

## PMS series - design features

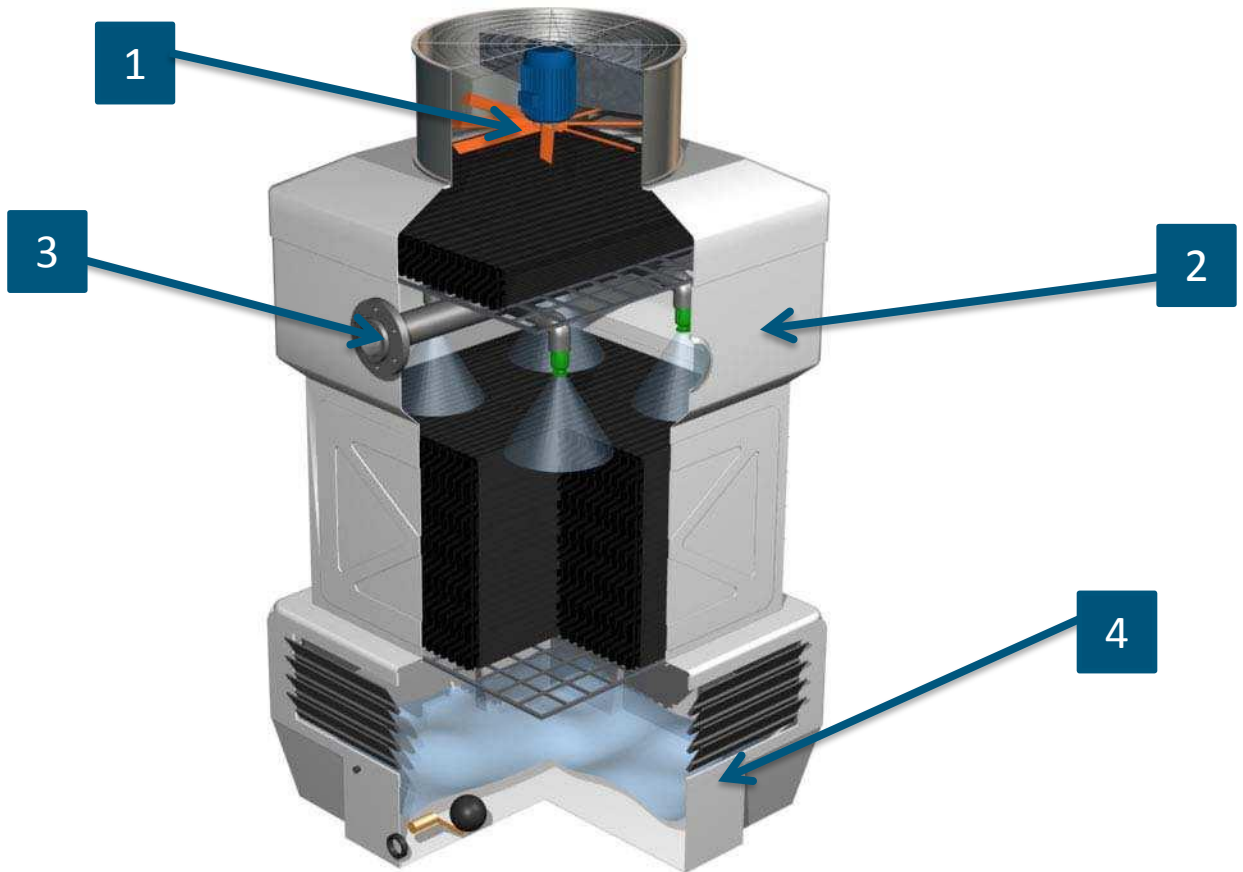
### Cooling towers



INDUSTRIAL  
REFRIGERATION



HVAC



### Induced Draft Axial Fan Counterflow Cooling Tower

Factory Assembled - Modular Compact Design

- 1 IP56 Motor(s) directly coupled to low energy and high efficient fan(s)
- 2 Shell (casing, top and optional basin) entirely made of fibreglass reinforced polyester (FRP)
- 3 Water distribution system with non-clogging tangential Polypropylene (PP) nozzles for a full cone water distribution. Flanged water inlet connection(s)
- 4 Fibreglass reinforced polyester (FRP) water collection basin with sloping base and smooth internal finish with rounded corners for easy cleaning. Flanged water outlet connection(s)

## STRUCTURE AND CASING

### SHELL (casing, top and optional basin)

Made entirely of fibreglass reinforced polyester resin, structurally self-supporting and of exclusive TORRAVAL design, with gel coat external finish as UV-protection.

For the version with basin: the water collection basin is totally in fibreglass with sloping base and smooth internal finish with rounded corners for easy cleaning. Flanged water outlet connection(s).

### SUPPORTS

For the fill pack (if necessary, depending on the model) and droplet eliminators in hot-dip galvanised steel after fabrication.

### NUTS AND BOLTS

In stainless Steel AISI 304.



## MOTOR FAN

**UPPER SECTION(S)** smooth faced air entry fan cylinder(s) entirely in fibreglass reinforced polyester (FRP) with gel-coat for UV-protection.

High efficiency directly coupled axial fan motor(s) assembly designed to efficiently convey discharge air.

### AXIAL FAN SYSTEM

- hot-dip galvanised steel after fabrication\* support(s)
- one or more propeller fan(s) in plastic material, with blades connected to central aluminium hub directly coupled to the motor
- IP56 sealed execution fan motor(s) (special versión for TORRAVAL cooling towers)
- multi-voltage (400/690/3/50), (50/60 Hertz), Class F insulation
- protection of the motor-fan set(s) is provided by a grid(s) in stainless steel AISI 304.
- electric motor(s) suitable for operation with frequency converter.

**ELECTRICAL ISOLATOR** (lockable) electrical wiring connection to fan motor(s) located on cooling tower body to minimise site electrical connections; IP65 isolating switch (lockable).

**IMPORTANT SUGGESTION:** it is recommended to start the motor/s by means of a “soft-starter” or with frequency converter.



## INSPECTION HATCH

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In plastic material, easy to open for visual inspection inside the tower.



## DRIFT ELIMINATORS

### EUROVENT Certified High Efficiency DRIFT ELIMINATORS

Consisting of sheets in polypropylene (PP), thermoformed under vacuum and welded together to form panels of such shape and size as to guarantee maximum efficiency of droplet separation from the airflow produced by the fan, reducing substantially the drift water.

## WATER DISTRIBUTION SYSTEM

**WATER DISTRIBUTION SYSTEM** made of UNI-EN-PN 10 pipes and connectors in PVC or PP, full cone (non-clogging) polypropylene spray nozzles for even water distribution.

The water distribution system is supplied complete with manometer for regulation of input water pressure and a bleed-off valve.

**Flanged water inlet connection(s).**



## FILL PACK

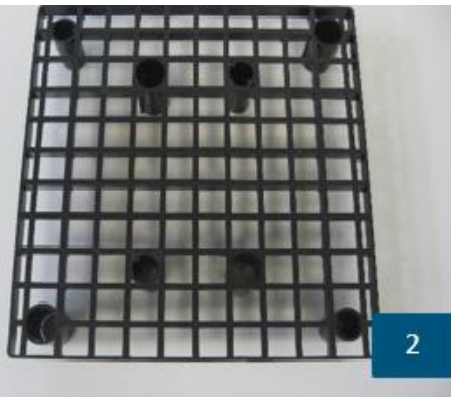
**FILL PACK (or heat Exchange surface)** consisting of high efficiency cross-fluted PVC or PP sheets, thermoformed under vacuum welded together into lightweight blocks.

The fill pack type K19 (used as standard) is suitable for industrial clean water and it's resistant to rot, decay and biological attack.

Alternative heat transfer fill packs are available for very clean water ("CW" type) and/or dirty process water ("NVP" vertical film / "GS" grids) and/or high temperature water ("ATT" version) and low ambient temperature ("SNOW" version).



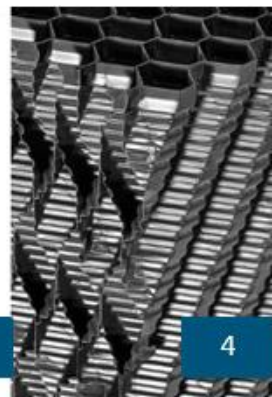
1



2



3



4

**1** K fill pack panel with 12mm flute (in PP)

**2** GS fill panel in PP

**3** NVP antifouling fill pack panel in PVC or PP

**4** K fill pack panel with 19 mm flute (PVC or PP)

## MOTOR-FAN PROTECTION

**PTC** (Positive Temperature Coefficient): overheating motor protection, useful in case of use of motors under inverter (inside the motor).

**Anti-condensation heater:** to avoid condensation formation inside the motor when not running (inside the motor).

**Vibraswitch:** detection of anomalous vibration to protect the motorfan group.



## MAINTENANCE

**Man hole:** internal parts inspection hatch.

**Materials:** metallic parts in stainless steel 304 or 316L.

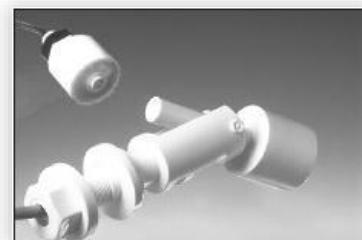


## ANTI-FREEZING ACCESSORIES

**Basin electric heater:** so to keep basin water temperature between +3°C and +5°C and avoid ice formation in the basin.

**Minimum level switch:** so to avoid electric heater damage in case of water absence in the basin.

**Electric heater for the fan ring:** so to avoid ice formation of between blades and fan ring



## WATER BASIN ACCESSORIES

**Filter:** water outlet connection filter in stainless steel 304.

**Anticavitation connection.**

**Louvers:** cellular structure, to reduce sunray water exposure and water leaks of from the basin.

**Frameworks to avoid the entrance of leaves in basin.**

