



APPLICATION BRIEF

ACCURATE MEASUREMENT OF WATER IN COOLING TOWER STRUCTURE

August 22, 2024

PROJECT OVERVIEW

Cooling tower structures vary significantly in size and design, but they all function to provide the same thing: heat extraction from a process or building system through the evaporation of water. As this water evaporates, water must be added back. The water that is added is called make-up water. It is essential to measure this water to ensure the cooling tower is free of leaks and is running efficiently. When water evaporates from the tower, dissolved solids (such as calcium, magnesium, chloride, and silica) remain in the recirculating water. As more water evaporates, the concentration of dissolved solids increases. To avoid scaling and corrosion problems caused by these high mineral concentrations, a portion of this water, called blowdown water, must be replaced with make-up water. A conductivity meter is used to measure the amount of dissolved solids. When the conductivity exceeds a predetermined threshold, blowdown water is drained and replaced with make-up water. This blowdown water should also be metered. The Federal Energy Management Program suggests the following best practices for managing cooling towers:

"Install flow meters on make-up and blowdown lines. Check the ratio of make-up flow to blowdown flow. Then check the ratio of conductivity of blowdown water and the make-up water (handheld conductivity meters can be used to determine the relative mineral concentration of the recirculating and make-up water). These ratios should match the target cycles of concentration. If both ratios are not about the same, check the tower for leaks or other unauthorized draw-off. If the system is not operating at, or near, the target cycles of concentration, check system components including conductivity controller, make-up water fill valve, and blowdown valve."

PRODUCT SPECIFICATIONS

A1N

- Nylon housing
- Fits pipe sizes 1 inch / NPT (female)
- Accuracy of reading: $\pm 1.5\%$
- Max working temperature: -40°F to $+250^{\circ}\text{F}$ (-40°C to $+121^{\circ}\text{C}$)
- Battery operated display – no wiring required
- Optional 4-20mA and scaled pulse available



TM

- PVC housing
- Fits pipe sizes $\frac{1}{2}$ in., $\frac{3}{4}$ in., 1 in., $1\frac{1}{2}$ in., 2 in., 3 in., 4 in.
- Accuracy of reading: $\pm 3\%$
- Max working temperature: $+32^{\circ}\text{F}$ to $+140^{\circ}\text{F}$ (0°C to $+60^{\circ}\text{C}$)
- Battery operated display – no wiring required
- Optional 4-20mA and scaled pulse available
- Remote-mounted display option



PRODUCT SPECIFICATIONS - CONT.

G2

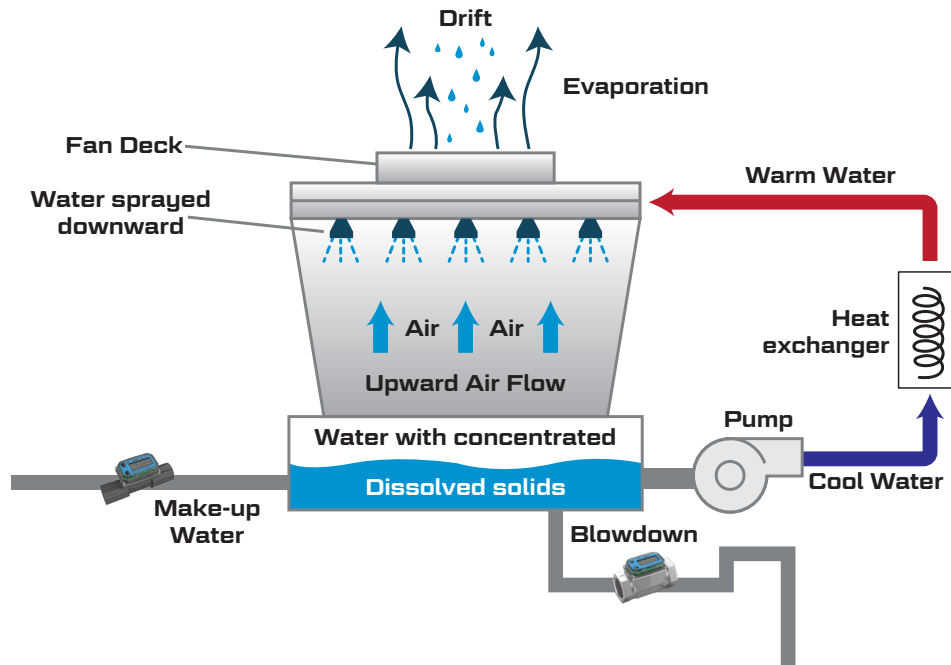
- 316 Stainless Steel, Aluminum, PVDF housing
- Fits pipe sizes ½ in., ¾ in., 1 in., 1½ in., 2 in.
- Accuracy of reading: ± 0.75% to ± 1.5% based on line size (PVDF is ± 1% to ± 1.5%)
- Max working temperature: 0°F to +129°F (-18°C to +54°C)
- Battery operated display – no wiring required
- Optional 4-20mA and scaled pulse available
- Remote-mounted display option



DP

- Plastic and Steel Pipes up to 100"
- Max working temperature: -40°F to +300°F (-40°C to +150°C)
- Optional 4-20mA and scaled pulse available
- Remote-mounted display option

**COOLING TOWER WITH FLOW METERS FOR
ACCURATE WATER READINGS**



PRODUCT SOLUTION

FLOMEC®'s turbine flow meters are excellent choices for a variety of cooling tower applications using steel or plastic pipes. The G2 flow meter is an accurate choice for steel pipes from ½" to 2", and the TM flow meter is a great choice for plastic pipes from ½" to 4". The A1N flow meter is an economical solution for 1" plastic pipe.

DP Series Flow Meters are for larger pipes up to 100", temperatures up to 300°F, and for applications where the user wants to avoid cutting through the pipe for installation. Installation is as simple as drilling a hole in the pipe and inserting the flow meter to the proper depth with a pipe saddle.

The G2, TM, A1, and DP flow meters all have remote display mounting options as well as optional pulse output and 4-20mA output for transmitting signals to building automation systems or other control devices.