



Green Cooling Towers



What is a Green Cooling Tower?

A green cooling tower is one that considers and implements the following and its impact on the environment

- Materials of construction
- Carbon footprint
- Maintenance
- Control of Legionella and Bacteria
- Water Use
- Sustainability
- Energy

Fibreflow Cooling Towers TM is leading the way in providing a true "GREEN COOLING TOWER".

Take the following into account to prove this statement.

The replacement of oil based resins with vegetable based bioresins

Brentwood PVC material

Brentwood's target is to move our products toward a "Green" environment as much as possible. Here are some that are already in placed.

Accushield is designed for Micro bio control See link <http://www.brentwoodindustries.com/cool/accushield.html>
(<http://www.brentwoodindustries.com/cool/accushield.html>)

We work hard so that our products do not bio degrade. Bio degradable products contribute CO2. PVC has low carbon footprint compare to others. See pdf link.

Brentwood has been recognized as a Plastic Recycler. We calendar pre-consumer industrial PVC and blended to meet CTI standard 136.

Most of our Cooling tower products are used in Wet Cooling systems. Please see attached our article on Sea water cooling which can have a very positive effect on sweet water consumption.

High performance fills such as OF21MA significantly reduce energy consumption for they require less pumping to do the same amount of cooling.

The Brentwood MA (mechanical assembly) system which does not use VOCs for fill pack assembly is a very "Green, environmentally positive technology" See link <http://www.brentwoodindustries.com/cool/ma.html>
(<http://www.brentwoodindustries.com/cool/ma.html>)

The PVC fill pack and louvers are designed for low pressure loss, which reduces the drag effect on the fan thus reducing running current

Minimal pressure drop so minimal fan overload to achieve correct airflow again reducing running time and running current.

Nozzles

Low pressure drop nozzles which reduces pumping head in turn reduces load and the running current of the pumps

Wide spray nozzles achieve a better flow pattern onto the fill thus achieving better thermal efficiency for the fill pack, which reduces the running time of the fans.

Fans

Fibreflow Cooling Towers TM are the only fiberglass hollow fan blade manufacturer in Australia. All other fans of this design are imported. Other manufacturers source the Fibreflow Cooling Towers TM fan to use on their cooling towers.

Fibreflow Cooling Towers TM fans incorporate a wide blade design produces

Less turbulence

Greater tip velocity

Less wear on the fan

All these factors reduce the load on the motors and drive and reduce running time, saving energy

The fans are light weight compared to aluminum, which reduces load on gears, drives etc.

Fan stack

Internal transition is designed for smooth airflow greater venture effect which allows the air to flow freely

This reduces the resistance on the airflow which reduces the running correct on the fan saving energy.

Links

Use these links for reference

Click here to download Foot Print Graph (http://ctms.net.au/assets/foot_print_graph.pdf)

Click here to download Seawater Cooling (http://ctms.net.au/assets/sea_water_cooling.pdf)

PVC vs Polypropylene Carbon Footprint (http://ctms.net.au/assets/pvc_vs_polypropylene.pdf)

When considering the "greenness" of your cooling tower selection, you should investigate several green facets that will impact the environment and your bottom line.

With the examination of every product as to its "greenness," it has finally come to the ubiquitous cooling tower sitting atop just about every manufacturing and process facility - metal processing, chemical, pulp & paper processing, injection molding and power generation, to name a few.

Greenness, of course, has several facets. And while the more advanced cooling towers are made of recyclable HDPE plastic cooling towers that will last for many decades, recyclability becomes a moot point. A more realistic examination of cooling tower greenness will deliberate improved sustainability, greater energy efficiency, added water conservation and smaller carbon footprint - plus some cost ramifications involved in achieving such green goals.

While conventional cooling towers, often constructed with basins lined with sheet metal cladding, are environmentally challenging and maintenance intensive - hence costly to operate - the alternative of using cooling towers with molded seamless plastic is immediately beneficial to both the environment and bottom line.

While the traditional, galvanized metal-clad cooling towers have done a good job at cooling process water, they have also been highly prone to corrosion and, therefore, frequent cleaning, re-coating and replacement. Additionally, metal cooling towers require extra caution when using water treatment chemicals to maintain continuous proper water chemistry to prevent accelerated loss of galvanizing leading to costly downtime and early replacement.

With the increasing concerns about meeting green standards and also improving ROI on capital equipment expenditures, here are some criteria you should consider when evaluating your next cooling tower purchase:

Sustainability

In the broad sense, sustainability refers to the "carrying" capacity of the ecosystem in terms of resource consumption, including the ability - economically and environmentally - to meet present demands and yet still provide for future generations. With that definition in mind, the ultimate in cooling tower sustainability is a model that can outlast the building it services.

Traditional metal towers, which last only a few years in many applications, confront owners with environmental and economic issues including increased chemical use, higher maintenance costs, replacement costs and disposal requirements.

Conversely, unparalleled lifespan has been achieved by FRP cooling tower models that feature a non-corroding material design will not rust, corrode or require the downtime for service that traditional metal towers require.

With improved thermal performance, the counterflow designs have less of an environmental impact than crossflow designs. Counterflow designs have much less water splash than crossflow models, especially during high winds or when fans are off at low-load or low wet-bulb conditions.

Cooling towers of this design also keep water totally enclosed and free from sunlight, thereby lessening the occasion for biological growth - which requires less harsh water treatment chemicals.

Counterflow models also can incorporate the industry's best drift eliminators at .001% or even Brentwood optional .0005% of the recirculation flow.

Energy efficiency

While the cost of electric power to drive cooling tower fans may seem incidental to process costs, they can also add up. Some manufacturers use direct-drive motors to power their cooling fans with no pulleys, bearings and belts, direct-drive motors are more efficient, and provide substantial savings in energy costs while also delivering more horsepower. When modular towers are incorporated into a multi-cell configuration, direct-drive tower motors or complete cells can be shut off independent of others when supported processes are not operating or heat load is low.

The efficiency of Fibreflow Cooling Towers TM high performance design, which runs on less horsepower than comparable standard models, is reflected in the savings of electricity usage. For example, a three-cell CT model, using six 4 kw premium efficiency motors running 8,760 hours annually costs an average of \$12,470.00. Competitive models running four 11kw "standard" motors for the same period would cost an annual average of \$22,600.00 - almost twice as much. Hence, a much lower carbon footprint.

High Capacities: In the past, plastic cooling towers were too small for many industrial processes, making galvanized metal cooling towers virtually a "given" for most applications above 250 tons. Processors requiring high-capacity cooling were forced to build custom-designed towers on site, often at a high cost in labor and materials.

Today that situation has changed dramatically. Factory-assembled FRP towers to suit almost any size requirements up to 2000 kw in a single, modularized unit.

Improving performance, saving water, and reducing or eliminating use of chemicals: In commercial and institutional buildings, cooling systems are not exactly top of mind when it comes to conservation and the use of "green" technologies. Yet the potential for significant cost and water savings and reduced environmental impact exists. With more stringent effluent and chemical-handling regulations, increasing drought conditions, and fluctuating chemical prices, Facility owners increasingly are looking to cooling towers more specifically, the treatment of cooling water to meet the objectives of sustainable cooling: more efficient equipment performance, saving makeup and discharged water, and reducing or eliminating the use of chemicals.

TRADITIONAL METHODS

Are the chemicals potentially hazardous to workers?

What is the actual cost of use?

Are there more effective alternatives?

How volatile are prices?

Discharge regulations

What discharge limits are imposed by the local publicly owned treatment works ?

Is the facility in violation?

Environmental impact

Are harmful chemicals being discharged into the environment?

Operational efficiency

Poor water treatment can adversely affect tower efficiency (e.g., scale formation, biofouling) and impact heat transfer.

Water-reuse options

Can discharge water be used for other purposes (e.g., landscape irrigation, equipment washing, dust control) on site?

Worker safety

Is the current treatment technology a health or safety hazard? Does it require moving heavy supplies?

Water use

Exactly how much water does the system use on a yearly basis?

The type and amount of chemicals used

TECHNICAL INFORMATION LINKS

- Green Star Conditional requirements (http://ctms.net.au/assets/green_star_conditional_req.pdf)
- Green Star Ecological Value of Site (http://ctms.net.au/assets/green_star_ecological_value.pdf)
- Green Star Cooling Towers (http://ctms.net.au/assets/green_star_cooling_towers.pdf)
- Green Star approach to Emissions (http://ctms.net.au/assets/green_star_emissions.pdf)
- Green Star Guidelines (http://ctms.net.au/assets/green_star_guidelines.pdf)
- Green Star En8 Legionella (http://ctms.net.au/assets/green_star_en8.pdf)

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