

Indiana State University Graduates to Advanced Plastic

Cooling Towers

BY ED SULLIVAN

Perhaps more than many other industries, today's universities and colleges are beset by dramatically rising costs on every front. One of the areas where overhead can be contained or reduced is in the operation of the chilled water systems that support air conditioning throughout college campuses, specifically the cooling towers.

Like many institutional, office, and processing facilities, some colleges and universities are upgrading their cooling towers from the outmoded designs constructed with galvanized steel-sheeted shells, to the more advanced models that are based on shells constructed of engineered plastics. These newer designs, particularly those constructed with seamless, HDPE (high-density polyethylene) shells, require much less maintenance, are more energy efficient, and often virtually eliminate costly downtime.

In a recent case, Indiana State University (ISU) began installing the engineered plastic cooling towers at its 190-acre main campus located near the center of Terre Haute in west-central Indiana. ISU residences, academic centers, labs, recreational, and sports facilities are situated in a park-like community that is separate from the rest of the city and maintains an impressive infrastructure of its own.



Several new cooling towers manufactured by Delta Cooling Towers, Inc. have been installed or are planned to support the central and satellite chilled water systems that supply the campus's many academic, student, and research facilities.

“SMARTER” SYSTEMS CHOICES

“About two years ago we were nearing the completion of a renovated building that became the College of Education,” says Mark J. Pupilli, ISU building and facilities manager. “Because the capacity at the central chilled water plant had become nearly exhausted, we decided to install a stand-alone chiller and also allow the building to be connected to the chilled water plant. So, of course, we were going to need a cooling tower. At the suggestion of one of our suppliers, AC Equipment in Indianapolis, we looked at the Delta plastic cooling towers.”

Pupilli explains that the Delta line offered many features that he liked, and the fact that they were engineered plastic meant that many maintenance issues could be avoided. He was also impressed with the selection of available models, the product quality, and a long-term (15 years) warranty on the double-walled HDPE shells.

After considering the applicable designs, Pupilli decided to purchase a 550-ton Delta Premier Series tower for the new College of Education building. This model is an induced draft, counterflow design, and features a low pressure drop, self-propelled PVC water distribution system. It also features a direct drive fan powered by a totally enclosed,

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energy-saving VFD motor. Modular construction allows this tower to be clustered to provide greater cooling tonnage. The cooling tower design is relatively light in weight, impervious to UV rays, and virtually corrosion-proof.

More recently, ISU received funding to build a satellite chilled water plant to provide some redundancy as well as much needed additional capacity in the central chilled water system.

“When we were working on the design of the satellite chilled water plant, we realized that we wanted to utilize Delta cooling towers at that location as well,” says Pupilli. “And so I have two four-cell TM Series towers with a cooling capacity of 2,500 tons at the new satellite chilled water plant. Each of the towers is connected to a VFD. The facility was completed and turned over to me in summer 2011.”


The configuration at the satellite plant is two banks of four TM towers, Pupilli says, but that are operated as eight separate towers. “We also have the space to expand the facility in the future,” he adds. “For example, we could put in another 2,500-ton chiller in there at a later date, and also add two more

banks of eight cooling towers.”

The TM Series is a selection of induced draft, counter flow design cooling towers that are available in single unit capacities from 250 to 2,000 cooling tons.

“The towers that have been installed are working painlessly,” says Pupilli. “We did have a minor fan motor problem, but the treatment we got from Delta has left a positive impression because they took care of the matter so quickly. We have not had any problems with the cooling towers and look forward to many years of trouble-free operation.”

Pupilli says the primary maintenance issue with the metal cooling towers was the need to do a lot of coatings and repairs. The main reason for going with the newer, engineered plastic technology was the expectation that those problems would go away.

In addition to the coatings problems Pupilli describes, many of the galvanized metal-clad cooling towers require even more expensive repair as well as frequent replacement. Because of the corrosive nature of water, the chemicals used to treat it, and locations where they are found metal towers will require extensive maintenance and costly repair or replacement bills. 

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