

DESCRIPTION OF COOLING TOWERS SERIES *TAT*



The *TAT series* are dedicated to every industrial sector with a modular conception. These models are characterized by SCAM T.P.E. S.r.l. well defined standards and are supplied with a structure preassembled and welded in continuous with a polyurethane coating and epoxy-bituminous according to ISO 12944-5:2007. The stacks and the collecting basin are supplied with a treatment carried out on wrought carpentry SCAMBOND/STD, a protective cycle effected on wrought carpentry of polyurethane type for external surfaces and epoxy-bituminous for internal surfaces, according to EN ISO 12944-5:2007(E) standards. This type of towers has dimensions compatible with road and ocean transport. The ordinary maintenance is ensured by oversized inspection doors placed on every cell / fan unit. The fan units are planned for a long life and with components of utmost quality, with a very easy maintenance program.

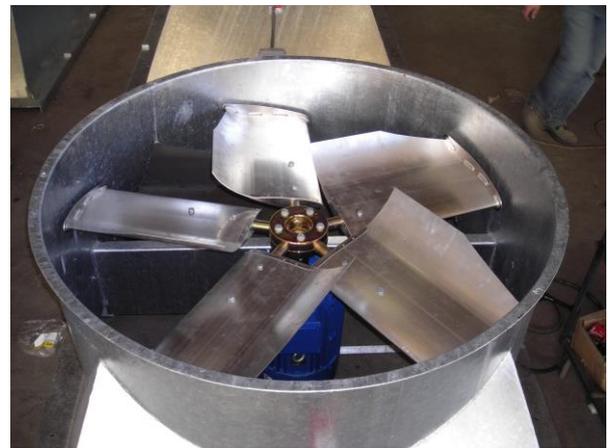
FAN UNIT

For *TAT* series of classic induced execution towers, the choice concerning the type of fan is almost obliged. The electric motor is placed inside the saturated air flow, the motor foreseen for utilization in saturated ambient, in hard working conditions. An axial fan in reinforced polypropylene (or FRP) or in aluminum alloy is placed on the same. The stacks of pyramid truncated shape allow a dynamic pressure recovery and a consequent reduction in the energy consumption.



Axial fans : With multiblade solution, have the function to ensure the cooling tower with the necessary air volume. The axial fan is placed on the cell high section (levelled with the tower walk-over floor) and it is directly coupled on the motor drive shaft. The high efficiency blades are of asymmetric profile “NACA” aeronautic type, balanced with “PALA MASTER” system. All the blades are equipped with the adjustable incidence solution with still fan in order to better optimize the tower performances and the electric power consumption. The constituent materials are the galvanized steel for the hub and the 6060T5 aluminum (FRP or PPG) for the blades.

Electric motors : are planned for severe conditions with continuous working type S1 asynchronous three-phase TEFC with SKF bearings type 2RSC3 with watertight oiled “for life”, IP55 + SCAM T.P.E. S.r.l. specifications ensuring durability. They are placed inside the flow crossing the truncated cone stacks for a better fluo-dynamic distribution. The electric motors frames are designed to transfer the dynamic loads to the cooling tower structure, minimising vibrations and allowing an easy and intuitive maintenance. All the rotating parts outside the stack are protected against accidental interferences in accordance with the most updated safety standards.



Unexpected vibration switch :

All the fan cells / groups are equipped with a switch cutting the motors power in case of excessive vibrations and it is contained outside the fan duct on every stack of the tower. This device is already wired to the external Junction box on which the power supply is grafted.



STACKS

All the mechanical groups in each cooling tower cell have an high thickness steel stack with SCAMBOND/STD protection. Each stack has a circular inlet junction and a pyramidal section: the outlet section is designed to recover dynamic pressure obtaining an high efficiency of the axial fan. The stacks are fixed to the structure through dedicated bolts by securing them to the tower walk-over floor.

WATER DISTRIBUTION SYSTEM

Inside the cooling tower upper section is placed the distribution system of “pressure” type. It is composed by a main channel connected to secondary ones whereon the spray nozzles are placed to ensure a water uniform distribution upon all the dispersion section.

The a.m. nozzles are of **Eco** type. This innovative spray nozzle has been designed to reach the following main goals:

- ✓ Large square water distribution (approximately 1 m²) in order to avoid any possible overlapping of the nozzles distribution on the same dispersion surface.
- ✓ Uniform hydraulic load in order to avoid any air bypass where the load is low and not equally supplied.
- ✓ Lower distance between nozzle and filling (600mm) in order to reduce the pumping elevation.
- ✓ Low pressure of utilization in order to reduce the pumping elevation.
- ✓ Self cleaning surface by means of dedicated hydraulic impeller.
- ✓ Anti clogging.



TECHNICAL DATA SHEET ECO S-L

| | |
|---------------------|----------------------------------|
| MATERIAL: | PP |
| DIAMETER RANGE: | from 23 to 40 mm |
| OPERATING PRESSURE: | 0,03 to 0,3 bar-g |
| DISTRIBUTION: | static cone + hydraulic impeller |
| CONNECTIONS : | PE ADAPTOR |

COOLING TOWER STRUCTURE

The structure is characterized by painted steel profiles with continuous welding.

Stainless steel bolts and main structure solidity are the main features. This structure typology envisages the utilization of lateral cover panels realized in painted welded steel by ensuring a good aesthetical and functional maintenance of the tower over the years.



LADDER AND HANDRAILS

All cells of TAT SERIES are equipped with the following items, designed in accordance with the most updated safety regulations to satisfy the most demanding plant standards:

- ✓ Back-up frame to mechanical groups
- ✓ Safety handrails
- ✓ Access ladder to deck



INCLUSIONS AND EXCLUSIONS

INCLUSIONS

- ✓ Thermal & hydraulic design.
- ✓ Basic design and water collecting tank loads design.
- ✓ Detailed calculations of the back-up structure.
- ✓ Internals and equipments drawing.
- ✓ Mechanical groups drawing.
- ✓ Quality Certificates.
- ✓ Structure.
- ✓ Casing.
- ✓ Fan Stack.
- ✓ Internal dispersion.
- ✓ Drift eliminators.
- ✓ Distribution system.
- ✓ Spray nozzles.
- ✓ Accessories (Vibration switches).
- ✓ Electric motors.
- ✓ Axial fans.
- ✓ Ladder from the basin to the tower walk-over floor (optional).
- ✓ Inspection doors.

EXCLUSIONS

- ✓ Transport and installation on site.
- ✓ Spare parts.
- ✓ Water treatment equipment.
- ✓ Hot water piping from ground to the cooling tower (expansion joints, risers, valves).
- ✓ Chemical products and chlorine injection.
- ✓ Blow down make up connections (valves excluded).
- ✓ Pumps.
- ✓ Lightning and grounding.
- ✓ All that not clearly specified in the inclusions.

BATTERY LIMIT

Hydraulic: water inlet flanges.

Electrical: IP66 terminal boxes placed on fan ducts (wired vibraswitch in the same box in order to meet one point of electric link).

Instrumentation: Not wired instrumentation into dedicated JB.