

# Transform your chilled water storage tank into an energy and cost-efficient system

A reputed global telecommunication company was able to achieve very low maintenance requirement and costs by using a simple but innovative Multipoint temperature solution for accurate measurement of chilled water storage tank.

## Benefits at a glance:

- Complete temperature profile of the tank using single instrument
- Accurate temperature readings at different lengths to minimize overall power consumption
- Zero effect of ambient temperature on chiller performance
- Higher life time of the temperature system
- Repeatable readings with higher accuracy
- Increase in the efficiency of process
- Ease of installation and
- Low maintenance cost



Chilled water storage tanks are used in various kinds of industries specially communications, district cooling and applications requiring heat transfers.

In this case, the chilled water storage tank was used to control temperature of communication equipment.

### The Challenges:

- Higher ambient temperature around the tank due to the atmospheric conditions makes it very challenging for system to maintain its water temperature at needed range.
- Temperature range within a 10-meter chilled water storage tank needs to be maintained at a range of 4 to 8 Deg C even with higher external ambient temperature fluctuations. In addition to this external effect, used warm water also flows into the tank which also raises the water temperature.
- Higher variation in temperature in turn requires higher amount of power to bring down the fluid temperature to its usable range.
- As per industrial standards, the minimum level of thermocline should never be below 50%.
- Thermocline is a thin but distinct layer formed in a large body of fluid in which temperature changes more rapidly with depth than it does in the layers above.
- During peak summer the temperature difference within this storage tank becomes very high and to maintain it at required levels is extremely difficult and challenging. This extreme application requires sensors with high accuracy and quick response time which helps the system to control the current load.

### Customer expectation:

- Sensor with high accuracy and better response time, combined with good repeatability.
- A single system with a total of 16 measuring points covering all the needed fluid layers to avoid multiple thermowells and inserts.
- Higher operational efficiency & safety, better quality and performance in a cost-effective manner.
- The process requirement of customer needed temperature sensors to be placed at every 600mm (0.6 meter).

### Our Solution:

- MultiSense flexible bundle type multipoint temperature transmitter - model TMS31 with 16 measuring points spaced every 600mm within the 10 meters measuring range.
- Overall length, wetted parts and process connection of the flexible multipoint was chosen as per process requirements
- Complete solution was offered with high performance 4-wire RTD's and smart head mount transmitters.



Figure 1: MultiSense TMS 31

### Benefits:

- 16 multiple sensors spaced equally at 600mm length gave an accurate temperature profile of entire chiller system.
- The solution was designed with a flexible type of probe which made the installation mobility quite simple and user friendly.
- Easy to configure 'smart' transmitters, mounted on the top of the tank, gave customer flexibility to pre-configure required measurement ranges. TMT smart temperature transmitters also gave option to configure from control room even at later stages once the device is installed and under working condition.
- The 4-wire RTD sensors capable of measuring process readings with highest accuracy helped customer to control their overall power consumption.
- Appropriate selection of wetted parts isolated the sensing element and kept it safe from external effects resulting in increased efficiency
- Accurate selection of wetted parts and assemblies, resulted in less corrosion, very low maintenance cost and increased lifetime of the system.

**The MultiSense TMS31 multipoint family offers maximum versatility for temperature profiling and inventory control in storage tanks where high mechanical robustness and flexibility are crucial**



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