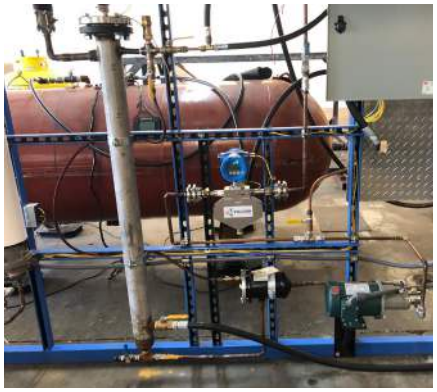
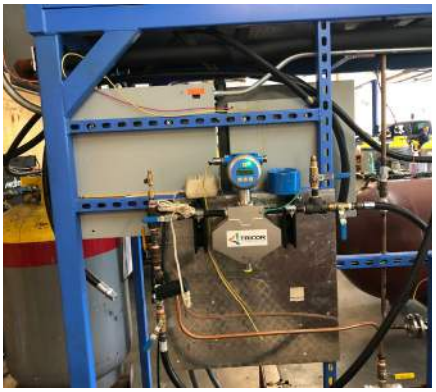
AW-LAKE
PROCESS FLOW MEASUREMENT

APPLICATION SPOTLIGHT

Coriolis Meters Monitor Gas & Liquid Refrigerants at Freon Recycling Facility

Coriolis Meters Monitor Gas & Liquid Refrigerants at Freon Recycling Facility





APPLICATION:

A Freon recycling facility converts used freon into "new" usable freon using several types of older refrigerants no longer produced on the market for use in older commercial systems. The recycled freon can sell for as much as 5x the cost of new types. The facility uses in-house recycling rigs to ensure product quality consisting of several heaters, storage tanks, and valves controlled by a PLC located next to the processing rig.

A fractional distillation process separates a variety of cross-contaminated refrigerants. A flow meter accurately measures the liquid flow, providing the control system with a scalable value for use in the cycling software. Once the process initiates, accurate flow measurement and density output are critical to ensure the quality of the final product. In a new control strategy for the final product, the freon recycling facility wanted one flow meter that could perform on the gas side of the process.

PRODUCT SUPPLIED:

- Classic Series TRICOR Coriolis Mass Flow Meters with digital signal processing and advanced diagnostics on both the liquid and gas side of the distillation process: TCM-0325 on the liquid side, TCM-0650 on the process side.

CHALLENGE:

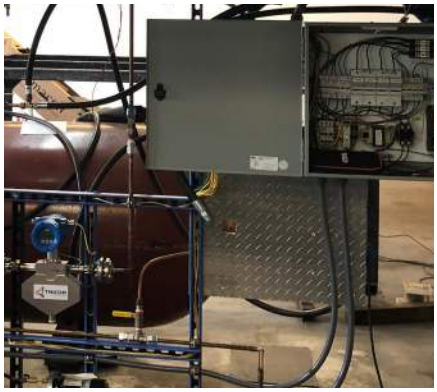
The customer needed to maintain a steady flow output while obtaining an extremely accurate measurement of flow and density. They didn't want to use damping or filtering to mask measurement errors caused by the meter inabilities to precisely measure the flow rate. Rotating equipment also introduced vibration into the process that could result in measurement inaccuracies.

SOLUTION:

The customer was not happy with the performance of existing turbine and mass flow meters as they required a lot of signal damping to get the desired flow rate. AW-Lake proposed that the customer trial its Classic Series Coriolis Mass Flow Meter designed with advanced electronics and an extremely strong sensor frame. If the meter proved unsuccessful in the process, the customer could return it at no charge.

The flow meter was installed in their newest processing stand for testing. Results were extremely successful right out of the box, with the flow meter providing accuracy within 0.2% when compared to the weigh tank used for the final product. The customer also was surprised at the

Coriolis Meters Monitor Gas & Liquid Refrigerants at Freon Recycling Facility



accuracy of the density output as it matched the known product valves as published by the original freon manufacturers. An internal batch function provided load feedback to the PLC, ensuring the correct amount of freon was loaded into the tanks per the end user's order. Weight could range from 15 to 10,000 lbs. of product. Based on the flow meter's success, a second unit was implemented on the gas side of the process, achieving the same results. The facility is now retrofitting production units with two Classic Series meters on each recycling column at the facility.

RESULT:

- Reduced raw material waste
- Improved process control
- Improve quality with less rework of recycled material
- Assurance that batch sizes are correct
- Customer estimated savings of 10% of production costs per batch