

## Delta Cooling Towers Tackle Middle Eastern Climates

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The advantages of using HDPE-based (high-density polyethylene) "plastic" cooling towers have been well received throughout commercial and industrial sectors of the U.S. for a number of years. Now the company responsible for developing this cost-and-downtime saving technology has ramped up efforts to market it internationally, notably with installations at two impressive projects in the Middle East.

In recent months, HDPE cooling towers manufactured in the U.S. by [Delta Cooling Towers](#), Rockaway, NJ, have been integrated into an advanced, solar-powered cooling project underway in Abu Dhabi, United Arab Emirates (UAE) as well as a water treatment project in Jenadriyah, the heritage and cultural city located in the Riyadh province of Saudi Arabia.

### Cooling With the Desert Sun

The Abu Dhabi project is the a pilot program designed to bring rooftop air conditioning to the city's Transmission & Despatch Company (TRANSCO) via concentrated solar panels that will provide clean renewable solar energy to the building's air-conditioning system during peak demand hours.



"Essentially, the project is using solar power to produce cold water that is used to provide air conditioning," explains Mohammad Alkarmi, CEO of Limitless International Corp., Raleigh, NC, the exporting organization that sold the advanced plastic cooling towers to the project's management. Limitless International is the authorized agent for Delta Cooling Towers in the Middle East

"We believe that this unique cooling tower technology is the ideal solution for cooling applications in the Middle Eastern countries, where very high temperatures accompanied by high humidity - especially in the gulf region - would prevent most metal cooling towers from lasting very long because they would rust and corrode easily."

Alkarmi says.

He adds that the solar-powered air conditioning project is a striking demonstration of how it is possible to capture the sun's energy and create cooling power in desert heat. The project Abu Dhabi National Energy Company PJSC (TAQA) and Chromasun Inc., a San Jose, CA-based solar panel manufacturer, installed 27 Chromasun Micro-Concentrator (MCT) solar panels on the TRANSCO's rooftop in Abu Dhabi. TRANSCO is a subsidiary of Abu Dhabi Water & Electricity Authority (ADWEA) and is responsible for developing, operating and maintaining the high voltage power transmission and bulk water transmission networks within the Emirate of Abu Dhabi.

The MCT-based system, which is designed specifically for rooftop application and operation in high temperatures and dusty conditions, provide hot water to the absorption chillers, and from the absorption chiller they get cold water to their chilled water system.

“Essentially, they are simply using the hot water that is coming from the solar panels to get cold water from the chiller,” Alkarmi explains.

According to TAQA, the benefits of the system include not only significant energy savings, but also the rooftop solar cooling technology has great potential for peak shaving, which will result in reduced emissions and better grid efficiency.

### **Long-term Reliability**

Alkarmi notes that the cooling towers play a vital role in the cooling system performance, and the continuous reliability of the tower was an important consideration when the Delta HDPE design was chosen.

“The HDPE plastic cooling tower will never rust or corrode, as opposed to either stainless steel or galvanized metal clad models, which will eventually rust and corrode,” Alkarmi says. “The Delta HDPE design does not require any coating or galvanizing or other exterior protection. It simply will never rust or corrode, and will last well over 20 years.”

This long-term performance has been so well tested that the manufacturer recently increased the warranty period from 15 to 20 years, which was unheard of previously in the industry. Some metal-clad cooling towers are guaranteed for only two or three years, after which they require sizable maintenance and or replacement investments.

“The attractive purchase price as well as low maintenance requirements and long-term operating lifespan make the HDPE models highly beneficial for the atmospheric conditions of the Middle East, especially in the UAE, Saudi Arabia and Qatar, where the weather is extremely hot and humid,” Alkarmi adds.

### **Assisting in Water Treatment**

Limitless International also recently supplied a new HDPE cooling tower to a reverse osmosis (RO) water treatment plant in Jenadriyah, Saudi Arabia.

Cooling towers can be an important element in water and wastewater treatment applications because



microorganisms used in the treatment process can be compromised when water temperatures get too warm. Cooling towers are a viable alternative to cooling water in tanks and ponds, which may be unavailable in dry climates.

“This project was an upgrade that called for the replacement of the Delta cooling tower that was originally installed in this plant many years ago,” says Alkarmi. “So, when they decided to upgrade the RO plant recently, they specified a new HDPE cooling tower for the project.”

Alkarmi says that the overall motivation of the customer was the same as with the solar application: long-term reliable performance, reduced maintenance costs, and an economical purchase price.

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