

Measurement units

Numerous factors affect the cooling water quality: composition of the makeup water, dissolved minerals, microbiological films, corrosion of the materials used, dust particles entering from the ambient air, etc. Sensors that measure cooling water parameters need to cope perfectly with this constantly fluctuating water quality. Measurements must be reliable and reproducible without any need for additional maintenance efforts or shortened service intervals. ProMinent offers sensors for most parameters that are commonly analysed to ensure cooling water quality. These sensors, ProMinent developed especially for this application, are optimised for high performance under challenging conditions.

SENSORS

Due to the nature of evaporative cooling towers, conductivity represents the most important parameter. Its system specific upper threshold defines the maximum tolerated process water concentration that in turn determines when and how much fresh water must be fed to the cooling water circulation. Optimising blow down intervals results in reduced fresh water consumption and increased protection of the system.

Most operators also continuously monitor the pH of the process water. This value correlates with the occurrence of corrosion processes and, in addition, effects the activity of some oxidative biocides. If the process water is treated with an oxidative biocide, monitoring the ORP value provides an indirect measurement of the biocide's effectiveness.

The physical and chemical conditions (slightly alkaline pH value, dissolved minerals, microbiological films, etc.) present in evaporative cooling towers aid the appearance of corrosion. Determining the system specific corrosion rate via LPR (Linear Polarization Resistance) measurement enables the detection of damages caused by corrosion at a very early stage and with that the avoidance of far reaching economic consequences.

Conductivity sensor CTFS

- Robust sensor for conductive conductivity measurement
- Integrated temperature compensation
- Simultaneous flow rate measurement (for safety reasons no controlling of any parameter without water circulation)



pH & ORP sensors PHEI & RHEIC

- Robust sensors optimised for industrial applications
- Double Junction (second diaphragm to protect the chemically sensitive reference system)
- Robust platinum calotte
- Large dirt repellent PTFE diaphragm
- Large electrolyte reservoir for long lifetime



LPR corrosion measurement

- Only real-time analysis of corrosion processes in the system
- Material of the electrodes same as that used in the system
- Corrosion rate stated in mpy (milli inches per year)
- Detection of short-term changes of the operation conditions



Biocide concentration measurement

No online measurement exists for non-oxidizing biocides. Therefore, no evidence can be provided automatically of successful biocide metering or efficient disinfection of the process water. In contrast, treating the process water with oxidizing biocides makes online monitoring of the disinfectant's activity possible, either indirectly via ORP value or directly via amperometric sensors (further information is provided in "Focus on Evaporative Cooling Towers – Online Measurement of Oxidizing Biocides").