

CASE STUDY / FLUID TRANSFER

Two-Stage Automated Wastewater pH Neutralization

pH 3.3 acidic discharge, \$25,000+/day penalty exposure, brought to consistent 5.5–6.5 compliance with zero manual sampling.

SITUATION

A small manufacturing plant, one non-compliant discharge stream

20,000–40,000 GPD of process wastewater at pH 3.3 — roughly 5,000 times more acidic than neutral — against a municipal discharge requirement of pH 5.5–6.5.

THE PROBLEM

Federal pretreatment rules prohibit discharge below pH 5.0 without a specifically engineered system. At this plant's volume and acidity, the exposure was real: \$25,000 or more per day in civil penalties for a non-compliant discharge. The existing process depended on manual batch treatment — a single missed reading or delayed correction was the difference between compliant and not.

The actual risk wasn't the chemistry — it was the dependency on operator judgment to catch a fast-moving pH swing before it left the site.

EQUIPMENT SPECIFIED

Component	Manufacturer	Model / Type
Holding tank (stage 1)	Snyder Industries	4,500 gal, polyethylene, double-wall
Level sensor	ProMinent Fluid Controls	AP05, radar, non-contact
pH sensor	ProMinent Fluid Controls	AP00
Metering pumps	ProMinent Fluid Controls	—
PLC controller	ProMinent Fluid Controls	Dialog X
Industrial mixer	Grovhac	Stainless steel impellers
Flow meter	Georg Fischer	Electromagnetic

THE SPECIFICATION RULE

Two-stage automated neutralization, not manual batch treatment

Acidic wastewater running near or below a regulatory discharge threshold calls for a two-stage automated system: a holding tank paired with closed-loop PLC dosing, non-contact radar level sensing, and inline pH monitoring — not manual batch correction. Closed-loop control with conditional discharge authorization is what prevents pH overshoot when dosing caustic into a highly acidic stream. Overshoot in the other direction is its own compliance failure, so the control logic has to guard both ends, not just the starting condition.

RESULT

pH 3.3 → 5.5-6.5

Consistent compliant range, fully automated, zero manual sampling required. Penalty exposure eliminated.

NEXT STEP

Every wastewater stream has a different acidity, flow pattern, and discharge threshold. A spec review starts with your actual process data — not a generic dosing skid.

[Request a spec review](#)

NEXT STEP

Send LibertyCES the process data, not a part number.

Fluid, chemistry, concentration, temperature, flow, pressure, discharge threshold,
and current equipment — that's what a real spec review needs to start.

Request a spec review

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