

# TEMPORARY COOLING TOWER SOLUTIONS



*How dependent is your facility  
on its cooling tower? If emergency  
repairs or a natural disaster  
shuts down your cooling tower  
today, do you have a plan  
to replace its cooling capacity?*



**TOWER TECH**

# Temporary Cooling Towers In Today's Business Environment

Whether you're a utility that's generating electricity, an industrial plant using cooling towers for manufacturing or a process, a hospital providing critical cooling to patients and surgical suites, or a commercial business providing comfort cooling for your tenants, the continued operation of your cooling towers is vital to your business.



## Applications For Temporary Cooling

### Retrofit Or Replacement Of An Existing Tower

Tower Tech temporary cooling towers allow you to separate your facility or process from your

primary cooling tower while continuing to provide full undisturbed access to your existing tower in times of retrofit, renovation or replacement.

### Emergencies

Whether a natural disaster or equipment failure takes your cooling tower down unexpectedly, a temporary cooling tower can get you back in business with minimal downtime.

### Planned Maintenance On An Existing Cooling Tower

Tower Tech temporary cooling towers are an excellent way to replace cooling capacity during planned equipment maintenance. We reduce the pressure to get your primary tower back on line, allowing maintenance to be done right the first time, without costly overtime.

### Supplemental Cooling

Tower Tech temporary cooling towers are used to increase your cooling output when the cooling demand of your facility or process exceeds your existing cooling tower's capacity (because of record high temperatures or changes in your cooling requirements). You save on capital expenditures by eliminating the need to purchase additional permanent cooling towers that might be used only part of the year.



### Reduction of Thermal Discharge Pollution

Using a Tower Tech temporary cooling tower reduces or even eliminates thermal pollution, thereby allowing your plant to operate at a higher capacity on the hottest days of the year while complying with EPA standards.

### Standby Cooling

Standby cooling for critical processes is a key use for temporary cooling towers. Tower Tech temporary cooling towers are used to back up critical manufacturing and chemical processes, or when a hospital's required system redundancy has been reduced. The temporary cooling tower may not be in use, but it is there when it is required.

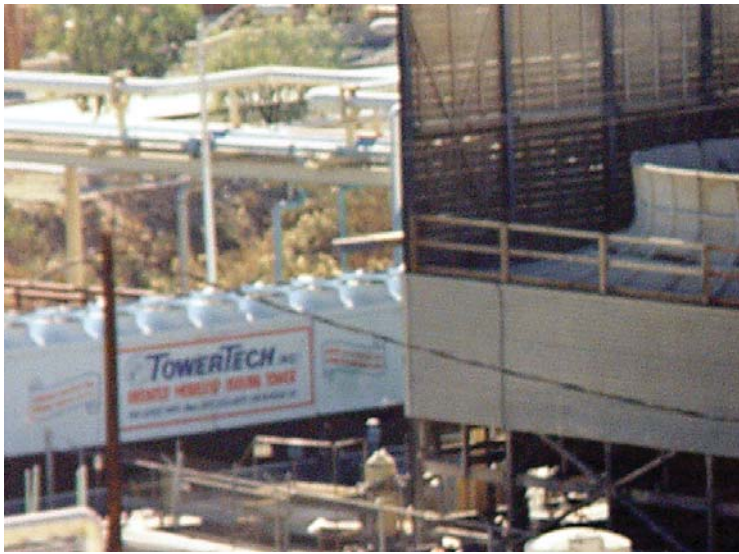


Modular Cooling Tower with bottom mounted mechanical equipment

### Cooling System Testing & Proving

Tower Tech temporary cooling towers are also used to model future processes or prototypes, allowing the cooling requirements to be determined prior to spending capital dollars on a new cooling tower--it may be possible to rent the exact equipment you intend to purchase for added assurance.





*An early 'Mobilized Cooling Tower' at work*

## 1980s – Modern Day Pioneer: Tower Tech Invents An Industry

Tower Tech's proven industry leadership begins with establishing the standard for reliable thermal performance with the lowest life-cycle cost...

Tower Tech recognized that many cooling towers are thermally challenged and built the first-ever cooling tower exclusively designed for augmenting an existing cooling tower. The patented trailer-mounted invention, HydroTower™, contained innovative water-driven fans to conserve energy. HydroTower met with immediate success and proved the temporary cooling tower concept, and a new industry was born. The next temporary cooling tower design, the Mobilized Cooling Tower™, (also trailer-mounted) used motor-driven fans in an attempt to boost tower performance.

These early designs propelled Tower Tech to the forefront of the cooling tower industry. As project demands increased, Tower Tech was compelled to revisit initial design challenges associated with both conventional cooling towers and trailer-mounted temporary units that could reduce tower performance by as much as thirty percent, an unacceptable margin of error in the thermal augmentation business. It was time for Tower Tech to innovate once again.

## 1990s – The Evolution of Efficiency

The accidental flooding of the Chicago Loop on April 13, 1992 closed thousands of businesses, including the Chicago Board of Trade (CBOT), throwing financial markets into turmoil. Tower Tech flew into action and had the CBOT back in business in just three days.

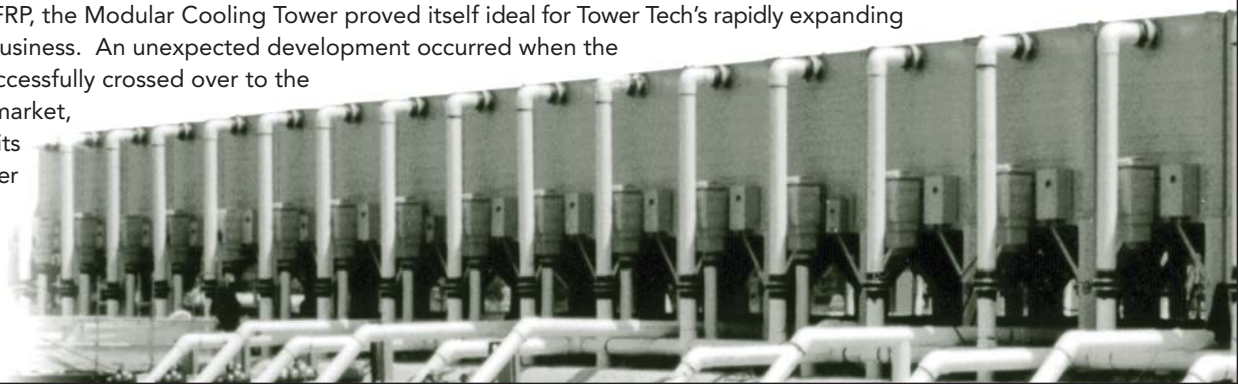
Early in the year Tower Tech's research and development team itemized every problem inherent to cooling towers in general, as well as the company's own fleet of wheeled units. They determined that side air intake louvers had to be eliminated in order to improve thermal performance and make it possible for large numbers of towers to be co-located without seriously impairing thermal performance. A new breed of water distribution nozzle had to be invented so a cooling tower could operate clog-free with even the worst water quality. Also, a new tower design would have to provide for easier and safer access to the tower's mechanical equipment, and offer greater redundancy and reliability. Tower construction would have to be sturdy enough to withstand several relocations each year. Faster connections were needed to minimize field labor. Finally, a 'new generation' cooling tower should have an elevated water basin to allow cooled water to gravity feed over long distances without the need for additional pumping.



*An early Modular Cooling Tower constructed of hand-laid-up fiberglass*

The solution to these maintenance, performance, and operational demands was the first patented Modular Cooling Tower™. The revolutionary Flow-Thru Basin™ was fully enclosed within the tower's walls. Its high velocity flow (~5-7 fps) eliminated the need for periodic cleaning of the reservoir. The enclosed basin prevented circulating water from exposure to sunlight, eliminating algal growth and the need for algicide. Tower Tech's newly patented self-cleaning Rotary Spray Nozzle™ operated virtually maintenance-free in the most demanding water quality conditions. To afford better access to the mechanicals, the Modular Cooling Tower had direct-drive fans located in the cool dry intake air stream, beneath the module 'canopy'. Stairways, ladders, and handrails were eliminated from the tower design; it was unnecessary to enter the tower box to perform maintenance, and the new design had no doors or hatches.

Built from hand-laid up FRP, the Modular Cooling Tower proved itself ideal for Tower Tech's rapidly expanding temporary cooling tower business. An unexpected development occurred when the Modular Cooling Tower successfully crossed over to the permanent cooling tower market, and the number of sold units quickly surpassed the number







of temporary units. To enhance durability, reduce weight, improve longevity and aesthetics, and to increase protection against corrosion and fiber blooming caused by ultra violet light, wall construction was changed to heavy-duty continuously pultruded reinforced fiberglass containing premium isophalic resin in 1994. This change allowed Tower Tech to begin mass-producing Modular Cooling Towers.

In 1998 Tower Tech's inventory of temporary cooling tower capacity grew to more than 200,000 GPM. The company's temporary cooling tower business was catapulted forward when 80 Modular Cooling Towers were installed at Commonwealth Edison's Dresden Nuclear Generating Station near Chicago. Faced with regulatory pressure to de-rate power output in order to reduce the temperature of water discharged into a nearby river, ComEd asked Tower Tech to supply 160,000 GPM of 'once-through' cooling during the Summer of El Niño. The cooling supplied by this temporary cooling installation enabled ComEd to maximize power output and helped

Chicago avert brownouts and a possible blackout. Tower Tech's successful completion of this high-profile project proved the viability of large-scale temporary cooling tower installations using Modular Cooling Towers.

## Today – Defining Quality

Our customer partners enjoy a culture of quality shaping an industry. The TTXL Modular Cooling Tower received CTI certification for thermal performance in the summer of 2008, and is also certified for both seismic and wind load bearing. Its modular design is ideally suited to any temporary application. Tower Tech is the proud manufacturer of the world's largest fleet of temporary cooling towers. We have sold more than \$150 million of permanent towers worldwide. Our team of cooling tower experts is committed to the success of each customer's project and gives no-nonsense advice and sound answers to any cooling tower need.



*Modular Cooling Towers reducing thermal pollution for ComEd*

## Tomorrow – Responsible Cooling for Industry Leaders

Tower Tech produces the only sustainable cooling tower technology in the world and is a long-standing member of the Green Building Council. As tomorrow's energy needs grow, so does Tower Tech's design responsibility. We are committed to preserving and protecting the environment by leading our industry in water and energy conservation and environmental responsibility.





# Why Use Tower Tech Temporary Cooling Towers?

## Leadership and Innovation

Tower Tech pioneered the temporary cooling tower industry in the 1980s and leads the industry in design innovations. In addition to all of the benefits and features that make our towers ideal for temporary applications, they are known for their excellent mechanical redundancy and reliability, improved operational flexibility, and reduced life-cycle cost.

## Flexibility

We supply temporary cooling towers to handle any project from 6,000 to 600,000 GPM. We also supply temporary piping, pumps, control panels, and electrical distribution equipment.



*Modular Cooling Towers inventoried for immediate shipment*

## Reliable, Modern Equipment

Reliability is the ability of a cooling tower to cool water when needed. Our fleet of temporary equipment is modern and reliable. We continuously upgrade our equipment to assure our customer the highest possible uptime when we're on the job. Our Modular Cooling Towers are designed to satisfy the rigors of frequent relocation.

## Cooling Contingency Planning

How much would the loss of a cooling tower cost your business? Contingency plans are common for other aspects of everyday operations, such as power outages. If your cooling tower's capacity is an important element in your facility's operation, then shouldn't you have a contingency plan in place for a possible cooling tower outage?

Tower Tech has developed a comprehensive program that helps facility owners and managers institute a Cooling Tower Contingency Plan. You and your Tower Tech sales representative will evaluate your facility's cooling towers to identify and to plan for potential sources of failure. Your Cooling Tower Contingency Plan will provide solutions to various failure scenarios with the goal to minimize downtime and reduce risk of financial loss to your facility.



## Our Vision

*To be the most customer-driven cooling tower company in the world – the standard by which all other cooling tower companies are measured.*

## Our Invitation

*Tower Tech's Modular Cooling Towers are available for sale, rent, rent-to-own, or long-term lease. Hundreds of satisfied customers attest to their high efficiency, mechanical redundancy, great reliability, superior operational flexibility, and excellent thermal performance. (The performance of our towers has been certified by the Cooling Technology Institute since 1993.)*

*Tower Tech has more experience and expertise in the business of supplying temporary cooling towers than any other company. As the world's leading manufacturer of temporary cooling towers, we are uniquely qualified to address your temporary cooling tower requirements.*

*Please visit our website or call us today for a free competitive quote or to obtain a customized solution for your facility.*

## CTI Thermal Performance Certification

The thermal performance of Tower Tech Modular Cooling Towers is certified by the Cooling Technology Institute. This certification is your assurance that the proposed capacities accurately reflect actual cooling tower performance. CTI certification is limited to thermal operating conditions with entering wet bulbs between 55°F and 90°F, a maximum process fluid temperature of 125°F, a cooling range of 4°F or greater, and a cooling approach to 5°F or greater.

## Seismic & Wind Load Certification

The design loads of TTXL Series Modular Cooling Towers are in accordance with the IBC (International Building Code). Wind, seismic and gravity loadings are applied. The illustrated tower shell and substructure is designed to withstand a wind pressure of 41 psf (ASCE7-05 150 mph wind, exposure C) and a seismic force factor:  $C_s = .4 \times$  weight, category D ( $S_s = 200$ ,  $S_1 = 150$ , soil class E). The highest stresses found in the analysis of even our largest offering on eight-foot substructure are less 60% of the allowable stress. This is a very conservative design under extreme loading conditions.

**Tower Tech Is The  
Innovation Leader  
In Temporary  
Cooling Tower  
Solutions.**

