

International Dairy Plant Optimizes Steam Measurement and Reduces Steam Usage with Reducer™ Vortex

RESULTS

- Identified steam energy savings of 7% in first year of program
- Reduced installation cost by 30%
- Increased ability to further optimize energy efficiency of the plant



APPLICATION

Steam flow monitoring in critical lines

CUSTOMER

An international dairy plant

CHALLENGE

Dairies use a significant amount of steam for pasteurization, cooking, evaporation, and sanitation. With rising energy costs having a more significant impact on profitability, identifying excess steam usage became a high priority for this plant.

When energy costs were lower, minimum instrumentation was implemented in the steam and utilities area. As energy costs increased, the existing instrumentation was not adequate to accurately measure steam use at the unit operations, and the plant was unable to identify ways to reduce usage. To complicate the measurement, the steam flow rate would frequently drop as units were warmed up or maintained at a lower temperature between process runs.

Many things effect efficiency, including eventual coating on heat exchange surfaces, leaks, and improperly operating valves and steam traps. Without the ability to measure steam usage at each unit, the plant was unable to identify areas that were becoming inefficient. Energy use per kilo of product produced was estimated to have increased 10% since the last significant plant upgrade.

Rosemount Reducer Vortex accurately measures steam use, enabling energy optimization.



Rosemount 8800D Vortex meter with MTA Option

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SOLUTION

The plant installed Rosemount Reducer Vortex flowmeters on critical steam lines to monitor the steam flow to units with significant steam use. Rosemount Vortex meters accurately measure saturated steam flow, and the Reducer Vortex with cast in reducers eliminates the need for costly field steam line modifications typically needed to measure lower steam flow rates. The Vortex technology was easy for the plant to implement and has minimal pressure drop across the vortex sensor.

The plant was able to measure the relatively large variation in flow rates, determined by the demand for steam within the plant units. This ensures that steam flow was being accurately controlled, thereby improving the performance of the individual units and identifying units with abnormal steam usage. By monitoring steam usage, the plant was able to reduce energy costs by 7% during the first year. The Reducer Vortex Flowmeter was installed in the original pipes without major modification, reducing installation costs by 30%. The ability to measure the full operating flow range also resulted in the identification of other inefficient units for further optimization.

RESOURCES

Emerson Process Management Food and Beverage Industry

<http://www.emersonprocess.com/foodandbeverage/>

Rosemount Reducer™ Vortex Flowmeters

<http://www2.emersonprocess.com/en-US/brands/rosemount/Flow/Vortex-Flowmeters/8800-Reducer/Pages/index.aspx>

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