

CASE STUDY

Containerized pH Adjustment System by Burt Process Equipment





Background

Burt Process Equipment is renowned for providing customized fluid handling and treatment systems. This case study highlights a containerized pH adjustment system designed for a biomanufacturing facility involved in drug substance production.

Problem

The facility required an efficient, modular solution to handle wastewater with fluctuating pH levels between 2 and 12 at a flow rate of 150 gallons per minute (gpm). Regulatory compliance and environmental sustainability were critical, necessitating a solution that could accurately neutralize the pH before discharge.

Solution

Burt Process engineered a single stage containerized pH neutralization system, part of their ACS (Assured Compliance System) series. This system is modular, fully integrated, and enclosed in a 40-foot container, simplifying on-site installation and offering an environmentally controlled space for equipment.



Key Features:

1. Prepackaged System: The pH adjustment system includes automated controls and instrumentation, minimizing installation time and ensuring reliability.

2. Continuous Neutralization: Designed to process 150 gpm of wastewater with a retention time of 20 minutes, the system efficiently doses sulfuric acid and sodium hydroxide to maintain pH levels between 6.5 and 8.5.

3. Advanced Controls: The system uses a PLC-controlled setup with sensors and proportional chemical dosing for accurate pH management. A recirculation pump ensures thorough mixing, while a second pH probe monitors the effluent stream.

4. Reagent Dosing: Two sets of metering pumps enable fine and coarse adjustments for precise reagent dosing. This dual approach enhances the accuracy of pH control, reducing reagent waste.

5. Safety Features: The containerized system provides insulation, heating, and lighting, ensuring a controlled environment. Safety features include pH sensors, float switches, and level transmitters to prevent system failure.

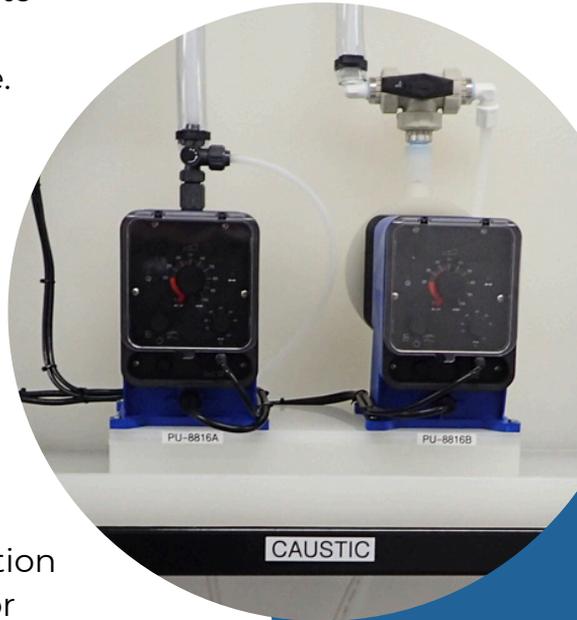
6. Hybrid Batch Process: The system employs a hybrid batch treatment process, allowing wastewater to recirculate if out-of-spec, ensuring compliance before discharge.

Implementation

The pre-assembled system was delivered to the facility, reducing on-site assembly time.

Key steps included:

- Placement of the container near the wastewater inlet and outlet.
 - Connection of plumbing and wiring to the existing infrastructure.
 - Calibration of pH sensors and optimization of metering pumps for proportional dosing.
- Burt Process provided on-site support for operator training and system commissioning



Results

The implementation of the containerized pH adjustment system provided significant benefits:

- Consistent regulatory compliance, with effluent pH maintained between 6.5 and 8.5.
- Cost savings due to precise reagent usage and minimal downtime.
- Operational safety ensured by automated controls and built-in fail-safes

Conclusion

This containerized pH adjustment system helped the customer meet stringent environmental and operational requirements. With advanced control systems, modular design, and sustainable practices, Burt Process' solution significantly improved wastewater treatment efficiency at the biomanufacturing facility. This project exemplifies Burt Process's expertise in delivering customized systems for industries requiring precise wastewater management solutions.

