



60 YEARS



- Capacity: 33 to 300 tons
(99 to 900 GPM @ 95°F / 86°F / 78°F)
- Available in galvanized, epoxy-coated galvanized for marine environment, and stainless steel.
- Low-cost installation and operation
- Low sound and vibration level
- Low power consumption per ton
- Low maintenance
- Programmable control panel integration

SERIES 6000

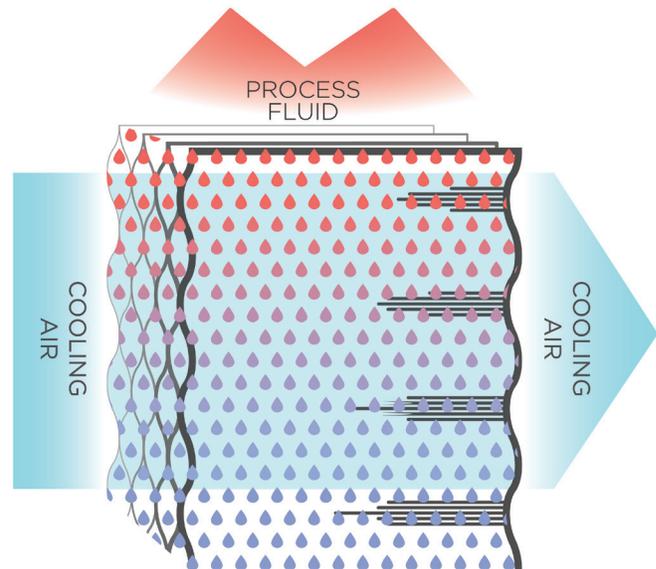
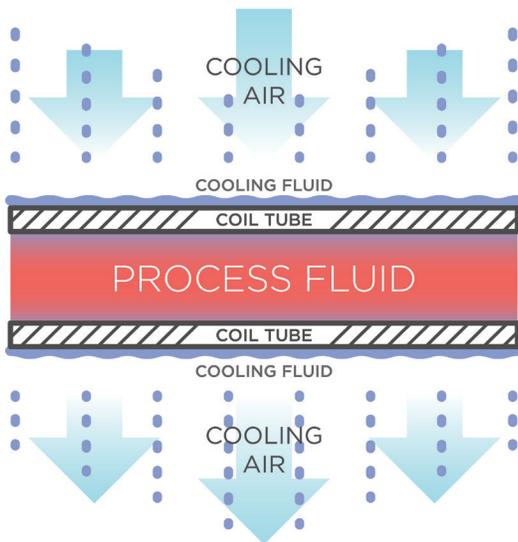
**HYBRID COMBINED-CYCLE
COOLING TOWER**



More than 5,000 towers installed in México and the world

Why hybrid?

IM® 6000 towers use both thermal exchange processes: sensitive and latent. They may also operate with just air in the outer part of the coil, so the cooler operates at 100% sensitive cooling and does not use evaporation water.



SENSITIVE COOLING

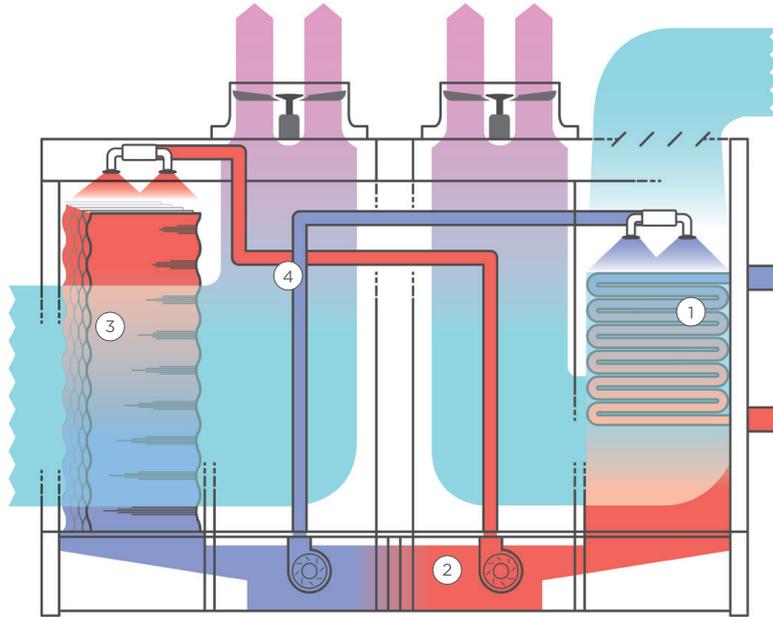
This is produced by the thermal exchange between hot liquid and cold liquid, without there being a change in mass from one liquid to another.

When cooling hot liquid in indirect contact with a mass of moving gas, an interchange takes place by convection due to the difference in temperature between the mass of the liquid and the temperature of the gas. As there is no exchange of mass, there is no evaporation of a part of the liquid, nor is there any increase in the relative humidity of the mass of gas.

LATENT COOLING (Evaporative)

This is produced by a simultaneous thermal/mass exchange that uses the energy required to evaporate hot liquid (latent evaporation heat) and the difference of heat content between the liquid and gas as the main motor of the cooling process.

SINGLE CYCLE VS. HYBRID COMBINED CYCLE



Single Cycle LOW ENERGY EFFICIENCY

VS.

Hybrid Combined Cycle ENERGY EFFICIENCY

① The process fluid circulates within the coil and the cooling fluid, together with the airflow, circulates outside the coil.

All thermal energy to be dissipated passes from the processing fluid to the cooling fluid through the wall of the coil.

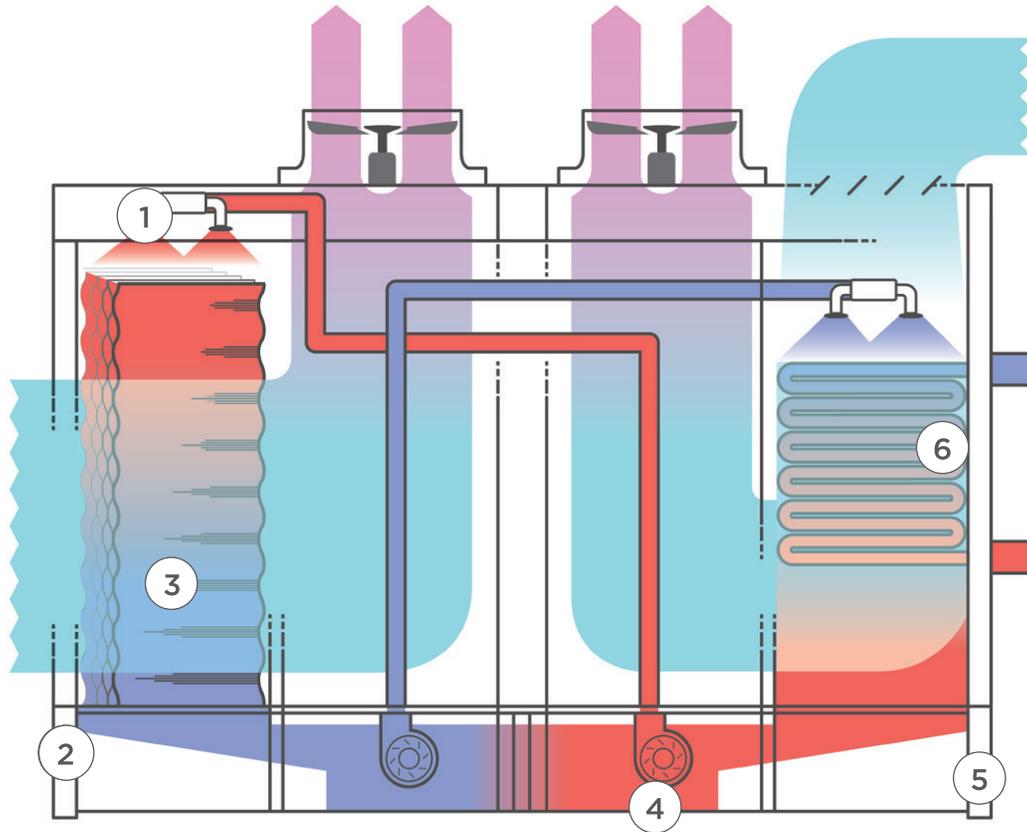
② All thermal energy gained by the cooling fluid when passing outside the coil has to be dissipated into the atmosphere so that cooling fluid falls on the lower cooler tray at the same temperature as that at which it was originally sprayed on the coil.

System requirements: A high-power ventilation system that has the facility to move a large mass of air in a high-pressure drop ventilation system with which energy efficiency is very low, particularly when the systems operate at a wet-bulb temperature over 65°F or approaches close to 14°F.

Two thermal dissipation sections, one primary made up of the single cycle as described above, plus a secondary dissipation section, ③ made up of a direct evaporative exchange system in which the remaining thermal energy is dissipated into the atmosphere before cooling water is returned to the upper part of the primary section ④.

System requirements: A much lower power ventilation system, as its aerodynamic system is much more efficient. This means its energy efficiency is much greater than the single system, in particular when operating at a wet-bulb temperature of more than 74°F or with approaches of less than 12°F.

The energy consumption of the single cycle is more than 200% of that required by the combined-cycle system.



1 Rotating-turbine nozzles vs. fixed-orifice stationary nozzles

2 Twin wall

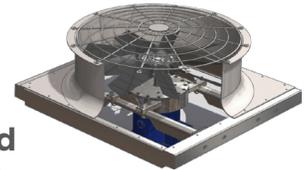
3 High-efficiency PVC laminate packing

4 Pumping system

5 Self-supporting structure

6 Coil system

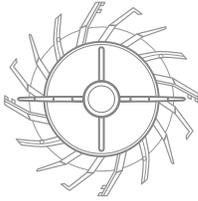
 **Low sound and vibration level**



The modular ventilation system has the facility to configure each section of the machine with 1, 2 or 3 ventilation modules, as needed to achieve the capacity required or to increase the capacity of an existing machine.

Independent, pressurized ventilation systems with high-efficiency and low-noise level FRP axle ventilators directly connected to low-speed TEFC electric motors.

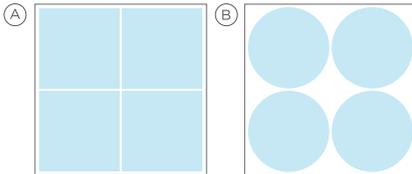
1



Rotating-turbine nozzles vs. fixed-orifice stationary nozzles

The rotating-turbine (A) variable-flow sprinklers used for IM® towers provide a square, constant and uniform distribution pattern, irrespective of the flow of processed water.

Fixed orifice stationary sprinklers (B) provide uneven, conical dispersion patterns that create dry areas and water overload areas, which may change in response to variations in flow.



2

Twin wall

The interior flat wall in the packing area reduces “loss through the wall”, thereby increasing tower efficiency.

3

High-efficiency PVC laminate packing

Supported on the floor, with integrated drip and entrainment removers, which may be replaced without having to disassemble the tower.

4

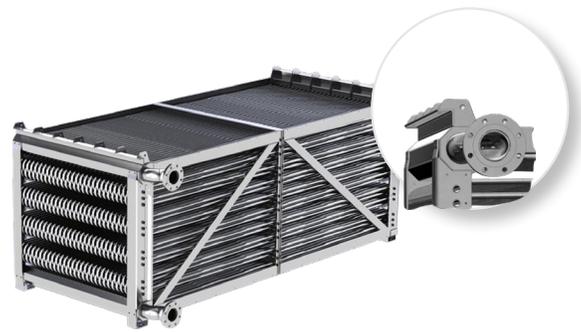
Pumping system

Independent cooling water pumping systems integrated into the machine.

5

Self-supporting structure

Hybrid structure (steel/FRP) does not need to be disassembled on a support beam structure, thus saving on installation costs.



6

Coil system

“Hung” on side rails and fluid connections in distributor heads.

Configuration allows easy and quick extraction of the coil assembly for maintenance purposes.

Assembly in models of the same group allows changing the size of the coil so as to increase or reduce machine capacity.

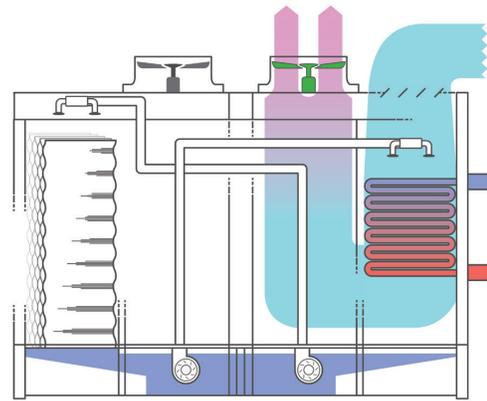
Available in hot-galvanized steel or 304 or 316 stainless steel, both of which meet ASME B31.5 specifications.

True parallel air/water flow on the coil, which eliminates dry areas and allows operation at a greater volume of air and water, without any increase in the system static pressure. At the same time it creates a ‘washing’ effect that prevents the formation of incrustation on the outer surface.

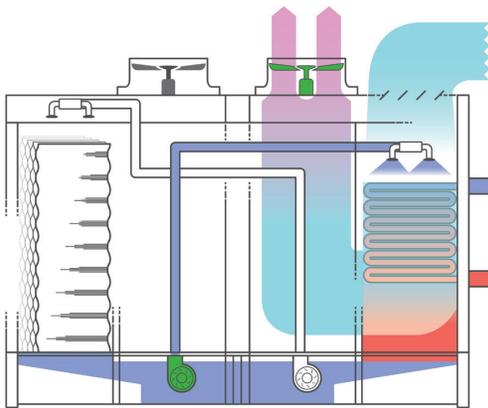
Hybrid combined-cycle fluid cooling

Operating Modes

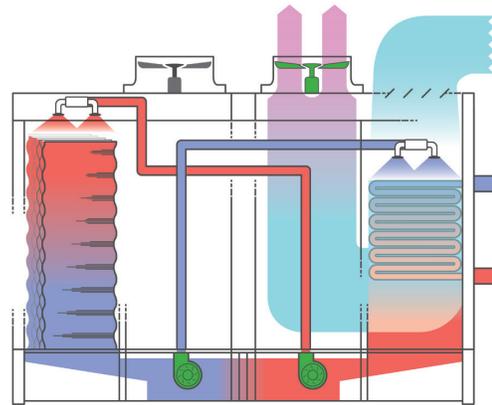
The twin-section configuration of the IM6000 is unique in the industry and allows the machine to operate at greater process fluid outlet temperature stability. This tower is very versatile, as it may operate in several modes and at several capacity stages within each operating mode, thereby achieving high levels of energy efficiency, reducing use of evaporation water, thus substantially reducing operating costs.



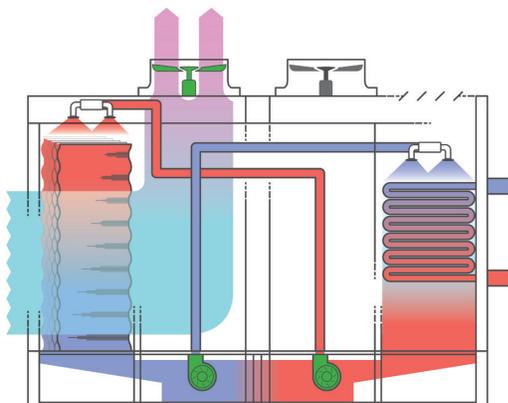
① **Air only (variable flow) on the coil**
Sensitive cooling/cooling water not used.



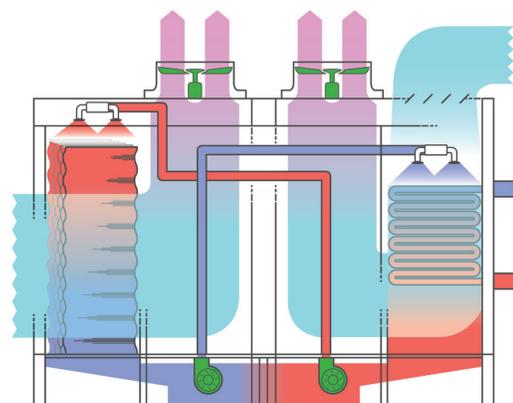
② **Air (variable flow) and water (fixed flow) on the coil** / Indirect latent cooling / Uses some evaporation water.



③ **Air (variable flow) and water (fixed flow) on coil and packing** / Indirect latent cooling and hybrid cooling (sensitive-latent), with no air induction.



④ **Water (fixed flow) on the coil and packing, and air (variable flow) on packing** / Direct sensitive cooling and direct latent cooling (evaporative) with induced air on packing.



⑤ **Air (variable flow) and water (fixed flow) on the coil and packing** / Indirect latent cooling (evaporative) and direct latent cooling (evaporative) with induced air.

Variable-Capacity Automatic Control System

The tower has the facility to be integrated into a system so as to operate at maximum efficiency.

The system automatically detects failure of any system component and takes automatic action to change the equipment to the right failure operating mode.



The intelligent control software, completely developed by IM®, provides users the facility to enter all control parameters so that the machine may operate fully automatically at the highest possible level of operating stability and energy efficiency.

The touch control terminal (HMI) may be found on the front of the panel, together with all components for controlling the system in automatic, semi-automatic or manual mode in the event of PLC failure.

All data are directly entered onto the terminal screen and the system may also be connected to a central console or a computer via Ethernet or TCP/IP.



The Control System includes all logical control and power components required to operate all cooling tower elements and the process fluid pumping system.



MODEL	NOMINAL CAPACITY			MOTOR HP ¹			DIMENSIONS (Inches)			WEIGHT (lbs.) Approx.		Pressure drop (psi)
	Tons	BTU/hr	GPM	Coil	Filling	B. Recirc.	A	B	C	Shipping	Operation	
CCT-6000-0033-G	33	495,000	99	(2) 1	(2) 1.5	(2) 2	175	86	126.75	7,182.02	10,770.75	0.28
CCT-6000-0046-G	46	690,000	138	(2) 1	(2) 1.5	(2) 2	175	86	126.75	7,597.83	11,238.35	0.68
CCT-6000-0055-G	55	825,000	165	(2) 1.5	(2) 3	(2) 2	180	90	126.75	8,081.86	12,310.11	0.90
CCT-6000-0073-G	73	1,095,000	219	(2) 2	(2) 7.5	(2) 2	180	90	126.75	8,617.73	13,146.88	1.88
CCT-6000-0069-G	69	1,035,000	207	(2) 1.5	(2) 3	(2) 2	193	108	138.75	9,382.96	15,061.30	1.61
CCT-6000-0087-G	87	1,305,000	261	(2) 2	(2) 5	(2) 2	193	108	138.75	9,977.19	15,385.72	3.06
CCT-6000-0100-G	100	1,500,000	300	(2) 2	(2) 5	(2) 2	193	108	138.75	10,363.13	16,427.63	4.73
CCT-6000-0111-G	111	1,665,000	333	(2) 3	(3) 3	(2) 3	214	144	140.75	12,624.41	20,493.27	5.02
CCT-6000-0131-G	131	1,965,000	393	(2) 3	(3) 3	(2) 3	214	144	140.75	13,235.15	21,366.76	8.47
CCT-6000-0145-G	145	2,175,000	435	(2) 3	(3) 3	(2) 3	214	144	140.75	13,862.37	22,210.43	12.22
CCT-6000-0155-G	155	2,325,000	465	(2) 3	(3) 5	(2) 5	232	144	140.75	14,002.56	23,095.54	4.75
CCT-6000-0185-G	185	2,775,000	555	(2) 5	(3) 7.5	(2) 5	232	144	140.75	14,968.73	23,956.55	8.18
CCT-6000-0193-G	193	2,895,000	579	(2) 3	(3) 5	(2) 5	244	156	140.75	15,910.41	26,597.59	9.54
CCT-6000-0225-G	225	3,375,000	675	(2) 3	(3) 7.5	(2) 5	244	156	140.75	17,106.68	28,019.74	15.13
CCT-6000-0267-G	260	3,900,000	780	(2) 5	(3) 10	(2) 7.5	256	162	156	20,342.57	31,751.32	17.26
CCT-6000-0300-G	300	4,500,000	900	(2) 7.5	(3) 10	(2) 7.5	268	168	156	21,786.13	34,223.89	17.99

1. Motor nameplate values.

Catalog dimensions are for reference applicable to standard Cooling Towers - without accessories. For actual dimensions and weights of the cooling tower purchased, please consult with your Sales Representative before any hiring of transport, loading and unloading vehicles or for the installation conditions after it has been unloaded at your facilities.

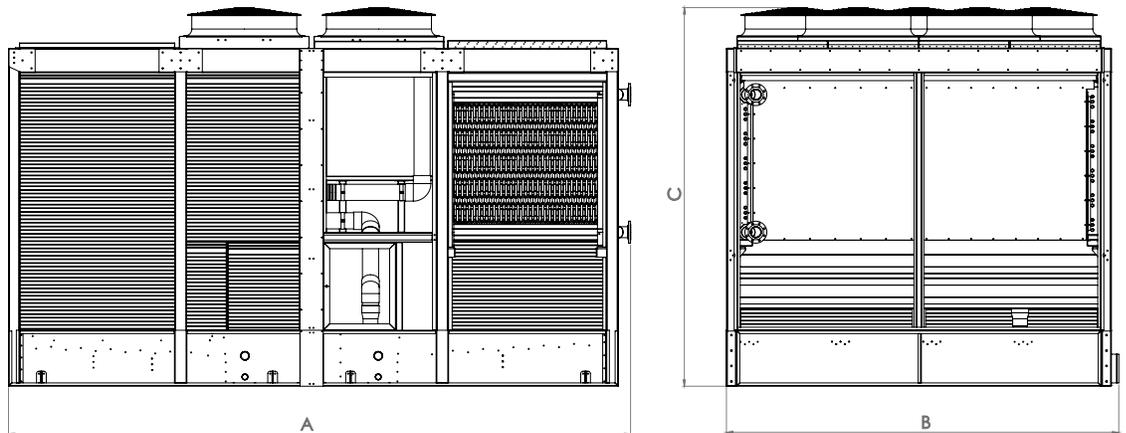
IM SERIES 6000

Nominal capacity

33 to 300 ton

99 to 900 GPM @

95°F / 86°F / 78°F



For further information, call or write to us at: **+52 (81) 1158-5300**
info@industrialmexicana.com

www.industrialmexicana.com

IM Maintenance

A solution for every situation

In Industrial Mexicana we offer the maintenance that your tower requires.

Basic Silver Bullet®

Basic Maintenance involves the installation of a Silver Bullet® equipment defined by the volume of water to be treated in the tower.

Plus Silver Bullet® + Mechanics

Plus Maintenance includes the installation of the Silver Bullet® equipment plus all mechanic maintenance for the tower.

Ultra Silver Bullet + Mechanics + Peripheral Equipment

Ultra Maintenance covers also peripheral equipment, such as loop pumps, boiler, hot water tanks, plate exchangers, among others.



Major repairs

Count with IM to get your tower going again. We make full repairs, from spare parts to mechanic service. Get in contact with our experts.

Spare Parts

We offer a wide variety of spare parts for IM towers and other brands.



Silver Bullet is a chemical-free water treatment system that prevents bacteria, incrustation of salts and corrosion in your tower, resulting in efficiency and energy savings.

In IM we work for you

Design & Innovation

We are involved in continuous research and develop unique solutions for cooling towers. Our efforts are always aimed at efficiency, performance and savings. This determination is what has gotten us so far.

Service & Experience

50 years of experience say it all. We have successfully worked in all industries, and we are capable of solving any situation. Our mission is to produce the best towers and keep them working with efficiency.

Applied Engineering

With the support of the engineering department, we develop turnkey projects, integrating our thermal dissipation equipment to the different equipment or processes owned by the client.

Automation & Energy Saving

Automation is the future and, at IM, we have developed forefront controllers in order for your towers to work in the most efficient way possible all the time, thereby producing energy savings that benefit us all.

Leaders in the industry through innovation



Saving water

Industry currently uses a large quantity of water just for cooling. Cooling towers use the evaporation principle so that water may be recycled, thereby reducing the demand for natural and local water.

IM® cooling towers incorporate major features to reduce waste of water and treatment chemicals, using the most modern material and components to reduce the risk of splashing and water entrainment.



Saving energy

As energy costs continue rising, greater emphasis has been placed on reducing the use of energy in industrial equipment. IM® cooling towers have been designed to achieve a maximum thermal performance capacity by unit, both in terms of saving energy and the use of energy of the recirculation pump, on incorporating the lowest static pumping load on the market.



Long operational life

Cooling towers must operate at their maximum capacity in a wide range of operating conditions, including sudden changes in temperature, a wide variety of water quality, wind and seismic loads. IM® has taken a leading technological position in the chemical treatment of wood, and in the design of robust structures. We utilize high quality materials, engineered to meet critical standards desired by our customers to enable a long-lasting operational life of this equipment.