CASE STUDY • POWER GENERATION

# UNIVERSITY USES ROSEMOUNT COMPACT ORIFICE FLOW METER TO REDUCE INSTALLATION COSTS

## Customer

A major Northeastern United States university

## Application

Steam supply for various university campus facilities

## Challenge

Operating as a separate business unit, the university's physical plant is responsible not only for supplying steam to various campus facilities, but also for generating operating revenue by billing the facilities for steam consumption.

An assessment of the performance, efficiency, and steam consumption of the university's boiler system revealed inadequate straight runs of piping, which made it difficult to develop necessary flow profiles for an accurate flow measurement.

Originally, the university tried V-cone technology for applications where the required straight piping was not available. However, it failed to provide adequate results and had difficulty dealing with the varying swings of seasonal loads, only adding to the complexity of each measurement point.

The existing piping configuration consisting of two pipe diameters downstream from two out-of-plane 90-degree elbows was giving previous results of +5 percent or worse, making it difficult to get an accurate flow measurement.

## Solution

Emerson recommended the Rosemount™ Compact Conditioning Orifice Mass Flow Meter. This technology allows installation within two diameters of upstream flow disturbances. The Rosemount Compact Orifice Mass Flow Meter combines the Rosemount Compact Orifice with the Rosemount MultiVariable™ Transmitter into an integrated DP Flow Meter.

## Results

- Reduced welding and installation
- Reduced welding, installation costs, and engineering hours
- Improved productivity and efficiency

***Image 1.*** *Rosemount™ 3051SFC Conditioning Orifice Flow Meter*

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This fully integrated flow meter eliminated the need for fittings, tubing, adapters, manifolds, and mounting brackets, thereby reducing welding and installation. The Rosemount MultiVariable Compact Flow Meter offered the advantage of mass flow measurement for this steam application and provided true compensated mass flow measurement. The advanced electronics of the Rosemount MultiVariable transmitter dynamically compensates for any density changes due to pressure and temperature variations.

The Compact Orifice is a wafer-style primary that is machined from a single-cast part, integrating the primary element, impulse lines, and manifold to facilitate direct mounting of the Rosemount transmitter. Coupling these two components provides a flexible, accurate, and reliable process measurement solution, while also improving productivity and the bottom line.

To verify that the Rosemount Compact Orifice Flow Meter was reading accurately, it was compared to a compensated orifice plate located 60 diameters downstream. The results showed the Rosemount MultiVariable Transmitter tracked within one percent of the orifice meter, thus illustrating excellent accuracy and repeatability in this difficult piping configuration.

In addition to being extremely satisfied, the University is looking to standardize on the Rosemount Compact Orifice Mass Flow Meter in applications where short piping configuration is involved. They now realize that Emerson is capable of meeting almost any measurement need due to its wide offering of Rosemount DP primaries and DP flow solutions.

> *Emerson recommended the new Rosemount Compact Orifice Flow Meter. This technology allows installation within two diameters of upstream flow disturbances.*

For more information, visit
**Emerson.com/dpflow**



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