

MCC

Non-corroding cooling towers

MCC series
Closed circuit



MCC Series Closed Circuit evaporative cooling tower



■ MCC Series Closed Circuit evaporative cooling tower

The MCC series closed circuit evaporative cooling towers are employed as an alternative to open-type cooling circuits with heat exchangers, in those cases in which the cooling liquid for the user's equipment (generally water or water with glycol) must maintain its chemical and physical characteristics constant over time and unpolluted by external elements. In fact the fluid to cool circulates within the tubes constituting the heat exchanger coil placed inside the cooling tower: the coil, in turn, is continuously wetted by the water contained in the basin of the tower and which, via the appropriate pump, is sent to a spray system with nozzles. From the combined effects of the evaporation of a small part of the spray water and of the turbulence created inside the tubes, one obtains the cooling of the fluid which can hence be returned to the user's equipment to be cooled. Fitted with one or more axial fans according to the model, the MCC series cooling towers are fabricated with a robust supporting structure in hot-dip galvanised steel and fibreglass sandwich panels which constitute the side walls. Of the latter, three are completely removable in order to allow both convenient inspection and, above all, easier intervention for cleaning and maintenance of the tower's internal components. The standard configuration is completed by the water collecting basin and the fan cylinders made entirely from fibreglass (FRP), as well as accessories such as the electric resistance antifreeze heater with thermostat, the low level cut-out switch to protect the spray pump and the electric heater, and the anti-cavitation system on the spray water suction. The MCC range comprises 27 base models capable of satisfying the demands of installations with cooling loads between about 80 and 1000 kW.

■ Fields of application

The closed circuit cooling tower is employed in industrial and civil installations of air conditioning and in particular:

- cooling of delicate equipment such as air compressors, moulds and plastic extrusion machines, pipe-manufacturing (with the use of an emulsion of anti-corrosion additive in the water of the closed circuit) or induction furnaces (with demineralised water)
- evaporative chilling (direct production by the cooling tower of chilled water for an air conditioning installation with the chiller shut-down in the low season) and load shaving (direct production of chilled water upstream of a chiller thus only subjected to part-load)

■ Principal advantages

The thermal performance of a closed circuit cooling tower depends, as for all evaporative cooling units, upon the ambient wet bulb temperature. The closed circuit cooling tower has, in many cases, a lower cost than that of a heat exchanger linked to an open circuit evaporative cooling tower in as much as it integrates all the heat exchange stages in a single piece of equipment.

■ Accessories and optional construction alternatives available on request

For all the models the following optional alternatives are available:

- coil in AISI 304 or 316 stainless steel execution (for corrosive spray water or environments, for semi-open circuits or for cooling circuits containing demineralised water)
- two-pass coils with split headers to maximise the thermal performance of the MCC tower selected to cool a low flowrate of water through a high temperature range
- two-speed motor with multi-step thermostat (or alternatively an automatic centralised cascade control system, or control system with inverter)
- electrical control and regulating panel.

Construction details



1 Structure and main casing

Construction Materials:
steel supporting structure, hot-dip galvanised after fabrication, sandwich panelling in 22 mm thick fibreglass, with removable side-walls.

- Characteristics:**
- optimum mechanical resistance
 - good sound-absorption properties
 - non-corroding
 - fease of internal inspection.

2 Multi-blade axial fan

Construction Materials:
hot-dip galvanised steel (support), electric motor, plastic (fan blades), stainless steel (protective screen).

- Characteristics:**
- high performance, low absorbed electric power, fan directly driver by the motor
 - safety function of the protective screen unaltered over time
 - easy blade replacement in the case of breakage of one of them.

3 Water distribution system

Construction Materials:
normalised PN 10 PVC pipes, polypropylene tangential nozzles.

- Characteristics:**
- non-corroding
 - uniform and complete spraying of the coil, full-cone spray.
 - exclusive MITA-design nozzles: the water flow is induced in the diffuser cone solely by the tangential connection to the main body of the nozzle, hence there are no internal parts which could give rise to obstructions.

4 Heat exchange coil

Construction Materials:
Hot-dip galvanised steel (stainless steel, on request).

- Characteristics:**
- large heat exchange surface
 - easier maintenance (thanks to the openable side-walls).

5 Centrifugal water recirculating pump and piping of the spray water circuit

6 Basin and top of the tower

Construction Materials:
glass-mat reinforced orthophthalic polyester resin in several layers.

- Characteristics:**
- external surface protection by means of a gelcoat resistano to UV-radiation, to cold and hot water, to abrasion from the elements/weather conditions and to chemicals
 - internal water-proofing/impermeability obtained by means of an isophthalic, paraffin-containing, impermeable and hydro-repellent gel-coat (for the basin)
 - light-weight
 - non-corroding.

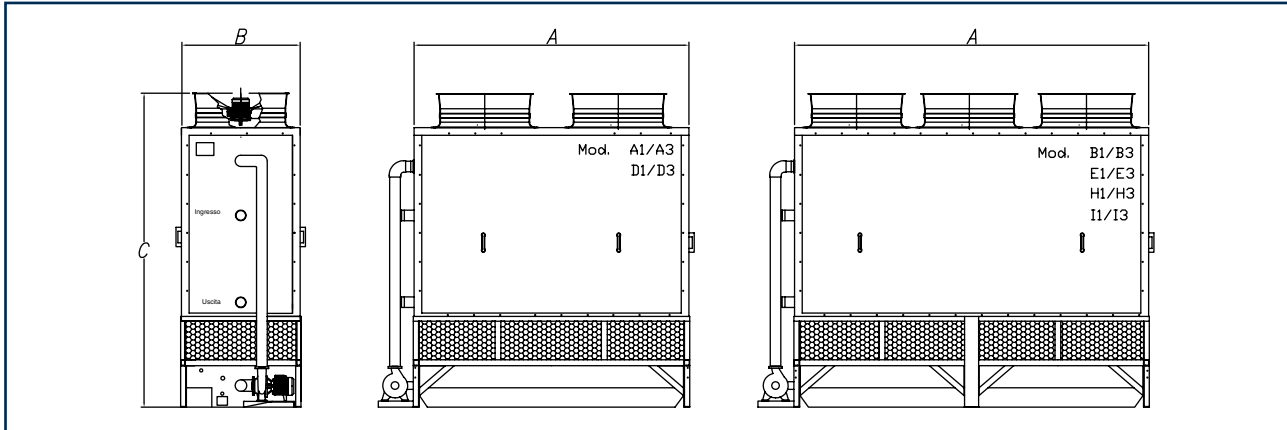
7 Anti-splash louvers on the air inlet openings

Construction Materials:
PVC or fibreglass.

- Characteristics:**
- non-corroding
 - easy dismounting even after many years in service.

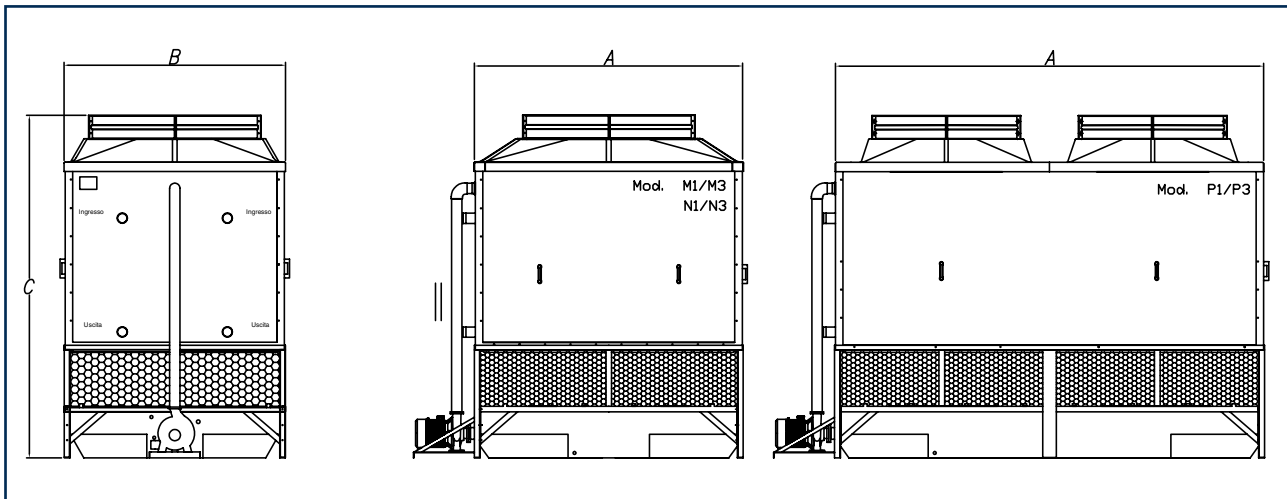
TECHNICAL DATA

MCC Series - Single Coil



| MOD. MCC | MAX WEIGHTS (kg) | | | FANS | | | PUMP | | ELECTRIC HEATERS | | DIMENSIONS (mm) | | |
|----------|------------------|--------------|------------------|------|----------------|-----------------|----------------------|----------------|------------------|----------------------|-----------------|------|------|
| | Empty | In operation | Heaviest section | N° | Motor fan (kW) | Air flow (m³/s) | Installed power (kW) | Capacity (l/s) | N° | Installed power (kW) | A | B | C |
| A1 / A3 | 1200 | 2200 | 910 | 2 | 1,1 | 2,92 | 1,1 | 6,95 | 1 | 2,0 | 1870 | 1032 | 3165 |
| B1 / B3 | 1645 | 3100 | 1295 | 3 | 1,1 | 2,92 | 1,1 | 10,27 | 1 | 3,0 | 2770 | 1032 | 3165 |
| D1 / D3 | 1865 | 3630 | 1485 | 2 | 2,2 | 5,30 | 1,1 | 12,50 | 1 | 3,0 | 2850 | 1230 | 3250 |
| E1 / E3 | 2200 | 4500 | 1780 | 3 | 1,5 | 4,72 | 2,2 | 16,67 | 1 | 5,0 | 3670 | 1230 | 3250 |
| H1 / H3 | 2710 | 5330 | 2230 | 3 | 2,2 | 5,77 | 2,2 | 20,85 | 1 | 5,0 | 3670 | 1500 | 3480 |
| I1 / I3 | 3260 | 6550 | 2680 | 3 | 2,2 | 7,08 | 3,0 | 25,55 | 1 | 7,5 | 4570 | 1500 | 3480 |

MCC Series - Twin Coil



| MOD. MCC | MAX WEIGHTS (kg) | | | FANS | | | PUMP | | ELECTRIC HEATERS | | DIMENSIONS (mm) | | |
|----------|------------------|--------------|------------------|------|----------------|-----------------|----------------------|----------------|------------------|----------------------|-----------------|------|------|
| | Empty | In operation | Heaviest section | N° | Motor fan (kW) | Air flow (m³/s) | Installed power (kW) | Capacity (l/s) | N° | Installed power (kW) | A | B | C |
| M1/M3* | 3510 | 7100 | 2860 | 1 | 7,5 | 23,33 | 3,0 | 27,80 | 1 | 7,5 | 2850 | 2340 | 3650 |
| N1 / N3 | 4135 | 8685 | 3435 | 1 | 11,0 | 28,06 | 3,0 | 33,35 | 1 | 7,5 | 3670 | 2340 | 3650 |
| P1 / P3 | 5215 | 10800 | 4465 | 2 | 5,5 | 17,50 | 4,0 | 41,70 | 2 | 5,5 | 4570 | 2340 | 3650 |

* AVAILABLE ON REQUEST

Cooling range capacity from approx. 100 kW to 1.000 kW

Technical data not binding - please contact MITA Technical Dept. for full details.

