Case Study

Beverage Producer saves upto 70% Water Savings using Adiabatic Dry Coolers

Customer:
Leading Beverage Producer

Location:
Mathura

Industry:
Beverages

Status:
Commissioned

Total Capacity:
780kW Per Single Unit

Application:
Process Cooling

Cooling Water (In/Out):
43°C/33°C

Customer Description

A Leading Beverage Producer, headquartered in Harrison, New York, stands as a global leader in the food and beverage industry. With a presence spanning more than 200 countries and territories worldwide, the customer products are savored by consumers over a billion times daily.

Project Description

Thermax's Adiabatic Dry Coolers are specially designed air-cooled fluid coolers or refrigerant condensers that can employ adiabatic cooling as needed when the outside air temperature becomes too warm for efficient heat removal.

When the air temperature becomes too warm, they switch to adiabatic mode with water evaporated into the inlet air stream to lower its temperature and provide additional cooling. Unlike traditional recirculating cooling towers, adiabatic cooling towers only use water during the hottest part of the day. Adiabatic cooling towers consume less water depending on the operating conditions and thus guarantees water savings upto 70%.

Highlights

Application: Process Cooling

- Adiabatic Cooling Towers are utilized for process cooling and require less water as well as energy for operations.
- Customer was able to achieve effective cooling through the addition of spray water across cooling pads as it operates in wet mode during the daytime
- During the night time, it shifts to dry mode when ambient temperatures are lower, resulting in zero water consumption.
- The customer successfully achieved water savings of up to **70%** with scale-free water along with efficient and sustainable cooling operations.

Capacity: 780kW Per Single unit

Challenge

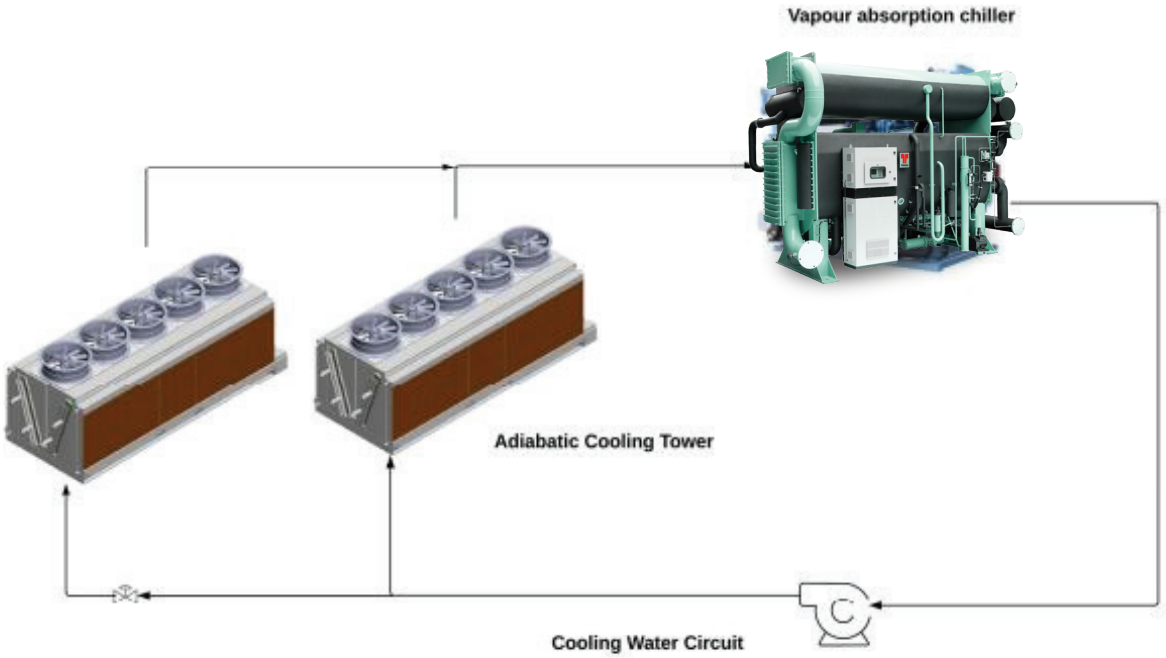
The Client faced a critical challenge in implementing a cooling system for their premises with two ultra-low pressure Vapour Absorption Chillers (900 TR total capacity). The site's makeup water had excessively high Total Dissolved Solids (TDS) of over 10,000 PPM, far above the permissible limit of 600 PPM for copper tube quality. This posed a significant risk to equipment performance and longevity. Finding a solution to manage high TDS water while minimizing consumption was imperative for the customer to ensure operational efficiency and compliance. Thermax Adiabatic Dry Cooling Towers offered a promising solution to address these challenges efficiently.

Solution

Thermax, a global leader in absorption cooling and heating solutions with a strong focus on sustainability and environmental responsibility, was selected to provide a precise and effective solution to meet the specific requirements of the customer. The choice of Thermax was driven by their extensive expertise across a wide range of industries. After conducting a thorough analysis of the customer's unique processes and challenges, Thermax supplied Adiabatic Cooling Towers with High-Efficient Heat Transfer Coils, capacity control, and corrosion resisting fins. This advanced solution not only ensures precise capacity control but also significantly reduces water and energy consumption, offering up to 70% water savings compared to conventional cooling methods. To furthermore add to water savings, during daytime, ADCT works at wet mode and produces effective cooling by the addition of spray water across cooling pads whereas, night-time, when ambient temperature is low, cooler works as dry mode with Zero water consumption.During daytime, ADCT works at wet mode and produces effective cooling by the addition of spray water across cooling pads whereas, night-time, when ambient temperature is low, cooler works as dry mode with Zero water consumption.

Furthermore, by incorporating features to prevent water accumulation and scaling issues, Thermax's solution guarantees uninterrupted operation and prolongs the lifespan of the cooling equipment. This comprehensive approach not only meets the customer's immediate cooling needs but also aligns with their long-term sustainability goals, demonstrating Thermax's commitment to delivering innovative and environmentally responsible solutions.

Schematic Diagram



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