Evaporative Coolers and Condensers

CCTS – CCFS series

CCTS-CCFS TOWER

SCAM T.P.E.

CCTS / CCFS series offers evaporative coolers (a.k.a. closed circuit evaporative towers or evaporative condensers) with smooth tubes heat exchange beams, designed to, respectively, cool water mixtures and to condense hot vapors. Those machines are made to be as resistant as possible to corrosion with a wide range of thermal potentiality, to a few kWs from 10 or more MWs.

All models are modular and totally factory pre- assembled to minimize installation costs on the site. Every model can be customized in terms of dimensions and project characteristics and can be designed to follow environmental constraints to reduce visual and acoustic impacts. For this matter, we planned special executions such as ATEX ("EX" versions), low noise ("LN" versions) and low temperature ("SN" versions). The main feature that distinguishes closed circuit evaporative towers from open circuit ones is that primary fluid, which runs in inner tube beams, is totally separated from cooling fluid's secondary circuit. Secondary circuit is made of a recirculating pump, which conveys water from basin to spray nozzles on the top side of the tower. Tube beams water irroration allows the cooling of the inner fluid, using evaporative effect and consequential enthalpic exchange. Recirculating fluid, which can be both in a liquid or a gaseous state, is never going on contact with ambience, avoiding any type of contamination.

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The main characteristics of these closed circuit evaporative towers are the following:

EXOSKELETON / MONOLYTHIC STRUCTURE (body, fan stack and water basin).
The tower exoskeleton is characterized by profiles made of hot-dip galvanized steel in accordance with UNI EN ISO 1461: 1999. The side cover panels are made with a multilayer fiberglass matrix (fiberglass FRP).
Each diffuser fan stack can be walked on, and has a truncated pyramid shape to standardize the air crossing speeds in the lower section of the tower, improving the overall efficiency of the machines. The tower body can be fully inspected thanks to the inspection doors and removable FRP walls (one for each cell), allowing the operator an easy entry.
An important feature is the presence of a particular coating called "SCAM / SHIELD", consisting of a FRP sheet fixed with stainless steel bolts along the internal structural walls, wrapping the dispersion elements. In this way, the internal metal structure is completely isolated from the process water, reducing the phenomenon called "by-pass on wall", that is the water which, being nebulized on the internal walls of the tower, does not meet the air that rises in against the current, (with consequent loss of efficiency). The perfect internal and external insulation therefore allows the meticulous elimination of any water leaks from the walls of the tower.
The basin, complete with all the connections necessary for normal use, can be made on request in a weight-saving "self-draining" EU version in line with current European anti-legionella guidelines.
The basin is supplied with a pre-assembled structure consisting of welded sheet metal panels protected with our hybrid protective cycle DURABOND/HYB: a solution designed for aggressive environments, consisting of a two-component epoxy-polyamide cycle preparatory to the subsequent FRP resin coating with the deposition of 2 hand-deposited layers of glass fiber of 450 gr/m^2 and a finish with epoxy/polyester resin (overall thickness 1500 gr/m^2).

BOLTING fixing is supplied as standard on this model in STAINLESS STEEL or even DUPLEX on request.

On request it is possible to propose the construction materials of the stainless steel tower for the TAZ / TAX models (SS304 or 316 depending on the needs), where the characteristics of the project make it essential to use noble metallurgy, highly resistant to corrosion.

VENTILATION GROUP

The direct drive ventilation unit consists of:
- High efficiency SCAMAIR / ST axial fan with asymmetrical profile of the "NACA" type of aeronautical derivation, designed for maximum efficiency and durability in compliance with the strictest acoustic standards. The components are of absolute quality such as the extruded aluminum hub to reduce vibrations to a minimum and allow the assembly of one blade at a time, for simplified and quick maintenance;

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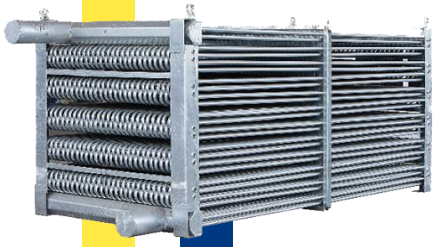

- Electric motor SCAM T.P.E. three-phase multivoltage (230/400 - 400/690) and multi-frequency (50-60 Hertz) specific for cooling towers, the result of the experience gained in this sector since 1956;
- Abnormal vibration switch wired in an IP67 junction box located outside the ventilation duct only to be powered and electrically connected (on request);
- Fan protection grille in SS304 and / or HDGS

WATER DISTRIBUTION SYSTEM

In the CCTS and CCFS series, the water distribution is done by means of DIN or ASME unified HDPE pipes and fittings with flanged connections; it is composed by a main manifold equipped with side branches equipped with dynamic type “SCAM/NZ-RT” or static type “SCAM/NZ” spray nozzles, both in PP.

Our SCAM / NZ-RT rotating nozzles are highly efficient, work at low pressure, and allow for significant energy and economic savings. They are anti-clogging, equipped with interchangeable internal inserts, which allow them to be adapted in the event of variations in flow rate, in case it’s necessary to work with a working scheme other than the design one.

DRIFT ELIMINATORS

They are mainly used to retain the drops of water dragged vertically in the flow of humid air exiting the evaporative tower. Our technology has achieved exceptional goals in separation efficiency, made available thanks to different designs SCAM / DRF-CL (CELLULAR line) and SCAM / DRF-DW180 (DW-180 line) in PP / PVC.

AIR INLET LOUVERS

They are placed in the intake air flow entering the cooling towers. Not only do they retain unwanted elements (such as foliage and debris), but also prevent water from escaping outside, which could cause ice to form in the winter months. In addition, the windows are a barrier, which limits the sunlight that enters the tank, hindering the growth of algae and microorganisms inside it. They are available in the SCAM / NET65 version in PP / PVC, customized in treated steel, or INOX / FRP, where the specifications require it.

HEATH EXCHANGE TUBES

Depending on the circulating fluid and the thermodynamic performance required, we proceed with the engineering of the tube bundles, making up the heat exchange surface. They are available in different materials such as hot galvanized steel, 304/316 stainless steel. The variation in the number of pipes and the number of rows determines the specific heat exchange power of the tower. Based on the operating conditions and customer requests, it is possible to supply PED certified tube bundles.

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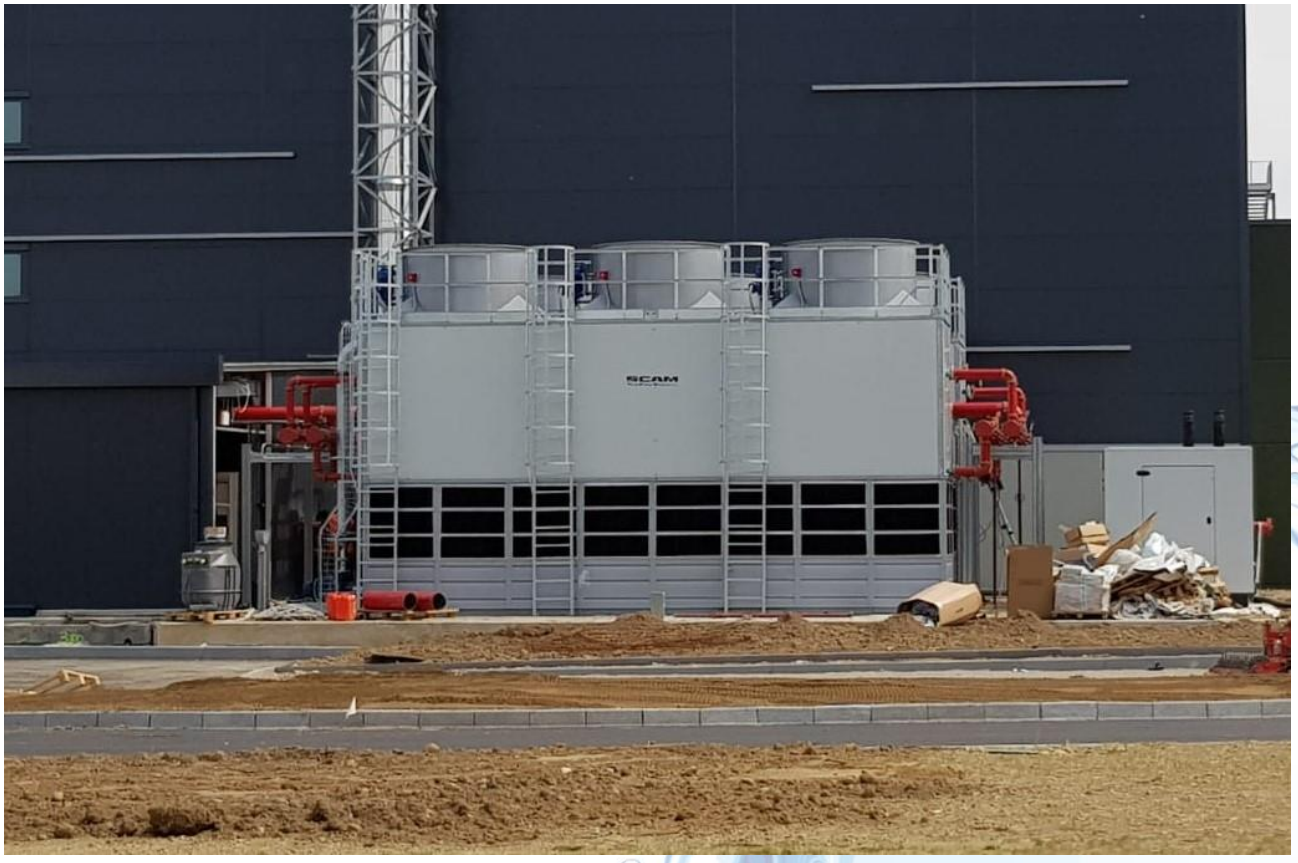
SECONDARY CIRCUIT RECIRCULATING PUMPS

These pumps, dedicated to the secondary spraying circuit, return the water from the basin of the evaporative tower to the upper continuous spraying circuit. The type used is of the "Flange / Flange" type, to optimize space, and facilitate ease of maintenance and assembly. Close-coupled centrifugal electric pumps with direct motor-pump coupling and single shaft up to 15 kW are used, built for IEC standard motors with integrated thrust bearing. The pump body with axial suction port and radial delivery port at the top. The pump body and the fitting are made of cast iron.

For further information on the products, please visit the *** section of the site.



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