

Industrial Wastewater Application

Integration of Walchem Controllers and Pyxis Sensors

Project Background

This initiative supports the optimization of the existing wastewater treatment plant as part of a broader effort to transition into a zero-effluent discharge production facility. The integration of advanced monitoring and control technologies—Walchem controllers and Pyxis sensors—aims to enhance operational efficiency, ensure regulatory compliance, and maximize water reuse across the plant.

Wastewater Treatment Plant Overview

The facility includes a comprehensive multi-stage treatment process:



Raw Water Reception

Initial intake and assessment of incoming water quality.

Primary Treatment – DAF (2 units)

Dissolved Air Flotation units remove suspended solids, oils, and other contaminants.

Secondary Treatment – Biological Reactors

Aerobic and/or anaerobic processes break down organic matter biologically.

Tertiary Treatment

Filtration, Ozone Disinfection, Chlorination
Advanced Treatment ensures high water quality suitable for reuse.

Sludge Treatment and Final Disposal

Stabilization and dewatering processes prepare biosolids for safe disposal or beneficial use.

Water Reuse Applications

Treated water is recycled for:

- Cooling towers
- Floor washing
- Machine cleaning
- Landscaping



W A L C H E M

IWAKI America Inc.

Pyxis

Solution: Walchem + Pyxis Technologies

The integration of Walchem and Pyxis technologies ensures real-time monitoring, precision dosing, and proactive system adjustments—critical steps in achieving reliable, sustainable, and efficient zero-liquid discharge (ZLD) operations.

Precision Dosing from Iwaki

Iwaki's digitally controlled, direct drive IX Series metering pumps were installed for precision dosing of coagulant, while motor-driven LKN pumps were installed for flocculant dosing to the DAF.

Walchem Advanced Monitoring & Powerful Control

Walchem's Intuition-9 controller, combined with Pyxis sensing technologies, offered unparalleled versatility for monitoring and control of the plant's treated re-use water.

- Monitoring of two (2) level sensors on homogenizing tanks of 22,000 liters
- 5800 gallon (22,000 liter) homogenizing/mixing tank level monitoring using two (2) level sensors
- One (1) flow meter and motorized ball valve, utilizing PID control to maintain inlet flow to the tanks
- Flow meter and pressure sensor for monitoring reuse water consumption and demand: controller sends signal to control reuse water pump VFD's based on demand indicated by the pressure sensor
- Control of freshwater make-up based on conductivity levels
- Dissolved oxygen monitoring and control in (4) biological reactor modules



Pyxis Sensors for monitoring key reuse water quality parameters:

- Ozone: ST-765SS-03
- Dissolved Oxygen: ST-772
- pH: ST-712
- Total suspended solids: LT-635
- TDS by conductivity: ST-726
- Turbidity: ST-735
- NEW Hazen Color: ST-750 (ongoing trial)

