

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 | Water distribution system with non-clogging tangential Polypropylene (PP) nozzles for a full cone water distribution. Flanged water inlet connection(s) |
| 3 | Fibreglass reinforced polyester (FRP) sandwich casing panels PVC |
| 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. Flanged water outlet connection(s) |

STRUCTURE AND CASING

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.

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) (each 2100x1760mm), to facilitate and simplify routine maintenance operations to the tower internals.

PERIMETER FRAME, STRUCTURE & FILL PACK SUPPORT

in hot-dip galvanised steel after fabrication*. Located and fixed to the base of the tower body to form a strong structure. Hot dip galvanized steel after fabrication metal supports are fixed to the frame to support the filling pack.

Drift eliminator panels with hot-dip galvanised steel after fabrication* supports are installed in the upper section.

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 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 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 (*expecially 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 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

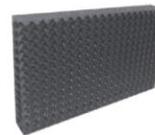
FILL PACK (or heat exchange surface)

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).

"K" fill pack panel with 19 mm FLUTE (PVC or PP)



"K" fill pack panel with 12 mm FLUTE (in PP)



"NVP" antifouling fill pack panel (in PVC or PP)



"GS" fill panel in PP



WATER COLLECTION BASIN AND LOWER STRUCTURE (IF INCLUDED)

WATER COLLECTION BASIN AND LOWER STRUCTURE

Water collection basin is entirely made of fibreglass reinforced polyester (FRP)

Sloping base with rounded corners for easy cleaning operations and reduced risk of biological growth, complete with **flanged water outlet connection(s)**, drain, make-up and overflow connections.

Water collection basin is shipped separately from the cooling tower body and it is fixed to a hot-dip galvanised steel after fabrication frame.

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

SNOW: suitable materials and solutions for installations in cold places (for example artificial snow making plants)

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



Supply of the tower is limited to the parts listed above. Building and electrical works, pumps, collectors external to the tower, valves, hoisting gear and any scaffolding and labour are therefore excluded. Accessories and/or constructional variants are available on request.
M.I.T.A. S.r.l. may carry out constructional improvements without notice.
Images for illustration purposes only.

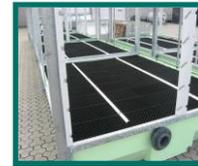
OPTIONS AND ACCESSORIES

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.



COOLING STATIONS

Cooling stations specially designed for automatic management of the cooling tower. Consisting of concrete water storage tank, water circulation unit, control panel and water treatment system. The equipment enclosed in a prefabricated structure complete with lighting and heating.



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



MAINTENANCE

Man hole: internal parts inspection hatch.

Totally removable side wall: internal body parts complete access to allow easy and quick maintenance

Walkable top: anti-slip metal sheet upper-structure , includes ladders and handrails to access units roof-top

Ladder: motor-fan group inspection

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 leafs in basin

