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XTW

HiRef

Innovators above
the standards

SERVICES

DATA CENTER

INDUSTRY



Water-condensed chillers

XTW

with oil-free centrifugal compressors

Range: 221-916 kW



XTW offers the most innovative, efficient water condensed chiller solution. A meticulous choice of components and equipment layout has led to a solution with numerous advantages as regards both energy performance and noise emissions. The special component layout lets users maximise the advantages provided by the oil-free centrifugal compressor (maximum heat exchange efficiency, ultra-high efficiency at partial loads, reduced inrush current) and the compact flooded exchangers (minimal approach temperature between water and refrigerant, lower load compared to traditional flooded units). The larger sizes have a double refrigerant circuit configuration and high system efficiency and redundancy.

Main advantages

Reduced footprint

Careful assessment of component layout and sizing allows the system footprint to be reduced, freeing up more space within the facility and during handling operations.

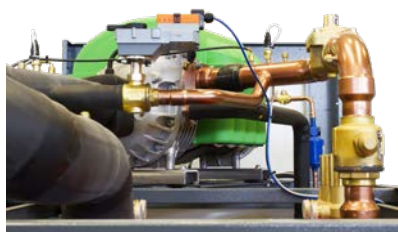


New refrigerant R1234ze

XTW range water condensed chillers use the new HFO refrigerant with low GWP (GWPR1234ze=6) as part of a wider Green Technology approach. (Also available with R134a refrigerant.)

Top-class thermodynamic performance!

An effective combination of “oil-free” centrifugal compressor and flooded exchangers allows maximisation of thermal exchange efficiency; this is largely due to the absence of oil in the circuit and the reduced approach temperature between water and refrigerant (1K) as a result of no overheating in the evaporator. Cycle efficiency is enhanced by the centrifugal compressor, which features ultra-high efficiency at partial loads, and by the economiser, which ensures intermediate regenerative exchange in the circuit.



“Silent” layout

The piping layout is designed and sized to ensure low noise emissions under all working conditions and mitigate Coriolis force acceleration. The use of high performance sound absorbing material in the Low Noise configuration results in a further reduction of the compressor noise emissions.

Compact size spray exchangers

The adoption of compact flooded heat exchangers (XTW 220, 300, 310, 370, 440, 450, 520) allows for a 30% reduction in the refrigerant load compared to traditional flooded exchangers. This characteristic, together with the low GWP of R1234ze refrigerant and high energy efficiency, ensures that the XTW range has ultra-low TEWI (Total Equivalent Warming Impact) levels.



XTW SINGLE CIRCUIT: Provision for modular configuration

Connecting the individual units in parallel makes it possible to obtain a modular configuration able to ensure high cooling capacity and high redundancy, with the system fully controlled by the on-board electronics. XTW units can be coupled to Polymorph PLM hydronic modules by HiRef.

XTW DUAL CIRCUIT: Two-level evaporation

The evaporator with spray technology and single pass on the water side guarantees up to 5% more efficiency than traditional shell and tube versions, thanks to the permanently countercurrent heat exchange on two separate evaporation levels – and with a smaller refrigerant charge than a standard flooded shell and tube model.

XTW DUAL CIRCUIT: 24/7 Operation

The configuration with dual refrigerant circuit and dual centrifugal compressor with permanent magnets guarantees high operational reliability, making the XTW range particularly suitable for installation in Data Centers or wherever high-value, continuous cycle industrial processes are carried out.

Available versions



COOLING ONLY

Types of system



WATER/WATER

Available versions

- Refrigerant R1234ze
- Also available with R134a refrigerant
- Refrigerant leak sensor
- Quick restart technology
- Water connections with Vic-Taulic quick couplings
- Modularity and supervision managed by the software
- Low noise set-up with compressor insulation
- Ductable electrical panel (separate electrical panel ventilation)

Technological components



Multi-protocol communication interface

HiRef units can be integrated with the customer's external supervision Building Management System (BMS), using the most popular communication protocols, including Modbus RTU, Modbus/IP, BacNet, LonWorks, SNMP.



Oil-Free Centrifugal Compressors

Oil-Free centrifugal compressors feature very high efficiency, reachable thanks to the absence of standard bearings and consequently, of oil. The shaft is supported, during operation, by magnetic levitation bearings, which results in the complete elimination of friction making lubricating fluid unnecessary. As there is no oil inside the compressor, there is also no oil inside the circuit, avoiding the typical exchanger clogging issues of oil-based systems. Centrifugal compressors are suitable for reduced pressure ratios compared to other compression technologies, they can be used with all low pressure refrigerants and are modulated with standard inverters.



Spray flooded shell and tube

A spray flooded shell and tube construction guarantees effectiveness and efficiency thanks to the minimal approach temperature between refrigerant and water. It requires about 30% less refrigerant charge compared to traditional flooded shell and tube configurations: a solution that benefits the environment and results in costs savings, in terms of both CapEx and OpEx.



Fast restart

The fast restart function (on request) allows the unit to restart quickly after a mains power outage. This optional feature is available with dual power to minimise restart times.



Corrosion resistant material

The HiRef outdoor units are protected by a metal structure resistant to corrosion and weathering. They are also made of galvanised steel sheet, with epoxy-polyester powder coating, oven-polymerised at 180°C, to offer a C3 degree of protection. On request, it is possible to order specific paint finishing treatments or a metalwork structure built entirely in stainless steel, to obtain a higher degree of protection from high impact adverse weather events.



Class A

Internal high-tech components suitably chosen and sized allow the units to operate with outstanding levels of efficiency.



Super Low Noise

It is possible to choose between two soundproofing configurations: the Low Noise version and the Super Low Noise version. The latter is equipped with panels that shield the compressors, the entire refrigeration circuit and the hydraulic components (pumps, valves, etc.) to minimise any noise coming from valves, pipes and pumps. The Super Low Noise version combined with reduced ventilation speed allows the lowest sound levels on the market to be reached.



Low GWP refrigerant

The Global Warming Potential (GWP) index is a numerical indicator that identifies the environmental impact of a substance. It measures the extent to which a gas contributes to the greenhouse effect, in relation to carbon dioxide (CO₂) whose baseline value is equal to 1. This parameter is used to determine the amount in kilograms of CO₂ corresponding to the environmental impact of the release of a refrigerant gas into the atmosphere. The use of low GWP refrigerants, such as R513A, R454B, R1234ze, CO₂, allows the environmental impact of air conditioning systems to be significantly reduced.

Technical table

XTW		220CS	300CS	370CS	440CS	461CS	641CS	761CS	921CS	
USER WATER VALUES 12/7°C, 30/35°C SOURCE WATER SIDE										
COOLING CAPACITY	kW	221	305	368	436	461	644	784	916	
TOTAL POWER INPUT	kW	38.1	51.6	62.3	72.5	74.5	100.7	123.4	142.4	
EER	-	5.79	5.91	5.9	6.01	6.18	6.39	6.35	6.43	
SEPR	-	11.31	11.15	12.54	11.79	11.33	12.47	12.74	12.4	
SEER	-	10.18	9.05	9.83	8.98	9.61	9.66	9.76	9.73	
ESEER	-	7.99	7.87	8.27	7.97	8.52	8.79	8.77	8.86	
SOUND POWER LEVEL	dB	86			89			92		
DIMENSIONS [LxHxD]	mm	2310x2040x1080		2700x1900x1500		4800x1900x1500		4800x2000x1500		

Also available with 60 Hz power supply



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