

WPA Techno

AIR COOLED CHILLER



COSMOTEC
INDUSTRIAL COOLING

A BRAND OF **STULZ**

YOUR FUTURE
IS ALREADY
IN OUR
MIND







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Versions

The right solution for you

Standard

The WPA Techno range expands the series of high efficiency chillers for industrial, IT and comfort applications, made by COSMOTEC.

WPA are chillers for outdoor installation, specifically designed to have high performance with small footprint.

Efficiency, strength and reliability at COSMOTEC levels.

Low Noise

WPA Techno is a highly silenced unit, thanks to the adoption of acoustic insulations, specifically designed and placed in the compressor compartment (ISO 3744).

In order to maximize the noise reduction the maximum speed of the fans is limited.

The optimization of the coils/fans group allows to limit the cooling capacity reduction compared to the standard version.

Available for all sizes of WPA Techno.

Free Cooling

The Free Cooling circuit is composed of air-water exchanger coils with copper tubes and aluminium fins. A 3-ways valve is controlled by SEC.blue, to ensure the maximum yield, minimizing the compressor operation time and reducing the running costs.

There is a cataphoresis treatment on the condensing coils, in order to prevent corrosion due to stray currents.

The total heat recovery from the ambient air is obtained at about 0°C: the entire cooling capacity is supplied by the Free Cooling batteries.

When the ambient temperature drops, the SEC.blue controller partialises even further the 3-ways valve and the fans, guaranteeing the correct thermal load management.

Due to the need to maximize the air flow through the batteries, is not possible to combine Free Cooling to the "Super Silent" version.

All versions have:

Gas R410A

All units of the WPA Techno range use refrigerant gas R410A, which ensures a higher cooling capacity with low footprint of the machine.

The R410A assures a very low environmental impact, no impact on the ozone and a greenhouse gas coefficient lower than the usual refrigerants.

Outdoor installation

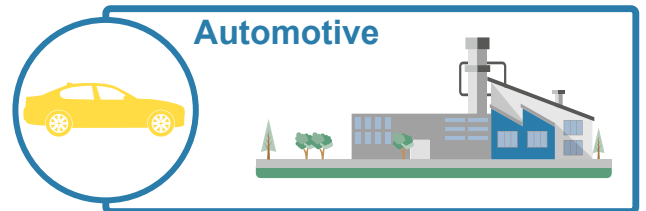
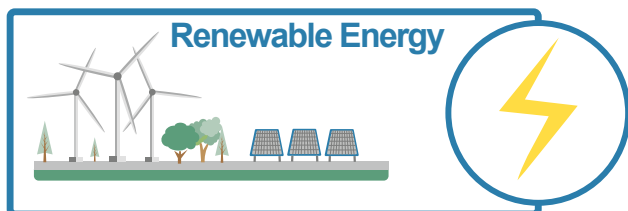
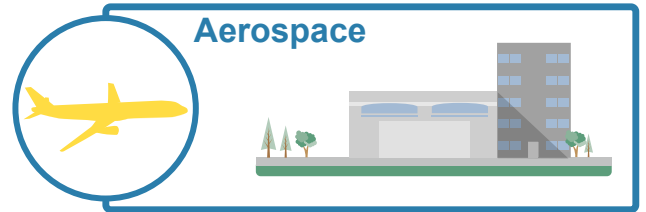
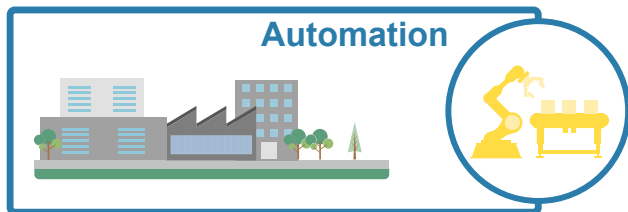
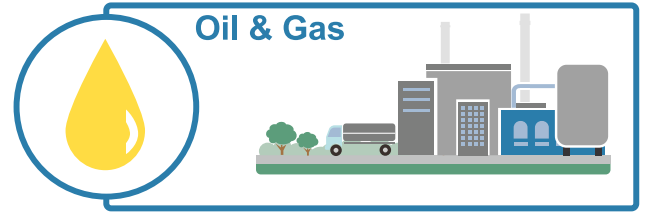
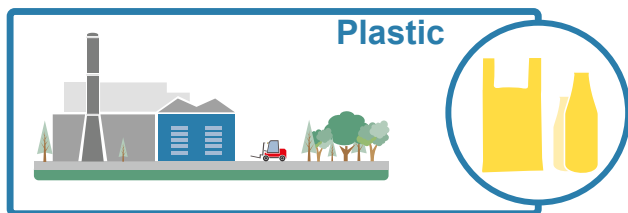
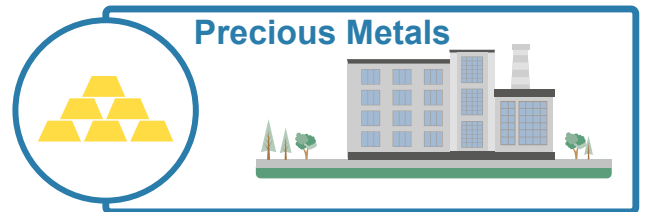
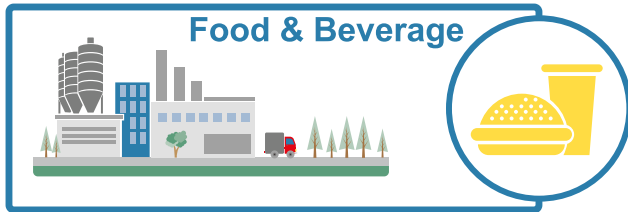
WPA Techno is designed to be used for every outdoor installation. The electrical panel, with IP54 protection, guarantees an adequate security for electric and electronic components.

The different options allow a further extension of the operating limits both at low and high temperatures, with enhanced protection for highly corrosive environments.

Applications

One technology, many uses

Process Cooling & Industrial applications

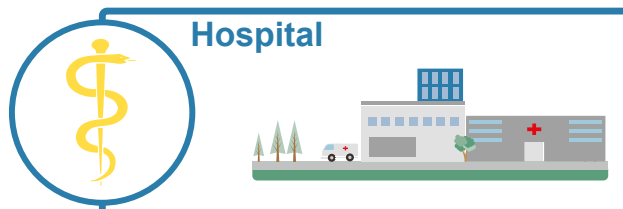


Air ambient temperature: -20°C / $+45^{\circ}\text{C}$

Water inlet temperature: $+0^{\circ}\text{C}$ / $+30^{\circ}\text{C}$

Water outlet temperature: -5°C / $+25^{\circ}\text{C}$

Comfort



Air ambient temperature: -20°C / $+45^{\circ}\text{C}$

Water inlet temperature: $+12^{\circ}\text{C}$ / $+22^{\circ}\text{C}$

Water outlet temperature: $+7^{\circ}\text{C}$ / $+18^{\circ}\text{C}$

Dimensions

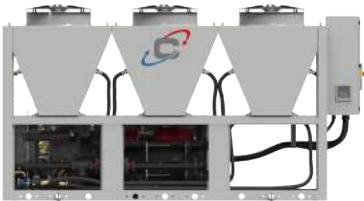
One size for every need



(1) Air ambient temperature: +35°C Water inlet temperature: +12°C Water outlet temperature: +7°C



Height 2406 mm
 Lenght 2208 mm
Depth 3140 mm
 Weight 2250 ÷ 3090 kg



Height 2406 mm
 Lenght 2208 mm
Depth 4447 mm
 Weight 3100 ÷ 4150 kg



Height 2406 mm
 Lenght 2208 mm
Depth 5820 mm
 Weight 4100 ÷ 4600 kg



Height 2406 mm
 Lenght 2208 mm
Depth 7130 mm
 Weight 5200 ÷ 5250 kg

Options

Made for you



Softstart

Device for reducing mechanical stress during compressor start-up. The device partialises the starting current of the compressors by reducing the stress on the power supply line and preserving the compressors' components.



Automatic transfer switch

Three-phase switch without neutral, with automatic or manual control (by key). Functions dedicated to network/backup unit installation, with checking function for the switching capability verify and backup unit test. Voltage and frequency control. Switch installed inside the electrical panel. Auxiliary contacts to report the line switching.



Energy meter

Meter to control the electric energy required by the chiller. LCD display to visualize current values, voltage, instant values of the 3 phases, average and maximum historical values. Remote control data through ModBus RTU. This component is installed inside the electrical panel.



Power factor corrections capacitors

The power factor correction capacitors can take back to a 0.95 cos the phase displacement, which can be caused by magnetic fields. The capacitors are managed by the SEC.blue electronic control.



Flow switch

Component that verifies the flow of the fluid in the circuit. Installed on the return pipe. The flow switch is electrically connected to the SEC.blue control and reports the absence of fluid circulation, preventing damage to the hydraulic components.



Antifreeze heaters

Electric heaters controlled by the SEC.blue prevent the icing of the fluid inside the hydraulic circuit. In case of particularly harsh work conditions the use of a correct amount of ethylene or propylene glycol is suggested.



Coils treatment

Protective cataphoresis or epoxy treatment in order to enhance the coils resistance in aggressive environments. The cataphoresis treatment is a standard on the condenser coils in Free Cooling version.



Closing Grid

The protective grids protect the condensing coils, preserve the correct air flow and prevent access to the components. Made in zinc coated metal sheet painted with epoxy powders. Standard color: RAL 9005 paint smooth.



Supply without refrigerant gas

It is possible to ship the chillers without the hazardous refrigerant gas, in case of particular conditions of shipment. In these cases the gas is substitute by nitrogen. The refrigerant charges are reported on the nameplate.



Containerization

The chiller can be loaded into a 40 feet high cube container.



Anti-vibration mount springs, antisismic

Supports specifically designed to bear the chiller weight and to avoid the transmission of vibrations to the underlying structure during operation.



Air filter

The metallic filters prevent the condenser clogging caused by the dust in the air. The filters are installed at the condenser inlet through two joint brackets.

Scroll Compressor

The Heart of the WPA Techno

Hermetic Scroll



The heart of the COSMOTEC Techno range are the hermetic scroll compressors, specifically designed for air cooled refrigerant circuits. These compressors are able to compress all the ecological refrigerant gases used by COSMOTEC.

State of the art compressors, able to achieve high compression ratios with reduced consumption.

Thanks to the compressor double spiral system the gas is continuously compressed, allowing to maintain the rotation inertia of the compressor motor, avoiding overloads, electrical consumption peaks, reducing mechanical stresses, which are the primary cause of the reduction of the product life.

Starting



The starting of the compressors is direct with delta connection, and is managed by the electronic controllers SEC.blue. The electronic controller starts the compressors in sequence, verifying the compliance with the timing imposed by the supplier and maintaining the operation hours aligned.

Tandem - Trio



The compressors are installed in tandem or trio according to the sizes of the chiller.

Tandem (2+2 compressors): WPA060-160

Trio (3+3 compressors): WPA180-200

Double cooling circuits in all the sizes.



Condenser

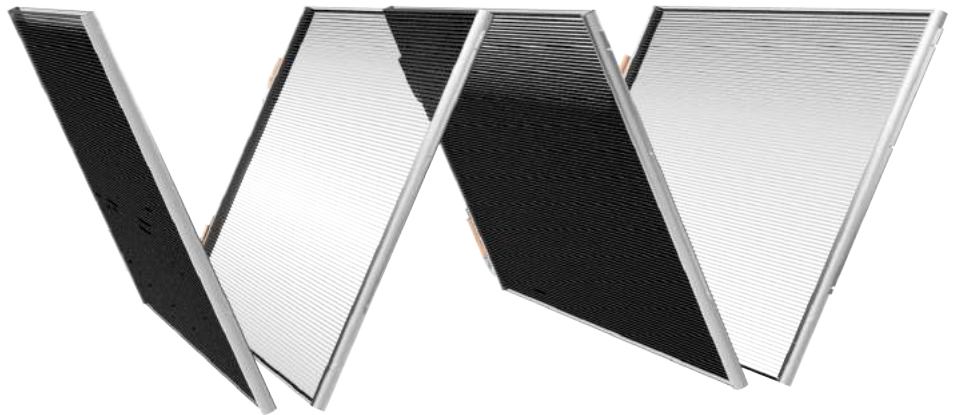
For the best performance

V-Shape Geometry



The MicroChannel condenser coils are entirely made of aluminum and expressly designed and realized to maximize the yield of the chillers, preserving reduced dimensions. The V-Shape geometry has an angle designed, tested and proven specifically to avoid points of failure of the batteries and the imbalance of the refrigerant circuits. The use of a V-Shape geometry ensures an optimal air flow through the coils, allowing to reduce the noise of the refrigerator both in Chiller or Free Cooling mode.

- ✓ Micro Channel
- ✓ Aluminium
- ✓ V-Shape
- ✓ Independent circuits

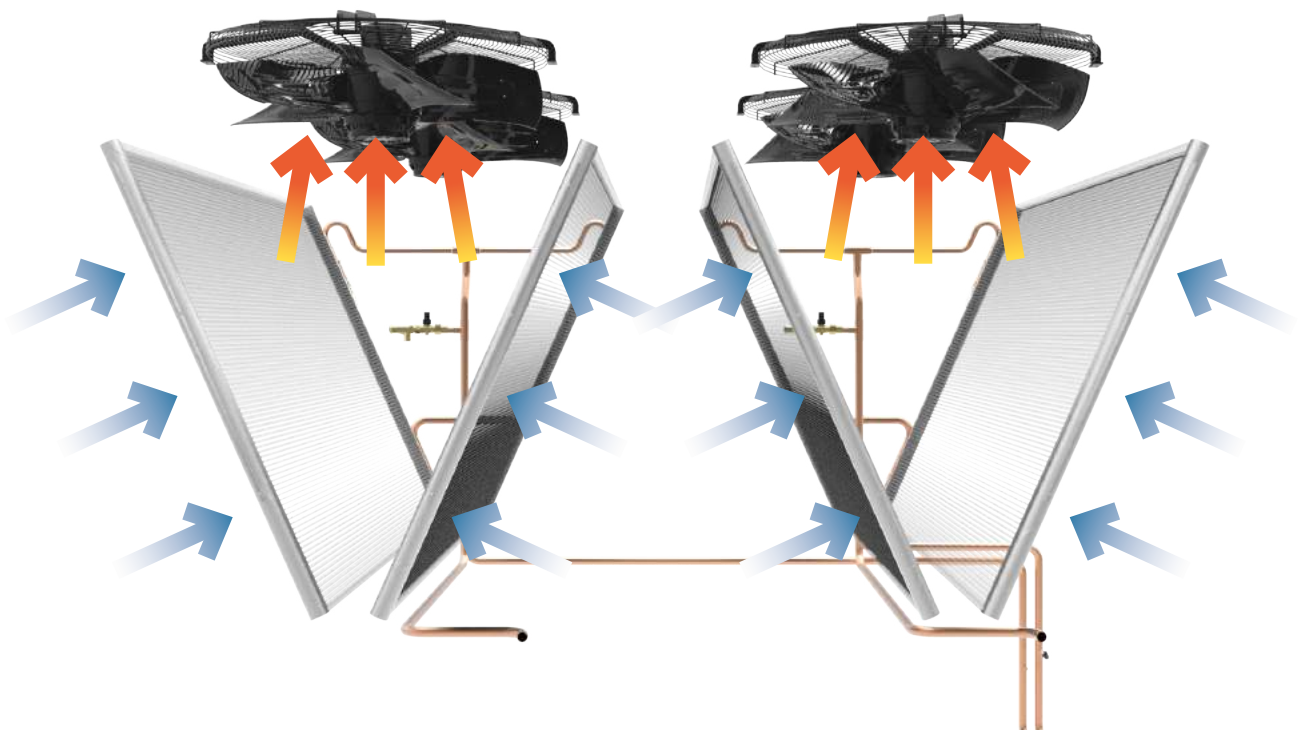


Axial Fans



The proper air flow is guaranteed by the axial fans with phase-cutting partialization, which takes in fresh air from the longitudinal sides of the chiller through the condensers, and push the heated air upwards. The fans are handled by SEC.blue electronic control to maintain the best condensing value in every cooling circuit. The fans can't be canalized.

Air flow:



Expansion valve

Quality in every component

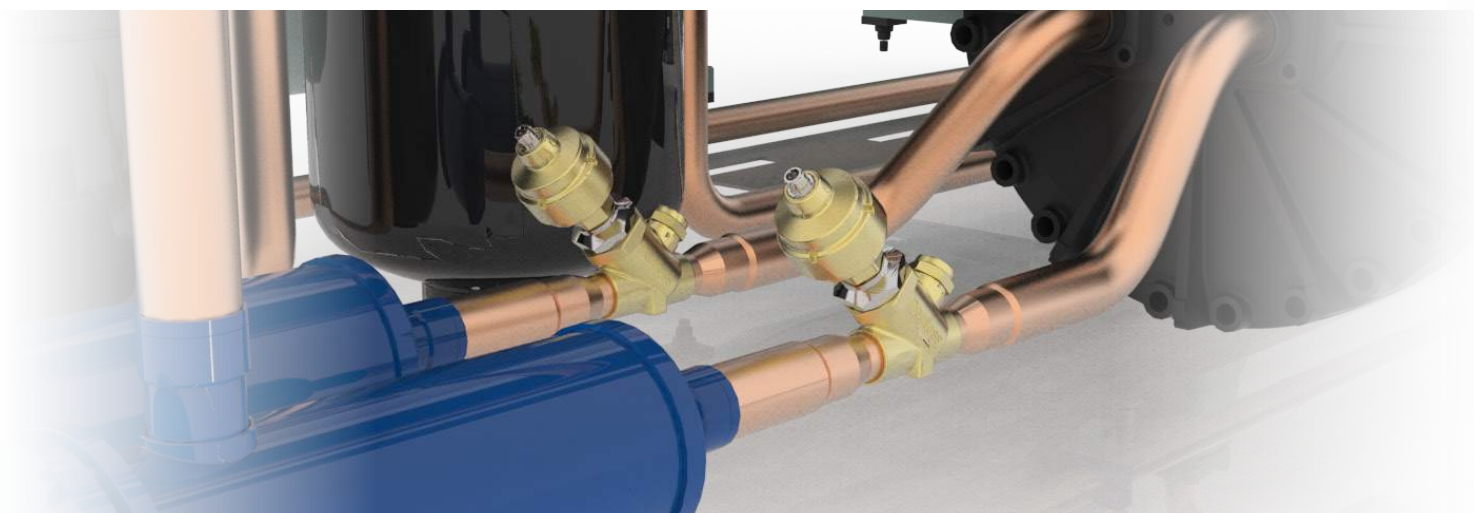
The evaporation of the refrigerant gas into the cooling circuits is guaranteed by the latest generation electronic thermostatic valves.

Together with appropriate pressure switches, temperature probes and the electronic controller SEC.blue the valves optimize the thermal exchange into the evaporator, preserving the upstream and downstream components from high temperatures or icing.

The operating and calibration logic of the electronic thermostatic valves lies in the electronic controller SEC.blue.

PLUS

- ✓ **Quick start up** with super heater control in order to achieve the full cooling capacity in less time.
- ✓ **Wider working range** operating limit increased compared to the mechanical expansion valve
- ✓ **Optimization of the exchange surface** thanks to the correct evaporation of the liquid in each conditions.
- ✓ **Compressor protected against the back liquid** with pressure switch and probe installed on the lower line guarantees the complete transition to gas of the refrigerant before the inlet in the compressor.
- ✓ **Humidity and liquid sightglass incorporated** to check the status of the refrigerant
- ✓ **Safety capacitor for shut-down** in case of failure of power supply, allows the complete closure of the valve to avoid the return of the liquid into the evaporator.
- ✓ **Independent for each cooling circuit** properly managed by electronic controller SEC.blue



Evaporator

For the best performance

Brazed plate

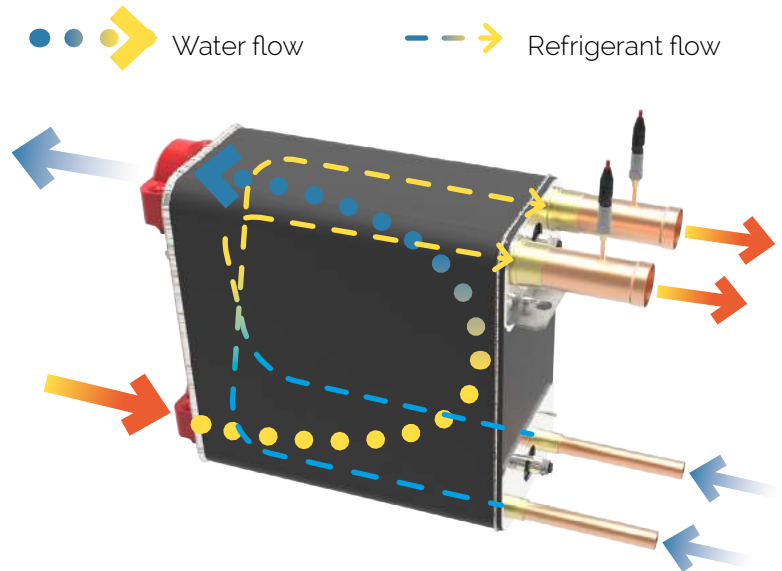


Brazed plate evaporator, composed by stainless steel plate, copper brazed. Fully external insulated with properly thermal insulator additivated with glass fiber (10 mm).

Double refrigerant circuits and single water circuit, installed counterwise to maximize the heat exchange from between the refrigerant and the fluid, keeping low pressure drop in both circuits.

Victaulic® connections on the water side for a quick installation.

Differential pressure switch and anti-freeze probe to avoid the icing of the fluid in the evaporator.



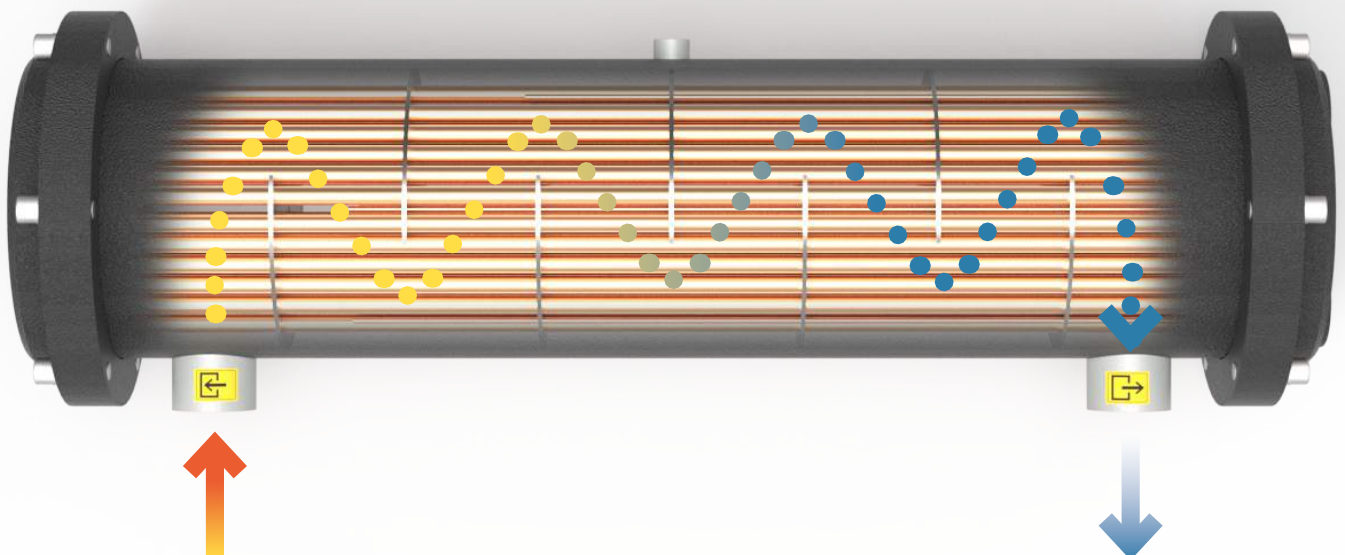
Brazed plates	WPA060 ÷ WPA140
Shell & Tubes	WPA160 ÷ WPA200

Shell & Tube



The Shell and tube evaporator is composed of: small inner tubes made of copper, separation baffles for a better heat exchange refrigerant-fluid, outer casing carbon steel coated with suitable thermal insulation (10 mm), in order to assure the entire range of operation of the chiller.

Double cooling circuit and mono circuit water side, disposed in countercurrent flow to maximize the heat exchange between the refrigerant and the fluid, while keeping pressure losses very low on both circuits. Victaulic® water connections for quick installation of the chiller



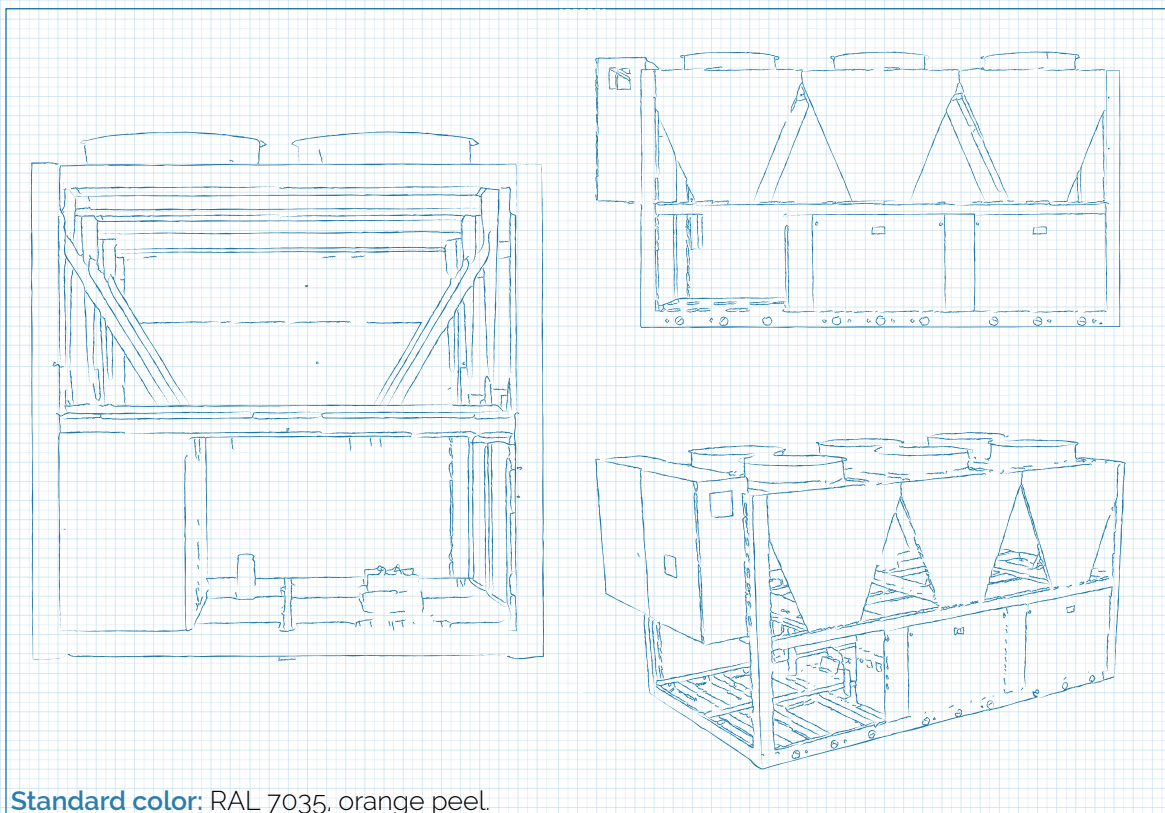
Structure

Made to be strong

The WPA range is produced with a bearing frame of zinc-coated metal sheet painted with epoxy powders; fixing small parts in corrosion resistant steel. Zinc-coated metal sheet painted with epoxy powders closure plugging, for condenser, compressors compartment and electrical panel.

Planks, properly designed and positioned in the basement, are identified to lift safely with cranes the entire refrigerator. These tubes can be removed after the positioning or to insert the chiller into a container.

Predefined holes in the support structure allow the installation of anti-vibration mounts.



PLUSES

- ✓ **Reticular full metal structure** to ensure the resistance of the structure also during the movement operations
- ✓ **Epoxy powder** for all the metal structure
- ✓ **Corrosion resistant parts** guarantee for all the fixing small parts
- ✓ **Outdoor installation**
- ✓ **Lifting plates** to handle safely the chiller
- ✓ **Predefined Anti vibrating Holes** to install correctly the anti vibrating kit

Electrical Panel

Protection & Accessibility

Large electric panel to allow installation of all options designed, installed in the front side of the chiller.
Double door, ventilated, equipped with external power switch and display to manage the chiller operating.
Three-phase power supply 400V/50Hz or 460V/60Hz, secondary supply at 230V with internal transformer.
The safety of the motors is guarantee by fuses and thermal protector.
The fans speed is managed through a cutting phases devices by the electronic controller SEC.blue.
The inlet of the wires is from the bottom of the cabinet, through specific removable panels

Components and realization in accordance with CEI EN 60335-2-40, CEI EN 61000-6-1/2/3/4 standards and EMC2004/108/CE regulation.

FEATURES

- ✓ Degree of protection **IP54** for outdoor installation
- ✓ **Large size** to include all the available options
- ✓ **Double Door**
- ✓ **Display** with transparent protection panel to manage the chiller
- ✓ **General lock door** to guarantee the safety of the user



Hydraulic Kit

Your project, our solution

Hydraulic circuit composed of painted steel piping, covered in elastomeric insulating material with added glass fiber, Shell and tube evaporator, charge/discharge/vent valves, Victaulic® connections.

The optionals allow to deliver the chiller also with:

- 1 pump with shut-off valves upstream and downstream for easy maintenance (WPA060 - WPA140)
- 2 pumps with shut-off valves upstream and downstream for easy maintenance (WPA060 - WPA140)
- pressured storage tank (WPA060 - WPA140)
- antifreeze heaters installed on the main components of the hydraulic circuit

Victaulic® Connections

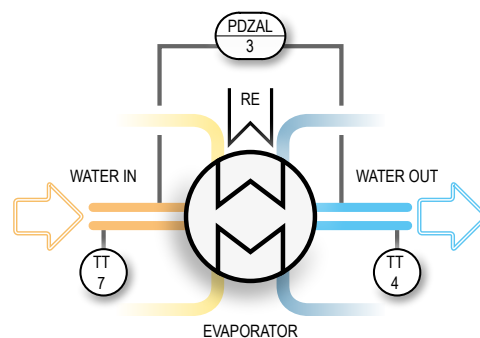
All hydraulic connections are equipped with Victaulic® rapid connections for a greater ease of installation and possible maintenance.

Only Evaporator



Standard selection for Standard and Low noise chillers.

Brazed plate	WPA060 ÷ WPA140
Shell & Tube	WPA160 ÷ WPA200

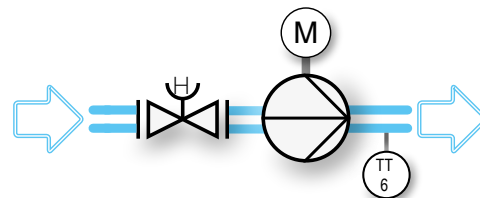


With n.1 Pump



Managed by electronic controller SEC.blue, available with Inverter.

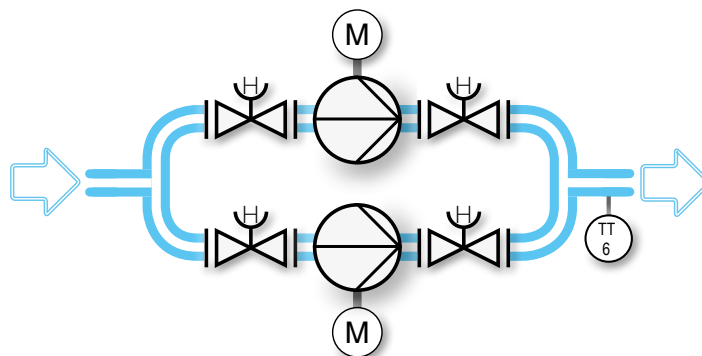
Pump installed after the evaporator in version without tank.
Pump installed after the evaporator and tank in version with storage tank.



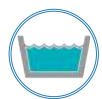
With n.2 Pumps



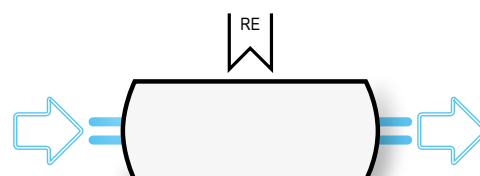
Pumps installed in redundancy: one is operating and the other is stopped. In case of failure of the first pump the second one turns on. Each pump has shut-off valves upstream and downstream for easy maintenance. Managed by electronic controller SEC.blue.



Storage tank



Pressurized storage tank installed after the evaporator. Volume of the tank calibrated according to the size of the chiller.



HYDRAULIC KIT

BASE			
	Modules	Connection Diameter	Tank Volume
WPA060	2	3" Victaulic®	500 L
WPA070	2	3" Victaulic®	500 L
WPA080	2	3" Victaulic®	500 L
WPA090	2	3" Victaulic®	500 L
WPA100	2	3" Victaulic®	500 L
WPA110	3	4" Victaulic®	750 L
WPA120	3	4" Victaulic®	750 L
WPA140	3	4" Victaulic®	750 L
WPA160	4	5" Victaulic®	n.a.
WPA180	4	5" Victaulic®	n.a.
WPA200	4	5" Victaulic®	n.a.

LOW NOISE			
	Modules	Connection Diameter	Tank Volume
WPA060	2	3" Victaulic®	500 L
WPA070	2	3" Victaulic®	500 L
WPA080	2	3" Victaulic®	500 L
WPA090	2	3" Victaulic®	500 L
WPA100	3	3" Victaulic®	500 L
WPA110	3	4" Victaulic®	750 L
WPA120	3	4" Victaulic®	750 L
WPA140	4	4" Victaulic®	750 L
WPA160	4	5" Victaulic®	n.a.
WPA180	5	5" Victaulic®	n.a.
WPA200	5	5" Victaulic®	n.a.

FREE COOLING			
	Modules	Connection Diameter	Tank Volume
WPA060	2	3" Victaulic®	500 L
WPA070	2	3" Victaulic®	500 L
WPA080	3	3" Victaulic®	500 L
WPA090	3	3" Victaulic®	500 L
WPA100	3	3" Victaulic®	500 L
WPA110	3	4" Victaulic®	750 L

Connections

Quick Victaulic® grooved end piping system to ensure:

- easy **maintenance** of the connection
- simple **alignment** of users pipes and chiller
- **flexibility** thanks to the shape of the joint is possible to secure the resistance to thermal expansion, slight misalignments and seismic stress
- **noise** and **vibration attenuation** by isolating the transference of vibration at each joint
- **rigidity** to torsional and flexural loads

As options are available Victaulic® adapters to flanged or threaded connection.



Display Touch

Full control one touch away

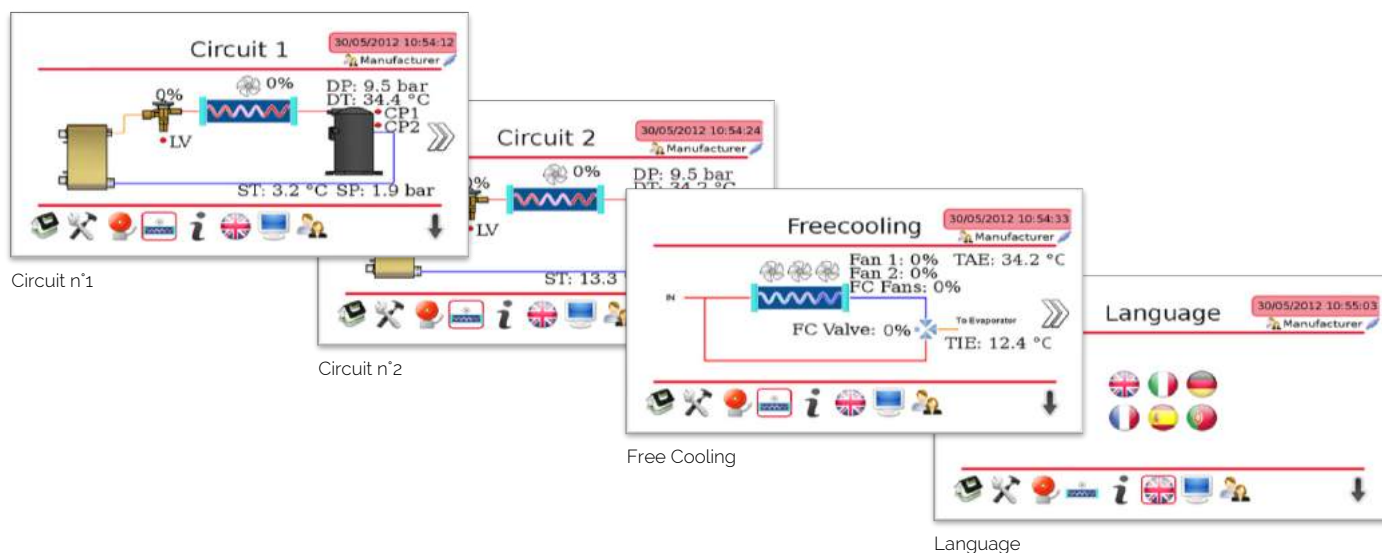
The user interface of the electronic controller SEC.blue is a 7" colour touch screen display, with synoptic useful menus. All the data of the chiller, warnings and alarms will be shown on the display. The menus are available in many languages: Italian, German, English, French, Russian, Spanish.

Main features

- ✓ 7" TFT-LCD graphical color display
- ✓ 800 x 480 px resolution
- ✓ Frontal protection IP66 for outdoor installation
- ✓ Operating limits from -20 up to $+60^{\circ}\text{C}$
- ✓ Resistive Touch Screen
- ✓ LED backlight
- ✓ Buzzer
- ✓ 4 diagnostic LEDs on pannel



Example of the synoptics menus:



Movements

Where you need it, easily

Handling

The WPA chillers can be handled with cranes or ropes and sling lifting.
The base is designed to house the lifting tubes, supplied with the chiller.



Containerization

WPA can be put in 40 feet high cube container. To do this is necessary to install two spars under the chiller after removing the lifting tubes.



SEC.blue Electronic Control

The Mind

The "mind" of the COSMOTEC Techno chiller is the SEC.blue electronic control, developed by COSMOTEC to achieve the best performance from every component. New functions have been implemented in the COSMOTEC Techno range in order to obtain the best management of the new components. Memory and calculation speed are increased, allowing a better and faster control of all the components and preserving the durability of the units.

The numerous functions and parameters are summarized in a few simple steps and screens, which allow the user to easily keep under control the chiller correct operation.

A 7" liquid crystal display with touch screen acts as an interface between the user and the chiller. The display reports all the information on: operation status, working time, alarm history and alarm signals. Furthermore it allows to start, stop and modify the chiller operation.



SEC.blue Electronic Controller is equipped with the following pre-loaded functions:

- **Sequencing** = to connect through a specific line more chillers and manage the components as a unique chiller
- **Emergency Cooling** = to activate the chillers in the same line, in case the active chiller cannot make up for the overload of the user.
- **Redundancy** = activates alternatively the chillers and guarantees the service continuity in case of fault of a chiller.
- **ModBus RTU** = to manage remotely the chiller through standard interfaces
- **STULZ Protocol** = to connect the chiller to the STULZ supervision components
- **Unloading** = guarantees the chiller partialised operation even at high temperatures
- **Antifreeze**

SEC.blue Electronic Controller manages:

- **Compressors** = start, switching off, within the limits provided by the supplier
- **Fans** = depending on the power requested and on the active function (chiller, Free Cooling) sets the fans speed, to guarantee the maximum yield with lesser noise and electric consumption
- **Electronic Thermostatic Valves** = partialises the refrigerant evaporation to obtain the requested power with the lesser electrical consumption
- **Fluid side pumps** (where expected) = the electronic control manages the redundancy in case of installation of 2 pumps, in order to maintain the working time of the pumps assimilar as possible.
- **Free Cooling circuit** = partialising the 3-ways valve, it takes advantage of the entire cooling capacity recoverable from the ambient air.

Low Noise

Silent, whenever needed

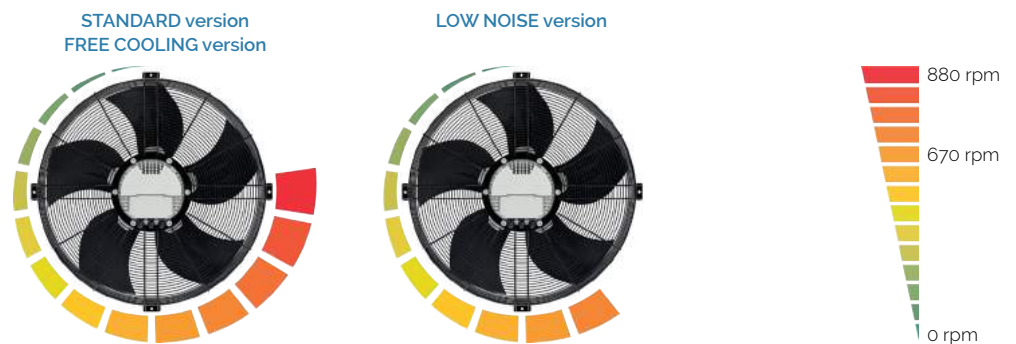
In the WPA Techno the noise can be made by the compressors and the air flow through the condensers. It's possible to reduce the noise level (about -10 dB) selecting the Low Noise Version of WPA Techno.

The noise is reduced with the following solutions:

Fan speed reduction

To reduce the noise caused by the flow of the air through the exchangers, the fans speed is reduced moving the electrical connections from Delta to Star.

This solution reduces the speed approximately about 30%. This requires a greater dimension of the condenser coils to achieve the same cooling capacity of the standard version.



Acoustic Isolation

In WPA Techno a textile fibre of polyester vane covers each compressor and the pumps.

The vane is made of a metal sheet powdered in the same colour of the chiller.

The vane allows the complete access to the compressors electrical box.



Free Cooling

Energy and Money saving

The Free Cooling circuit is composed of a coil with copper tubes and aluminium fins. A 3-ways valve, controlled by the SEC.blue, ensures the maximum yield, minimizing the compressor operation time and reducing the running costs.

Cataphoresis treatment on the condensing coils, in order to prevent corrosion due to stray currents.

The total heat recovery from the ambient air is obtained at about 0°C: the entire cooling capacity is supplied by the free cooling coils.

When the ambient temperature drops, the SEC.blue controller partialises even further the 3-ways valve and the fans, guaranteeing the correct thermal load management.

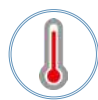
Due to the need to maximize the air flow through the coils, is not possible to combine Free Cooling to the "Super Silent" version.



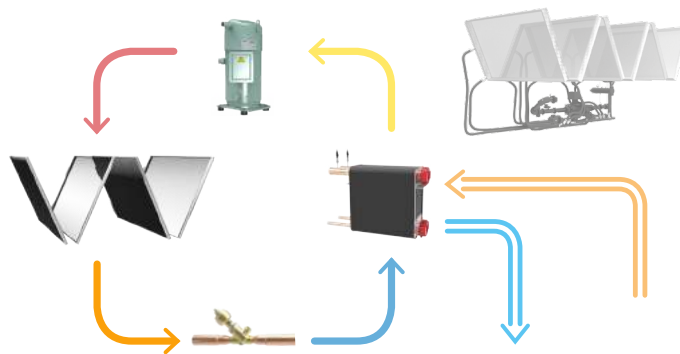
Temperate climate

In temperate climates north and south of the equatorial zone, the energy-saving advantages of Indirect Free Cooling can be fully exploited. Electricity consumption for data center air conditioning will drop by up to 60%.

Summer Mode



During the summer the air temperature is too high to exchange with the water, then the 3-way valve close the Free Cooling and the water goes directly to the evaporator. The chiller cools the water.

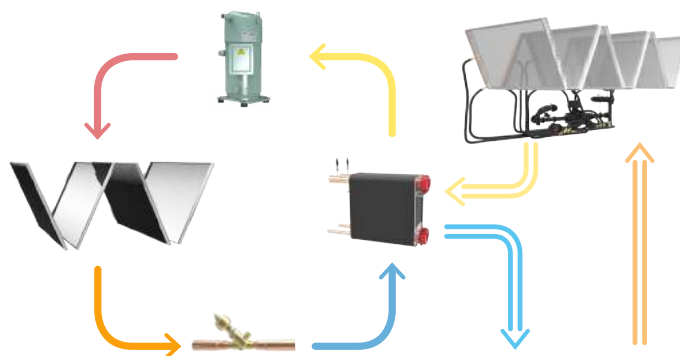


Mix Mode



The valves allow the passage of the water through the Free Cooling coils to exchange some heat. The rest of the heat is removed by the chiller.

Due to the fact that the fans are managed first to maximize the yield of the cooling circuit, if possible one cooling circuit is totally turned off to maximize the Free Cooling yield.

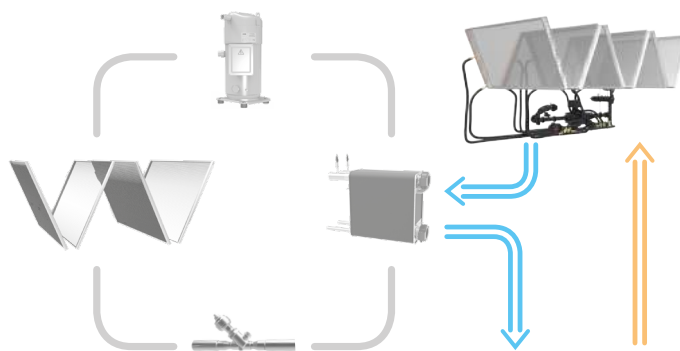


Winter Mode



When the temperature reaches about 0°C the cooling capacity of the Free Cooling coils is at the maximum. The chiller is stopped and the water heat is all exchanged with the ambient air.

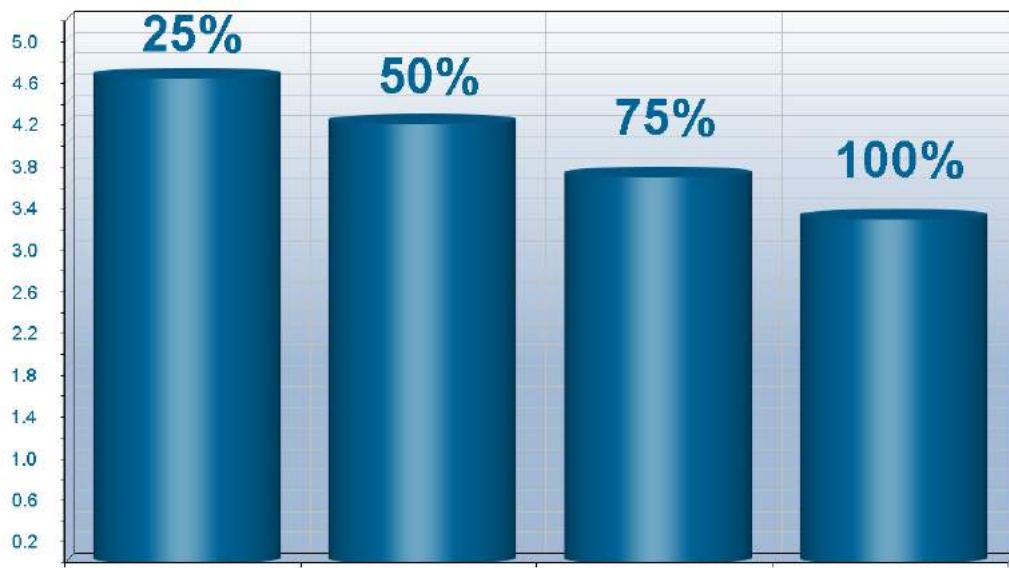
The energy is used only to run the fans. That is the way to reduce a lot of energy and the operating cost.



Energy Efficient in every season

WPA Techno chillers are developed to cover an entire range of applications (from process industry to data centers). The Techno units are designed for a high energy class (Class A or B) or to work in extreme environmental conditions. They also come in very precise configurations with temperature controls dedicated to the application.

In almost all applications, the thermal load and ambient temperature conditions are highly variable. WPA Techno units closely match all environmental and load conditions, achieving a high seasonal efficiency (ESEER) – even higher than 5. High ESEER values lead to significant energy savings.



EER: Energy Efficiency Ratio

The Energy Efficiency Ratio (EER) of a particular cooling device is the ratio of output cooling energy to input electrical energy at a given operating point. EER is generally calculated using a 35°C outside air temperature and an inlet water temperature at 12 °C, outlet water temperature at 7°C.

$$\text{EER} = \text{Cooling Capacity}_{w7L35} / \text{Power consumption}_{w7L35}$$

ESEER: European Seasonal Energy Efficiency Ratio

The seasonal energy efficiency index is a parameter that indicates the seasonal efficiency of an air conditioner or a refrigerator group. The parameter is defined by the Eurovent Certification Company.

$$\text{ESEER} = 0.03 \times \text{EER}_{100\%} + 0.33 \times \text{EER}_{75\%} + 0.41 \times \text{EER}_{50\%} + 0.23 \times \text{EER}_{25\%}$$

IPLV: Integrated Part Load Value

The Integrated Part Load Value (IPLV) is a performance characteristic developed by the Air-Conditioning, Heating and Refrigeration Institute (AHRI). It is most commonly used to describe the performance of a chiller capable of capacity modulation. Unlike an EER (Energy Efficiency Ratio) or COP (coefficient of performance), which describes the efficiency at full load conditions, the IPLV is derived from the equipment efficiency while operating at various capacities.

$$\text{IPLV} = 0.01 \times \text{EER}_{100\%} + 0.42 \times \text{EER}_{75\%} + 0.45 \times \text{EER}_{50\%} + 0.12 \times \text{EER}_{25\%}$$

Certified Value

Maximum Reliability

The WPA Techno units are designed to guarantee the integrity during the transport both on road and in container, thanks to their sturdiness and flexibility.

The components assembly is realized to ensure the maximum reliability and accessibility during the maintenance.

The double refrigerant circuit with hermetic scroll compressors guarantees the best performance at different loads, paying particular attention to intensive uses (h24/365) and providing extra durability.

COSMOTEC Quality

All the chillers are designed and produced in compliance with:

- UNI EN ISO 9001: Quality Management System,
- UNI EN ISO 14001: Environmental Management
- 2006/42/EC: Machinery Directive
- 2006/95/EEC: Low Voltage Directive
- 2004/108/EEC: EMC Directive
- 97/23/EC: Pressure Equipment Directive
- EN 378-1, 2, 3, 4: Refrigerating systems and heat pumps
- EN ISO 12100 -1, 2: Safety of machinery
- EN ISO 13857: Safety of machinery - Safety distances
- EN 60204 -1: Safety of machinery - Electrical equipment
- EN 61000-6-2: Immunity for industrial environments
- EN 61000-6-4: Emission standard for industrial environments

In all phases of design and production the compliance with these standards and directives are checked by an independent quality management.

Components and Test

The components installed in the COSMOTEC Techno are from well-know manufacturers, and sampling controlled at the arrival of the shipment by the Quality department.

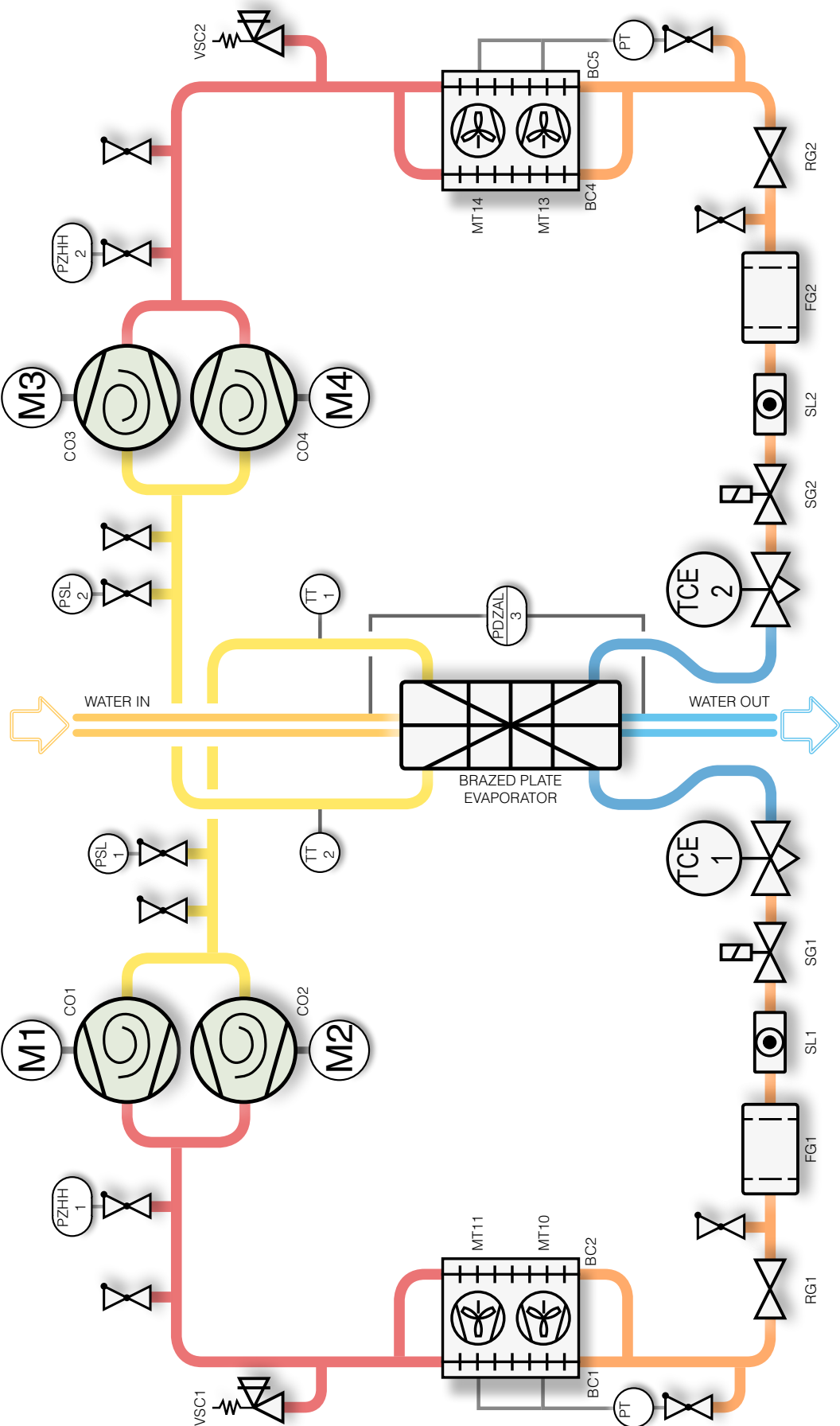
The finished chiller undergoes a function and leak tests, including:

- Visual inspection of the correct assembly
- Leakage test with detector of the cooling circuits
- Leakage test of hydraulic circuit
- Programming and setting the electronic controller SEC.blue.
- Control of the calibration of sensors and probes
- Functional test and alarm check
- Unit labeling, documents and complementary material

The certificate is included with the documentation pack.

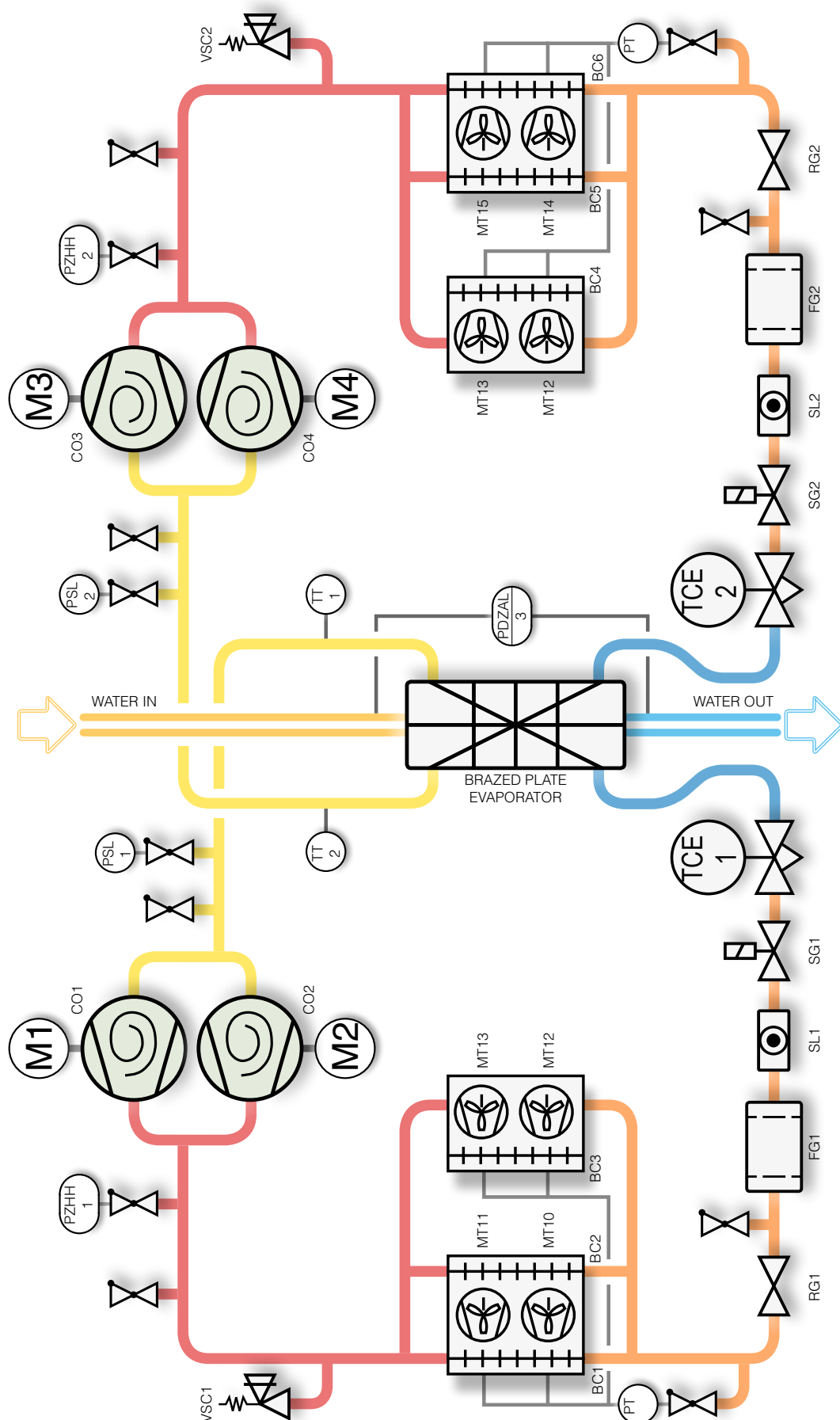
Refrigeration Circuit 2V

Simple, complete, efficient

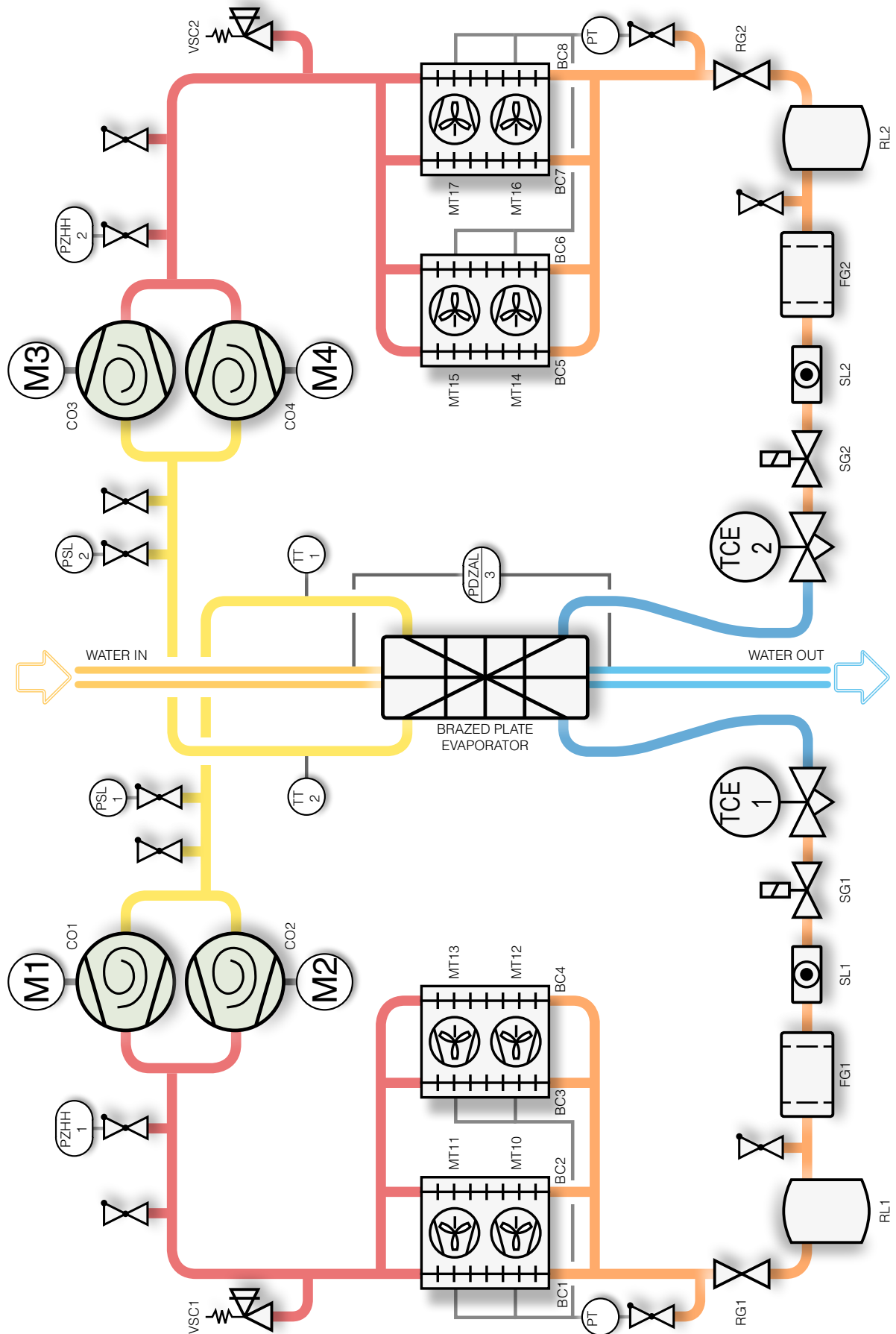


Legend	
SYMBOL	DESCRIPTION
	refrigerant circuit
	water circuit
	signal line
	lift check valve
	disconnectable joint
	semihermetic screw compressor
	Shell and tube heat exchanger
	vessel
	manual valve disconnectable
	filter
	electronic expansion valve
	temperature transmitter
	safety pressure cut out
	differential pressure switch
	motorized valve
	disconnectable check valve
	heat exchanger with fan
	centrifugal pump with electric motor
	safety check valve
	anti freeze heater

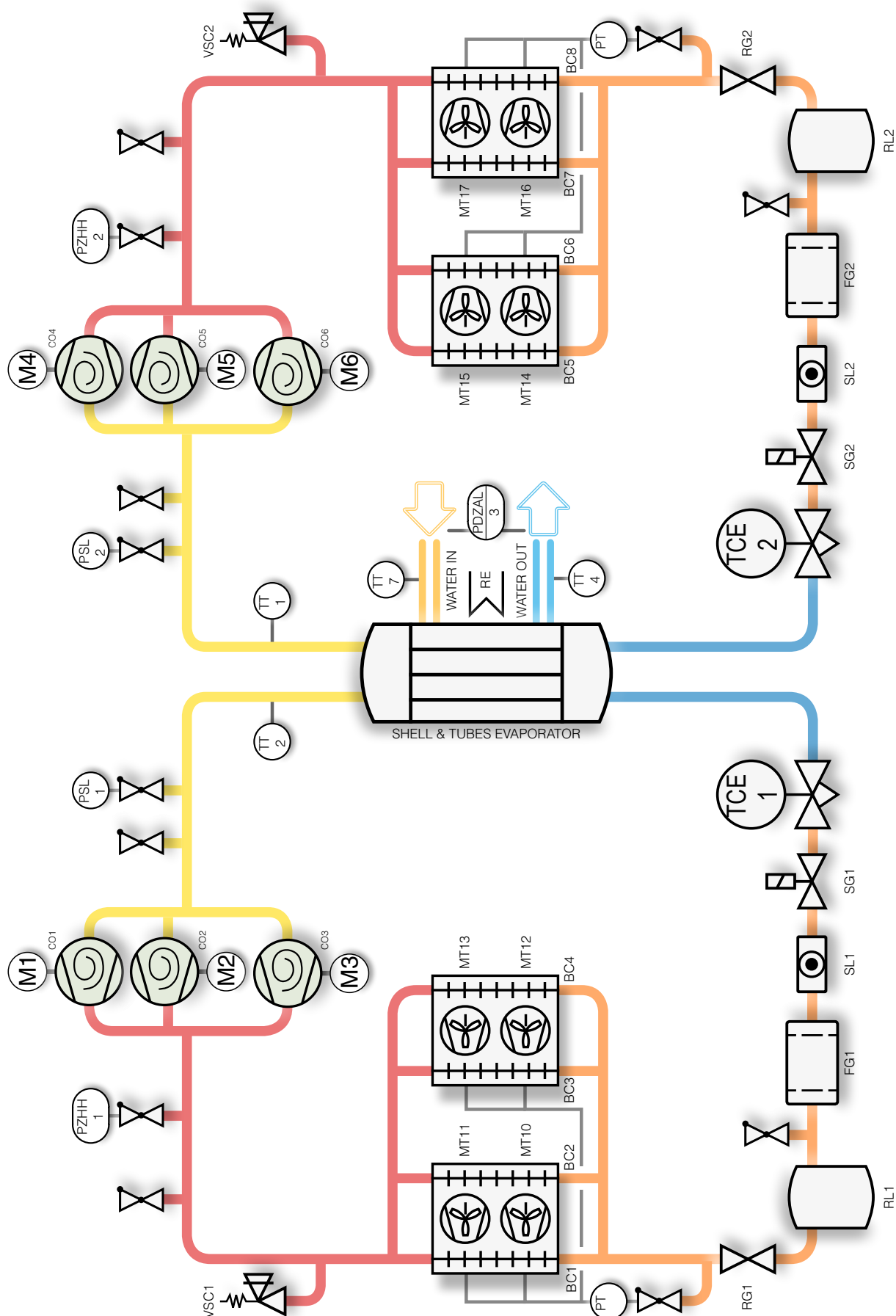
3V REFRIGERANT CIRCUIT



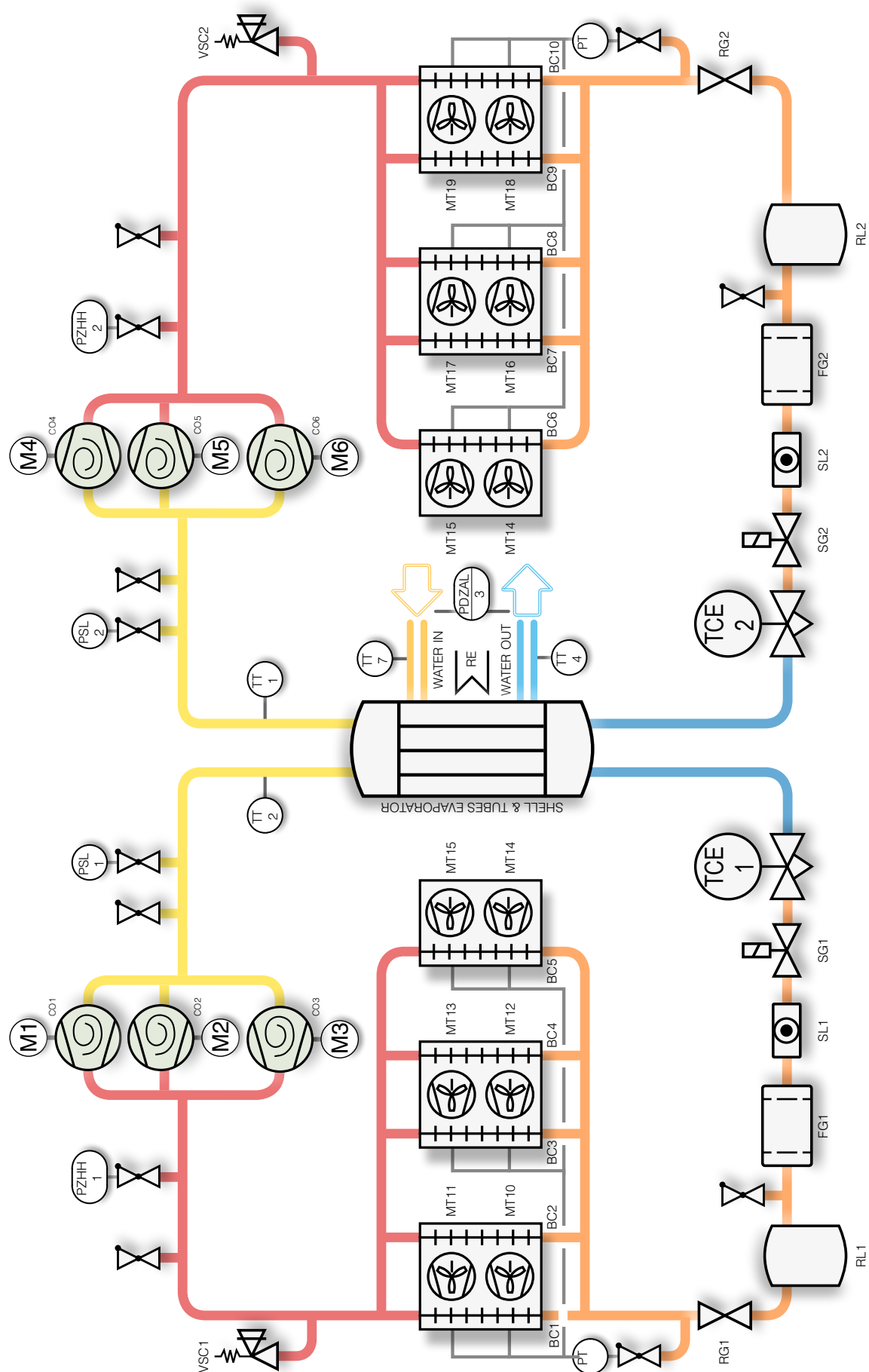
4V brazed plates REFRIGERANT CIRCUIT



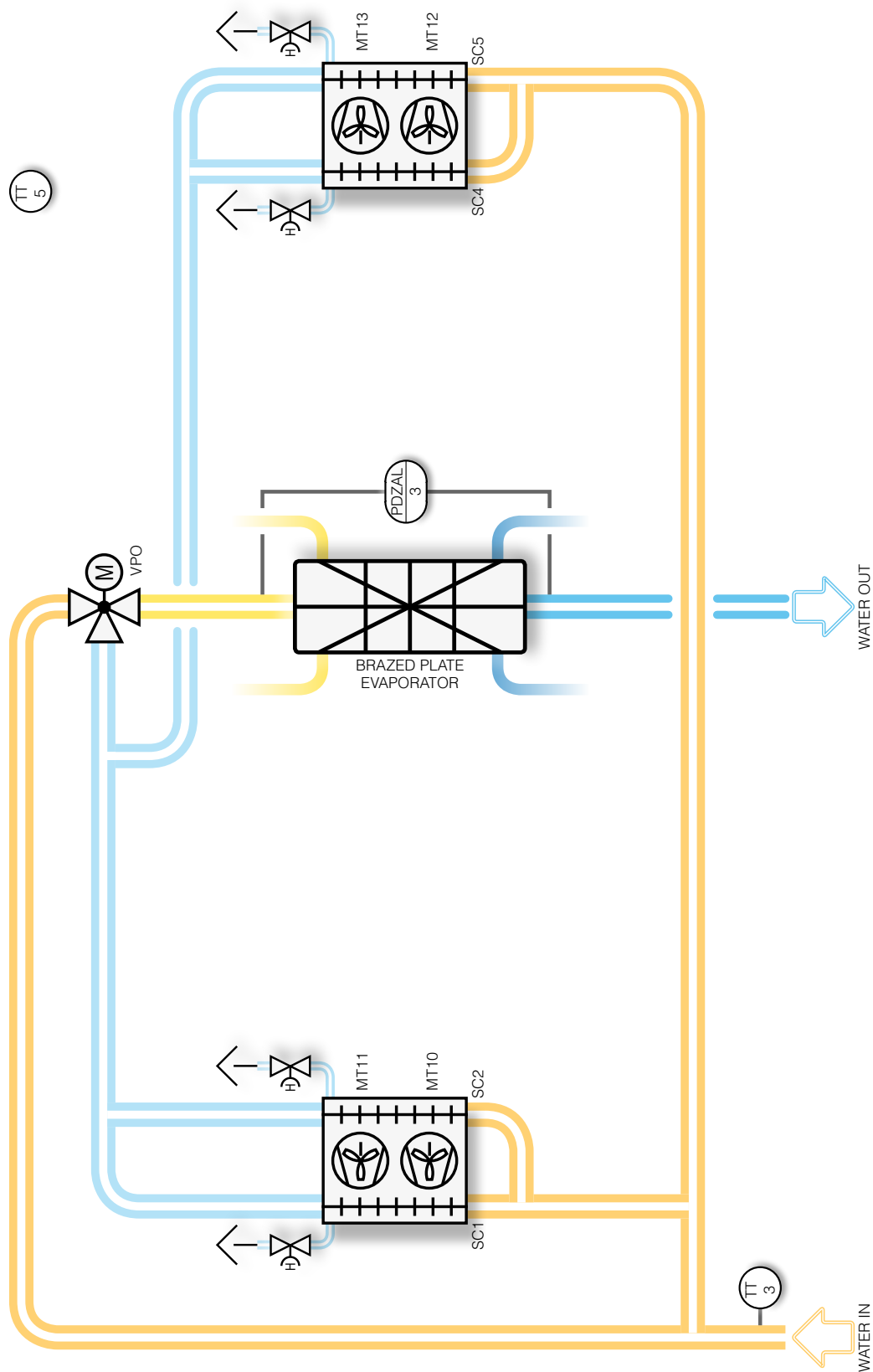
4V shell & tubes REFRIGERANT CIRCUIT



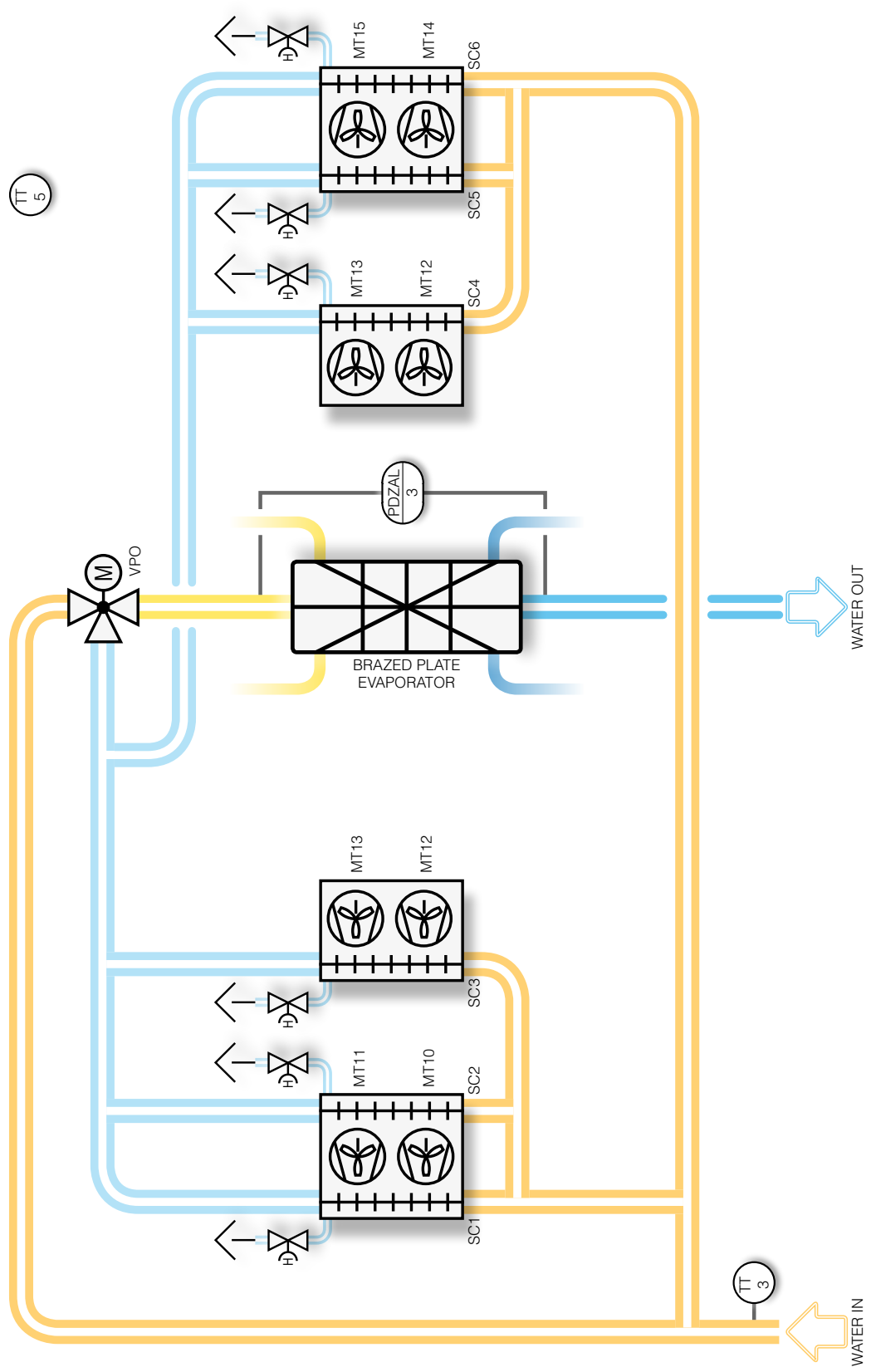
5V REFRIGERANT CIRCUIT



Energy and Money saving



3V FREE COOLING CIRCUIT



Encoding

All in a readable code

1°

2°

3°

4°

5°

6°

7°

8°

9°

10°

11°

12°

13°

14°

n° digit

W

P

A

1

2

0

S

C

S

A

0

0

0

0

n° digit

Liquid chiller

Type

Heat recovery

Options

Hydraulic circuit

Power Supply

Sound level

Compressors

Version

Type

A Air cooled

C Centrifugal fans

E E.C. fans

W Water cooled

Cooling Capacity

060 165 kW⁽¹⁾

070 187 kW⁽¹⁾

080 222 kW⁽¹⁾

090 245 kW⁽¹⁾

100 266 kW⁽¹⁾

110 319 kW⁽¹⁾

120 353 kW⁽¹⁾

140 385 kW⁽¹⁾

160 432 kW⁽¹⁾

180 504 kW⁽¹⁾

200 559 kW⁽¹⁾

⁽¹⁾ at 50 Hz, W7L35

Compressors

S Scroll compressor R410A

Version

C Chiller

D Chiller with cataphoresis condensing coils

F Free Cooling

G Free Cooling with epoxy coated coils

I Free Cooling with cataphoresis coated coils

Heat recovery

o None

D Economizer

T Total recovery

Hydraulic circuit

o without pump and tank

1 one pump

2 two pumps

3 one pump + tank

4 two pumps + tank

5 one pump + tank + heaters

6 two pumps + tank + heaters

⁽¹⁾ ⁽²⁾

⁽¹⁾ ⁽²⁾

⁽¹⁾ ⁽²⁾

⁽¹⁾ ⁽²⁾

⁽¹⁾ ⁽²⁾ ⁽³⁾

⁽¹⁾ ⁽²⁾ ⁽³⁾

Power Supply

A 400 V / ~3 / 50 Hz

B 460 V / ~3 / 60 Hz

Sound level

N Standard noise

S Low noise

Options

(change accordingly to the selected options)

not in free cooling version

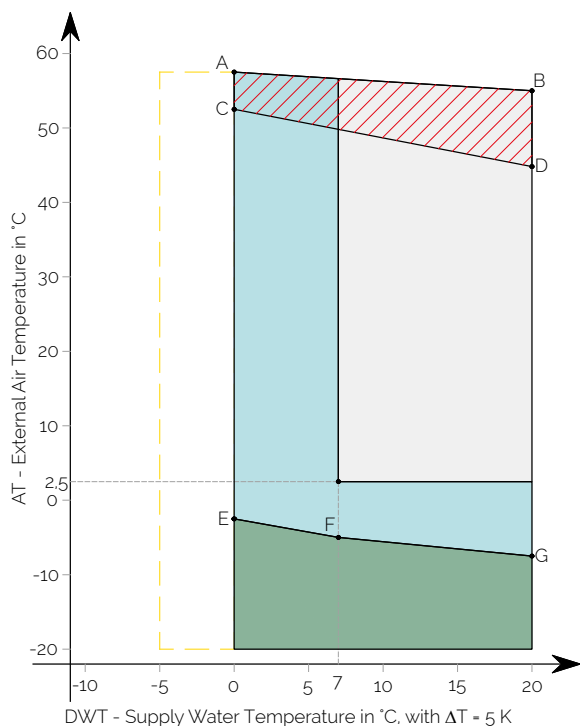
up to size 140 (included)






tank and impeller

32

Working limits

Wide application



-  Unloading area (reduced capacity)
-  Standard water
-  Only with antifreeze mixture (glycol)
-  Only with antifreeze mixture (glycol)
Only in free cooling mode
-  Special application

		AT VALUES [°C]						
		A	B	C	D	E	F	G
BASE	WPA060	57	55.5	52	46	0	-5	-10
	WPA070	57	55	50	44	-3	-9	-10
	WPA080	57.5	55.5	52.5	47	-7	-10	-10
	WPA090	57	54	51	45	-10	-10	-10
	WPA100	57	54	50	43	-10	-10	-10
	WPA110	58	57	54	48	-6	-10	-10
	WPA120	57.5	55	51.5	45.5	-8	-10	-10
	WPA140	57	53.5	51	44	-10	-10	-10
	WPA160	57.5	56	52.5	47	-7	-10	-10
	WPA180	55	51	50.5	43.5	-10	-10	-10
LOW NOISE	WPA200	55	50	49	41.5	-10	-10	-10
	WPA060	57	54	50	44	0	-5	-10
	WPA070	57	54	48	41	-3	-9	-10
	WPA080	57.5	53	50	45	-7	-10	-10
	WPA090	56	52	49	41.5	-10	-10	-10
	WPA100	57.5	56	54	46.5	-3	-8	-10
	WPA110	57	56	52	44.5	-6	-10	-10
	WPA120	57	53.5	49.5	42	-8	-10	-10
	WPA140	56.5	54.5	51.5	45.5	-10	-10	-10
	WPA160	56	54.5	50.5	44	-7	-10	-10
FREE COOLING	WPA180	56	53	51	47	-7	-10	-10
	WPA200	55	51	50	42.5	-10	-10	-10
	WPA060	57	54	50	43	0	-6	-10
	WPA070	57	54	49	40	-4	-10	-10
	WPA080	57	55	51	45.5	-7	-10	-10
	WPA090	57	53	49.5	43	-10	-10	-10
	WPA100	57	51	48	40.5	-10	-10	-10
		WPA110	59	56.5	51.5	45.5	-3	-10

In Free Cooling version the minimum AT valued is set at -20°C, depending on the electronic control.

WARNING: Below AT +2.5°C is advisable to use antifreeze mixture.

Correction Factors

Multiply the correction factor in this table for the value in Data Sheet

		Ethylene glycol				Propylene glycol			
		10%	20%	30%	40%	10%	20%	30%	40%
Freezing temperature	[°C]	-3.9	-8.9	-15.6	-23.4	-3.3	-7.8	-12.2	-20.6
Cooling capacity	Correction factors	0.997	0.990	0.984	0.977	0.993	0.985	0.974	0.962
Input power		0.999	0.997	0.996	0.994	0.999	0.996	0.993	0.989
Water flow		1.014	1.033	1.068	1.117	0.989	1.009	1.017	1.040
Pressure drop water side		1.07	1.16	1.30	1.48	1.04	1.14	1.23	1.37

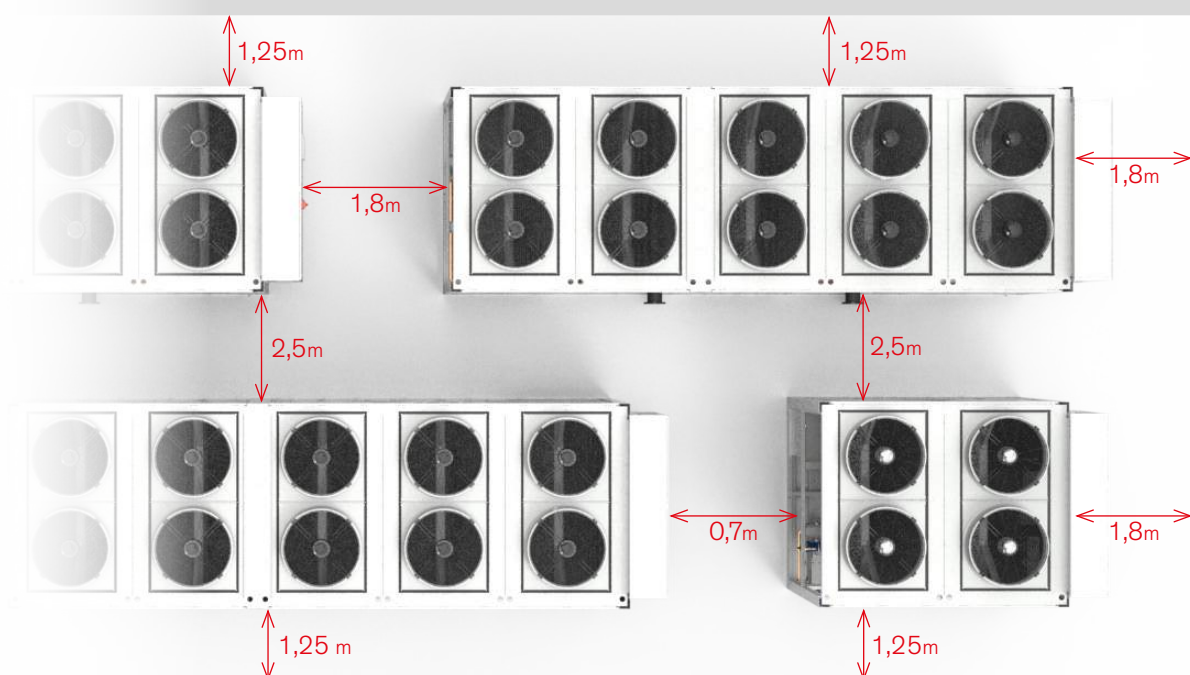
Free space

Few space, more capacity

Minimum distance from obstacles



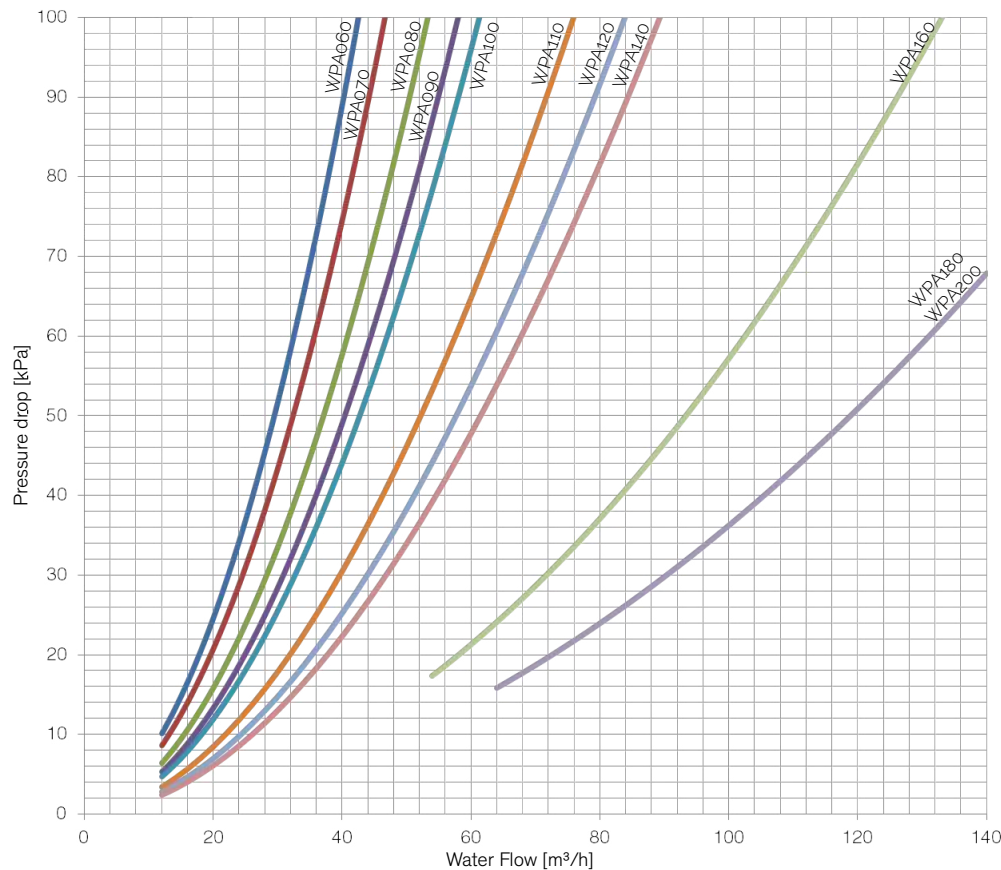
Distance of installation of several units



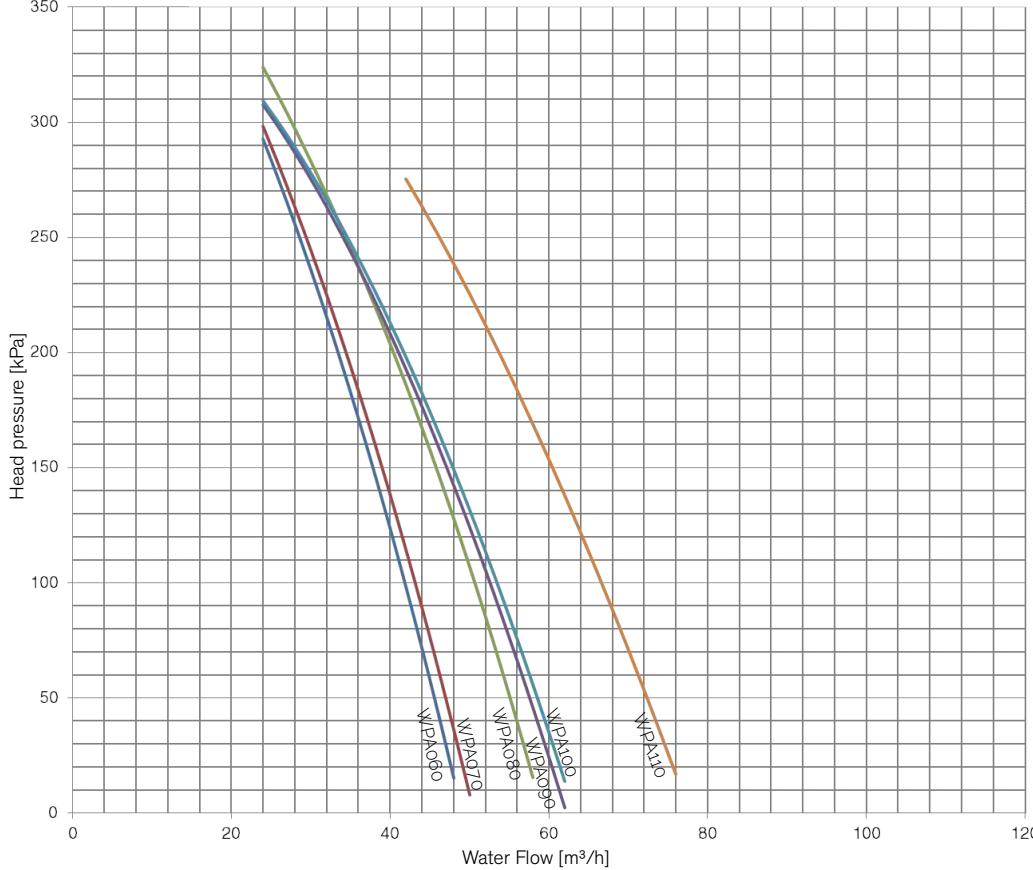
Pumps curves

High performance

Pressure drop on the evaporator

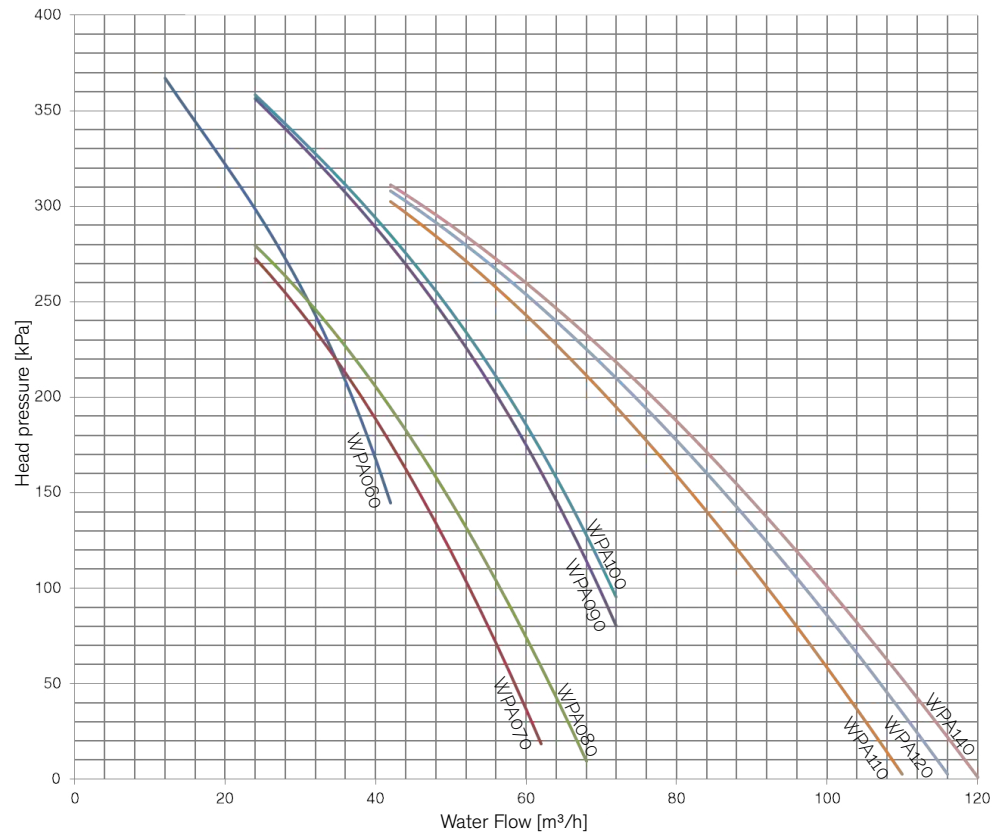


Free cooling: net residual head

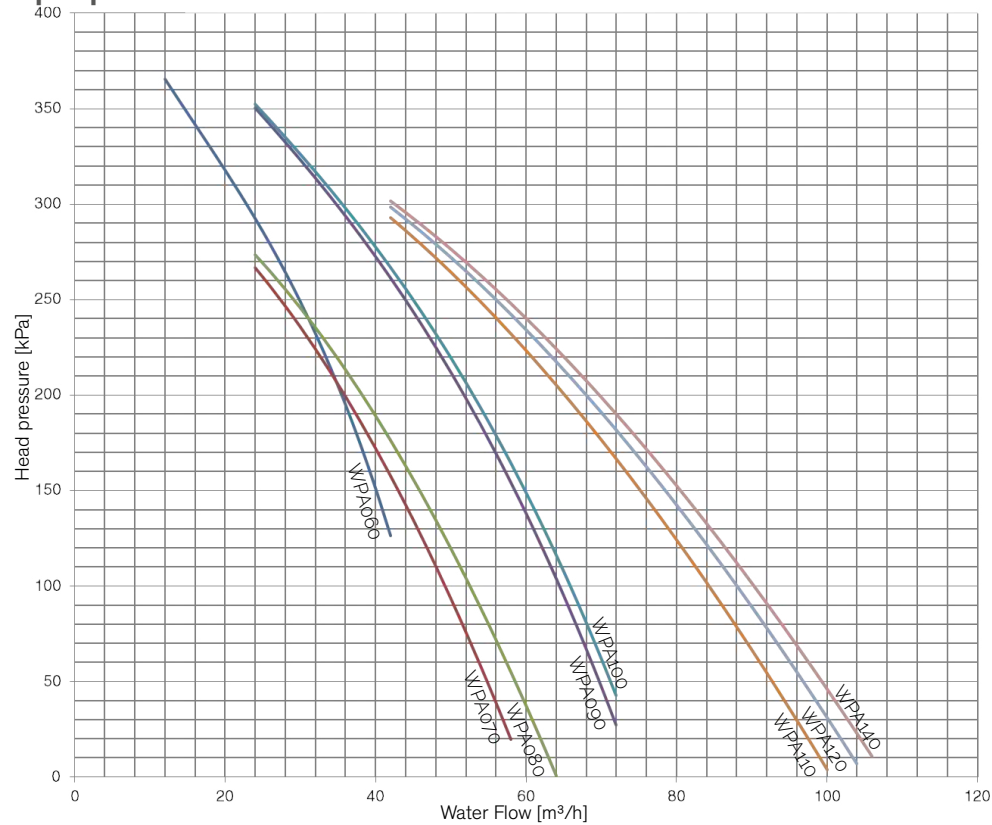


PUMPS CURVES

One pump option: net residual head

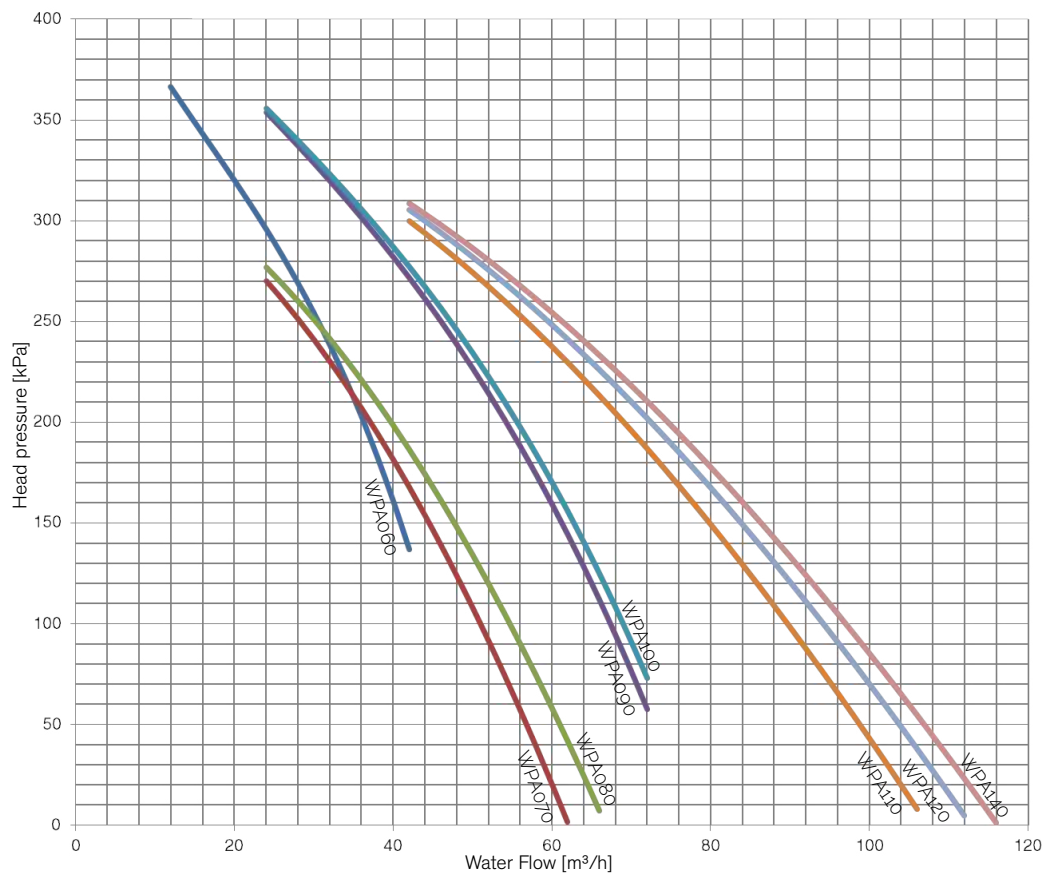


Two pump option: net residual head

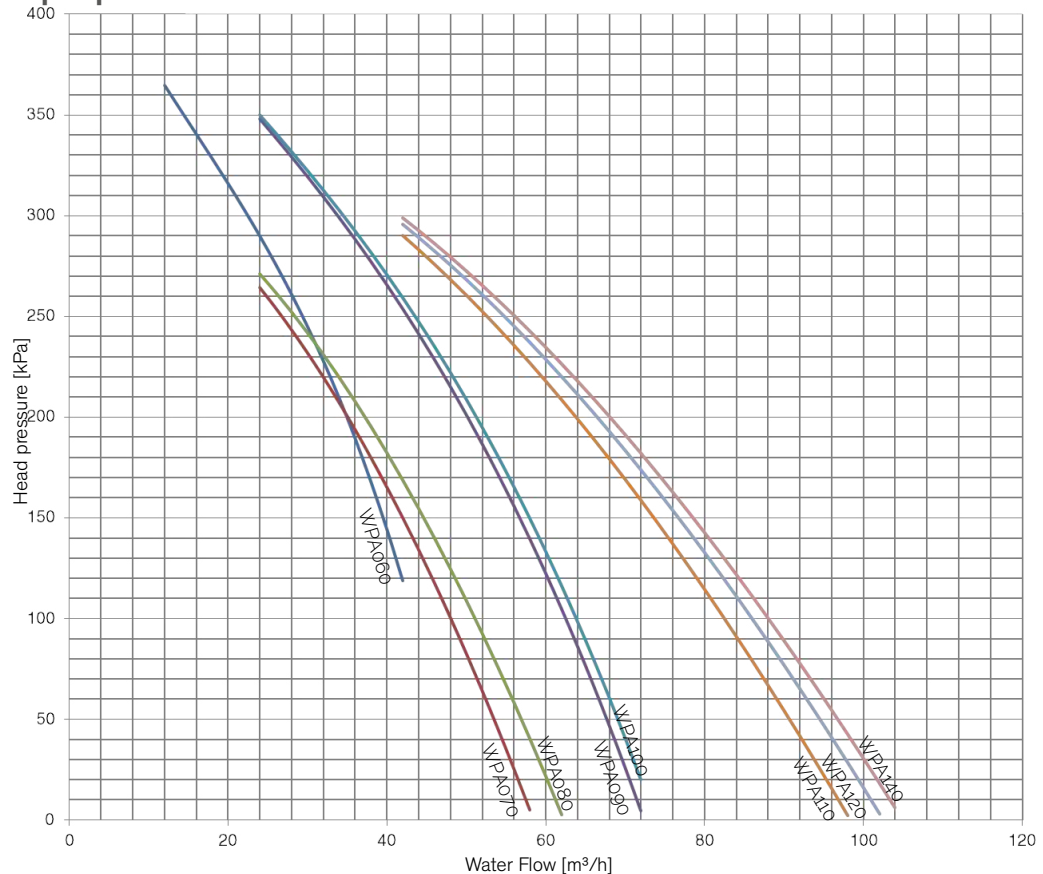


PUMPS CURVES

One pump option + accumulation: net residual head



Two pump option + accumulation: net residual head



Technical data

Wide range

- Evaporator water (in/out) 12/7 °C; Condenser air (in) 35 °C
- Average sound pressure level, at 10m distance, unit in a free field on a reflective surface.
- Unit at full capacity. According to ISO 3744. Pumps contribution is not considered.
- In case of applications with output fluid temperature below 0°C, please contact the manufacturer

COOLER ONLY - BASE

		WPA060	WPA070	WPA080	WPA090	WPA100
Cooling capacity	kW	165.5	187.5	222.6	245.2	266.5
Total power consumption	kW	53.3	64.4	73.7	83	91.6
Sound power level	dB(A)	85.8	85.8	86.1	86.2	86.2
Sound pressure level @ 10m	dB(A)	57.8	57.8	58.1	58.2	58.2
Chilled water circuit						
Flow of fluid to be cooled	m³/h	28.42	32.22	38.22	42.12	45.79
Pressure drop on fluid to be cooled side	kPa	39.9	39.8	37.2	33.7	31.9
Maximum volume of water in the system	dm³			13		
Tank volume (if provided)	l			500		
Refrigerant Circuit						
Refrigerant				R410A		
Refrigerant charge (per circuit)	kg	18	17.5	17	18	15.5
No. of refrigerant circuits		2	2	2	2	2
Oil charge	dm³	21.2	21.2	21.2	21.2	21.2
Compressor						
No.		4	4	4	4	4
Capacity control	%			25 - 100		
Power Consumption	kW	49.8	61	68.1	77.5	86
Current consumption	A	82.3	100.4	108.6	122.7	137.9
Maximum current consumption	A	132	154	176	194	212
Fans						
No.	0	4	4	4	4	4
Air flow with free outlet	m³/h	57600	57600	85500	85500	85500
Power consumption	kW	3.36	3.36	5.46	5.46	5.46
Current consumption	A	6.96	6.96	15.6	15.6	15.6
Unit data						
Rated power supply	V/-/Hz			400/3/50		
Maximum power consumption	kW	79.88	92.62	109.76	121.16	132.56
Maximum current consumption	A	138.96	160.96	191.6	209.6	227.6
Inrush current	A	268.66	337.36	368	380.3	398.3
Depth	mm			2206		
Width	mm			3100		
Height	mm			2410		
Weight for transport	kg	2293	2323	2395	2420	2440
Weight in operation	kg	2304	2337	2412	2439	2461
Pump						
Rated power consumption	kW	4.56	6.29	6.29	8.45	8.45
Nominal current consumption	A	8.7	10.4	10.4	13.7	13.7
Maximum current consumption	A	9.57	11.44	11.44	15.07	15.07
Additional weight of the second pump	kg	41	47	47	56	56
Efficiency index						
EER		3.1	2.9	3.0	3.0	2.9
ESEER		4.31	4.38	4.02	4.26	4.26
IPLV		4.79	4.68	4.07	4.32	4.52

TECHNICAL DATA

- Evaporator water (in/out) 12/7 °C; Condenser air (in) 35 °C
- Average sound pressure level, at 10m distance, unit in a free field on a reflective surface.
- Unit at full capacity. According to ISO 3744. Pumps contribution is not considered.
- In case of applications with output fluid temperature below 0°C, please contact the manufacturer

		COOLER ONLY - BASE					
		WPA110	WPA120	WPA140	WPA160	WPA180	WPA200
Cooling capacity	kW	318.6	353.1	385.1	432	504	559.3
Total power consumption	kW	100.4	114.2	127.5	131.9	173.6	199.8
Sound power level	dB(A)	87.9	88.2	88.8	89.6	90.0	89.0
Sound pressure level @ 10m	dB(A)	59.9	60.2	60.8	61.6	62.0	61.0
Chilled water circuit							
Flow of fluid to be cooled	m³/h	54.7	60.63	66.14	74.16	86.51	96.01
Pressure drop on fluid to be cooled side	kPa	44.5	41.5	34.8	44.3	64.2	48.3
Maximum volume of water in the system	dm³		19.5		n.a.	n.a.	n.a.
Tank volume (if provided)	l		750		n.a.	n.a.	n.a.
Refrigerant Circuit							
Refrigerant		R410A					
Refrigerant charge (per circuit)	kg	22.5	25	24.5	69	80.5	89
No. of refrigerant circuits		2	2	2	2	2	2
Oil charge	dm³	21.2	21.2	21.2	21.2	31.8	31.8
Compressor							
No.		4	4	4	4	6	6
Capacity control	%	25 - 100				12.5 - 100	
Power Consumption	kW	92.2	106	119.3	121.1	162.8	188.9
Current consumption	A	145	168.5	195.2	203.7	258.8	311.4
Maximum current consumption	A	238	264	294	324	396	456
Fans							
No.	o	6	6	6	8	8	8
Air flow with free outlet	m³/h	128250	128250	128250	171000	171000	171000
Power consumption	kW	8.19	8.19	8.19	10.92	10.92	10.92
Current consumption	A	23.4	23.4	23.4	31.2	31.2	31.2
Unit data							
Rated power supply	V/-/Hz	400/3/50					
Maximum power consumption	kW	150.64	165.07	181.27	201.12	283.62	318.62
Maximum current consumption	A	261.4	287.4	317.4	355.2	427.2	487.2
Inrush current	A	499.2	525.2	551.2	572.2	648.2	678.2
Depth	mm		2206			2206	
Width	mm		4400			5770	
Height	mm		2410			2410	
Weight for transport	kg	3119	3173	3219	4158	4559	4561
Weight in operation	kg	3146	3203	3252	4292	4801	4803
Pump							
Rated power consumption	kW	10.23	10.23	10.23	n.a.	n.a.	n.a.
Nominal current consumption	A	16.8	16.8	16.8	n.a.	n.a.	n.a.
Maximum current consumption	A	18.48	18.48	18.48	n.a.	n.a.	n.a.
Additional weight of the second pump	kg	61	61	61	n.a.	n.a.	n.a.
Efficiency index							
EER		3.2	3.1	3.0	3.3	2.9	2.8
ESEER		4.55	4.38	4.23	4.52	4.79	4.62
IPLV		4.23	4.25	4.28	4.35	4.42	4.42

TECHNICAL DATA

- Evaporator water (in/out) 12/7 °C; Condenser air (in) 35 °C
- Average sound pressure level, at 10m distance, unit in a free field on a reflective surface.
- Unit at full capacity. According to ISO 3744. Pumps contribution is not considered.
- In case of applications with output fluid temperature below 0°C, please contact the manufacturer

ONLY CHILLER - LOW NOISE

		WPA060	WPA070	WPA080	WPA090	WPA100
Cooling capacity	kW	160.6	180.7	216.6	237.4	276
Total power consumption	kW	104.2	119.1	126.7	174.2	119.9
Sound power level	dB(A)	77.9	77.9	78.7	79.5	80.0
Sound pressure level @ 10m	dB(A)	49.9	49.9	50.7	51.5	52.0
Chilled water circuit						
Flow of fluid to be cooled	m³/h	27.59	31.08	37.21	40.82	47.42
Pressure drop on fluid to be cooled side	kPa	37.8	37.3	35.5	31.8	34.0
Maximum volume of water in the system	dm³			13		
Tank volume (if provided)	l			500		
Refrigerant Circuit						
Refrigerant				R410A		
Refrigerant charge (per circuit)	kg	18	17.5	17	18	15.5
No. of refrigerant circuits		2	2	2	2	2
Oil charge	dm³	21.2	21.2	21.2	21.2	21.2
Compressor						
No.		4	4	4	4	4
Capacity control	%			25 - 100		
Power Consumption	kW	52.6	65	71.6	81.9	81.1
Current consumption	A	86.1	106.2	113.5	129.1	130.4
Maximum current consumption	A	132	154	176	194	212
Fans						
No.	0	4	4	4	4	6
Air flow with free outlet	m³/h	47840	47840	71036	71036	106554
Power consumption	kW	3.2	3.2	5.2	5.2	7.8
Current consumption	A	3.76	3.76	8.92	8.92	13.38
Unit data						
Rated power supply	V/-/Hz			400/3/50		
Maximum power consumption	kW	78.6	91.37	106.83	118.19	132.01
Maximum current consumption	A	135.76	157.76	184.92	202.92	225.38
Inrush current	A	265.46	334.16	361.32	373.62	396.08
Depth	mm		2206			2206
Width	mm		3100			4400
Height	mm		2410			2410
Weight for transport	kg	2293	2323	2395	2420	3095
Weight in operation	kg	2304	2337	2412	2439	3115
Pump						
Rated power consumption	kW	4.56	6.29	6.29	8.45	8.45
Nominal current consumption	A	8.7	10.4	10.4	13.7	13.7
Maximum current consumption	A	9.57	11.44	11.44	15.07	15.07
Additional weight of the second pump	kg	41	47	47	56	56
Efficiency index						
EER		2.9	2.8	2.8	2.7	3.1
ESEER		4.37	4.44	4.07	4.31	4.2
IPLV		4.79	4.68	4.07	4.32	4.52

TECHNICAL DATA

- Evaporator water (in/out) 12/7 °C; Condenser air (in) 35 °C
- Average sound pressure level, at 10m distance, unit in a free field on a reflective surface.
- Unit at full capacity. According to ISO 3744. Pumps contribution is not considered.
- In case of applications with output fluid temperature below 0°C, please contact the manufacturer

ONLY CHILLER - LOW NOISE

		WPA110	WPA120	WPA140	WPA160	WPA180	WPA200
Cooling capacity	kW	310.3	342.6	391.7	419.5	507.3	563.4
Total power consumption	kW	104.2	119.1	126.7	136.6	174.2	119.9
Sound power level	dB(A)	80.6	81.4	81.7	82.5	82.7	82.1
Sound pressure level @ 10m	dB(A)	52.6	53.4	53.7	54.5	54.7	54.1
Chilled water circuit							
Flow of fluid to be cooled	m³/h	53.27	58.84	67.26	71.99	87.08	96.73
Pressure drop on fluid to be cooled side	kPa	42.4	39.3	35.8	41.9	65	49
Maximum volume of water in the system	dm³		19.5		n.a.	n.a.	n.a.
Tank volume (if provided)	l		750		n.a.	n.a.	n.a.
Refrigerant Circuit							
Refrigerant		R410A					
Refrigerant charge (per circuit)	kg	22.5	25	24.5	69	80.5	89
No. of refrigerant circuits		2	2	2	2	2	2
Oil charge	dm³	21.2	21.2	21.2	21.2	31.8	31.8
Compressor							
No.		4	4	4	4	6	6
Capacity control	%	25 - 100				12.5 - 100	
Power Consumption	kW	96.4	111.3	116.2	126.2	161.2	186.8
Current consumption	A	151.1	176.3	190.5	211.9	256.5	308.5
Maximum current consumption	A	238	264	294	324	396	456
Fans							
No.	o	6	6	8	8	10	10
Air flow with free outlet	m³/h	106554	106554	142072	142072	177590	177590
Power consumption	kW	7.8	7.8	10.4	10.4	13	13
Current consumption	A	13.38	13.38	31.2	31.2	22	22
Unit data							
Rated power supply	V/-/Hz	400/3/50					
Maximum power consumption	kW	146.29	160.8	184.8	195	280	315
Maximum current consumption	A	251.38	277	325	342	418	478
Inrush current	A	489.18	515	559	559	639	669
Depth	mm	2206		2206		2206	
Width	mm	4400		5770		7100	
Height	mm	2410		2410		2410	
Weight for transport	kg	3119	3173	3855	4256	5205	5211
Weight in operation	kg	3146	3203	3888	4390	5447	5453
Pump							
Rated power consumption	kW	10.23	10.23	10.23	n.a.	n.a.	n.a.
Nominal current consumption	A	16.8	16.8	16.8	n.a.	n.a.	n.a.
Maximum current consumption	A	18.48	18.48	18.48	n.a.	n.a.	n.a.
Additional weight of the second pump	kg	61	61	61	n.a.	n.a.	n.a.
Efficiency index							
EER		3.0	2.9	3.1	3.1	2.9	2.8
ESEER		4.61	4.43	4.2	4.55	4.79	4.61
IPLV		4.23	4.25	4.28	4.35	4.42	4.42

TECHNICAL DATA

- Evaporator water (in/out) 12/7 °C; Condenser air (in) 35 °C
- Average sound pressure level, at 10m distance, unit in a free field on a reflective surface.
- Unit at full capacity. According to ISO 3744. Pumps contribution is not considered.
- In case of applications with output fluid temperature below 0°C, please contact the manufacturer

CHILLER WITH FREE COOLING

		WPA060	WPA070	WPA080	WPA090	WPA100	WPA110
Cooling capacity	kW	191	217.8	245.4	271.8	294.9	347.7
Cooling capacity in free cooling	kW	131	131	196.5	196.5	196.5	196.5
Total power consumption	kW	50.5	59.6	69.4	78.8	88.9	94.9
Sound power level	dB(A)	86.1	86.1	86.3	86.6	86.6	87.9
Sound pressure level @ 10m	dB(A)	58.1	58.1	58.3	58.6	58.6	59.9
Chilled water circuit							
Flow of fluid to be cooled	m³/h	32.83	37.42	42.17	46.68	50.66	59.74
Pressure drop on fluid to be cooled side	kPa	74.1	75.2	68.9	63.8	61.7	76.6
Maximum volume of water in the system	dm³			13			19.5
Tank volume	l			500			750
Refrigerant Circuit							
Refrigerant					R410A		
Refrigerant charge (per circuit)	kg	18	17.5	17	18	15.5	22.5
No. of refrigerant circuits		2	2	2	2	2	2
Oil charge	dm³	21.2	21.2	21.2	21.2	21.2	21.2
Compressor							
No.		4	4	4	4	4	4
Capacity control	%				25 - 100		
Power Consumption	kW	45	54.1	61.2	70.7	80.7	86.7
Current consumption	A	69.3	83.8	92.3	103.1	114.7	133.3
Maximum current consumption	A	132	154	176	194	212	238
Fans							
No.	o	4	4	6	6	6	6
Air flow with free outlet	m³/h	85500	85500	128250	128250	128250	128250
Power consumption	kW	5.5	5.5	8.2	8.2	8.2	8.2
Current consumption	A	15.6	15.6	23.4	23.4	23.4	23.4
Unit data							
Rated power supply	V/-/Hz				400/3/50		
Maximum power consumption	kW	90.4	103.2	118.6	135.27	143.2	159.4
Maximum current consumption	A	161.3	183.3	213.1	234.2	252.2	283.3
Inrush current	A	282.3	349.3	379.1	391.2	409.2	504.3
Depth	mm		2410			2410	
Width	mm		3140			4400	
Height	mm		2206			2206	
Weight for transport	kg	3054	3089	3743	3932	3953	4145
Weight in operation	kg	3711	3747	4409	4600	4623	5147
Pump							
Rated power consumption	kW	8.45	8.45	8.45	10.23	10.23	12.2
Nominal current consumption	A	13.7	13.7	13.7	16.8	16.8	21.9
Maximum current consumption	A	15.07	15.07	15.07	18.48	18.48	24.09
Additional weight of the second pump	kg	56	56	56	61	61	65
Efficiency index							
EER		3.8	3.7	3.5	3.4	3.3	3.7
ESEER		4.94	4.92	4.94	5.06	5.09	5.3
IPLV		4.79	4.68	4.07	4.32	4.52	4.23





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