cosmotec

your cooling solutions

R513A



WRA

- F-GAS Compliant
- Gas refrigerante R513A

Liquid Chiller

RELIABLE
VERSATILE
COMPLETE

WRA ErP R513A units are high-efficiency liquid chillers specifically designed for industrial process cooling.

WRA is the result of a design approach focused on **reliability**, **energy efficiency**, **extended operating limits**, and **extreme configurability**.



High thermodynamic performance in compliance with Ecodesign and F-Gas regulations

Thanks to dedicated technological solutions such as oversized heat exchangers, a standard electronic expansion valve, and new high-efficiency fans, every WRA ErP configuration is characterized by h**igh thermodynamic performance** that exceeds the most stringent minimum energy efficiency requirements imposed by the Ecodesign Directive starting from 2021.

R513A

The use of R513A refrigerant helps reduce resource consumption and CO_2 impact

R513A refrigerant:

- ralls within safety class A1, as it is a **non-flammable gas**
- offers energy efficiency, environmental sustainability, and a **significantly lower GWP value compared to R134a and R410A** (R513A: GWP = 631, R134a: GWP = 1430, R410A: GWP = 2088)
- **does not harm the ozone layer** and is available in the medium to long term not only for production but also for maintenance



Core Technologies

Centrifugal pumps

Context from selected text frame: Horizontal multistage centrifugal pumps designed specifically for process cooling at high pressure. Available pressure ratings: p3 - 3 barg; p4 - 4.5/5 barg; p6 - 6/6.5 barg.

Cooling circuit

Equipped with hermetic scroll compressors optimized for operation with the refrigerant. The electronic expansion valve (EEV), where present, is equipped with sensors placed on the refrigeration circuit and allows optimization of its operation under every thermal load condition, ensuring maximum efficiency at all times.

Condenser

Heat exchanger with finned coil featuring copper tubes and corrugated aluminum fins. The technical solution using mini-tubes maximizes the surface area exposed to air, allowing compact dimensions and a reduction in refrigerant charge.

Electrical panel

Electrical control panel built following EN60204-1 standards with a standard IP54 protection level, enabling external installation.

Struttura

Robust structure designed and built to ensure complete resistance to weather conditions and corrosion.

Perfect for both outdoor and indoor installation





Ventilatori AC-EC

AC STANDARD axial fans with IP54 protection rating featuring an external rotor. The blades are made of corrosion-resistant PP technopolymer and are protected by a safety grille. The nozzle, directly integrated into the impeller, functions as a diffuser, enhancing efficiency and reducing noise levels.

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



Sec-Blue-Light control

The SEC.blue Light SMP4600 programmable microprocessor controller optimizes the operation of both the refrigeration and hydraulic circuits and enables easy integration of WRA ErP units with all BMS management systems.

Main Features

- RON/OFF control of compressors based on setpoint temperature
- Fan speed control
- Measurement and display of process fluid inlet/outlet temperatures and ambient temperature
- Control of preheating / antifreeze heater (water side)
- Alarm history display
- Electronic expansion valve management
- Alarm management: HP; LP; antifreeze; tank level
- General alarm dry contact
- Remote ON/OFF digital input
- LASER function for fine adjustment of process temperature for single/double hydraulic circuit (on request) with hysteresis ±0.5K / ±0.1K
- TTL serial interface (RS485 option available)

Main Functions

Smart laser The microprocessor manages the valve using PID logic based on the error between the setpoint and the water supply temperature, ensuring precise control of the process fluid temperature even under variable thermal load conditions, with hysteresis of ±0.5K or ±0.1K..

Heating The heating function, via a preheating (or heating) element, increases the temperature of the water inside the hydraulic circuit, especially during start-up in cold environments, ensuring proper temperature control.

Integrabilità con sistemi di supervisione The controller can be equipped with an opto-isolated RS485 port to communicate with BMS systems via Modbus RTU protocol. The RS485 connection option is also available as a non-opto-isolated accessory.

Dynamic setpoint The unit automatically adapts to varying operating conditions thanks to the dynamic setpoint function, adjusting the fluid temperature according to ambient temperature. This feature is particularly effective for cooling spindles or electrical devices, where it is essential to prevent condensation..

Suitable for every requirement

Versions

Standard Non Ferrous

NON FERROUS



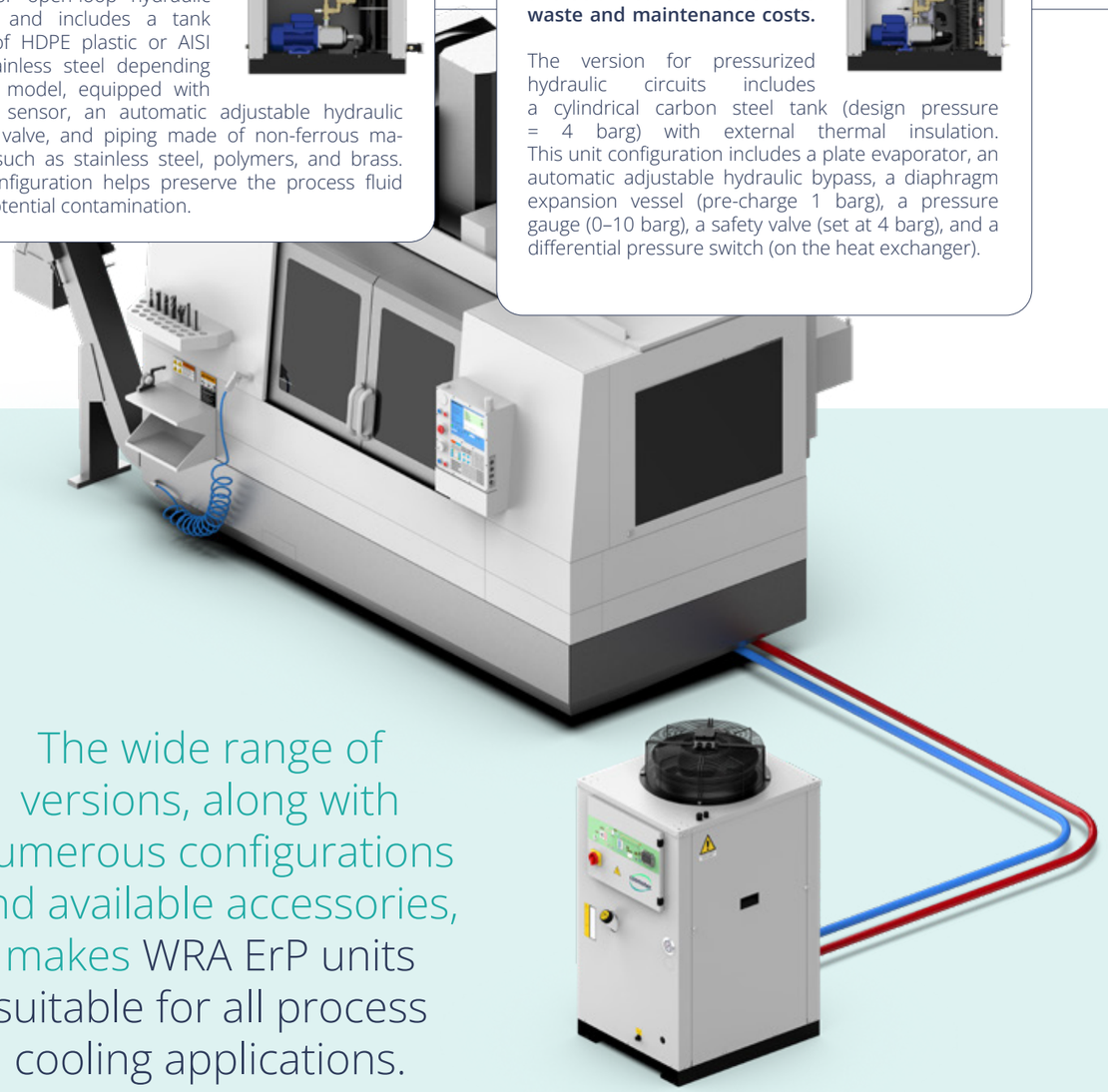
It includes a brazed plate evaporator made of AISI 316 stainless steel, protected against freezing by a differential pressure switch and an antifreeze probe. The hydronic module is suitable for open-loop hydraulic circuits and includes a tank made of HDPE plastic or AISI 304 stainless steel depending on the model, equipped with a level sensor, an automatic adjustable hydraulic bypass valve, and piping made of non-ferrous materials such as stainless steel, polymers, and brass. This configuration helps preserve the process fluid from potential contamination.

Pressurized Hydraulic Circuits



In industrial processes, the use of a pressurized circuit allows optimization of efficiency and improved production accuracy, maintains fluid stability, prevents corrosion, and at the same time reduces waste and maintenance costs.

The version for pressurized hydraulic circuits includes a cylindrical carbon steel tank (design pressure = 4 barg) with external thermal insulation. This unit configuration includes a plate evaporator, an automatic adjustable hydraulic bypass, a diaphragm expansion vessel (pre-charge 1 barg), a pressure gauge (0–10 barg), a safety valve (set at 4 barg), and a differential pressure switch (on the heat exchanger).



The wide range of versions, along with numerous configurations and available accessories, makes WRA ErP units suitable for all process cooling applications.

Brine -5°C/-10°C

-5 -10

The BRINE version is suitable for producing low-temperature glycol water down to -5°C or -10°C, depending on the model. It includes: insulation of the hydraulic circuit and pumps with oversized motors suitable for operation with high glycol concentrations. Thanks to its wide operating limits, this version is particularly suitable for FOOD & BEVERAGE and WINE-MAKING applications (tartaric stabilization).

Laser

The performance of modern industrial lasers is strongly influenced by variations in their operating temperature and can be compromised by dangerous overheating phenomena. LASER units are equipped with a LASERPACK control system, which integrates a hot gas bypass valve for cooling capacity regulation, EC brushless fans, and a microprocessor control with an advanced PI algorithm, ensuring a standard hysteresis of ±0.5K under variable load conditions. A LASERPACK ±0.1K version is also available, allowing temperature deviation from the target to be limited to a hysteresis of ±0.1K.

Double-Circuit Laserpack

(on request)

Thanks to the dual cooling circuit equipped with a three-way modulating valve and a second pump dedicated to the optics hydraulic circuit, this option enables independent control of the operating temperature of both the laser source and the optics.

LT -20°

-20

The LT version is suitable for low ambient temperatures down to -20°C. It is characterized by: dedicated control software, electronic speed control of EC brushless fans, and thermal insulation of the hydraulic circuit. The BRINE centrifugal pumps feature oversized motors suitable for high glycol concentrations.

Bi-Frequenza 50/60 Hz

All WRA ErP models are available in dual-frequency version and, thanks to their ability to operate with both 400V/3ph/50Hz and 460V/3ph/60Hz power supply, they ensure international operational flexibility and greater adaptability to a wide range of applications.



Options

- Flow switch
- Automatic filling system for open or pressurized hydraulic circuits
- System for low-level installation (flooded installation)
- Condenser air filters in aluminum or polyurethane
- Electric preheating / antifreeze heaters
- Multipole connector
- RS485 Modbus card
- Ambient probe, 10 m length
- Enhanced insulation for the hydraulic circuit
- Lifting eyebolts
- HP and LP pressure gauges

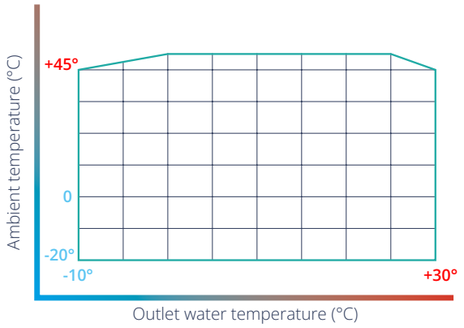
Accessories - kit

- External flow switch kit
- Condenser air filter kit in aluminum or polyurethane
- External water filter kit
- Adjustable feet kit
- Lifting eyebolts kit
- Remote control kit
- Remote ambient probe kit (10 m cable)
- TTL–RS485 bus adapter kit (non opto-isolated)

Extended Operating Limits

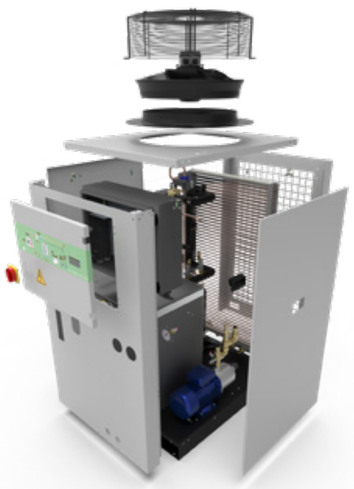
Thanks to the ability to extend both air and water temperature ranges, the chillers are suitable for operation in a wide variety of industrial and process applications.

Full-load operation is guaranteed at outdoor temperatures up to +45°C and down to -20°C with the LT version (where available). Standard WRA units produce chilled water with an evaporator outlet temperature ranging from +5°C to +30°C (down to -5°C / -10°C in the Brine version).



Simplified Maintenance

The protective panels of the hydraulic and refrigeration compartments are fully removable, allowing easy access to internal components for maintenance operations. The electrical panel is divided into two sections: a power section and a low-voltage section (signals and control circuits).



Maximum Reliability

WRA ErP units are designed for 24/7 industrial operation. All units are individually tested in the factory and subjected to functional checks.

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

Compact Design

The compact design of WRA ErP units maximizes the use of production space, improving efficiency and simplifying maintenance. This optimized layout enhances operational flexibility in industrial environments.

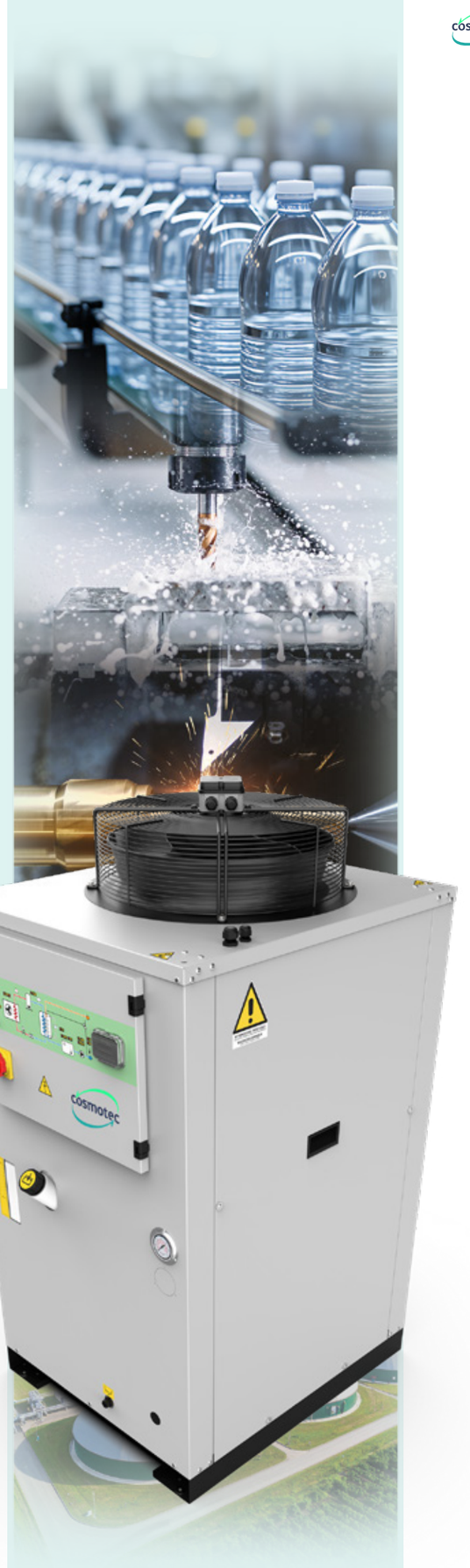
Electronic Expansion Valve

Electronic expansion valves (EEV – model 20–5A) optimize the operation of the refrigeration circuit under all thermal load conditions.

Thanks to precise control of subcooling and superheating, it is possible to extend the chiller's operating range while preserving compressor reliability.

Designed for process applications

- **Plastics and rubber**: molding, extrusion, blow molding, thermoforming
- **Laser**: cooling of laser sources and optics for welding, cutting, marking machines, medical lasers, and 3D printers
- **Food & Beverage**: meat processing, pasta/bread production, chocolate industry, dairy industry, coffee production, mineral water and soft drink carbonation, fruit juice production, beer brewing
- **Winemaking:** temperature control of fermentation, clarification, and tartaric stabilization processes
- **Medical sector**: MRI, X-ray equipment, CT scanners
- **Printing**: flexographic lines, digital printing, offset printing, UV systems
- **Chemical and pharmaceutical**: cooling of reactors and tanks, cosmetics industry, clean rooms, paint production, electroplating
- **Biogas**: drying systems for biogas used to power co-generators or for biomethane production
- **Rental**: customized solutions for cooling critical processes during summer months to increase production or in case of unexpected failures



Technical Features

Refrigeration Circuit

- Compliance with ErP 2021 regulations
  - 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
- Brazed plate evaporator in AISI 316 stainless steel, compact and high-efficiency
- Finned condenser (copper tubes / aluminum fins) with mini-tube technology
- HP/LP pressure switches
- High-pressure transducer
- Thermostatic expansion valve or electronic expansion valve

Hydraulic Circuit

- HDPE or AISI 304 inertial tank, dust-tight, equipped with visual level indicators, connections for filling/draining, overflow, and level switch
- Hydraulic piping made of non-ferrous materials
- Standard automatic adjustable brass hydraulic bypass valve
- Evaporator antifreeze protection: standard differential pressure switch and antifreeze probe
- Pressure gauge 0–6 barg

Electrical Panel

- Design and construction in compliance with EN 60204
- Main disconnect switch with door interlock
- Circuit breakers and contactors
- Protection rating IP54: suitable for outdoor installation
- Standard phase monitor
- Dry contacts: remote ON/OFF; general alarm
- Labeled electrical cables



Technical data

			WRA50	WRA55	WRA65	WRA80	WRA90	WRA0A	WRA5A	WRA8A	WRA0B
Cooling capacity	W20-15 L32	kW	16,23	19,19	22,02	27,92	31,92	37,32	50,66	63,3	74,84
Power input	W20-15 L32	kW	4,28	4,61	5,33	7,08	8,44	9,04	12,42	15,33	19,73
EER	W20-15 L32		3,79	4,16	4,13	3,95	3,78	4,13	4,08	4,13	3,79
Cooling capacity	W12-7 L32	kW	12,11	14,33	16,28	20,8	23,9	27,95	38,43	47,6	56,84
Power input	W12-7 L32	kW	4,25	4,68	5,24	7,08	8,19	9,69	12,2	15,0	19,13
EER	W12-7 L32		2,85	3,06	3,11	2,94	2,92	2,88	3,15	3,17	2,97
SEPR HT Regulation 2016/2281			5,01	5,45	5,06	5,13	5,25	5,14	5,30	5,34	5,37
Power supply			400-3-50								
Width		mm	735	895	895	895	895	895	1135	1135	1135
Depth		mm	930	1175	1175	1175	1175	1175	2475	2475	2475
Height		mm	1596	1992	1992	1992	1992	2019	2202	2202	2202

*Measured according to EN ISO 9614 with a tolerance of ±3 dB(A). Data refer to the base unit without options, at full load. Conditions: evaporator fluid: 100% water, IN / OUT temp. = +12/+7 °C, outdoor air temp. = +35 °C.

**STANDARD configuration for open hydraulic circuits with tank + P3 pump, without options/accessories. Tolerance ±10%.



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