Making use of a simple, natural physical principle, thanks to which the forced evaporation of a minimal quantity of water produces a lowering of the temperature of the main mass of water, evaporative cooling towers still today represent the most widely employed system of cooling in civil and industrial applications.

The minimum outlet temperature theoretically obtainable from an evaporative cooling tower is that of the wet bulb temperature of the atmospheric air as measured in the zone in which the unit is installed: this is usually much less than its dry bulb temperature, on which other types of cooling system are based (and with which one can obtain a cold water leaving temperature of 3-5°C higher than that parameter).

In practice, owing to the effects of performance factors related to air saturation, an adequately sized cooling tower manages to cool the circulated water down to a temperature 2-3°C above the wet bulb temperature.

It is on this basis that many plant specialists and equipment manufacturers size their cooling circuits and heat exchangers, already envisaging, from the original design stage, the use of cooling tower water and thus also ensuring optimum plant efficiencies.

Founded in Milan (Italy) in 1960, MITA designs, builds and sells non-corroding cooling towers, offering to her clientele competence and technical know-how acquired in almost fifty years of experience in the industrial sector and more than 20,000 units installed. Apart from a choice between the various standard models, MITA also provides “made-to-measure” solutions for every customer, manufacturing construction variants according to the characteristics of the fluid to be cooled and having available a wide range of optional extras to cover specific necessities.
Evaporative cooling towers for industrial water cooling are employed in a multiplicity of fields of application:

- steelworks and foundries
- forges
- heat treatment of metals
- engine test-beds
- air compressors
- vapour condensers
- industrial dyeing
- tanneries
- ice cream parlours
- paper-works
- rubber manufacturing and plastic moulding
- distilleries
- the chemical industry in general
- food industries
- the pharmaceutical industry
- refrigeration plant
- air conditioning installations
- combined heat and power plants
- artificial snow plants
- metal refining
- aluminium extrusion
- pressure casting
- hot-moulding of metals
MITA’s non-corroding technology

MITA cooling towers are noteworthy for the main tower casing in FRP and components manufactured using prevalently plastic materials.

The result of this design choice is a very high quality product which is light-weight, non-corroding, with exceptionally long life and which minimises tower maintenance work.

The product range covers a large number of models subdivided into open cooling towers with axial fans (PMS, PMD, PME-E, PMM) and a series with centrifugal fans (MCT) for a cooling capacity range between 18 and 7300 kW (indicative nominal values referred to a 5°C temperature range) ; closed circuit towers and evaporative condensers with axial fans (MCC, MCE) with heat rejection capacity ranging from about 80 to 1500 kW.

Installations with greater heat rejection capacity requirements can be handled by making use of the modularity of the units offered. Wherever the nature of the water to be cooled or the environmental or particular climatic conditions render inadvisable the use of the standard versions of the cooling towers, a multiplicity of construction options, designed for specific requirements of the fluid to be cooled, are available. Moreover the wide range of optional accessories available completes the MITA product portfolio which is thus capable of resolving any industrial or civil cooling problem.

MITA also produces and sells a range of high-quality spray nozzles, entirely in polypropylene and with an internal geometrical design which provides full-cone and uniform spraying.
Main casing
Construction materials:
• fibreglass
Characteristics:
• completely removable side-wall (patented design) comprising hot-dip galvanized steel frame and counter-frame, stainless steel nuts and bolts, sealing gasket and plastic lifting handles (standard supply for PMM, MCC, MCE, optional for PME-E).
• ease of inspection of and access to the internal components
• simplification of maintenance and/or replacement work / interventions.

Water collecting basin (optional)
Construction materials:
• fibreglass
Characteristics:
• light-weight
• non-corroding
• internal waterproofing with an impermeable, water repellent, paraffin-containing orthophthalic gel-coat, manufactured with smoothed / rounded corners
• possibility of basins with bottom sloped for complete emptying to facilitate cleaning.

Hot water distribution system
Construction materials:
• PN 10 unified PVC pipes, polypropylene nozzles
Characteristics:
• non-corroding
• uniform and total spraying of the heat exchange - fill pack
• exclusive nozzle design, with large passages to guarantee non-clogging and a full cone spray.

Screen-grille
Construction materials:
• AISI 304
Characteristics:
• non-corroding
• unaltered, long-lasting protection / safety properties.

Bolts, nuts and washers
Construction materials:
• AISI 304 (no usage of self-tappers)
Characteristics:
• non-corroding
• easy dismantling even after many years of service.
Mita’s non-corroding technology

Construction details

Main casing, basin (optional) and top-plate (PMS, PMD series)
Main casing with inspection hatch, with basin and motor cover box (MCT series)

Construction materials:
• orthophthalic polyester resin, reinforced with several layers of glass fibre matting

Characteristics:
• self-supporting structure reinforced at the points subject to greatest static and dynamic loads
• external surface protection via gel-coat resistant to UV radiation, cold and hot water, abrasion due to weathering and chemicals
• light-weight
• non-corroding.

Fill pack (or heat exchange surface)

Construction materials:
• self-extinguishing PVC

Characteristics:
• 20 mm wide flute (air/water channels), especially suitable for industrial applications, reduced fouling, reinforced top layer (for the PMS, PMD series)
• 12 mm wide flute air/water channels) with high air/water heat exchange efficiency (for the MCT series).

Multi-blade axial fan (for the PMS, PMD series)

Construction materials:
• hot-galvanized steel (electric motor support), fibreglass reinforced plastic (fan blades), stainless steel (fan screen grille)

Characteristics:
• high performance, low electrical power input
• directly driven by the electric motor
• constant safety, unaltered over time thanks to the fan grille

Centrifugal fan (for the MCT series)

Construction materials:
• steel drive shaft, galvanized steel fan housing and blades

Characteristics:
• pulley and belt driven by the electric motor
• low sound levels (which can be further reduced using sound attenuators with absorbent baffles)

NOTE:
for the MCT series, with respect to comparable steel units of other suppliers, the water collecting basin is a component particularly subject to corrosion owing to the continuous presence of water: its manufacture in fibreglass eliminates this problem.
Construction details

**Mixed structure casing**

*Construction materials:*
- hot-dip galvanized steel (internal and external support structure), sandwich panels in fibreglass of 22mm thickness

*Characteristics:*
- high thickness (4-6 mm) of the profile channels of which the structure is composed, hot-dip galvanized (600 g/m²) after fabrication
- internal and external surface protection of the panels with a gel-coat resistant to UV radiation, hot and cold water, abrasion caused by weathering and by chemicals
- non-corroding.

**Fibreglass sandwich panels means:**
- double wall of fibreglass laminate with between which is interposed the expanded support material
- only the inside surface of the side wall is in contact with the water to be cooled
- even for large side wall dimensions, greater mechanical strength
- good sound absorption effect on the internal falling water noise.

**Top-plate with air discharge cylinder and water collecting basin**

*Construction materials:*
- orthophthalic polyester resin, reinforced with several layers of glass fibre matting

*Characteristics:*
- internal and external surface protection by means of a gel-coat resistant to UV radiation
- light-weight
- non-corroding.

**Multi-blade axial fan**

*Construction materials:*
- hot-galvanized steel (electric motor support), extruded aluminium alloy with propeller profile or fibreglass reinforced plastic (fan blades), stainless steel (fan screen grille)

*Characteristics:*
- high performance, low electrical power input
- directly driven by the electric motor

**Fill pack (or heat exchange surface)**

*Construction materials:*
- self-extinguishing PVC

*Characteristics:*
- 20 mm wide flute (air/water channels), reinforced top layer, reduced fouling.

**PME-E CONT series, for the shipment in container**
Construction details

Mixed structure casing

Construction materials:
- hot-dip galvanized steel (internal and external support structure), sandwich panels in fibreglass of 22mm thickness, top-plate/covering supports foot-loads

Characteristics:
- high thickness (5-7 mm) of the profile channels of which the structure is composed, hot-dip galvanized (600 g/m²) after fabrication
- internal and external surface protection of the panels with a gel-coat resistant to UV radiation, hot and cold water, abrasion caused by weathering and by chemicals
- non-corroding.

Fibreglass sandwich panels means:
- double wall of fibreglass laminate with between which is interposed the expanded support material
- only the inside surface of the side wall is in contact with the water to be cooled
- good sound absorption effect on the internal falling water noise
- 2 completely removable side-walls on the opposite side of inlet water are included in standard supply.

Gearbox and shaft driven axial fan

Construction materials:
- hot-dip galvanized steel (electric motor support), extruded aluminium alloy with propeller profile (fan blades)
- the drive system is composed of a hollow shaft without intermediate supports with flexible “lamellar” joints in 316 stainless steel (on request a carbon-fibre shaft can be supplied)
- the fan stack is entirely manufactured in fibreglass, with flanged segments for easy on-site assembly

Characteristics:
- high performance, low electrical power input
- electric motor is positioned outside of the humid air stream.

Fill pack (or heat exchange surface)

Construction materials:
- self-extinguishing PVC

Characteristics:
- 20 mm wide flute (air/water channels), reinforced top layer, reduced fouling
- high air/water heat exchange efficiency.

NOTE:
all the models can be transported in several factory pre-assembled sections (also in container), whilst their subsequent site assembly is extremely simple and rapid.
Construction details

Mixed structure casing

Construction materials:
- steel support structure, hot-dip galvanized after fabrication, fibreglass sandwich panelling of 22 mm thickness, with three side-walls completely removable as standard supply

Characteristics:
- optimum mechanical strength
- good sound absorption effect
- non-corroding
- ease of internal inspection.

Multi-blade axial fan

Construction materials:
- hot-dip galvanized steel (electric motor support), fibreglass reinforced plastic (fan blades), stainless steel (screen grille)

Characteristics:
- high performance, low electrical power input, fan directly driven by the electric motor
- constant safety, unaltered over time thanks to the screen grille.

Heat exchange coil

Construction materials:
- hot-dip galvanized steel (on request, stainless steel for the MCC series)

Characteristics:
- high heat exchange surface
- more convenient maintenance (thanks to the openable side-walls)

In the case of the MCE series the heat exchange coil is manufactured in compliance with the PED directive 97/23/EC

Centrifugal water recirculating pump and spray water circuit piping

Basin (complete with electric resistance anti-freeze heater and related thermostat)

Construction materials:
- orthophthalic polyester resin, reinforced with several layers of glass fibre matting

Characteristics:
- external surface protection with a gel-coat resistant to UV radiation, hot and cold water, abrasion caused by weathering and by chemicals
- basin with internal waterproofing by means of an impermeable, water-repellent, paraffin-containing orthophthalic gel-coat
- possibility of sloping water collecting basins for complete emptying of water
- light-weight
- non-corroding.
PMS
Distinguishing Characteristics: single cell, axial fan units, with FRP casing, suitable for small installations
Cooling Capacity: 13 models for capacities between about 18 and 480 kW (indicative cooling capacity referred to a 5°C water temperature range).

PMD
Distinguishing Characteristics: double cell, axial fan units, with FRP casing, suitable for medium-size installations
Cooling Capacity: 4 models for capacities between about 480 and 860 kW (indicative cooling capacity referred to a 5°C water temperature range).

MCT
Distinguishing Characteristics: single cell, centrifugal fan units, with FRP casing, low sound levels (which can be further reduced using sound attenuators with absorbent baffles), suitable for small to medium-size installations
Cooling Capacity: 21 models for capacities between about 28 and 1,500 kW (indicative cooling capacity referred to a 5°C water temperature range).

PME-E
Distinguishing Characteristics: single and double cell, axial fan units with a mixed FRP-galvanized steel casing structure, FRP basin and top-plate, suitable for medium to large installations, and with the possibility of creating systems based upon a series of modules
Cooling Capacity: 16 models for capacities between about 580 and 2,600 kW (indicative cooling capacity referred to a 5°C water temperature range).
<table>
<thead>
<tr>
<th><strong>PMM</strong></th>
<th><strong>MCC</strong></th>
<th><strong>MCE</strong></th>
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<tr>
<td><strong>Distinguishing Characteristics:</strong> modular, axial fan units with drive system. The casing is manufactured from FRP sandwich panels held together by a steel structure, hot-dip galvanized after fabrication, FRP fan stack. Upper part in plain execution walkable. 2 completely removable side-walls (patented design). These units are suitable for large installations, with the possibility of creating systems based upon a series of modules.</td>
<td><strong>Distinguishing Characteristics:</strong> closed circuit, axial fan units with a mixed FRP-galvanized steel casing structure, FRP basin and top-plate. Three out of the four side-walls are completely removable (patented design). Smooth tube, hot-dip galvanized steel heat exchange coil. <strong>Cooling Capacity:</strong> 27 base models with capacities between about 80 and 1300 kW (indicative cooling capacity referred to a 5°C water temperature range).</td>
<td><strong>Distinguishing Characteristics:</strong> axial fan evaporative condensers with a mixed FRP-galvanized steel casing structure, FRP basin and top-plate. Three out of the four side-walls are completely removable (patented design). Smooth tube, hot-dip galvanized steel heat exchange coil, manufactured in compliance with the PED directive 97/23/EC. <strong>Cooling Capacity:</strong> 27 base models with capacities between about 100 and 1500 kW (indicative condenser heat rejection capacity referred to a 35°C condensing temperature).</td>
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**Cooling Capacity:**
- **PMM:** 8 models for capacities between about 1000 and 7300 kW (indicative cooling capacity referred to a 5°C water temperature range).