USING AUTOMATION to Green Your Water Treatment Program

Return on investment for a sustainable operation is linked to energy and water savings and ultimately to water treatment. In a commercial building, the HVAC system accounts for over 60% of utility costs and is the biggest energy and water consumer. An effective water treatment program is a critical part of preventative maintenance for HVAC systems and is integral for the operation of resource-efficient facilities. In many cases, water treatment programs can be upgraded to improve energy and water efficiency, reduce chemical use and optimize results. Automating tower bleed, chemical feed and control, and other treatment processes are effective ways to do this.

**IMPORTANCE OF BLEED CONTROL**

Evaporative cooling is used in most commercial buildings because it is more energy-efficient than air-cooled systems. However, effective water treatment is required to manage water usage and keep heat transfer surfaces clean. Cooling towers require an astonishing amount of fresh water to operate. As the cooling water evaporates, dissolved solids are left to concentrate in the cooling tower water, which causes the conductivity to rise.

To prevent the dissolved solids in the water from concentrating to the point where energy-robbing deposits and other problems occur, a portion of the tower water must be discharged by a function called 'bleed'. Maintaining the minimum bleed rate consistent with good deposit control is essential. This is accomplished by adding chemicals to increase the solubility of scale-forming impurities and controlling the bleed rate so the target cycles of concentration level are maintained.

The environmental benefits associated with maximizing the tower cycles are significant. Too much bleed wastes water and increases chemical use; however, insufficient bleed can result in waterside deposits that reduce efficiency and increase energy costs. Since the bleed rate required to maintain the target cycles varies as the tower evaporation rate changes throughout the day and seasonally, an automatic system enables bleed control.

**IMPORTANCE OF CHEMICAL FEED AND CONTROL**

The addition of chemical inhibitors and biocides allows high cycles to be maintained without efficiency losses and other problems. However, even the best water treatment chemicals are not effective when improperly applied. Overfeeding chemicals is wasteful, while underfeeding can result in corrosion, deposits and microbiological growth problems.

Effective microbiological control is a key part of cooling tower water treatment programs. Over 90% of cooling water system failures occur due to microbiologically influenced corrosion. Poor microbiological control also contributes to unsafe operating conditions by allowing Legionella bacteria (the cause of Legionnaires' Disease) to proliferate. Effective microbiological control requires automatic, controlled addition of EPA registered biocides as part of the water management program.

Facilities focused on sustainable operations closely monitor energy and water usage. Advanced data logging water treatment controllers automatically monitor and log key treatment parameters including water use. These controllers can interface with the building automation system and the internet to enable high-performance programs. They also warn personnel when upset conditions occur, so minor concerns don’t become major problems.

**AUTOMATION AND GREEN BUILDING**

The water treatment program for a building’s HVAC system is integral to the operation of energy, water, and resource efficient facilities. Obtaining results from the water treatment program has huge economic payoffs and helps meet sustainability objectives on many levels. An automatic water treatment control system supports green building by providing good cycles of concentration control, precision in chemical application and optimum program results.

**GO GREEN**

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