



Closed Circuit Cooling Tower

Factory Assembled - Modular Compact Design

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|---|--|
| 1 | IP56 Motor(s) directly coupled to low energy and high efficient fan(s) |
| 2 | Fibreglass reinforced polyester (FRP) sandwich casing panels 22mm |
| 3 | Water distribution system with non-clogging tangential Polypropylene (PP) nozzles for a full cone water distribution. |
| 4 | Hot dip galvanised steel (HDGS) after fabrication perimeter frame |
| 5 | Fibreglass reinforced polyester (FRP) water collection basin with sloping base and smooth internal finish with rounded corners for easy cleaning. |

BODY

CASING

walls consisting of 22 mm thick polyester resin sandwich panels reinforced with fibreglass and coloured with paste gel-coat for UV-protection.

Seal between the load bearing structure and the panels is guaranteed by a special bituminous sealing gasket.

NUTS AND BOLTS

in stainless steel AISI 304.

Optional items:

Man-sized access door(s) (each 720x520mm) in FRP sandwich panel in a HDGS (after fabrication) frame to allow easy inspection or access to the inside of the tower.

Totally removable side-wall(s) to facilitate and simplify routine maintenance operations to the tower internals.

COOLING COIL(S)

consisting of high quality steel smooth tubes, fitted into a supporting frame made of HDGS profiles: the whole assembly is hot-dip galvanised after fabrication. During manufacturing every single circuit is carefully checked and air-pressure tested under water in a suitable tank: this pressure test is then repeated for the completed coil.

Coil geometry is such as to ensure complete wetting of the heat exchange surface and to optimize external air-water contact to obtain maximum thermal cooling capacity.

Moreover tube sloping ensures fluid's complete discharge and outlet connections are placed in line with the bottom of the outlet header to avoid "dead zones".



MOTOR FAN GROUP

UPPER SECTION(S)

smooth faced air entry fan cylinder(s) entirely made of 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 version for MITA cooling towers)
- **multi-voltage** (400/690/3/50), (50/60 Hertz), **Class F** insulation
- protection of the motor-fan set(s) is provided by grid(s) in stainless steel **AISI 304**.
- electric motor(s) suitable for operation with **frequency converter**.

Optional items:

ELECTRICAL ISOLATOR (lockable)

electrical wiring connection to fan motor(s) located on the unit's body to minimise site electrical connections; IP65 isolating switch (lockable).

IMPORTANT SUGGESTION (especially in case of 12 poles motors / Silent version): it is recommended to start the motor/s by means of a "soft-starter" or with frequency converter



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

WATER DISTRIBUTION SYSTEM

connected to the water recirculation pump, entirely in PVC consisting of a main header with UNI-EN-1092-1-PN 10 flanged side water inlet and side branches for fixing the static type non-clogging, axial, spray nozzles.

Such system guarantees optimal spraying over the whole coil surface, exploiting its capabilities at maximum.

Spray nozzles are in polypropylene, with full-cone spraying at an angle of 120°.

CIRCULATING PUMP

for evaporative cooling circuit spray-water, connected to the water distribution system, external to the coils, fitted inside the pan and is equipped with PVC piping.



WATER DISTRIBUTION SYSTEM

NOZZLES

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



WATER COLLECTION BASIN

WATER COLLECTION BASIN

Entirely made of fibreglass reinforced polyester (FRP) Sloping base with rounded corners for easy cleaning operations, complete with drain, make-up and overflow connections.

Water collection basin is shipped separately from the body, it is fixed to a hot-dip galvanised steel after fabrication* structure.

Easily removable FRP air louvers.

Optional item: cellular structure removable PP louvers to limit the entrance of sunlight and dirt in the basin, to reduce the risk of biological growth.



SPECIAL VERSIONS

SILENCED: several solutions to reduce the noise level, including low rpm motors and silencers on air inlets

CONTAINER: suitable design (including flat metal top and metal fan rings shipped separately from the cooling tower body), for shipment by Open Top sea containers

STAINLESS STEEL METAL PARTS: metal parts could be in AISI 304 or AISI 316 in case of aggressive water or environment



OPTIONS AND ACCESSORIES

NOISE LEVEL REDUCTION

Fan motor: higher pole motors (12 or 16 poles) to reduce fan speed and blades with special airfoil

Basin water attenuators: polypropylene mats to reduce noise related to water falling down into the basin

Silencers on air inlets: galvanized steel or stainless steel plus noise-absorbing material easily removable air inlet



ENERGY SAVINGS

MCS (MITA CONTROL SYSTEM): control panel with an inverter and a temperature probe to measure cooled water temperature. The MCS constantly regulates motor fan speed so to maintain a constant outlet water temperature and in return reduce energy usage.

3-phase AC supply with ground and neutral needed



WATER TREATMENT SYSTEM

Salinity concentration and dose scale inhibitor control system; corrosion inhibitor and algacide product dosage; also with water softener depending on water quality.



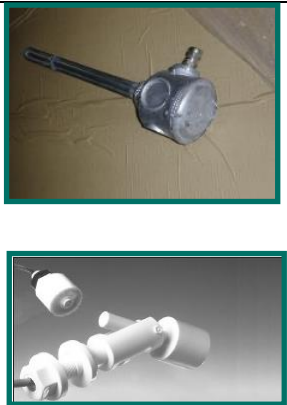
MOTOR-FAN PROTECTION

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 motor-fan group



<p>MAINTENANCE</p> <p>Man hole: internal parts inspection hatch.</p> <p>Totally removable side wall: internal body parts complete access to allow easy and quick maintenance</p> <p>Walkable top: anti-slip metal sheet upper-structure , includes ladders and handrails to access units roof-top</p> <p>Ladder: motor-fan group inspection</p> <p>Materials: metallic parts in stainless steel 304 or 316L.</p>	
<p>ANTI-FREEZING ACCESSORIES</p> <p>Basin electric heater: so to keep basin water temperature between +3°C and +5°C and avoid ice formation in the basin</p> <p>Minimum level switch: so to avoid electric heater damage in case of water absence in the basin</p> <p>Electric heater for the fan ring: so to avoid ice formation of between blades and fan ring</p>	
<p>WATER BASIN ACCESSORIES</p> <p>Filter: water outlet connection filter in stainless steel 304.</p> <p>Anticavitation connection</p> <p>Louvers: cellular structure, to reduce sunray water exposure and water leaks of from the basin</p> <p>Frameworks to avoid the entrance of leaves in basin</p>	