cosmotec

your cooling solutions



WRA

ErP

Liquid chiller

RELIABLE VERSATILE COMPLETE



After thousands of WRA units installed worldwide since 1989, the **WRA ErP** is the next generation of high efficiency chillers specifically designed for **industrial process cooling**.

WRA ErP is the result of a design that has focused on **reliability, energy efficiency, the extension of operating limits, and extreme configurability**.

Thanks to dedicated technological solutions such as the enlarged heat exchangers, the standard electronic expansion valve, and the new high-efficiency fans, each configuration of the **WRA ErP** is characterized by **high thermodynamic performance**, which exceeds the most stringent minimum energy efficiency requirements imposed by the Ecodesign directive starting from 2021.

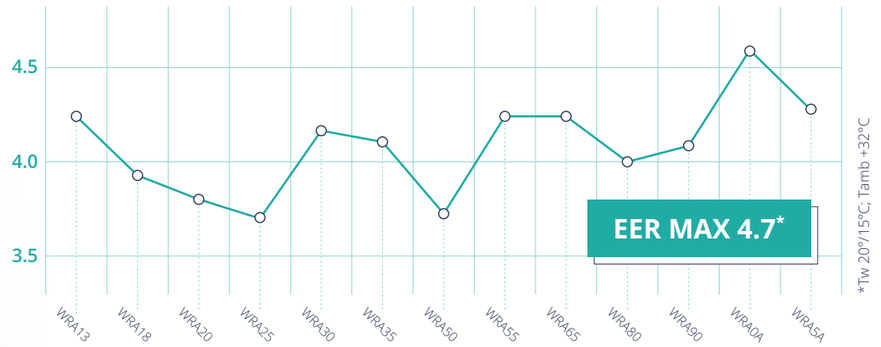


High thermodynamic performance in compliance with the Ecodesign regulation

High energy efficency

A

WRA ErP works with high thermal load continuously throughout the year, thus ensuring the highest performance in any operating condition. All WRA liquid coolers comply with the limits required by the **ErP2021 regulation - SEPR HT (EU) 2016/2281 - SEPR MT (EU)2015/1095**, becoming the best solution for all process applications.



CORE TECHNOLOGIES

CENTRIFUGAL PUMPS

High-pressure multistage horizontal centrifugal pumps, specifically designed for process cooling. Available head: P3 - 3barg; P4 – 4.5/5barg; P6 –6/6.5 barg. P5 INVERTER INOX pump with MGE motor equipped with permanent magnets and high-efficiency frequency converter.

REFRIGERATION CIRCUIT

Equipped with hermetic scroll type compressors and optimized for operation with R134a refrigerant (mod.13-18) and R410A (mod.20-5A). These high-efficiency compressors are equipped with a 2-pole motor complete with overheating/overcurrent protection and an oil heating resistance. The EEV electronic expansion valve (standard from mod.20) is equipped with sensors placed on the refrigeration circuit and allows to optimize its operation in every thermal load condition, guaranteeing maximum efficiency at all times.

CONDENSER

Fin coil heat exchanger with copper tubes and corrugated aluminum fins. The technical solution with mini-tubes maximizes the surface affected by the air, allowing compact dimensions and a reduction of the refrigerant charge.

Perfect for both outside and inside

ELECTRICAL PANEL

Electrical panel made according to EN60204-1 with standard IP54 protection degree that allows outdoor installation.

STRUCTURE

Robust structure designed and built to ensure total resistance to atmospheric agents and corrosion.





AC-EC FANS

AC STANDARD axial fans
with **IP54 protection degree with external rotor**. The blades are made of corrosion-resistant PP technopolymer and are protected by a safety grid. The nozzle directly integrated into the impeller acts as a diffuser, increasing the fluid dynamic efficiency and reducing the noise level.

EC axial fans
(high efficiency, standard for LASER and LT versions), equipped with Brushless motor with electronic switching and integrated temperature control and continuous speed regulation from 10% to 100%.



SEC-BLUE LIGHT CONTROL

The **programmable microprocessor control SEC.blue Light SMP4600** allows to optimize the operation of the refrigeration and hydronic circuits and allows to easily connect the **WRA ErP** units to all BMS management systems.

MAIN FEATURES

- ON/OFF regulation of compressors based on set point temperature;
- Fan speed control;
- Measurement and display of process fluid inlet/outlet temperatures and ambient temperature;
- Control of preheat / antifreeze resistance (water side);
- Display of alarm history;
- Management of electronic expansion valve;
- Alarm management: HP; LP; antifreeze; tank level;
- Clean contact of general alarm;
- Remote ON/OFF digital input;
- LASER function of fine regulation of process temperature for single / double hydraulic circuit (hysteresis ± 0.5K /± 0.1K);
- TTL serial interface (RS485 option)

MAIN FUNCTION

SMART LASER
The microprocessor manages the on/off cycles of the hot gas valve based on the output temperature offset, maintaining precise **control of the process fluid temperature even under variable thermal load conditions, with a hysteresis of +/-0.5K or +/-0.1K**.

INTEGRABILITY WITH SUPERVISION SYSTEMS
The controller can be equipped with an optoisolated RS485 port to communicate with BMS systems via ModBus RTU protocol. The RS485 connection option is also available as an accessory (not optoisolated).

HEATING
The heating function controls the switching on/off of a heating resistor (optional) based on the offset of the process fluid outlet temperature. It is **useful in industrial processes that require precise temperature control**, such as in the optics circuit of fiber laser systems or in food production plants, ensuring the quality and safety of the final product.

DYNAMIC SET POINT
The unit automatically adapts to various usage situations thanks to the dynamic set point function, **adjusting the fluid temperature based on the ambient temperature**. This feature is particularly effective for cooling spindles or electrical devices, where it is essential to avoid condensation formation.

SUITABLE FOR EVERY NEED

STANDARD NON FERROUS



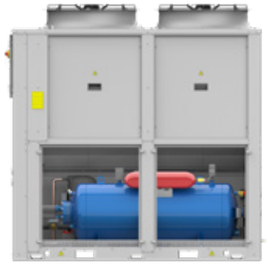
It includes a brazed plate evaporator in AISI316 protected from the risk of freezing by a differential pressure switch and an anti-freeze probe. The hydraulic module is suitable for atmospheric hydraulic circuits and includes a tank in HDPE plastic material (mod.13-50) or in AISI304 (mod.55-5A) equipped with a level sensor, an automatic adjustable hydraulic bypass valve and the circulation composed of non-ferrous materials such as stainless steel, polymers, brass. This configuration allows to preserve the process fluid from possible contaminations.

PRESSURE HYDRAULIC CIRCUITS



The version for pressurized hydraulic circuits (mod. 13-90) includes a cylindrical tank in carbon steel (design pressure = 4barg) with external thermal insulation. The equipment of this unit includes a plate evaporator, the automatic adjustable hydraulic bypass, a membrane expansion vessel (preload 1barg), a pressure gauge (0-10 barg); a safety valve: (setting 4barg); a differential pressure switch (on the heat exchanger).

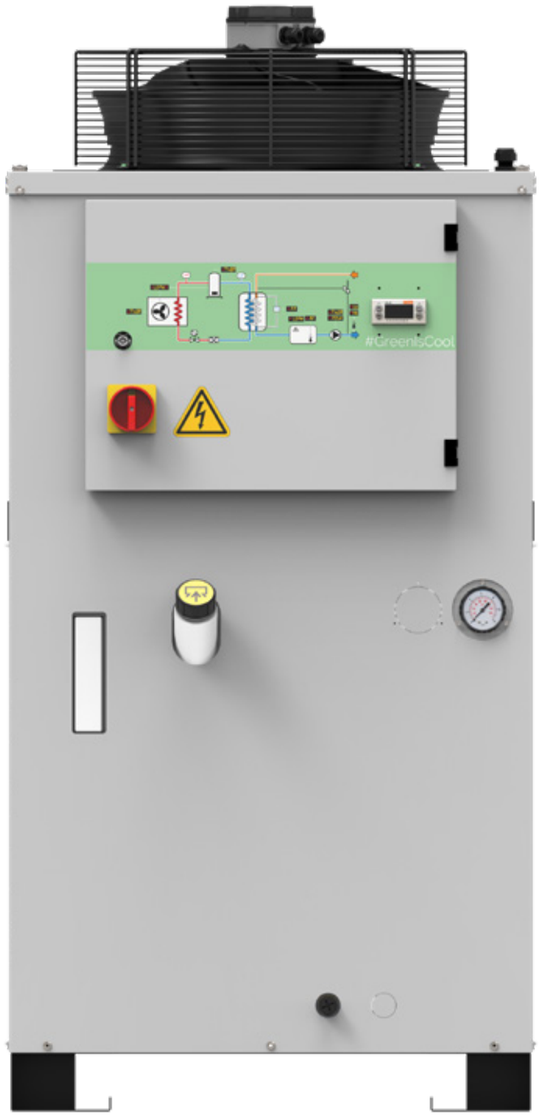
PROCESS SHELL&TUBE EVAPORATOR



It includes a single-circuit shell&tube evaporator with direct expansion equipped with a carbon steel shell and copper tubes installed inside a hydraulic tank in carbon steel (mod. 0A-5A). The exchanger is protected from the danger of freezing by a differential pressure switch and an anti-freeze probe. The hydraulic module is suitable for pressurized hydraulic circuits and includes: a vacuum breaker switch, an automatic vent valve, two membrane expansion vessels and an automatic adjustable hydraulic bypass valve to protect the pump.

Versions

The wide range of versions and the numerous configurations and accessories available make the **WRA ErP suitable for all process cooling applications**



Options

Brine -10°

The BRINE version **is suitable for the production of low-temperature glycol water up to -10°C** (-5° for mod. 13-18). It includes: insulation of the hydraulic circuit; pumps with oversized motor suitable for operation with high concentrations of glycol. Thanks to the wide operating limits, this version is particularly suitable for FOOD & BEVERAGE applications; OENOLOGICAL (tartaric stabilization).

LASER

The performance of modern industrial lasers is closely influenced by variations in their operating temperature and can be compromised by dangerous overheating phenomena. **The LASER units are equipped with a LASERPACK regulation system**, which integrates a hot gas bypass valve for the regulation of refrigeration power, EC brushless fans and a microprocessor control with an advanced PI algorithm to guarantee a standard hysteresis of ±0.5K in variable load conditions. Available LASERPACK ±0.1K version that allows limiting the deviation from the target temperature to a hysteresis of ±0.1K.

LASERPACK Double Circuit

Thanks to the double cooling circuit equipped with a three-way modulating valve and a second pump dedicated to the hydraulic circuit of the optics, this option allows to independently control the operating temperature of the laser source and that of the optics.

LT -20° environment

The LT version **is suitable for low-temperature environments down to -20°C** (Not available for models 13–18). It is characterized by: dedicated control software; electronic control of the speed of EC brushless fans; thermal insulation of the hydraulic circuit. The BRINE centrifugal pumps are characterized by an oversized motor suitable for high concentrations of glycol.

PROCESS

The PROCESS version (mod. 0A-5A) **includes a shell&tube evaporator immersed inside a hydraulic tank**. The construction characteristics of this technical solution allow the WRA ErP to operate reliably in heavy industrial applications and also with process fluids containing impurities. The extractability of the bundle also allows cleaning operations in case of particularly hard water (limestone).

DUAL-FREQUENCY 50/60Hz

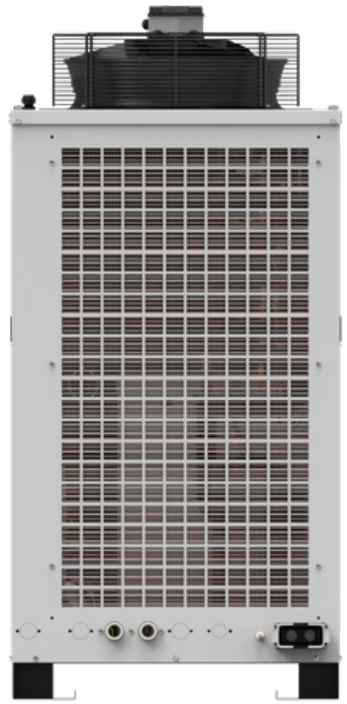
All WRA ErP models are available in dual frequency version, and thanks to the possibility of operating both with 400V/3ph/50Hz and 460V/3ph/60Hz power supply, they guarantee international operational **flexibility and greater adaptability to the most varied applications**.

OTHER OPTIONS

- EC Brushless fans: permanent magnet motor (LASER and LT versions)
- Stainless steel centrifugal pumps: P3/P4/P6;
- P5 pump with MGE permanent magnet motor and frequency converter;
- BRINE stainless steel centrifugal pumps P3/P5: with oversized motor;
- Electronic flow switch;
- Automatic filling for atmospheric or pressurized hydraulic circuits;
- System for under user installation: non-return valve + solenoid valve;
- Aluminum or polyurethane condenser air filters;
- Anti-corrosion treatment for condensing batteries;
- Preheating/antifreeze electric resistances;
- Multipolar connector;
- Controller with RS485 ModBus card;
- Environment probe length. 10m;
- Increased insulation of the hydraulic circuit;
- Gas taps for safety valves refrigeration circuit;
- Lifting eyebolts;

ACCESSORIES - KIT

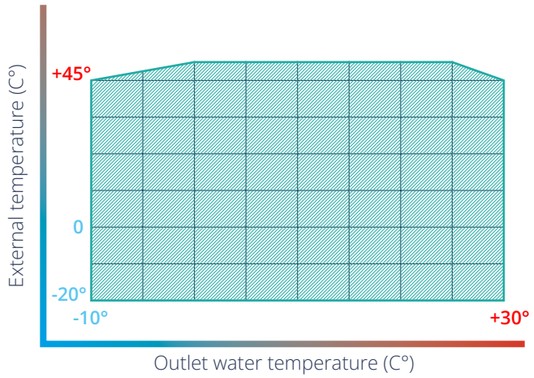
- External electronic flow switch kit;
- Aluminum or polyurethane condenser air filters kit;
- External cartridge water filter kit;
- External cartridge water filter kit - LASER version;
- Adjustment feet kit;
- Lifting eyebolts kit;
- Remote control kit;
- Remote environment probe kit (10m cable);
- TTL-RS485 bus adapter kit (non-optoisolated).



FURTHER ADICIONALES

EXTENDED OPERATING LIMITS

Thanks to the dedicated versions and accessories, **full load operation is guaranteed up to +45 °C of external air temperature during the summer season and -20 °C during the winter season in LT version**. The WRA units as standard produce chilled water with a maximum evaporator outlet temperature up to +30 °C; standard minimum temperature +5°C and -10 °C in the BRINE version.



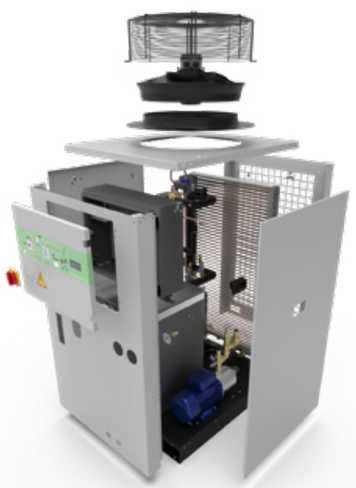
MAXIMUM LEVEL OF RELIABILITY

The **WRA ErP** units are designed for 24/7 industrial use all units are individually tested in the factory and subjected to functional checks.

The complete standard safety equipment ensures stable operation in all conditions and includes: control pressure switches, phase monitor, anti-freeze sensor, level sensor, crankcase heater and a hydraulic bypass circuit with automatic valve.

SIMPLIFIED MAINTENANCE

The protective panels of the hydraulic/refrigeration compartment are all removable and allow **easy access to the internal components** for maintenance operations. The panel is divided into two sections: a power section and a low voltage section (signals and control circuits).



COMPACT

The compactness of **WRA ErP** maximizes the use of productive space, improving efficiency and simplifying maintenance. This optimized design favors operational flexibility in industrial contexts.

QUIET

Noise levels among the lowest in the sector without requiring the use of extra accessories.

EVV ELECTRONIC EXPANSION VALVE

The EEV electronic expansion valves (mod.20-5A) **allow to optimize the operation of the refrigeration circuit in every thermal load condition**. Thanks to a precise control of subcooling and superheating it is possible to extend the operating range of the chiller, preserving the reliability of the compressor.

DESIGNED FOR PROCESS APPLICATIONS



Plastic and rubber
molding, extrusion, blowing, thermoforming;

Laser
cooling of laser sources and optics of machines for welding, cutting, marking, medical lasers, 3D printers;

Food & Beverage
meat processing, pasta/bread production, chocolate industry, dairy industry, coffee production, carbonation of mineral water and soft drinks, fruit juice production, beer;

Oenology
control of the temperature of fermentation processes, clarification, tartaric stabilization;

Medical sector
MRI, X-ray equipment, CT;

Printing
flexographic lines, digital printers, offset, UV plants;

Chemical and pharmaceutical
cooling of reactor tanks, cosmetic industry, clean rooms, paint production, electroplating;

Biogas
drying systems for biogas intended for the supply of co-generators or for the production of biomethane;

Rental
customized solutions for cooling critical processes during the summer months to increase production, or in the event of unforeseen failures.

Technical characteristics

Refrigeration Circuit

- Compliance with ErP2021 regulation - SEPR HT (EU) 2016/2281 - SEPR MT (EU) 2015/1095;
- Hermetic scroll compressors protected by a phase sequence control relay and equipped with crankcase heater;
- Refrigerants: R134a (mod.13-18) R410A (mod.20-5A);
- Brazed plate evaporator in AISI 316 stainless steel, compact in size and high efficiency;
- Fin coil condenser (copper tubes / aluminum fins) with mini-tube technology;
- HP/LP pressure switches;
- High pressure transducer
- Thermostatic expansion valve (mod.13-18)
- Electronic Expansion Valve EEV(mod.20-5A);
- Axial fans with corrosion-resistant PP technopolymer blades with integrated diffuser;
- High and low pressure safety valves;

Hydraulic Circuit

- Inertial tank in HDPE (mod.13-50) in AISI304 (mod. 55-5A) dustproof equipped with visual level indicator, connections for loading/drainage, overflow and level switch;
- Hydraulic circuit built with non-ferrous materials;
- Automatic adjustable hydraulic bypass valve in brass as standard:
- Evaporator antifreeze protection: differential pressure switch and standard antifreeze probe;
- Pressure gauge 0-6 barg;

Electrical Panel

- Design and construction in compliance with EN 60204 standard;
- General isolator with door lock;
- Circuit breakers and contactors;
- Degree of protection IP54: suitable for outdoor installation;
- Standard phase monitor;
- Clean contacts: remote ON/OFF; general alarm;
- Labelled electrical cables.



Technical data

WRA		13(1)	18(1)	20(1)	25(1)	30(1)	35(1)	50(1)	55(1)	65(1)	80(1)	90(1)	0A(1)	5A(1)	0A(2)	5A(2)
Performance @50hz																
Cooling power @50Hz (3)	[kW]	4,7	5,9	7,3	8,7	11,8	13,7	16,7	19,5	22,3	27,1	31,8	39,9	48,2	39,5	47,4
Total absorbed power @50Hz (3)	[kW]	1,1	1,5	1,9	2,3	2,8	3,3	4,5	4,6	5,3	6,7	7,8	8,7	11,3	8,7	11,2
Evaporator water flow @50Hz (3)	[l/min]	13,4	16,8	21,0	24,8	33,8	39,2	47,8	55,9	63,8	77,5	91,2	114,5	138,1	113,2	135,9
EER (excluding pump) @50Hz (3)		4,2	3,9	3,8	3,7	4,2	4,1	3,7	4,2	4,2	4,0	4,1	4,6	4,3	4,6	4,2
Cooling power @50Hz (4)	[kW]	3,4	4,4	5,6	6,6	9,0	10,3	12,7	14,9	17,1	21,0	24,7	30,7	37,2	29,9	36,1
Total absorbed power @50Hz (4)	[kW]	1,1	1,5	2,0	2,4	2,9	3,4	4,4	4,7	5,3	6,7	7,7	8,6	11,1	8,6	11,0
Evaporator water flow @50Hz (4)	[l/min]	9,7	12,5	16,1	18,9	25,8	29,5	36,3	42,7	49,0	60,1	70,7	87,9	106,7	85,8	103,5
EER (excluding pump) @50Hz (4)		3,0	2,9	2,9	2,7	3,1	3,0	2,9	3,2	3,2	3,2	3,2	3,6	3,4	3,5	3,3
SEPR HT (5)		5,38	5,42	5,45	5,18	5,52	5,54	5,37	6,37	5,76	5,69	5,53	5,92	5,66	5,80	5,51
ELECTRICAL DATA																
Unit power supply	[V/Ph/Hz]	400/3/50														
Unit power supply	[V/Ph/Hz]	400/3/50 - 460/3/60														
Auxiliary power supply		24 VAC														
IP protection degree		IP54														
TECHNICAL DATA																
Refrigerant Gas		R134a		R410A												
No. of compressors/circuits [#]		1/1														
Number of axial fans x impeller diameter		1 x ϕ350		1 x ϕ400		1 x ϕ450			1 x ϕ630				2 x ϕ630			
Air flow fans	[m3/h]	3197	3197	3460	3460	5935	5935	5935	10150	9570	9570	9073	16200	16200	16200	16200
Pump P3 - Min/Max fluid flow	[l/min]	10/40	10/40	10/40	10/40	20/70	20/70	20/70	40/130	40/130	40/142	40/142	83/162	83/162	83/193	83/193
Pump P3 Min/Max head	[kPa]	68/321	82/323	73/322	85/323	95/398	108/399	118/400	64/340	77/341	72/417	81/417	263/408	276/412	178/408	195/412
Pump P5 INVERTER - Min/Max fluid flow	[l/min]	10/50	10/50	10/50	10/50	20/85	20/85	20/85	26/125	26/125	26/125	30/125	60/162	60/162	67/193	67/193
Pump P5 INVERTER - Min/Max head	[kPa]	125/625	146/625	133/625	150/625	192/632	211/633	231/634	267/660	280/660	296/660	303/660	426/661	443/663	426/661	443/663
Sound pressure [dB(A)] (6)	[dB(A)]	37,5	37,5	40,4	40,4	46,9	48,3	50,2	41,9	42,5	44,3	43,9	45,4	47	45,4	47
Sound power [dB(A)] (7)	[dB(A)]	68,8	68,8	71,7	71,7	78,3	79,7	81,6	73,5	74,2	75,9	75,3	77,2	77,5	77,2	77,5
DIMENSIONS AND WEIGHTS																
Hydraulic connections diameter [Rp]	[Rp]	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"1/4	1"1/4	1"1/4	1"1/4	1"1/2	1"1/2	1"1/2	1"1/2
Tank volume [dm3]	[dm3]	40				98			180				300	300	250	250
Width	[mm]	560	560	560	560	740	740	740	895	895	895	895	1140	1140	1140	1140
Depth	[mm]	720	720	720	720	930	930	930	1175	1175	1175	1175	2084	2084	2084	2084
Height	[mm]	1290	1290	1310	1310	1550	1550	1550	1992	1992	1992	1992	2074	2074	2074	2074
Operating weight (8)	[kg]	178	185	188	190	311	311	314	560	572	572	580	890	910	950	970
Empty weight (8)	[kg]	133	140	143	145	201	201	204	400	412	412	420	610	630	710	730
Operating weight (9)	[kg]	205	212	215	217	347	341	341	556	570	574	588	NA	NA	952	968
Empty weight (9)	[kg]	160	167	170	172	237	241	241	396	410	414	428	NA	NA	761	777

(1) STANDARD version with plate evaporator
(2) PROCESS version with tube shell&tube evaporator
(3) Data refers to: Inlet/outlet water temp. 20/15°C, Ambient air temp. + 32°C, 50Hz power supply.
(4) Data refers to: Inlet/outlet water temp. 12/7°C, Ambient air temp. + 35°C, 50Hz power supply.
(5) Data declared according to the European regulation (EU) 2016/2281 for high temperature process chillers.
(6) Sound pressure at 10m: average value obtained in free field on reflective plane at a distance of 10m from the unit according to EN ISO 9614-2. Values with tolerance ± 2 dB.
(7) Sound power level measured according to EN ISO 9614 with a tolerance of +/- 3 dB (A). Data refers to the base unit without options, at full load. Conditions: evaporator fluid: 100% water, IN / OUT temp. = +12/+7 °C, T outside air = +35 °C.
(8) Unit weight in STANDARD configuration for atmospheric circuits with tank + P3 pump without options/accessories. Tolerance +/-10%.
(9) Unit weight in configuration for pressure circuits/PROCESS with tank + P3 pump without options/accessories. Tolerance +/-10%.

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STULZ S.p.A.
Via E.Torricelli 3
37067 Valeggio sul Mincio (VR)
Tel. +39 045.6331600
Fax +39 045.6331635

www.cosmotec.it
info@cosmotec-cooling.com