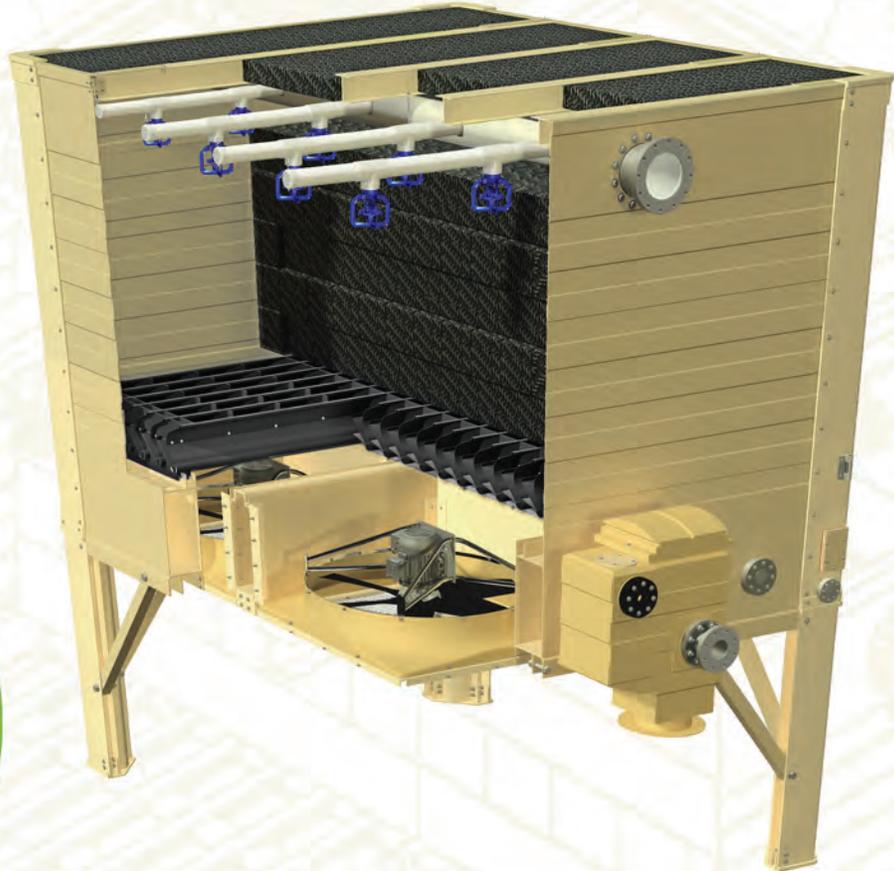




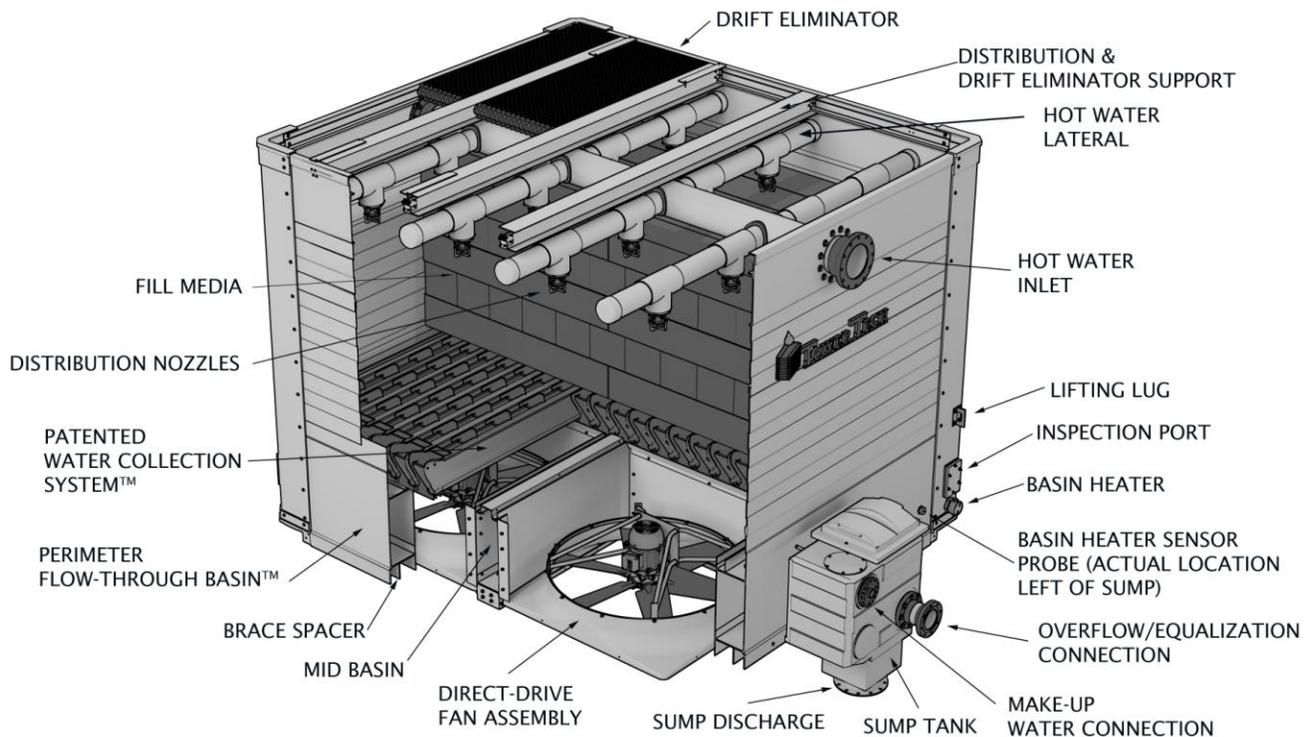
# TTXR SERIES



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## FEATURES:

The TTXR Series Modular Cooling was designed for the purpose of increased performance at design conditions, smaller footprint and reduced fan horsepower. The TTXR model is technically identical to the TTXL model with the same installation and operational benefits providing the lowest life-cycle cost of any cooling tower. The performance enhancements of the TTXR model are achieved by optimization of the water distribution system through dispersing smaller water droplets for increase surface area. The TTXR models are available in the same familiar module sizes of the TTXL series with modular plug and play interconnectivity to achieve any project size cooling requirements. The modular cooling tower design quickly accommodates future expansion of the cooling tower capacity.



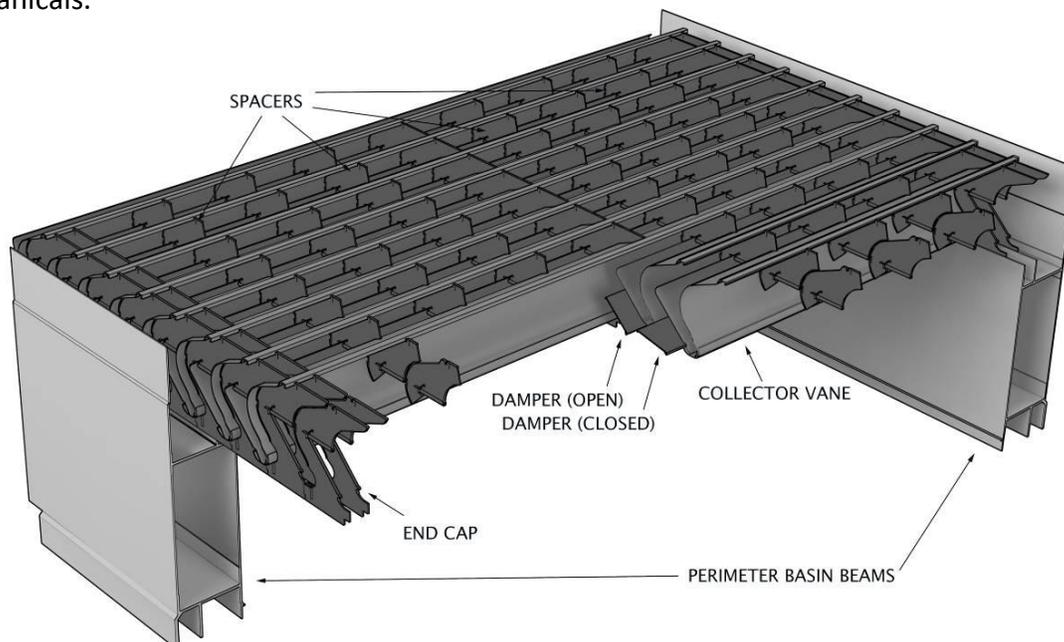
## Unique Design Features Include:

- Fully Enclosed Flow-Thru Basin
- Variable-Flow Rotary Spray Nozzle
- Water Collection System
- Bottom Mounted Fans
- Factory Assembled Modular Design
- Completely Non-Corrosive Materials

The TTXR Series Modular Cooling Tower takes advantage of the benefits achieved with the TTXL design. The factory assembled modular design allows for quick installation in less than 1 hour with a pre-engineered certified substructure that reduces infrastructure cost. The modular towers are the most maintenance friendly cooling tower in the world. All routine maintenance can be safely performed from ground level. The Tower Tech series modular towers offer the lowest drift rate; combined with the flow-through basin and enclosed tower design, water usage and chemical treatment cost are significantly reduced. Tower Tech modular towers provide the longest life span of any factory assembled cooling tower with an industry best 15 year limited warranty. Combine all of these advantages with the energy savings achieved by Tower Tech's design and you have the best cooling tower available today.

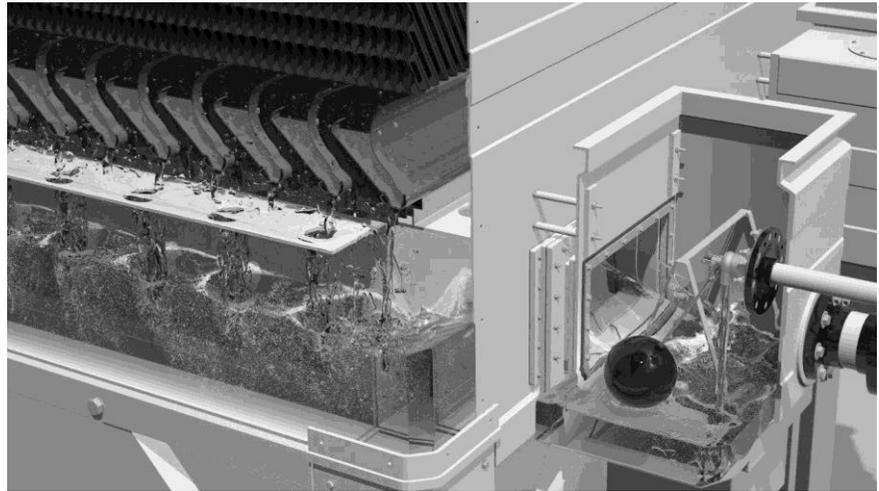
## Water Collection System™

TTXR's patented Water Collection System serves as an efficient collection chamber and conduit for channeling water flow into the tower's Flow-Thru Basin™. Its unique shape aerodynamically moves inlet air into the fill media while effectively providing a leak free barrier protecting tower mechanicals.



## Flow-Thru Basin™

Unlike the low velocity cold-water settling basins common to conventional cooling tower designs, the TTXR tower incorporates a patented perimeter box beam which uniquely serves as both the cold water reservoir and provides the base structural component of the module. High water velocities in the basin beams continually scrub the walls and floor of the basin



to eliminate the build-up of sediment and potentially bio-hazardous material – a common problem in conventional designs. Four access ports are provided for easy inspection.

## Variable-Flow Rotary Spray Nozzle™

The TTXR Series towers contain Spin-Free™ spray nozzles that delivers even fill coverage across a broad range of system flows. The Spin-Free spray nozzle can perform from 25 GPM to 75 GPM. Spin-Free™ spray nozzles provide a 3-1 turn down from the maximum allowed flow rate. The nozzle requires less pressure to operate than a conventional nozzle, is virtually maintenance free, and dramatically improves tower performance. Debris that typically clogs conventional nozzles will pass directly through the spray nozzle. This is accomplished by the 2" (5.08 cm) nozzle throat/inlet coupled with the brisk rotating agitation action provided by the nozzle's turbine.



The nozzle orifice is shaped to provide a square spray pattern, thereby uniformly wetting the entire fill media. This improves tower performance and reduces the likelihood of scaling due to the occurrence of dry regions within the fill. This flexible capability is not present in fixed orifice spray nozzles; they must remain very near design flow to provide the required spray coverage. While conventional towers require a reduction in cell usage when system flow decreases, TTXR technology permits this reduced flow to be evenly distributed over all available fill area. This results in maximizing cooling capacity and energy efficiency under partial load duties.

## Motors / Fans / Shrouds



Tower Tech Modular Cooling Towers shipped after October 2010 are equipped with Baldor brand motors that are direct-drive, totally enclosed air over (TEAO), 8-pole, induction-type, inverter-ready, with Class H (Class F minimum) insulation, and L<sub>10</sub> sealed bearings rated for 100,000-hour life with sealed case. 60 Hz motors have a nominal RPM of 860. 50 Hz motors have a nominal RPM of 715.

All Baldor motors on Tower Tech Cooling Towers shipped after October 2014 also meet IP55 and NEMA MG-1 Parts 30 and 31 requirements. Motor type and power level depends on tower model selected and required design conditions. Standard available motor types:

60Hz 40°C. Available in 3.0 HP, 5.0 HP, or 7.5 HP. Available at 200V, 230V, 460V and 575V.

60Hz 50°C. Available in 3.0 HP, 5.0 HP (2.9kW) or 7.5 HP. Available at 230V, 380V or 460V.

50Hz 40°C. Available in 2.2 kW, 3.7 kW, 4.8 kW or 5.6 kW. Available at 190V-208V, 220V, 380V-415V or 440V.

50Hz 50°C. Available in 2.9 kW or 4.5 kW. Available at 190V-208V and 380V-415V.

Tower Tech fans use high-efficiency, molded thermoplastic blades with a unique airfoil design resulting in uniform airflow, minimal turbulence, and maximized system efficiency. Adjustable-pitch blades along with lightweight, high-strength cast aluminum-silicon alloy hubs simplify field adjustments. Blade tip tolerances are quality control validated in order to ensure maximum system efficiencies. Tower Tech's stainless steel tubular motor mount provides minimum air turbulence, reduced fan noise, and long life for support of mechanical equipment.

The TTXR Series precision molded fan shroud is manufactured using hand-laid fiberglass techniques. It is engineered to provide a smooth air entry (optimized r/d) and approach velocity. The heavy-duty fiberglass shroud is lightweight and will resist corrosion indefinitely.

## Fill & Drift Eliminators

TTXR Series cooling towers are equipped with rigid cross-corrugated, high-efficiency PVC film fill media (10 mil thickness). This fill media is resistant to biological degradation and to most chemicals (inorganic alkalis or acids, as well as organics) common to cooling tower systems. Its high surface area to volume ratio provides optimum heat exchange efficiency. The TTXR tower shell may be equipped with configurations to meet any water quality demand – alternative

thermal capacity ratings are available from your Tower Tech design engineer. In addition to PVC, TTXR Series towers may be optionally equipped with HPVC fill suitable for use in “hot water” applications within a working range of 130°F to 155°F (54.4°C to 60°C). Alternative 15 mil thickness material is also available as a specified option.

TTXR Series cooling towers are equipped with low-pressure sinusoidal-wave shaped PVC drift eliminators (15 mil finished thickness). These high-efficiency cells (drift loss guaranteed not to exceed 0.0004%) force the exiting airstream to make three distinct directional changes causing exiting moisture droplets to impinge and coalesce on its high surface areas. The PVC material used in the construction is virtually impervious to rot, decay, or biological attack. An ultraviolet inhibitor manufactured into the product extends the life expectancy.

## Materials of Construction

The Tower Tech TTXR Series cooling tower structure is factory-assembled and constructed entirely of fiberglass and stainless steel hardware, which together provide a rigid shell and framework for the tower that will resist deterioration and corrosion indefinitely. There are no galvanized or wood components which may leak potentially hazardous chemicals into the environment. Walls are joined together by tongue and groove joints and are sealed by a polyurethane sealant to prevent leaks. Stainless steel fasteners employing coated threads (in wetted areas) are used to bolt the walls together and ensure leak-free operation under pressurized operating conditions.

Component	Material
Fill Media	10 mil PVC (std.), 15 mil PVC (opt.)
Drift Eliminators	10 mil PVC (Thermoformed)
Spin Free Nozzle	HDPE & Stainless Steel
Water Distribution Header & Laterals	PVC
Water Collection System	ABS (Injection Molded & Extruded)
Header Inlet Flange	PVC (Injection Molded)
Hardware	304 Stainless Steel
Corner Enclosure	FRP (pultruded)

Component	Material
Shell/Casing	FRP (pultruded)
Sub-Structure Legs	FRP (Pultruded)
Wind Wall Partitions	ABS (Extruded)
Modular Base Support & Footpad	Nylon (Injection Molded)
Fan Shroud	Hand Lay-Up Fiberglass (Flame Retardant)
Sump Box	PP (Rotationally Molded)
Inspection Ports	Nylon (Injection Molded)
Motor Support	304 Stainless Steel

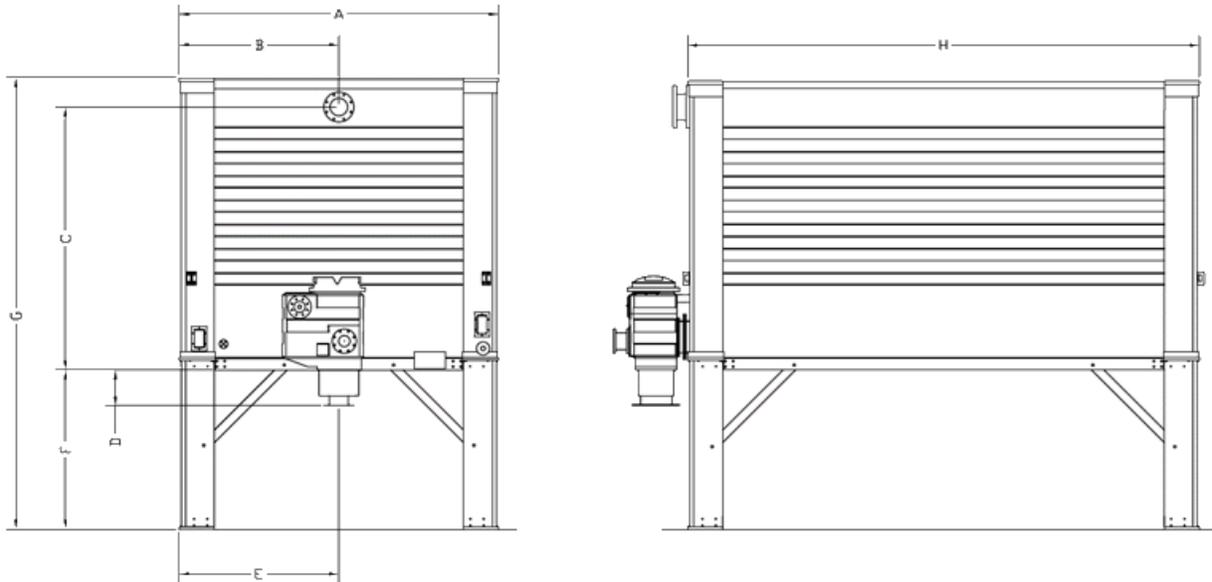
Key: *FRP = Fiberglass Reinforced Plastic Pultrusion*  
*PVC = Poly-Vinyl Chloride (Self-Extinguishing)*  
*ABS = Acrylonitrile, 1,3-Butadiene, and Styrene Copolymer (Flame Retardant)*  
*PP = Polypropylene*

TTXR Model	Weights in Lbs. (kg)		Dimensions per Illustration Below <sup>a</sup>							
	Shipping <sup>b</sup>	Operating	A	B	C	D	E	F	G	H
i219xx	4,360 (1,978)	9,470 (4,305)	7'-00" (213.4)	3'-06" (106.7)	10'-01" (307.3)	1'-04" (40.6)	4'-00" (121.9)	6'-00" (182.9)	17'-00" (518.2)	13'-06" (411.5)
i319xx	6,155 (2,792)	12,991 (5,905)	7'-00" (213.4)	3'-06" (106.7)	10'-01" (307.3)	1'-04" (40.6)	4'-00" (121.9)	6'-00" (182.9)	17'-00" (518.2)	19'-03" (586.7)
i419xx	7,950 (3,606)	16,503 (7,501)	7'-00" (213.4)	3'-06" (106.7)	10'-01" (307.3)	1'-04" (40.6)	4'-00" (121.9)	6'-00" (182.9)	17'-00" (518.2)	25'-00" (762.0)
0419xx	7,800 (3,538)	14,394 (6,543)	12'-00" (365.8)	6'-00" (182.9)	9'-11" (302.3)	1'-04" (40.6)	6'-00" (182.9)	6'-00" (182.9)	17'-00" (518.2)	13'-06" (411.5)
i519xx	9,745 (4,420)	20,024 (9,102)	7'-00" (213.4)	3'-06" (106.7)	10'-01" (307.3)	1'-04" (40.6)	4'-00" (121.9)	6'-00" (182.9)	17'-00" (518.2)	30'-09" (937.3)
i619xx	11,540 (5,235)	23,553 (10,706)	7'-00" (213.4)	3'-06" (106.7)	10'-01" (307.3)	1'-04" (40.6)	4'-00" (121.9)	6'-00" (182.9)	17'-00" (518.2)	36'-06" (1,112.5)
0619xx	10,775 (4,887)	19,587 (8,903)	12'-00" (365.8)	6'-00" (182.9)	9'-11" (302.3)	1'-04" (40.6)	6'-00" (182.9)	6'-00" (182.9)	17'-00" (518.2)	19'-03" (586.7)
0819xx	13,750 (6,237)	24,780 (11,264)	12'-00" (365.8)	6'-00" (182.9)	9'-11" (302.3)	1'-04" (40.6)	6'-00" (182.9)	6'-00" (182.9)	17'-00" (518.2)	25'-00" (762.0)
1019xx	16,855 (7,645)	29,964 (13,620)	12'-00" (365.8)	6'-00" (182.9)	9'-11" (302.3)	1'-04" (40.6)	6'-00" (182.9)	6'-00" (182.9)	17'-00" (518.2)	30'-09" (937.3)
1219xx <sup>c</sup>	19,700 (8,936)	35,156 (15,980)	12'-00" (365.8)	6'-00" (182.9)	9'-11" (302.3)	1'-04" (40.6)	6'-00" (182.9)	6'-00" (182.9)	17'-00" (518.2)	36'-06" (1,112.5)

<sup>a</sup> Dimensions are approximate and should not be used for construction purposes. Dimension F may be 1'-00" (30.5 cm), 4'-00" (121.9 cm), 6'-00" (182.9 cm), 8'-00" (243.8 cm), 10'-00" (304.8 cm), or 12'-00" (365.8 cm) depending on project requirements. 12'-00" (365.8 cm) may be specified with prior approval of Tower Tech engineering manager only. Dimension F on drawing below is 6'-00" (182.9 cm).

<sup>b</sup> Tower weights may vary due to optional equipment, residual water from factory testing, rain, etc. Weights shown are guidelines only and do not include sump, substructure or other accessories not directly attached to the tower module during shipping.

<sup>c</sup> TTXR-1219xx requires two sumps. See TTXR-1219xx drawings on Tower Tech website.



## About Us

Tower Tech provides innovative solutions for all your cooling tower needs. As the industry's most notable innovator, Tower Tech continues to deliver the latest in cooling tower design across numerous industrial markets and around the globe. From utility and industrial process applications to commercial comfort cooling needs, there is a modular tower configuration to meet any thermal demand. Tower Tech continues to break boundaries and improve on what others accept as "best". Tower Tech's three key tower design innovations ensure that your cooling project will be well positioned to service important demands: energy efficiency, water conservation, maintenance friendly operation, and workplace and environmental safety.

## PACE (Performance And Competitive Evaluation)

*PACE* is proprietary software that is designed to change the thinking and behavior of the cooling tower market. Tower Tech believes *PACE* has the potential to change the way cooling towers are sold, bought, and specified everywhere. *PACE* is the only competitive analysis software offered by a cooling tower manufacturer. Use *PACE* for your next cooling tower project and understand why.

*PACE* generates a report document called a Performance and Competitive Evaluation. The Performance and Competitive Evaluation compares the performance and operating costs of a given Tower Tech TTXR Series Modular Cooling Tower with the performance and operating costs of a given opposition cooling tower. Results include a report on tower performance and the cost of fan energy, pump energy, water, and chemicals consumed by the cooling tower and the rest of the chiller loop. Addressing these challenges continues to be the driving force behind the growing popularity of the Tower Tech design.

Most cooling towers buyers focus on the initial cost to purchase the equipment even though it amounts to less than 20% of the full life-cycle cost of owning and operating the equipment. The evaluation of the full life-cycle cost analysis of the cooling tower is not always the highest priority. The results of *PACE* can show that combining a competitive first costs with lower operating costs plus lower maintenance costs will provide payback within a few years. Over the full expected 30 year expected lifespan of a Tower Tech cooling tower, the potential savings will more than pay for the initial cost of the cooling tower several times. For buildings with comfort cooling systems, almost a full 1/3 of the utility bills are a result of air conditioning requirements. In fact, when looking at the life-cycle cost of owning and operating a water-cooled system more than half the cost is the result of energy cost with the remaining cost attributed to maintenance, water usage and chemical treatment.

## Accessories

Tower Tech offers a full range of accessories and after market equipment to compliment your cooling tower project. Tower Tech can provide accessories to lower installation cost and controls to optimize the operational efficiency of your system.

- Certified Substructure for wind loads up to 200mph and OSHPD pre-approved
- Control Panel and VFD packages with gateway communication options for BMS integration
- Basin Heater packages
- Water Level Control with standard mechanical float level or option electronic level control
- Motor Pre-Wiring to junction box, motor protection panel or disconnects

## After-Market Service

Tower Tech offers more than just a superior product. Tower Tech provides expert solutions that extend beyond the initial purchase. Our Customer for Life commitment extends across all services provided by Tower Tech including customer service. Our factory-certified service team can assist you with the maintenance of your tower. Our Customer Service Hot Line gives customers a personal link to highly experienced Service Representatives who can help you create a preventive maintenance plan for inspections and service plus provide immediate needed. Tower Tech maintains a well-stocked and full-staffed Customer Service department capable of providing industry leading service, repair, commissioning and troubleshooting wherever you are located. Our Preventative Maintenance program assures peak tower performance through the lifespan of your investment.

## Temporary Cooling Tower Solutions

Imagine the impact a cooling water loss would have on your system. Oftentimes production is limited as the result of cooling capacity. Required maintenance on cooling towers is delayed due to lack of extra capacity or redundant cooling. Each day brings new regulations limiting your cooling water system. When every minute and degree of cold water matters, you can always count on Tower Tech. Tower Tech Rentals can increase performance while reducing risk. Even when needs are temporary our Experts provide sustaining solutions to maximize results. Tower Tech pioneered the temporary cooling tower industry in the 1980s and still leads the industry in design innovations. Most people never consider temporary cooling tower solutions because they didn't realize the options that are available as a result of the Tower Tech design.

Our vision is to be the most customer-driven cooling tower company in the world -- the standard by which all other cooling tower companies are measured.

We are committed to preserving and protecting the environment by leading our industry in water and energy conservation and environmental responsibility.



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