



Automated Metal Etch Line



**MADE IN
THE USA**

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PARTS PROCESSING





PROCESSING DATA

- REL COHO software
- Track, record data infrastructure PLC
- Run, motion control according to recipe input from operator

DATA LOGGING

- Sensors collect data for all processes
- COHO logs all data from infrastructure for review at a later date
- Used for troubleshooting process



LOAD

- Parts loaded & entered into coho, recipe selected based upon surface area & amp output of rectifier
- Parts loaded & monitored. Proximity sensors let COHO know which position a particular rack is in & what recipe to run on the rack
- Safety light curtain to prevent incidental contact with overhead part transporter



CLEANING



Cleaning chemicals are controlled through automatic level & temperature controls. All process tanks can be set to come up to temp ahead of time so operator can start immediately.

RINSING



Rinsing time automatically set according to recipe

ETCHING



Monitors dissolved aluminum content to estimate bath life: WALCHEM data

RECTIFIER

- Current Source for Etch Processing
- Controlled in Coho recipes
- Remote Control Box for monitoring



RINSING

A close-up photograph of a large industrial metal mold, likely for pharmaceuticals, featuring a grid of circular cavities. The mold is mounted on a mechanical arm within a factory setting. The background is slightly blurred, showing other industrial equipment and a blue component in the foreground.

Rinsing time automatically set according to recipe

ANODIZING

A photograph showing a large number of aluminum fasteners, including bolts and nuts, hanging from a black metal rack in an industrial setting. The fasteners are arranged in two rows. In the foreground, a black electrical control box with a blue handle and an orange cable is visible. The background shows more industrial equipment and a concrete floor.

Anodize control through COHO/recipe control time, current & amp/sqft

CHILLER

- Integrated with Anodize Tank
- Temperature control (cooling) of process chemistry
- Integrated into Infrastructure PLC
- Automatic temperature control of anodizing tank through a glycol loop & heat exchanger



SCRUBBER / EXHAUST FAN



DYEING



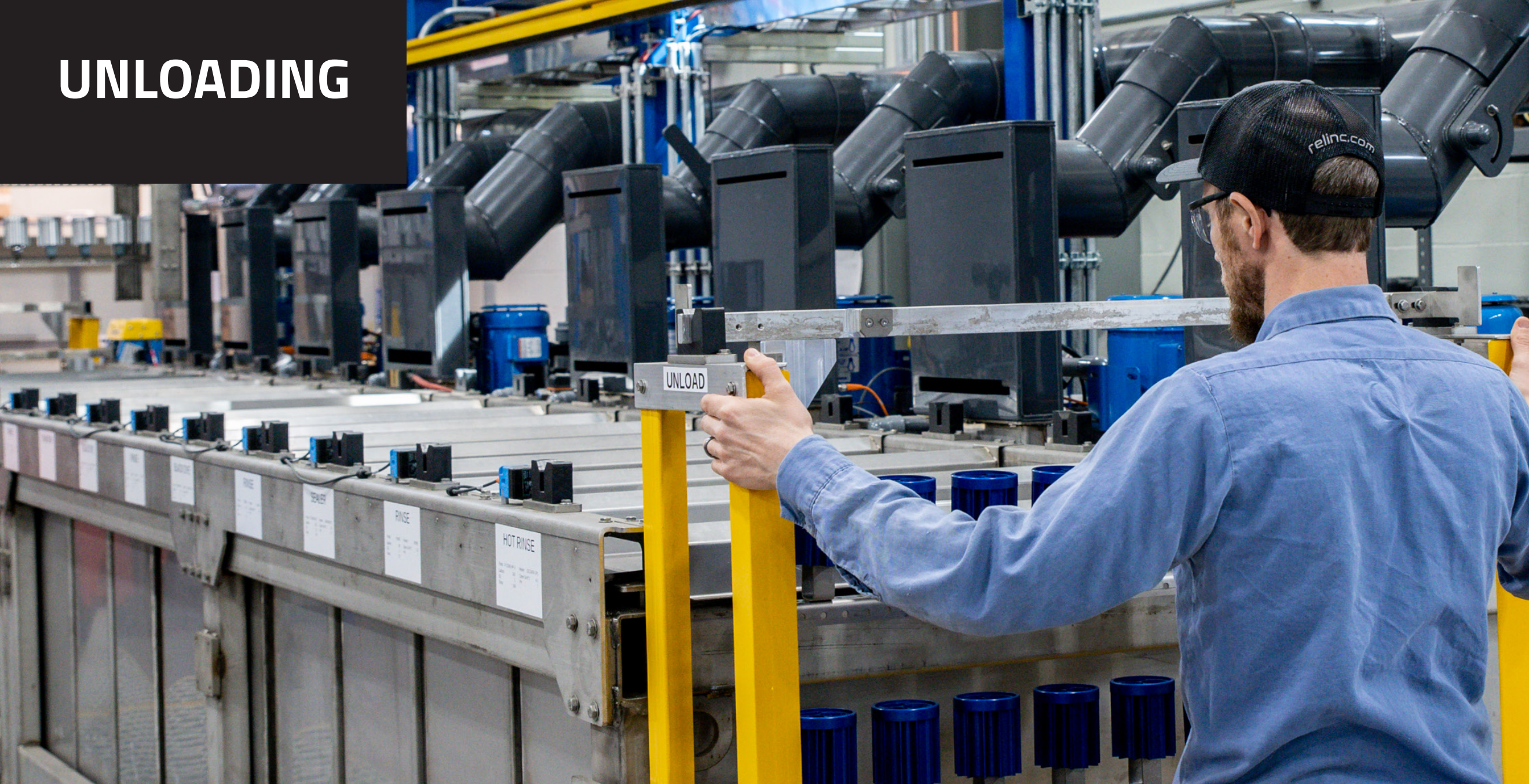
Control of dye chemistry & pH levels

RINSING



Rinsing time automatically set according to recipe

UNLOADING



SCRUBBER / EXHAUST FAN

- Main Control Box
- Ability to control pH for drain discharge



INFRASTRUCTURE

- All tank infrastructure controlled by PLC
- Real-time, all station data monitoring
- Adjust station parameters
- Infrastructure sleep/wake feature
- Monitor DI De-ionized water usage.
Preventative maintenance for
filter change



CHEMICAL INJECTION

- Metering pump to inject chemicals



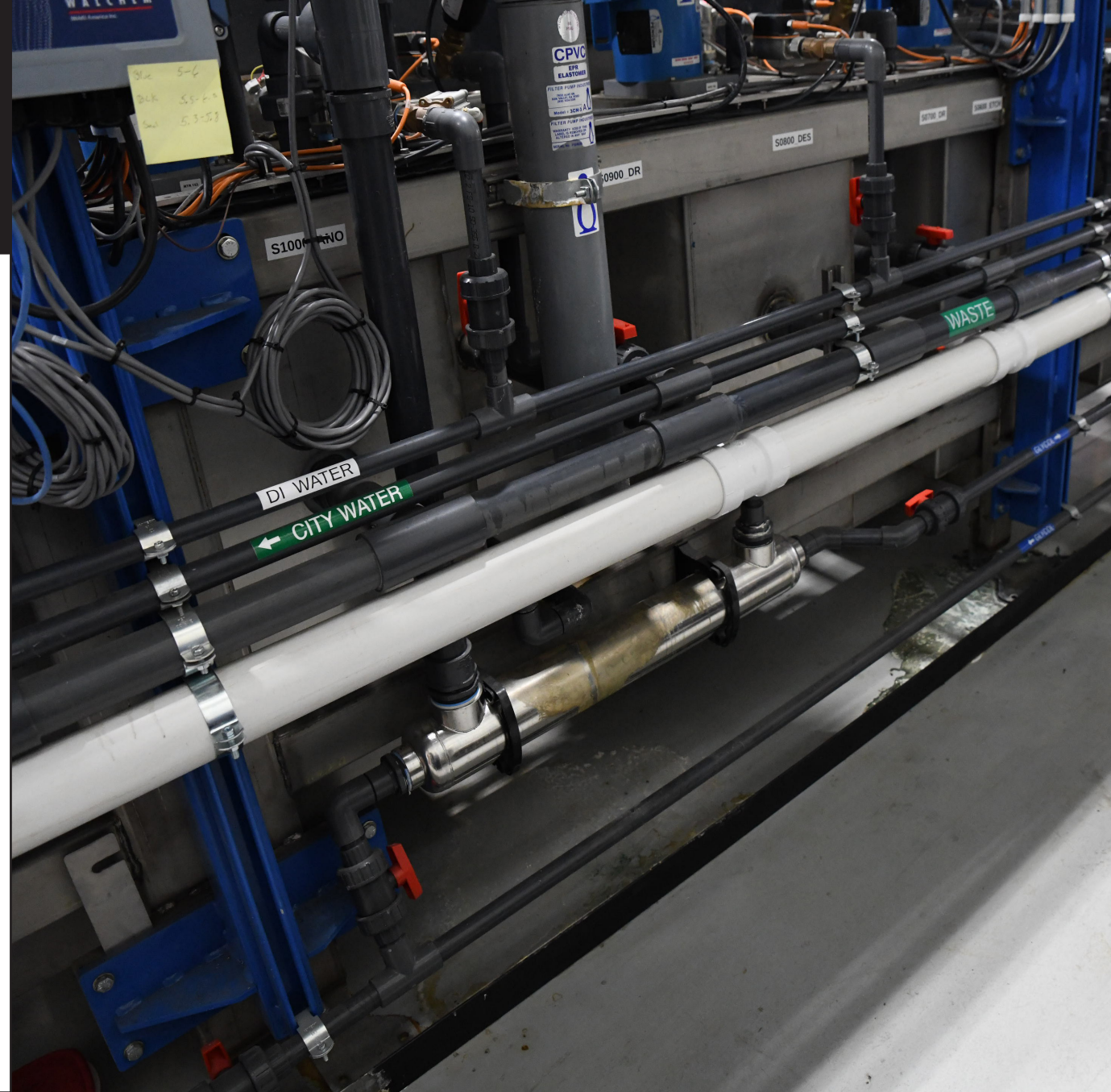
SUMP MONITORING

- Monitor temperature, level & pH
- pH level adjustment prior to disposal



DI/CITY/GLYCOL

- DI water used on all process tanks
- Monitor temperature, level & pH
- pH level adjustment prior to disposal



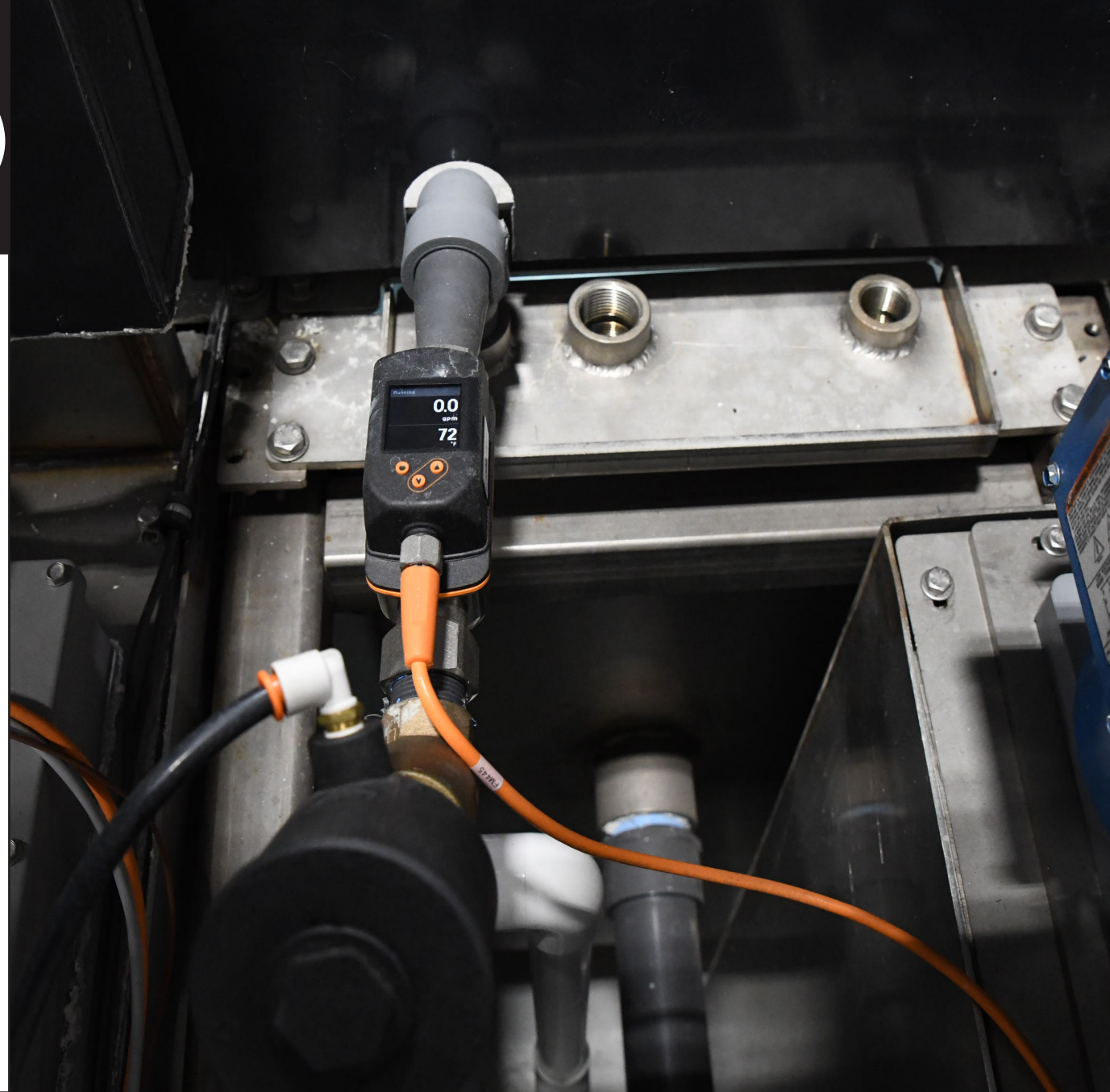
TANK SENSORS (all tanks)

- Water Level
- Water Temperature
- Flow meter
- Automated level control
- Chemical injection
- Agitation pump



TANK SENSORS (rinse tanks)

- Automated rinse with flow monitoring



WALCHEM

- Monitor pH on Seal, Dye, Sump tanks
- Monitor conductivity on etch & anodize to track dissolved aluminum & acid concentration to control chemical additions



VENTILATION

- Push/pull ventilation



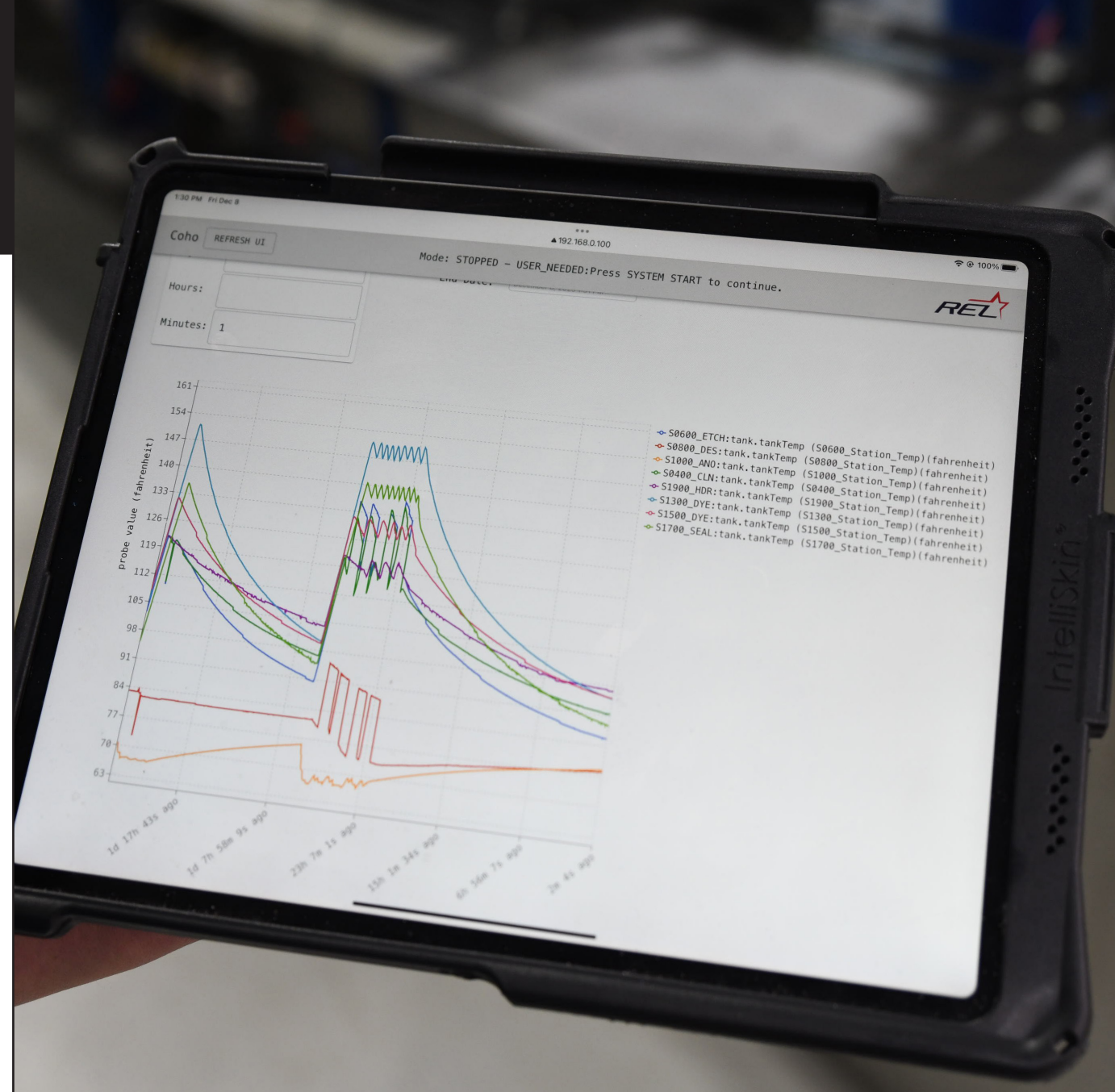
EDUCTORS

- Eductors used in rinse & process tanks to enhance agitation/ tank turn-over



COHO

- Process control through Process Planner
- Motion/process control Recipes
- Adjustable, programmable, customizable and remote monitoring





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