

Cooling Tower Monitoring



Success in this application can be applied to variety of other applications with similar challenges

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Facts about Cooling Towers:

- Cooling towers are used across almost all industries. The purpose of the tower is to release heat from circulation water.
- Cooling towers are expensive and need to be maintained properly to prevent the following issues which cause unexpected and costly maintenance shutdowns:
 - Scaling — Affects efficiency and performance
 - Corrosion — Shortens the useful life of the cooling tower system
 - Biological growth — Bacterial colonies, such as Legionellae, are major health risk



pH: SE 555
ORP: SE 565
Conductivity: SE 630
Transmitter: Stratos Evo

Critical Analytical Measurements Prevent Downtime

— Using the Digital pH, ORP, and Conductivity Monitoring Trifecta

Cooling towers require an acid addition like sulfuric for pH adjustment to dissolve the calcium carbonate that builds up from high salts in the system. By dissolving the calcium carbonate it reduces scaling which helps the system efficiency. By monitoring the pH adjustment with a digital Memosens® sensor such as the SE 555, better corrosion control and earlier detection of process breakthrough is achievable.

As part of the cooling tower control system, there is normally a chemical skid that doses an oxidizer to sanitize the water. The ORP sensor infers the concentration of the oxidizer such as sodium hypochlorite. A reliable ORP measurement is required to ensure oxidizer levels are adequate to prevent bacterial contamination, which can lead to potential health issues for plant personnel. M4 Knick's SE 565 provides accurate and repeatable ORP monitoring to help maintain a healthy cooling water system.

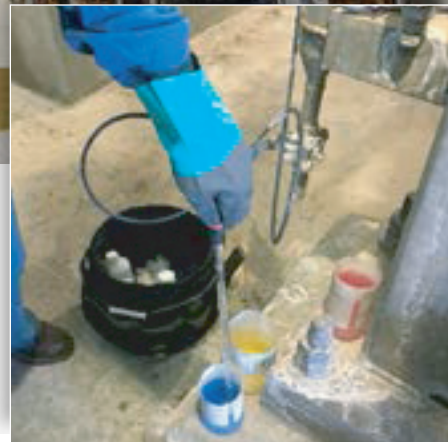
The automatic blowdown control system in cooling towers require a conductivity measurement of the water. This measurement controls when high conductivity water is "blown down" or removed from the cooling tower

and "new" low conductivity makeup water is brought into the system. The SE 630 is a rugged conductivity sensor that will resist corrosion and provide a long lasting and repeatable measurement.

A traditional analog sensor connection is typically not submersible, making it an issue for moist environments like cooling towers.

To get around this manufacturers will "pot" the cable into the sensor. However this requires the customer to completely disconnect and pull the sensor cable from the transmitter during maintenance.

By using M4 Knick's digital Memosens inductive sensor connections, which are completely submersible, the sensor can be connected in the wet environment without concern of failure. Memosens technology also allows all calibration and maintenance to be done in the lab. Memosens process connections are available for pH/ORP, dissolved oxygen and conductivity measurements. The sensors can be used in conjunction with the M4 Knick Stratos Evo transmitter, which uses fully sealed boards to protect them from moisture. This design provides long service life.



What was this Customer's Return on Investment?

- **Reduction in Maintenance Time and Costs:** By using the SE 555, SE 565, SE 630, and Stratos transmitter, the customer has greatly reduced the need for calibrations as well as frequent sensor replacements, which means fewer sensors being used. Reduced frequency of calibration/replacements equals fewer trips to the cooling tower and reduced cost over the sensor's lifetime.
- **Automated Control of Cooling Tower Chemistry:** Automated control of cooling tower chemistry was achieved which reduced corrosion of the system. This greatly cut down on chemical and water usage and maintenance, which will extend the life of the cooling towers.