ABSTRACT for the 2018 ISA WWAC Symposium

Improve Plant Efficiencies & Reduce Energy Costs with Reliable and Consistent Online Nutrient Monitoring for Biological Wastewater Processes

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SUBMISSION TYPE

_x_ 30 minute presentation

___ 6-12 page paper plus 30-minute presentation

___ 3 foot wide x 4 foot high large format poster

KEYWORDS

Instrumentation, Automation, Optimization, New technologies, Advanced Diagnostics, Integrated Instrumentation, Control and Information

ABSTRACT

Wastewater treatments plants consume about 3 percent annually from America's electric grid, according to the federal Environmental Protection Agency. This demand is only anticipated to grow as populations increase, and state and federal regulations tighten.

The biggest energy burden? Aeration basin blowers. Up to 60% of a plant's total energy usage can be attributed to large air blowers used in aeration basins – which throttle through millions of gallons of influent wastewater per day.

Creating the proper aeration environment is a delicate balance. Traditionally, plants would manually manage this balance by turning the blowers off and on, based on laboratory tests done by operators at set intervals. Incorporating variable frequency drives (VFDs) added efficiency to the process, but there is a more accurate option. Improvements in online process analyzers, intelligent motor control and integrated process control combined with emerging digital technology delivers a precise approach that helps reduce energy consumption and extends maintenance intervals; making the implementation of true, experience-based predicative diagnostics a reality.

This presentation will discuss the benefits and ease of implementing a more sophisticated measurement approach for real-time integrated control. It will also review the importance of proper sample handling and maintenance as well as the driving force behind nutrient removal process monitoring.

A basic overview of biologic nutrient removal will be presented as the primary application for nutrient monitoring. This overview will be the basis for discussion on how specific technology improvements and integration improves plant efficiency; making the equipment more reliable and maintenance more predictable than ever before.

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