



Optimized cooling solution enhances shopping mall comfort

The Situation

One of the largest shopping malls in the United Arab Emirates was experiencing difficulty in maintaining the temperature within its district cooling system, so they enlisted the help of Grundfos UAE to provide an effective solution.

District cooling is the centralized generation and distribution of cooling energy which requires chilled water to be delivered via pipes from a central energy facility in order for the chilled water to be used for air conditioning in a variety of buildings.

For these systems to work effectively, the temperature of the water returning to the central facility needs to be kept as low as possible. Maintaining an adequately low return water temperature is difficult for buildings such as shopping malls that have fluctuating occupancy, because it is difficult to reliably predict the temperature the chilled water will return at. This affects the overall efficiency of the central plant, along with reducing the Coefficient of Performance.

Minimizing the temperature difference (Delta T) within the system is essential to enhancing the overall system efficiency.

The Solution

To solve this problem, the team at Grundfos UAE used a mixing loop to carefully regulate the water temperature within the system.

To manage the temperature, we used the concept of our MIXIT product on a much larger scale,” said Arjun Nair, Sales Engineer at Grundfos UAE.

The Grundfos team built an HVAC modular skid comprised of three TP 200-290/4 pumps, a CU 352 pump controller, manifold, suction diffuser non-return valves, and isolation valves. This equipment was used to skillfully merge the primary water flow with the return stream to achieve the exact desired temperature for the supplied water.

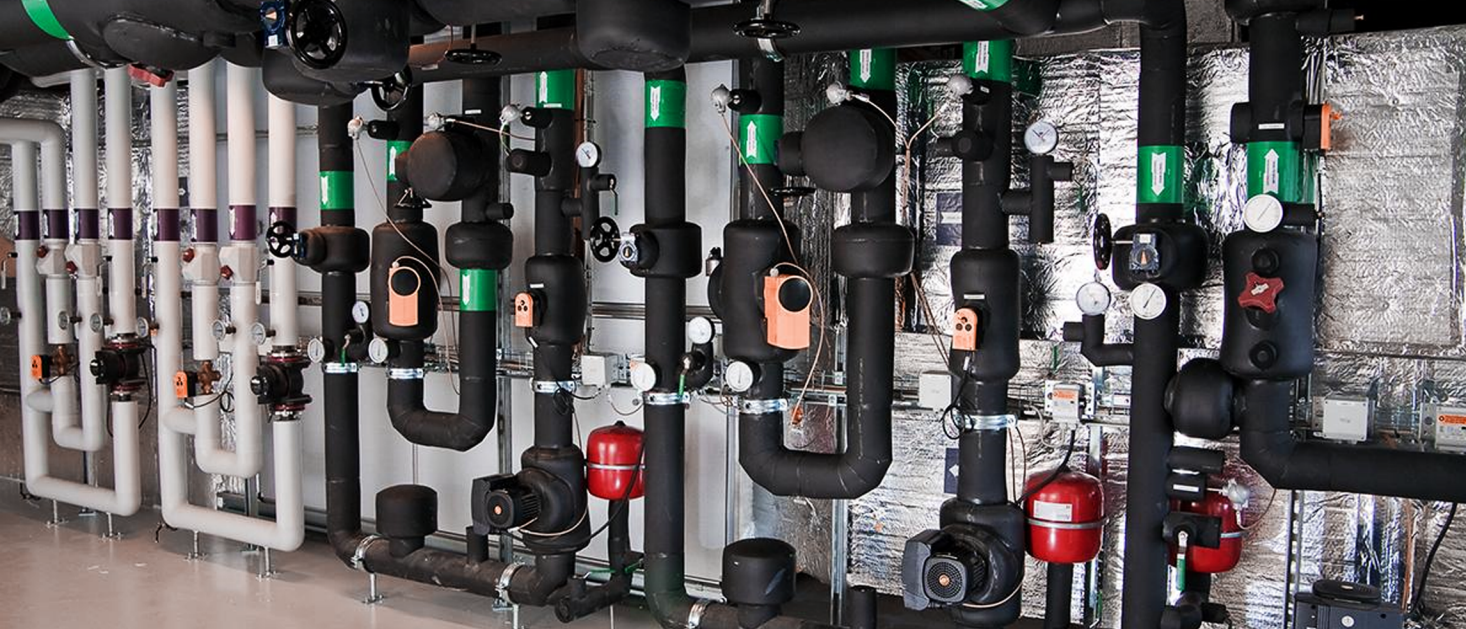
The mixing loop incrementally raises the temperature of the supplied water, while simultaneously ensuring that the comfort of the occupants of the building is not compromised.

“Once we started using the mixing loop, we were pleased to see the huge transformation in the system’s performance”

Arjun Nair
Sales Engineer
Grundfos UAE

GRUNDFOS 

Possibility in every drop



The Outcome

Prior to the introduction of the mixing loop, the supply water temperature was 4.5° C, with return water temperature at 10.3° C, leading to a Coefficient of Performance just above 3.

“The supply water temperature has been consistently at 7° C, resulting in the return temperature sitting at 13° C. As a result, the Coefficient of Performance is now close to 5, which is a tremendous improvement and near best-in-class performance for the industry standard.”

Grundfos Supplied

HVAC Modular Skid consisting of:

3 x TP 200-290/4

CU 352 Control Panel

Manifold, suction diffuser, non-return valves, and isolation valves



CU352 control panel



TP pump