



MULTIVARIABLE VORTEX TECHNOLOGY IMPROVES CUSTODY TRANSFER OF SATURATED STEAM

Customer

Large paper producer

Application Characteristics

Saturated steam at 359 °F (182 °C) and 136 psig (938 kp) in a 2" line

Application

Custody transfer of "House Heat"

Challenge

A producer of paper for wallboard, wallboard tape and joint compound was looking to optimize plant productivity. Each department is run as an independent profit and loss center, so steam use for each department for both process and house heat - as well as steam production at the power house - is carefully measured and totalized and the departments are billed accordingly. Since each department wants to minimize energy costs, accurate measurement of steam use is important. For one department, a mechanical meter that required frequent maintenance was being used on house heat. It was placed in a hot location six flights up from the main floor and provided only local indication. This meant monthly trips to write down totalized flows for billing purposes. The customer wanted to eliminate these monthly trips, provide totalized steam flow on demand, and eliminate maintenance on the mechanical device.

Results

- 2-4% reduction in error of custody transfer of steam
- Reduction of tax burden
- Eliminated 12 trips per year to read meter
- \$5000 per year in reduced maintenance costs



Rosemount 8800 MultiVariable Flow Meter

PXP IMPROVES OIL FIELD OPERATION BY OPTIMIZING STEAM INJECTION WITH EMERSON SMART WIRELESS

Solution

The customer replaced the old mechanical meter with a Rosemount™ 8800 MultiVariable™ Vortex Flow Meter from Emerson on the steam line for house heat. With no moving parts and no ports or crevices to clog, the vortex meter provides a cost-effective, reliable, low maintenance solution. Although the objective was to eliminate monthly trips to read the flow meter, the customer discovered the performance of the vortex unit significantly improved accounting for steam use.

Since the old meter remained in line during the transition to the new technology, those readings were compared with the Rosemount vortex meter. The customer discovered the accuracy of the old meter was off by 2-4% due to steam density changes. Since the MultiVariable vortex meter has an integrated temperature sensor that compensates for these changes in saturated steam applications, it is able to provide significantly higher accuracy in steam flow measurement, with an output of flow rate, temperature, and compensated mass flow.

Now the power house can more accurately bill this department for steam use, which is good for profit and loss management. Additionally, house heat is taxed differently than process steam, it has reduced the tax burden. Finally, the customer eliminated trips to the field to read the meter, and so far has eliminated maintenance, saving \$5,000 per year. "We wanted a meter that does not require a lot of maintenance" said the Process Control Supervisor at the plant. "Our vortex meter has been installed for 18 months and has not needed any maintenance." He concluded, "We eliminated about 14 operator and maintenance trips annually, and the operators can see the totalized steam flow through the operator screen at a glance."



Our vortex meter has been installed for 18 months and has not needed any maintenance.



Process Control Supervisor



When we installed the new vortex meter to eliminate trips to the field, we were surprised to find the old meter was off by 2-4% due to steam density changes.



Process Control Supervisor

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