

/ Marley MS Cooling Tower /



SPX COOLING TECHNOLOGIES

SPX Cooling Technologies has worldwide recognition as the pacesetter in the field of water cooling technology. Unique within its industry in the scope of products and services offered, we design and manufacture cooling towers of virtually any capacity and configuration. More than 400 Marley tower models are available to service the application requirements of air conditioning, industrial processing and electric generation. More simply stated, there's a Marley cooling tower for almost any conceivable water cooling need — from as little as 15 gallons per minute to more than 300,000 gallons per minute.



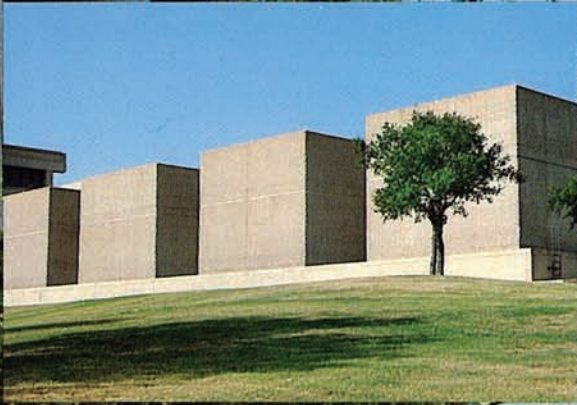


In the area of cooling tower design, Marley believes that form must yield to function — in most situations. After all, the exterior appearance of a cooling tower is not of primary importance in an industrial application. Such factors as first cost, operating and maintenance costs and overall practicality far outweigh aesthetic considerations.

Conversely, there are situations in which aesthetics become very important, in addition to the more practical elements of function and economy. In those instances Marley can design a cooling tower, in cooperation with the architect, that is a beautiful, integral part of an overall architectural plan — without sacrificing the high quality inherent in a “traditional” Marley tower.



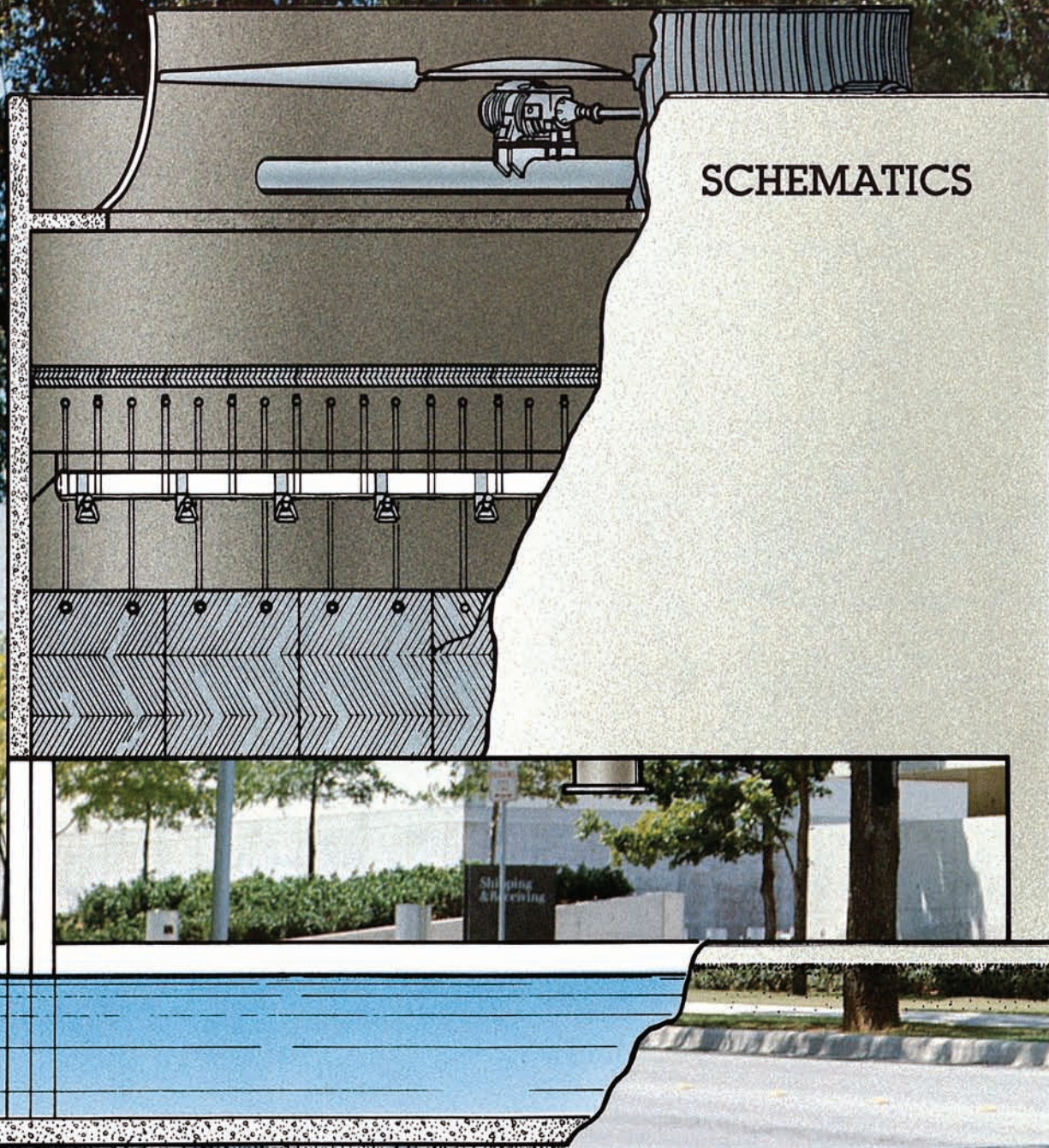
INSTALLATIONS

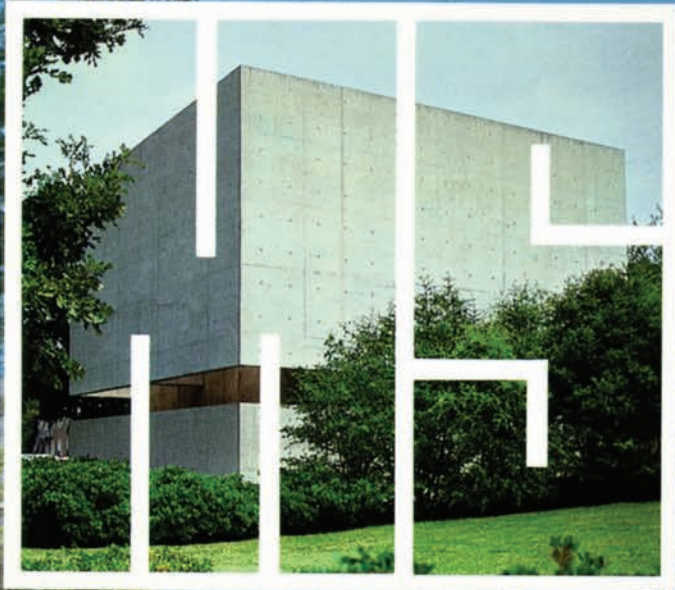


The Marley Masonry Shell (MS) cooling tower is a counterflow, mechanical draft tower developed to serve those water cooling applications where aesthetics preclude the use of a conventionally cased and enclosed cooling tower.

As the photographs indicate, the MS can be designed in a wide variety of configurations and sizes to complement, or even enhance, the architectural treatment of the structure being served.

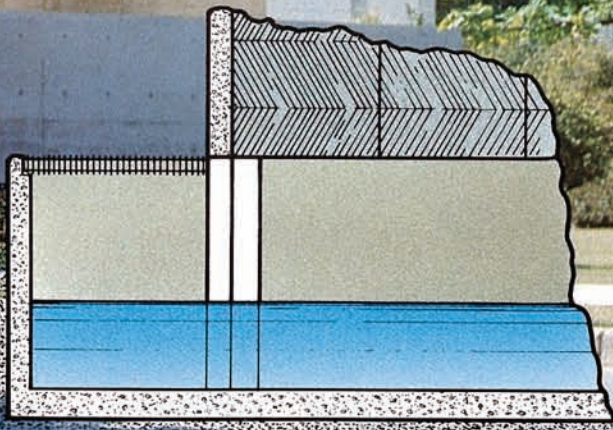






Like all Marley cooling towers, the MS is the end-product of a simple but highly successful three-part formula: 1) structural and mechanical integrity, 2) design and construction flexibility, and 3) on-line thermal capability.

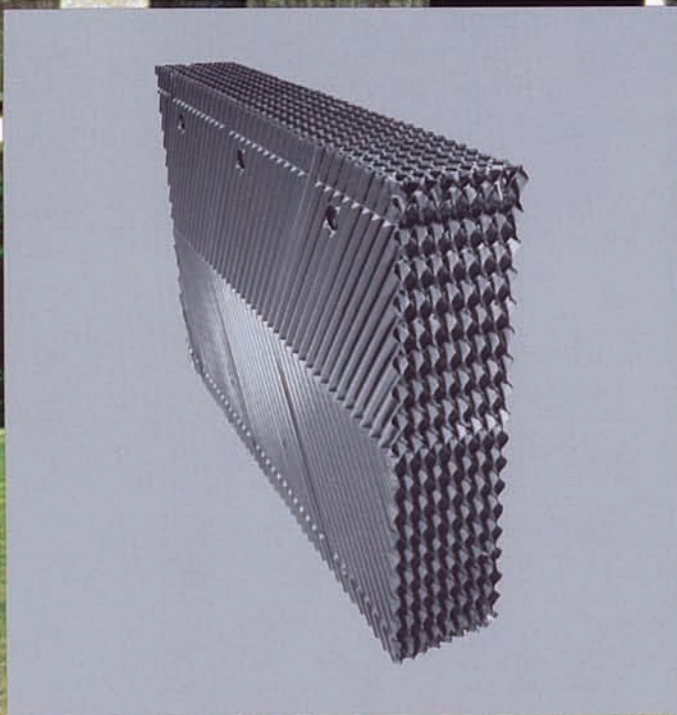
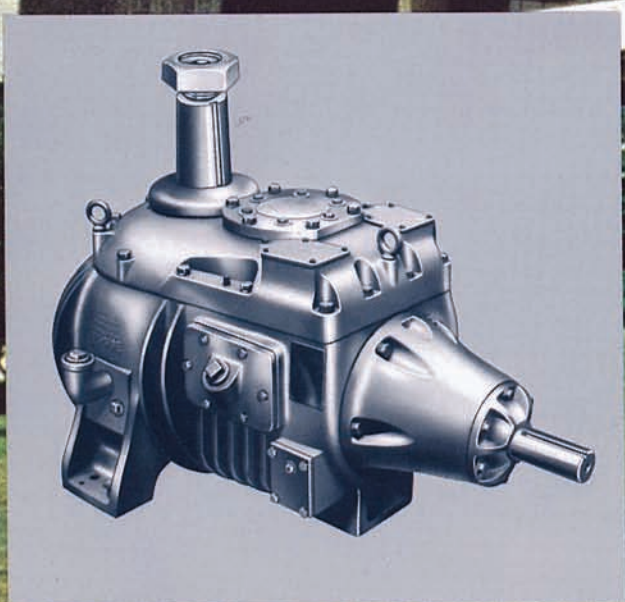
Mechanical equipment, fill, drift eliminators and other industrial rated components are the same as those used in Marley's larger Class 600 crossflow and Class 800 counterflow cooling towers. All major components, except the electric motor, are designed and manufactured by Marley, helping to assure meaningful performance projections and relieving the user of multiple warranty considerations.



COMPONENTS

FILL: Marley MC high performance PVC film fill sheets are thermoformed at the Marley factory to exacting quality and strength standards. Maximum performance and clog resistant designs are both available for a wide range of thermal and water quality requirements.

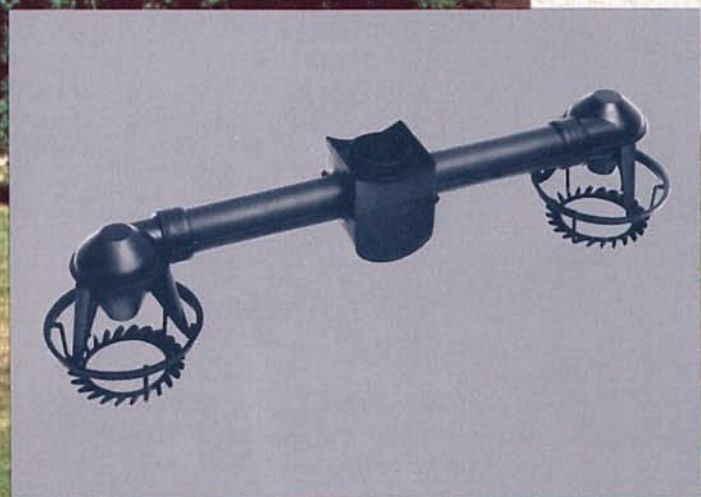
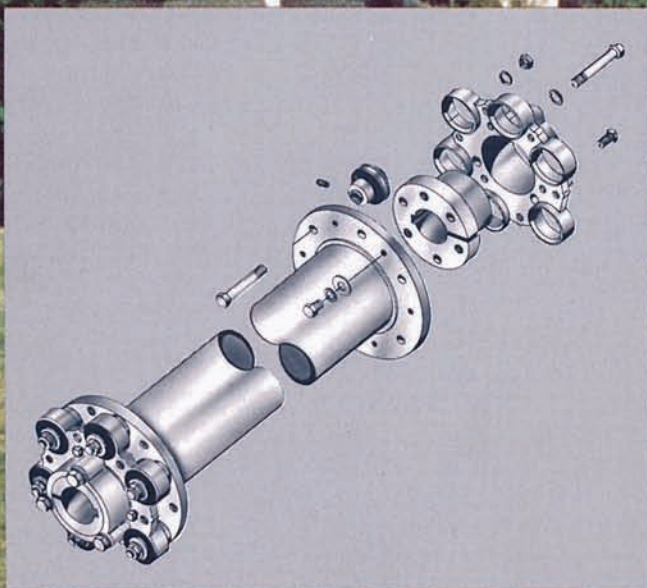
ELIMINATORS: Marley XCEL® drift eliminator panels—formed from PVC sheets into a cellular configuration—offer the lowest drift rates in the industry. They significantly lower air pressure losses, reducing fan horsepower requirements.



GEAREDUCERS: Marley Geareducer® drives are the industry quality standard. They are designed to meet or exceed the requirements of CTI STD-111 and AGMA Std, 420.4, and are run-in under load prior to shipment. Numerous reduction ratios are available so that horsepower is applied at optimum fan speed.

FANS: Designed, tested and manufactured by Marley, fan materials include cast aluminum alloy, glass reinforced polyester and glass reinforced epoxy. Fan sizes and materials are selected to be compatible with individual application requirements.

DRIVESHAFTS: Rugged Marley manufactured driveshafts are built from stainless steel or carbon fiber composite tubes with stainless steel flanges. All Marley driveshafts are dynamically balanced at the factory to minimize operating vibrations.



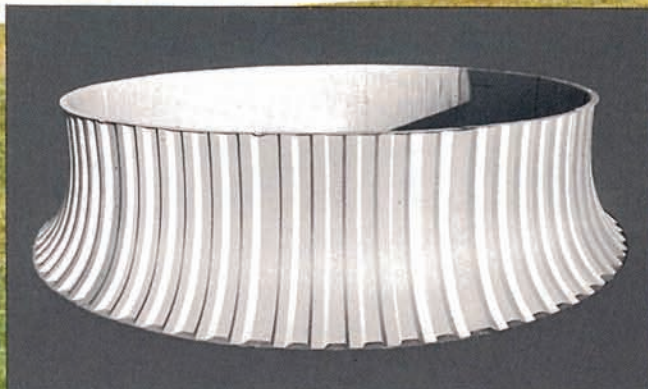
MECHANICAL EQUIPMENT

SUPPORT: The Marley hot-dipped galvanized torque tube unitized support assures permanent alignment of the motor, driveshaft and Geareducer.

DISTRIBUTION SYSTEM: Marley-patented non-clogging, large diameter NS spray nozzles assure an unimpeded, uniform flow with minimal operating pump head. Plus, they free you from the expense and nuisance of cleaning clogged nozzles.

FAN CYLINDERS: Marley FRP fan cylinders feature venturi shaped eased inlets and close fan tip clearance for maximum efficiency. If required, a concrete fan cylinder may be utilized.

STRUCTURE: Normal structure consists of 8" thick concrete exterior walls and interior cell partitions. Cast-in-place fan decks are normally 6" slabs. A furnished torque tube spans the full fan deck opening for mechanical equipment support, thereby avoiding concrete beam obstructions.



SPECIFICATIONS

COOLING TOWER: Furnish and install (1) Induced Draft Counterflow Cooling Tower. Cooling tower shall be _____ ft. long x _____ ft. wide x _____ ft. overall height with a maximum operating weight of _____ lbs. Cooling tower shall consist of _____ fan cells with a maximum of _____ total fan horsepower and a maximum pump head of _____ ft.

Other contractor(s) will furnish all external piping, valves, pumps, electrical equipment other than cooling tower fan motors, wiring, controls, etc. all in accordance with general overall dimensions to be supplied by cooling tower manufacturer. All internal components of cooling tower as described following will be furnished and installed by the cooling tower manufacturer.

CAPACITY: Cooling tower shall be selected and guaranteed to cool _____ GPM of water from _____ °F to _____ °F at _____ °F entering wet bulb temperature.

MECHANICAL EQUIPMENT: Mechanical equipment shall be designed specifically for cooling tower usage and shall be mounted on a rigid unitized HDG steel support to assure permanent drivetrain alignment. Cooling tower manufacturer shall be responsible for equipment warranty.

FANS: Fans shall be of a multi-blade propeller type and blades shall be constructed of solid glass reinforced polyester, cast aluminum alloy or hollow glass reinforced epoxy. Hubs shall be HDG steel cast iron or aluminum plate. Blades shall be individually adjustable for required pitch angles.

DRIVESHAFTS: Driveshaft tubes and flanges shall be manufactured of type 304 stainless steel. Couplings shall be hot dip galvanized cast iron, joined to the driveshaft by flexible neoprene bushings and cadmium plated steel inserts. Connecting hardware shall be 300 stainless steel. Driveshaft assemblies shall be dynamically balanced at the factory at full motor speed.

SPEED REDUCERS: Speed reducers shall be provided for right angle fan drive and shall be designed to AGMA standards for continuous duty operation, capable of reverse operation. Oil fill and drain lines are to be extended outside the fan cylinder to an oil level sight glass.

ELECTRIC MOTORS: Electric motors shall be _____ speed, single winding, variable torque, _____ hp maximum, TEFC, and specially insulated for cooling tower duty. Speed and electrical characteristics shall be _____ RPM, _____ phase, _____ hertz, _____ volts. If the load applied to the motor exceeds 90% of the nameplate rating, then the motor shall have a 1.15 service factor and the service factor beyond 1.0 shall not be considered available for load.

FILL: Heat transfer fill media shall be crosscorrugated 20 mil PVC sheets supported by stainless steel tubes which, in turn, are suspended by stainless steel tension hangers from concrete support beam members.

DRIFT ELIMINATORS: Drift eliminators shall be supplied in a 3 pass cellular arrangement of bonded 17 mil PVC sheets. Drift loss shall not exceed _____% of circulating water.

HOT WATER DISTRIBUTION SYSTEM: Hot water distribution system in each cell shall be supplied with a single interior inlet terminating 1'-0" below bottom of the tower filling. Materials will be of inert PVC and RTR and polypropylene piping supported by the support beams utilized to carry heat transfer fill media.

FAN CYLINDERS: Fan cylinders shall have eased inlet design and be of molded fiber reinforced polyester with a minimum height of 6' 0".

OPTIONS: Factory Mutual Approval. The tower shall include all design and material modifications necessary to meet the fire rating requirements of Factory Mutual. The product proposed shall be listed in the FM Approval Guide, latest edition.

Masonry structure options at owner's election:

1-Shell structure design shall be by cooling tower manufacturer.

2-Shell structure and cold water basin design shall be by cooling tower manufacturer.

3-Shell structure and cold water basin design shall be by cooling tower manufacturer. Shell structure construction including materials and labor shall be by cooling tower manufacturer.

4-Shell structure and cold water basin design shall be by cooling tower manufacturer. Shell structure and cold water basin construction including materials and labor shall be by cooling tower manufacturer.

WARRANTY: Warranty on all components against defective materials and workmanship will be extended for a period of one (1) year following initial operation but not exceeding eighteen (18) months from date of shipment. Components that may fail within warranty period shall be repaired and/or replaced including freight and installation labor.

Thermal testing of cooling tower will be done within one (1) year following structural completion in accordance with Cooling Technology Institute Acceptance Test Code CTI ATC 105. In the event test results indicate deficiency, manufacturer shall make alterations to overcome indicated deficiency and if such alterations are inadequate manufacturer shall refund a percentage of contract price proportional to tower deficiency.



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7401 WEST 129 STREET
OVERLAND PARK, KANSAS 66213
UNITED STATES
913 664 7400
spxcooling@spx.com
spxcooling.com

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