



60 YEARS



# **CROSS-FLOW**

## **FIELD ERECTED TOWER**

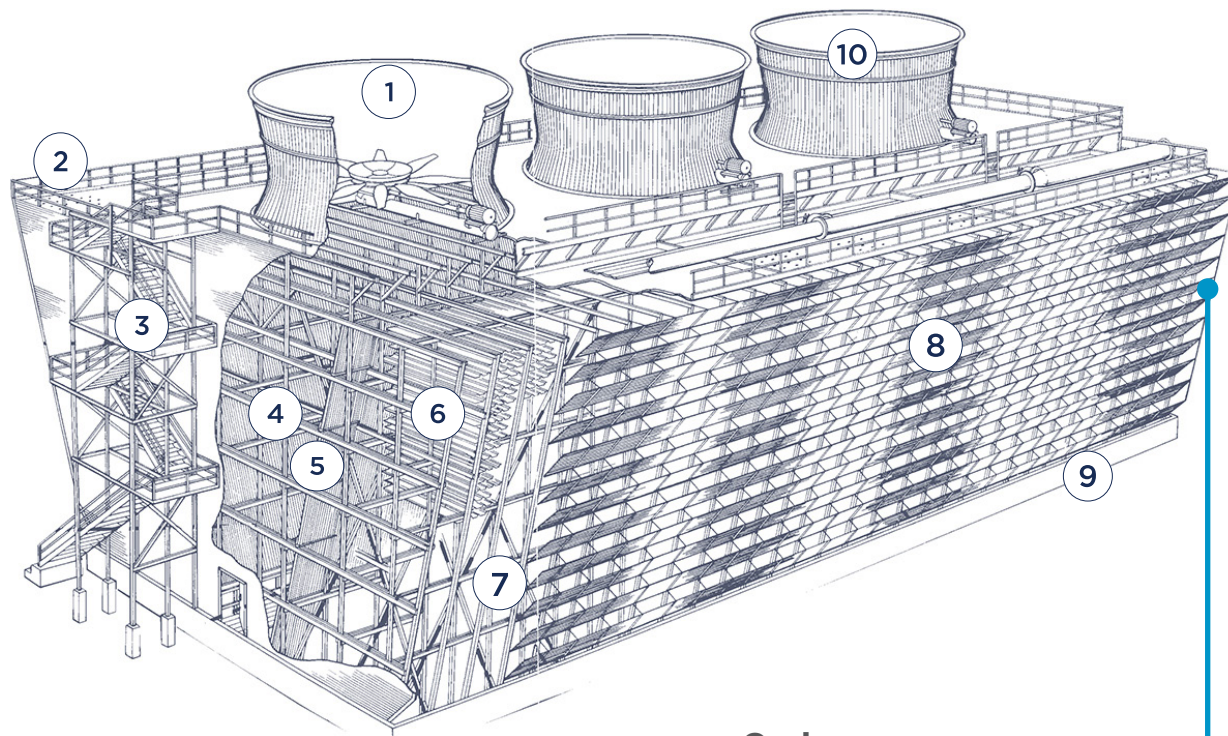
AVAILABLE IN:

- ✓ Wood
- ✓ Glass fiber
- ✓ Steel



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





### Casing

Made from flame-retardant fiberglass corrugated sheet, its flexibility, resistance and even finishing make it the best choice to use in cooling tower casings. Architectural panels are also available on demand.

1 **Mechanical Equipment**

2 **Hot Water Basin**

3 **Stairway and Safety**

4 **Structural Material**

5 **Drift Eliminators**

6 **Fill Pack**

7 **Main Structure**

8 **Louvers**

9 **Cold Water Basin**

10 **Recovery Fan Stacks**

# CROSS-FLOW

## FIELD ERECTED TOWER

1

### Mechanical Equipment

Selected for minimum energy consumption and with a wide range of service factors for continuous operation for industrial use. The fan, motor, reducer and shaft are assembled and aligned on a unit mechanical equipment support made from hot-dipped galvanized steel, to ensure maximum stability of moving components. Epoxy coatings can be added for additional life if customer desires.

2

### Hot Water Basin

Gravity-opened water distribution trays with dispersion boxes and flow calibration orifices made from polypropylene for the proper and uniform distribution of water on fill pack. Flow per cell is controlled by valves made from high-quality material specifically designed for cooling towers.

3

### Stairway and Safety

IM® Towers are designed for a convenient operating routine and meet all required standards. Built with stairways that provide access to the fan flow, a marine stairway and safety platform that provides access to the spray removal area, and a perimeter OSHA approved Rail Systems railing throughout the entire tower. With all rotating parts outside the ring being suitably protected to prevent any hazard, stairways can be made from wood, fiberglass or steel.

4

### Structural Material

Various types of treated wood are used. The structure is connected with fiberglass, galvanized steel, stainless steel or silica bronze connectors, in accordance with operating requirements of water quality. These components are firmly supported by stainless steel or silica bronze bolts.

5

### Drift Eliminators

Three-step spray removers built from thermo-formed PVC or Polypropylene sheet that retain up to 0.005% of entrainment, thereby decreasing the use of water to the maximum.

6

### Fill Pack

Various types of packing are used for cooling towers, depending on use and circulating water temperature. Treated-wood tablet, perforated sheet and thermo-formed laminate PVC sheets supported on stainless steel square mesh, distribute and separate drops of water to ensure uniform and efficient cooling throughout the entire tower.

7

### Main Structure

Designed to resist major wind and earthquake loads according to Cooling Technology Institute standards, STD-114 standard, for Douglas Fir pine. Wood is pressure treated using hydrosoluble salts in accordance with the C2-77 standard of the AWWA, to prevent the wood from decomposing.

8

### Louvers

Wide panels made from flame-retardant fiberglass sheet which provide greater vertical separation to reduce static pressure and water loss caused by filtration and splashing. These also reduce the power demand of motors substantially.

9

### Cold Water Basin

The foundation and concrete cold water tray (provided by the customer), designed on a single level and anchored at the transversal and longitudinal sides of the structure facilitate construction, and later on make draining and cleaning easier.

10

### Recovery Fan Stacks

Made from polyester-resin reinforced fiberglass. Their construction is based on vertical reinforcing ribs that guarantee a solid and robust resistance to impact. Their aerodynamic design allows a major saving in energy by recovering outlet air speed. Their height varies from 6 feet to 18 feet, which reduces the nominal power of motors even more.

# CROSS-FLOW

## FIELD ERECTED TOWER



### Fan Stacks

Fan stacks are made from fiberglass reinforced with an isophthalic gel coat with special additives to resist harsh weather, solar rays and constant dampness and water that the component must withstand throughout its operating life.

Built at a typical thickness of  $\frac{1}{4}$  of an inch and thanks to the structural design that incorporates large reinforced ribs along the length and breadth of segments, an aerodynamic model is provided that allows the free passage of air without any restrictions, thus creating an efficient chimney effect to allow substantive recovery in static operating load of the fan. These fan stacks are built in a variety of diameters and at a height of 6, 10, 14 and 18 feet.



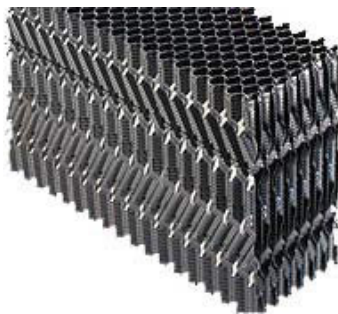
### Drive Shafts and Couplings

The transmission shaft is made from epoxy-resin reinforced fiberglass. It is built on a single piece to guarantee transmission of power between the motor and the speed reducer, and with flexible fiberglass elements to absorb torsion vibration due to any possible misalignment. Each shaft is dynamically balanced in the factory and selected widely outside the critical fatigue speed.



### Speed Reducers

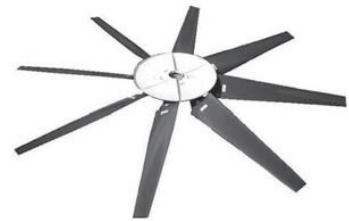
Right-angle speed reducers specifically designed for use in cooling towers. Its helicoidal conical gears and straight helicoidal gears are built in accordance with AGMA and CTI standards and are selected at a minimum service factor of 2.0, according to motor load. They are designed to operate in both directions.



### Fill Pack

The fill pack consists of levels of packets formed by laminate PVC sheets, 19 millimeters thick. Resistant to corrosion and flame, may withstand biological attacks and deterioration by fungus, bacteria or any other. Different kinds of fill pack are available and are used depending on the characteristics of process water and the environment in which it operates.

## COMPONENTS



### Fans

Fan blades are made from reinforced fiberglass with epoxy resin. These vanes are very light as they are made with the most advanced technology available, thus providing a light weight fan blade that is highly resistant to the extremely harsh environments seen in a cooling tower application. The aerodynamic design of these blades achieves a highly efficient and low-energy load operation. Each vane is balanced individually and all are of the exact same size and weight. This provides for silent and vibration-free operation, and facilitates the exchanging of any ventilator blades for new ones without having to rebalance the system.

The main mass consists of two thick galvanized steel plates to which stainless-steel fittings and bolts are connected. The number of blades required depends on the specific use.

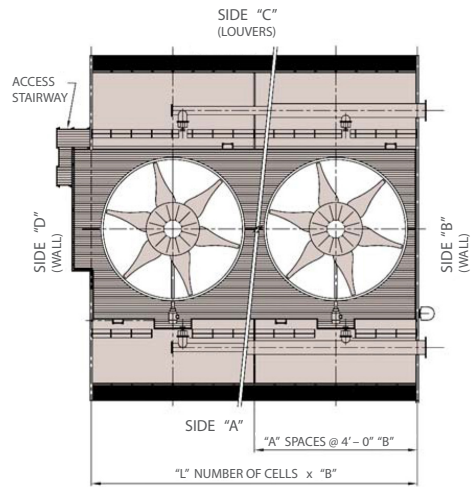


### Mechanical Support Equipment

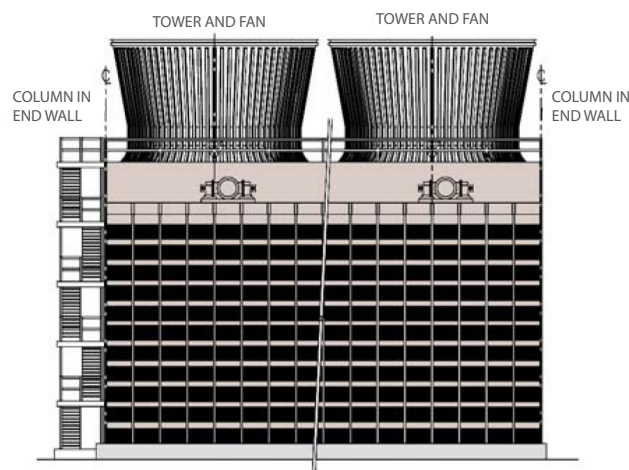
Made from a single hot-dipped galvanized tube. The support has been designed with a rigid structure to keep the motor-reductor-fan aligned and without vibration. Epoxy coatings can be added for additional life if customer desires.

ENGINEERING DETAILS

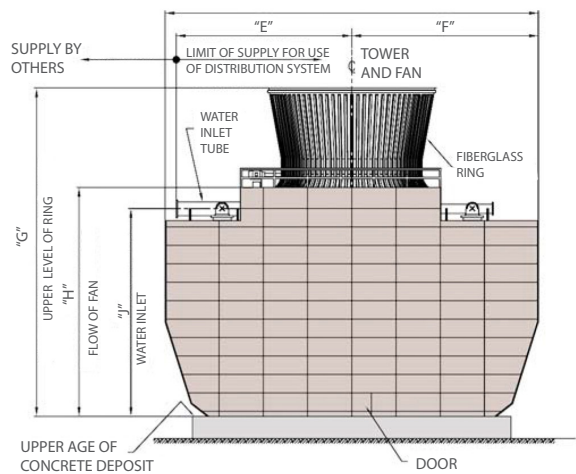
Typical  
Dimensions  
of Multi-Cell  
Towers



PLANT VIEW



ELEVATION SIDE "A"



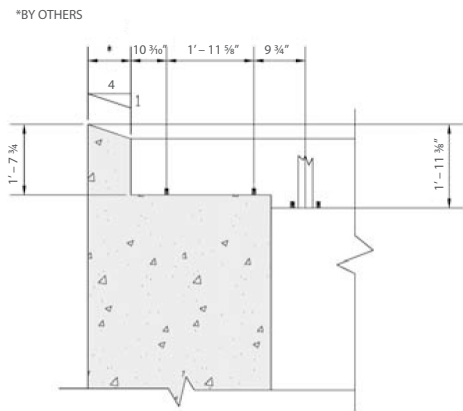
ELEVATION SIDE "B"

| MODEL   | A  | B      | E       | F       | G      | H      | J      | W      |
|---------|----|--------|---------|---------|--------|--------|--------|--------|
| FC-1820 | 5  | 20'-0" | 31'-10" | 33'-10" | 41'-5" | 23'-5" | 19'-5" | 67'-8" |
| FC-1824 | 6  | 24'-0" | 31'-10" | 33'-10" | 41'-5" | 23'-5" | 19'-5" | 67'-8" |
| FC-1828 | 7  | 28'-0" | 31'-10" | 33'-10" | 41'-5" | 23'-5" | 19'-5" | 67'-8" |
| FC-2420 | 5  | 20'-0" | 31'-10" | 33'-10" | 47'-5" | 29'-5" | 25'-5" | 67'-8" |
| FC-2424 | 6  | 24'-0" | 31'-10" | 33'-10" | 47'-5" | 29'-5" | 25'-5" | 67'-8" |
| FC-2428 | 7  | 28'-0" | 31'-10" | 33'-10" | 47'-5" | 29'-5" | 25'-5" | 67'-8" |
| FC-2432 | 8  | 32'-0" | 31'-10" | 33'-10" | 47'-5" | 29'-5" | 25'-5" | 67'-8" |
| FC-3020 | 5  | 20'-0" | 33'-9"  | 35'-9"  | 53'-5" | 35'-5" | 31'-5" | 71'-6" |
| FC-3024 | 6  | 24'-0" | 33'-9"  | 35'-9"  | 53'-5" | 35'-5" | 31'-5" | 71'-6" |
| FC-3028 | 7  | 28'-0" | 33'-9"  | 35'-9"  | 53'-5" | 35'-5" | 31'-5" | 71'-6" |
| FC-3032 | 8  | 32'-0" | 33'-9"  | 35'-9"  | 53'-5" | 35'-5" | 31'-5" | 71'-6" |
| FC-3036 | 9  | 36'-0" | 33'-9"  | 35'-9"  | 53'-5" | 35'-5" | 31'-5" | 71'-6" |
| FC-3040 | 10 | 40'-0" | 33'-9"  | 35'-9"  | 53'-5" | 35'-5" | 31'-5" | 71'-6" |
| FC-3632 | 8  | 32'-0" | 33'-9"  | 35'-9"  | 59'-5" | 41'-5" | 37'-5" | 71'-6" |
| FC-3636 | 9  | 36'-0" | 33'-9"  | 35'-9"  | 59'-5" | 41'-5" | 37'-5" | 71'-6" |
| FC-3640 | 10 | 40'-0" | 33'-9"  | 35'-9"  | 59'-5" | 41'-5" | 37'-5" | 71'-6" |
| FC-4232 | 8  | 32'-0" | 33'-9"  | 35'-9"  | 65'-5" | 47'-5" | 43'-5" | 71'-6" |
| FC-4236 | 9  | 36'-0" | 33'-9"  | 35'-9"  | 65'-5" | 47'-5" | 43'-5" | 71'-6" |
| FC-4240 | 10 | 40'-0" | 33'-9"  | 35'-9"  | 65'-5" | 47'-5" | 43'-5" | 71'-6" |

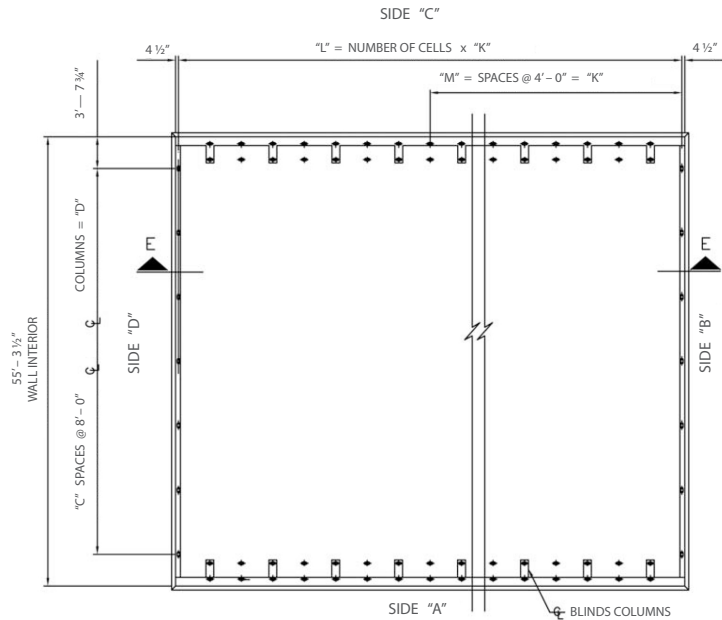


ENGINEERING DETAILS

Typical  
Anchoring  
Of Multi-Cell  
Towers

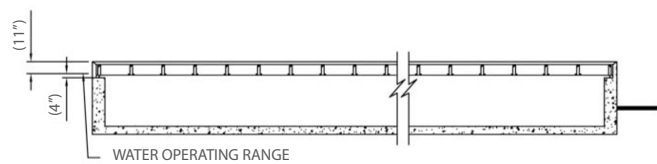


TYPICAL DETAIL OF  
PERIMETER PEDESTALS



PLANT VIEW

| MODEL    | C | D      | M  | K      |
|----------|---|--------|----|--------|
| FC-1820  | 6 | 48'-0" | 5  | 20'-0" |
| FC-1824  | 6 | 48'-0" | 6  | 24'-0" |
| FC-1828z | 6 | 48'-0" | 7  | 28'-0" |
| FC-2420  | 6 | 48'-0" | 5  | 20'-0" |
| FC-2424  | 6 | 48'-0" | 6  | 24'-0" |
| FC-2428  | 6 | 48'-0" | 7  | 28'-0" |
| FC-2432  | 6 | 48'-0" | 8  | 32'-0" |
| FC-3020  | 6 | 48'-0" | 5  | 20'-0" |
| FC-3024  | 6 | 48'-0" | 6  | 24'-0" |
| FC-3028  | 6 | 48'-0" | 7  | 28'-0" |
| FC-3032  | 6 | 48'-0" | 8  | 32'-0" |
| FC-3036  | 6 | 48'-0" | 9  | 36'-0" |
| FC-3040  | 6 | 48'-0" | 10 | 40'-0" |
| FC-3632  | 6 | 48'-0" | 8  | 32'-0" |
| FC-3636  | 6 | 48'-0" | 9  | 36'-0" |
| FC-3640  | 6 | 48'-0" | 10 | 40'-0" |
| FC-4232  | 6 | 48'-0" | 8  | 32'-0" |
| FC-4236  | 6 | 48'-0" | 9  | 36'-0" |
| FC-4240  | 6 | 48'-0" | 10 | 40'-0" |



SECTION "E - E"

# ***A solution for every situation***

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

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### **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.

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### **Plus** Silver Bullet® + Mechanics

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

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### **Ultra** Silver Bullet + Mechanics + Peripheral Equipment

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

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*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.*



### **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.



# 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 & Ingeniería aplicada Energy Saving

Con apoyo del departamento de ingeniería, desarrollamos proyectos de automatización de torres de refrigeración. Hemos desarrollado controladores de torres de refrigeración para que operen de la manera más eficiente posible 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.