	76	75	75	76	78
DIMENSIONS							
Length	mm	3400	3400	3400	3400	3400	3600
Width	mm	1200	1300	1300	1300	1300	1400
Height	mm	1800	1800	1800	1800	1800	1800
Weight	kg	2340	2450	2550	2650	2750	2900

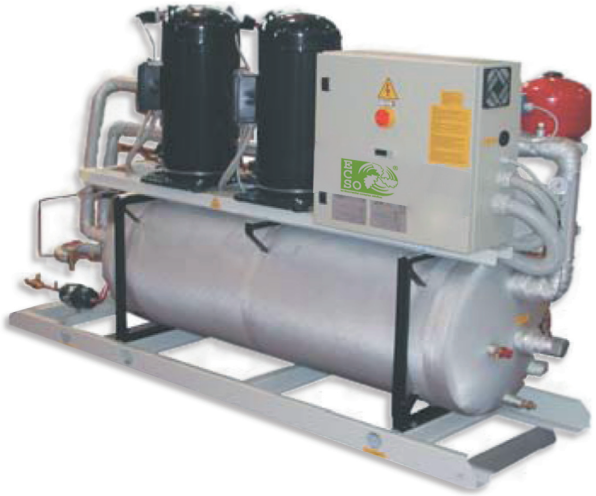
Remarks:
1) Cooling mode : evaporator water temp. 12°C / 7°C; condenser water temp. 30°C / 35°C.
2) Cooling mode : evaporator water temp. 12°C / 7°C; condenser water temp. 40°C / 45°C.
3) Compressor only, no water pump(s).
4) Without water pump(s).
5) Water temperature 40°C / 50°C.

SIZE		822	902	1002	1062	1182	1302
OPERATION WITH COOLING TOWER USE							
Cooling capacity (1)	kW	767	865	945	1010	1124	1237
Abs. power (3)	kW	206	225,6	247,2	262,8	294,2	323,6
EVAPORATOR							
Water flow	m³/h	132,8	149,8	163,5	175	196,8	214,2
Pressure drop	kPa	74	52	62	90	41	49
Water volume	L	240	221	221	241	274	374
Water connections	PN 10	DN200	DN200	DN200	DN200	DN200	DN200
CONDENSER SUITABLE FOR COOLING TOWER							
Water flow	m³/h	83,5+83,5	94+94	102,5+102,5	110+110	122+122	134,2+134,2
Pressure drop	kPa	58	46	57	55	67	39
Water volume	l	42+42	51+51	56+56	61+61	61+83	83+83
Water connections	Ø	DN80	DN100	DN100	DN100	DN125	DN125
OPERATION WITH DRY COOLER USE - 30% GLYCOL							
Cooling capacity (2)	kW	650	746	822	870	980	1090
Abs. power (3)	kW	252,6	277,6	305,8	323,8	364,4	392,2
EVAPORATOR							
Water flow	m³/h	111,7	128,3	141,5	149,6	168,5	187,6
Pressure drop	kPa	46	40	49	66	30	38
Water volume	l	240	221	221	241	214	374
Water connections	PN 10	DN200	DN200	DN200	DN200	DN200	DN200
CONDENSER SUITABLE FOR DRY-COOLER							
Water flow	m³/h	83,0+83,0	91,2+91,2	103,8+103,8	109,8+109,8	123,7+123,7	136,4+136,4
Pressure drop	kPa	43	39	47	35	30	36
Water volume	l	60+60	66+66	71+71	87+87	87+107	107+107
Water connections	Ø	DN100	DN100	DN100	DN125	DN125	DN125
COMPRESSOR (SCREW TYPE)							
Quantity	n°	2	2	2	2	2	2
Capacity step	n°	4	4	4	4	4	4
Refrigerant Type					R407C		
UNIT ELECTRICAL DATA (4)							
Max operating abs. current	A	479	520	573	623	698	754
Max LRC	A	615	716	831	908	908	975
PAC VERSION							
Tank volume	l	1100	1250	1250	1250	2000	2000
Water pump nominal power	kW	11	11	18,5	18,5	22	22
Water pump nominal current	A	21,6	21,6	36,3	36,3	43,2	43,2
ESP	kPa	130	140	160	150	160	150
DS VERSION (5)							
Heating capacity	kW	155	175	190	200	225	248
Water flow	m³/h	13,3	15	16,3	17,2	19,3	21,3
Pressure drop	kPa	13	13	13	15	14	14
SOUND PRESSURE LEVEL AT 1 M (4)							
STD Version	Db(A)	83	83	82	82	82	82
LN Version	Db(A)	80	80	79	79	79	79
DIMENSIONS							
Length	mm	3600	3800	3800	4200	4200	4200
Width	mm	1400	1400	1400	1500	1500	1500
Height	mm	1950	1950	1950	2050	2050	2100
Weight	kg	3200	3450	3550	3600	3680	3850

Remarks:
1) Cooling mode : evaporator water temp. 12°C / 7°C; condenser water temp. 30°C / 35°C.
2) Cooling mode : evaporator water temp. 12°C / 7°C; condenser water temp. 40°C / 45°C.
3) Compressor only, no water pump(s).
4) Without water pump(s).
5) Water temperature 40°C / 50°C.

ESCL

**ESCL condenserless chiller
for indoor installation from 50 kW to 340 kW**



General features

FRAME
ESCL/P: self-supporting, galvanized steel frame coated with polyester paint.
ESCL/F e ESCL/F… PAC stell frame.

COMPRESSORS
Hermetic “scroll” type with crankcase heater and klaxon for overload protection.

EVAPORATOR
ESCL/P: braze welded plate to plate type.
ESCL/F: shell and tube type.
Both series are with two independent refrigerant circuits and one water circuit. The insulation is with a flexible closed-cell lining.
It is advisable to fit a differential pressure switch which will stop the unit in case there is no water circulation on the plate to plate evaporator.

REFRIGERANT CIRCUIT
Each unit is supplied with one or two independent refrigerant circuits; each one includes: filter dryer, sight glass, thermostatic expansion valve, service valve.
To protect the refrigerant circuit the following devices are fitted: manual reset high pressure switch, automatic reset low pressure switch, antifreeze thermostat.
Besides, only on the size from mod. 111 to 352: manual reset safety pressure switch.

ELECTRICAL BOARD
It includes:
- Main circuit automatic breaker switch with door locking device, main fuses, compressor contactor, auxiliary circuits transformer.
- Microprocessor to automatically control the unit with a display to indicate the functions as well as alarm conditions.

Versions

DS
Partial condensing heat recovery. Each refrigerant circuit includes a desuperheater insulated and installed in series between the compressors and the condenser.

RCS
Condensing heat recovery from 70% to 90%. Each refrigerant circuit includes: a heat exchanger insulated and mounted in parallel to the condenser between compressor and condenser.

RCP
100% condensing heat recovery. Each refrigerant circuit includes: a heat exchanger insulated and mounted in parallel to the condenser and the relevant solenoid valves.

PAC
Available as ESCL/F version only. It includes hydraulic kit and storage tank installed on the return line. This includes: insulated storage tank, one or two pumps (one as stand-by), expansion vessel, safety valve, air release valve, shutoff valves and, in case of two pumps, non return valve. Relevant electrical circuit. As an option, pumps with higher ESP are available.

LN
Low noise version equipped with soundproof material covering the compressors.

VLN
On request.

Options
- Power factor condensing capacitors.
- Oversized evaporator.
- Flowswitch (standard mounted on ESCL/F….PAC).
- Water pumps with higher ESP.
- Compressor suction and discharge shut-off valves.
- Gauges with shut-off valves.
- Programmable clock.
- Remote control panel.
- Evaporator electric heater.
- Electric heater for PAC version.
- Rubber shock absorbers.
- Wooden crate packing.

ESCL TECHNICAL DATA

SIZE		51	61	81	91	111	131	151	161
Cooling capacity (1)	kW	48	56	69	84	98	110	136	153
Abs. Power (2)	kW	14.3	16.4	20.4	24.6	28.5	32.4	40.2	44.1
COMPRESSORS (SCROLL)									
Quantity	n°	2							
Refrigerant circuit	n°	1							
Capacity steps	n°	2							
Refrigerant (4)		R 407C							
EVAPORATOR PLATE-TO-PLATE ESCL/P									
Water flow	m³/h	8.3	9.6	11.8	14.4	16.8	18.9	23.4	26.3
Pressure drop	kPa	41	42	42	38	30	38	46	47
Water volume	l	1,7	2	2,2	2,6	3	3	6,6	6,8
Water connections	Ø	1½”	1½”	1½”	2½”	2½”	2½”	2½”	2½”
Refrigerant (4)	kg	1,1	1,1	1,1	2,2	2,7	2,7	2	3,2
EVAPORATOR SHELL AND TUBE ESCL/F									
Water flow	m³/h	8.3	9.6	11.8	14.4	16.8	18.9	23.4	26.3
Pressure drop	kPa	29	26.5	34.5	27	34	43	43	19.5
Water volume	l	12	15	16	18.5	29.5	29.5	38	52
Water connections	PN 10	1½”	2½”	2½”	2½”	3”	3”	3”	3”
Refrigerant (4)	kg	2,4	2,8	3,2	3,4	4,2	4,2	4,7	5,7
CONNECTIONS REFRIGERANT SIDE									
Outlet (discharge line)	Ø	22	22	28	28	35	35	35	42
Inlet (liquid line)	Ø	18	18	22	22	28	28	28	35
UNIT ELECTRICAL DATA (2)									
Max abs. current	A	43	47	57	67	76	85	107	118
Max LRC	A	148	155	197	235	260	269	330	365
Electrical supply	V/f/Hz	400/3/50							
PAC VERSION SHELL AND TUBE EVAPORATOR									
Storage tank water volume	l	260	260	260	470	470	470	660	660
Water pump nominal power	kW	0,9	0,9	1.1	1,1	1,5	1.5	2.2	2.2
Water pump nominal current	A	2,6	2,6	2,7	2,7	3,5	3,5	5,1	5,1
ESP pump	kPa	150	160	135	125	125	185	175	150
DS VERSION (3)									
Heating capacity	kW	11	12	16	18	21	24	33	37
Water flow	m³/h	0,95	1,0	1,4	1,6	1,8	2,0	2,8	3,2
Pressure drop	kPa	10	10	15	15	15	15	15	16
SOUND PRESSURE AT 1 M (2)									
STD version	dB(A)	65	65	68	70	72	73	73	73
LN version	dB(A)	60	60	63	65	67	68	68	68
VLN version	dB(A)	On request							
DIMENSIONS									
Length	mm	1750	1750	2400	2400	2400	2400	2400	3000
Width	mm	710	710	710	710	710	710	710	710
Height	mm	1490	1490	1610	1610	1610	1610	1610	1610
Weight	kg	480	545	585	665	815	980	1075	1130

Remarks: 1) Evaporator: water temp. 12°C / 7°C; condensing temp. 50°C (dew point), subcooling 5K
2) Compressors only, except pumps.
3) Water temperature 40°C / 45°C.
4) This data has only to be considered to charge the system as the unit leaves the factory with nitrogen

SIZE		181	212	242	262	292	322	352
Cooling capacity (1)	kW	170	195	216	245	268	305	340
Abs. power (2)	kW	48	57	64,8	72,6	80,4	88,2	96
COMPRESSORS (SCROLL)								
Quantity	n°	2	4					
Circuit circuit	n°	1	2					
Capacity steps	n°	2	4					
Refrigerant (4)		R 407C						
EVAPORATOR PLATE TO PLATE ESCL/P								
Water flow	m³/h	29,3	33,5	37,1	42,1	46	52,4	58,5
Pressure drop	kPa	47	48	59	53	63	63	65
Water volume	l	8,2	9,8	9,8	13	13	21	23
Water connections	Ø	2½"	2½"	2½"	2½"	2½"	2½"	2½"
Refrigerant (4)	kg	3,5	2x2,5	2x2,5	2x2,9	2x2,9	2x3,4	2x3,9
EVAPORATOR SHELL AND TUBE ESCL/F								
Water flow	m³/h	29,3	33,5	37,1	42,1	46	52,4	58,5
Pressure drop	kPa	23,5	30,5	31	30,5	36	29,5	35
Water volume	l	51,4	55	55	105	105	99	99
Water connections	PN 10	DN 100	DN 100	DN 100	DN 125	DN 125	DN 125	DN 125
Refrigerant (4)	kg	5,7	2x3,8	2x3,8	2x4,8	2x4,8	2x5,3	2x5,3
CONNECTIONS REFRIGERANT SIDE								
Outlet (discharge line)	Ø	42	2*35	2*35	2*35	2*35	2*42	2*42
Inlet (liquid line)	Ø	35	2*28	2*28	2*28	2*28	2*35	2*35
UNIT ELECTRICAL DATA (2)								
Max abs. current	A	129	151	169	191	213	235	257
Max LRC	A	376	335	353	414	436	482	504
Electrical supply	V/f/Hz	400/3/50						
PAC VERSION SHELL AND TUBE EVAPORATOR								
Storage tank water volume	l	660	660	660	660	660	660	660
Water pump nominal power	kW	1,85	2,2	2,2	3	3	3	3
Water pump nominal current	A	5	5	5	6,5	6,5	6,5	6,5
ESP pump	kPa	120	128	144	136	125	105	85
DS VERSION (3)								
Heating capacity	kW	42	50	55	62	66	79	85
Water flow	m³/h	3,6	4,3	4,7	5,3	5,6	6,8	7,3
Pressure drop	kPa	16	16	18	18	20	20	20
SOUND PRESSURE AT 1 M (2)								
STD Version	dB(A)	77	75	76	78	79	79	79
LN Version	dB(A)	72	70	71	73	74	74	74
VLN Version	dB(A)	On request						
DIMENSIONS								
Length	mm	3000	3000	3000	3000	3000	3000	3000
Width	mm	710	710	710	710	710	710	710
Height	mm	1610	1610	1610	1610	1610	1610	1610
Weight	kg	1190	1340	1485	1590	1690	1805	1910

Remarks: 1) Evaporator: water temp. 12°C / 7°C; condensing temp. 50°C (dew point), subcooling 5K
2) Compressors only, except pumps.
3) Water temperature 40°C / 45°C.
4) This data has only to be considered to charge the system as the unit leaves the factory with nitrogen