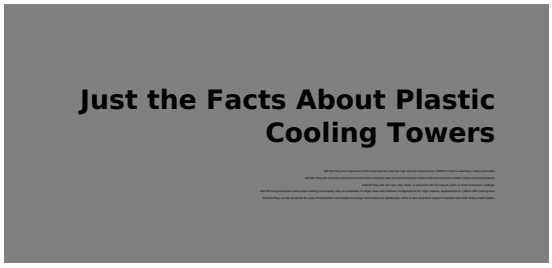
Manufacturer ofBleachKeeps CoolWith EngineeredPlastic Towers

Relying on metal cooling towers can be catastrophically expensive if a failed or leaking tower shuts down a process. That's why many industries are converting to engineered plastic cooling towers



It's a tough world out there, especially in production areas that involve harsh chemicals or corrosive environmental elements such as coastal air. It's no small wonder that galvanized metal cooling towers are often problematic, requiring frequent cleaning, patching, and early retirement.

When it comes to handling the heat generated in the chemical and other process industries, taking a cooling tower offline due to pH problems, scale, leakage, or unplanned cleaning can be disastrous, delaying production and shipments for days or even weeks. Plus, maintenance costs for those often unnoticed-yet-critical towers, such as water treatment, filtration equipment, and manual cleaning, can certainly add up. Water deposits that coat or foul heat exchangers can cause far more expensive problems including lowering process efficiencies or damaging production equipment.

The process interruptions and expensive maintenance of traditional metal clad cooling towers have increasingly led manufacturers and process industries down another path &#151 the engineered plastic cooling tower. Engineered with tough plastics such as high-density polyethylene (HDPE) to form a seamless, heavy-wall shell, today's more advanced plastic cooling towers are virtually impervious to the harsh chemical, pH, and environmental factors that are the bane of their metal-clad counterparts.

Yet, although engineered plastic cooling towers have been around for several years, their toughness and other performance attributes have gone unnoticed by many plant managers. That may be, at least in part, to the fact that they perform so well that their owners take them for granted. However, for chemical producer Allied Universal Corp. in Miami, that is not the case.

"If a cooling tower goes down, we lose production, and it can adversely affect our delivery schedules," says Jim Palmer, Allied Universal president. "We have a very corrosive and tough environment to have any type of equipment. And even though

the cooling towers are not in direct contact with our products, they are exposed to corrositivity in the air."

Allied Universal is the leading U.S. manufacturer of sodium hypochlorite (bleach), liquid sodium bisulfite, sulfuric acid, hydrochloric acid, and swimming pool acid. With plants in Florida, Georgia, Mississippi, Arkansas, and Arizona, the firm has been using engineered plastic cooling towers for approximately 15 years with highly reliable results.

For the most part, these have been the Paragon Series of factory-assembled cooling towers manufactured by Delta Cooling Towers Inc. in Rockaway, NJ, a leader in packaged cooling systems. The Paragon Series is a modular, induced draft design that includes a corrosion-proof HDPE shell and many other design features that enable the cooling towers to survive well in Allied Universal's demanding manufacturing environments.

"We couldn't make our products if we didn't have consistent cooling towers," Palmer explains. "Because these chemicals are exothermic, they give off lots of heat. So, we run the product through one side of the heat exchanger and flow cool water through the other side. The heat is taken out of the cooling water by the cooling tower and given back to the environment before it recirculates. So, a continuous flow of cool water is essential."

Palmer adds that Allied Universal chose Delta because the company is one of the original developers of the engineered plastic cooling tower. "I'll give them an 'A' for quality and service. Their cooling towers are highly efficient and require much less service than the metal ones. In fact, there are some maintenance intervals that never happen because the plastic is impervious."

Palmer mentions that Allied Universal has some metal cooling towers that have been around for several years. In some cases, they have been welded so many times that the only repair possible is fiberglass patching. "Fiberglass will last for a while," he says, "but after that, it's time to get out your checkbook."

The first plastic cooling towers became available in limited smaller sizes 35 years ago. The success of those early models gave rise to second, third, and now a fourth generation of engineered plastic cooling towers. These lightweight and seamless towers will not rust, chip, flake, or peel and will not require paint or other protective coatings. Using advanced resins and molding techniques, they are available in larger sizes and modular configurations for high-capacity applications of 1,500-2,000 cooling tons. Designs such as the Paragon Series can be clustered for ease of installation and footprint savings. Since they are lightweight, there is less structural support required than with many metal towers.

While electric power costs to drive cooling tower fans may seem incidental to process costs, they also add up. Some manufacturers, such as Delta, use direct-drive motors to power cooling fans. With no pulleys, bearings, and belts, direct-drive

motors are more efficient and provide substantial savings in energy costs while delivering more horsepower. The other benefit of direct-drive motors is they have fewer moving parts and maintenance items such as belts. When modular towers are incorporated into a cluster configuration, direct-drive tower motors can be shut off independent of others when supported processes are not operating.

Typically, molded polyethylene plastic water towers incur no problems from water treatments that may cause corrosion of metal parts or even a fungal attack on the lumber on wooden cooling tower structures. Also, with plastic water towers, there is no risk of water treatments causing the removal of zinc from galvanized metal, which in some cases could result in the zinc migrating into the process &#151 a potentially catastrophic problem.

Additional information about engineered plastic cooling towers is available from Delta Cooling Towers Inc., 41 Pine St., Rockaway, NJ 07866, by calling 800-289-3358 or visiting www.deltacooling.com.

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