

University Power Plant Improves Performance in Steam Application with Innovative Flowmeter

RESULTS

- Consistent and correct billing for steam use
- Reduced installation time
- Reduced welding and installation costs

APPLICATION

Steam supply for various university campus facilities

CUSTOMER

A prestigious university in the Northeast U.S.

CHALLENGE

A prestigious university in the Northeast U.S. has a steam distribution system consisting of approximately 150 locations. The University's power plant upgraded its Supervisory Control and Data Acquisition (SCADA) system for better control of their utilities and to determine steam usage at various locations. Existing flow measurement installations were evaluated and upgraded to improve plant performance and efficiency of steam distribution.

In one location, the campus power plant was billing a nationally known fast food restaurant for their steam usage. An existing flowmeter monitored the steam usage for the food service contractor, but was unable to provide accurate measurement due to the low flow rates and multiple upstream disturbances.

SOLUTION

This tough application required a unique solution. A Rosemount 3095MFC Compact Conditioning Mass Flowmeter was installed two pipe diameters downstream of six 90-degree elbows, shown in Figure 1. This technology measured mass flow with an accuracy of $\pm 0.7\%$ in this difficult straight pipe-run application.

The excellent results of the Compact Orifice Mass Flowmeter gave the University confidence in their flow measurement and SCADA system. Even though the power plants system was operating below the minimum accurate flow of approximately 133 lbs/hr., the Compact Mass Flowmeter was able to provide the University's SCADA system with a low flow output signal that now measures steam usage accurately. The restaurant now receives a consistent and correct billing for steam usage.



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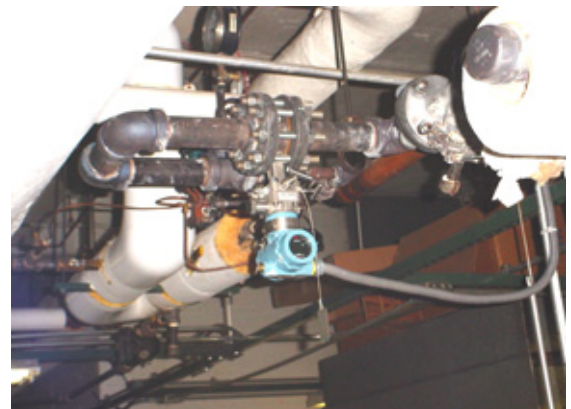


Figure 1: 3095MFC Compact Orifice Mass Flowmeter installed two-pipe diameters downstream from several 90-degree elbows

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POWER

The Compact Orifice Mass Flowmeter simultaneously measures differential pressure, static pressure and temperature, and uses an internal flow computer to automatically compensate for changing process conditions in one fully integrated package. The integration of multivariable measurements, advanced flow calculations and advanced configuration flexibility made this the ideal choice for measuring the campus power plant's steam application.

The Compact Orifice Mass Flowmeter not only facilitated short straight-run piping, but the fully integrated package eliminated the need for manifolds, connecting hardware, and orifice plate primary. The unique 1-in. thick wafer body design of the primary element allowed for installation between existing pipe flanges (see Figure 2), reducing welding requirements and installation time and costs.

The Compact Orifice Mass Flowmeter provided a flexible, accurate, and reliable process measurement solution, as well as an economical remedy to this installation problem. With the excellent performance of the Compact Orifice Mass Flowmeter in a unique installation, the University is looking toward future upgrades of other existing flowmeter installations where limited upstream piping is causing measurement inaccuracy.

RESOURCES

Emerson Process Management Power Industry

<http://www.emersonprocess.com/solutions/power/>

Rosemount Compact Orifice Flowmeter Series

<http://www.emersonprocess.com/rosemount/products/flow/m405p.html>

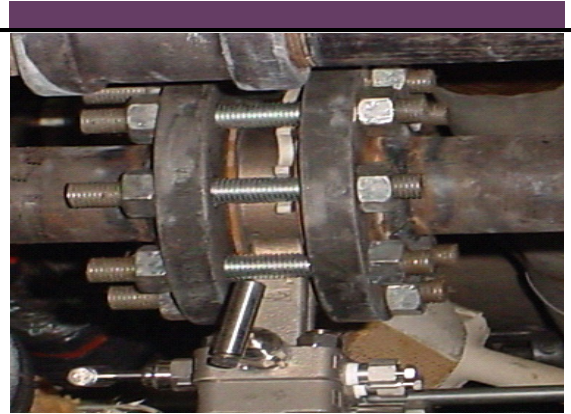


Figure 2: 3095MFC Compact Orifice Mass Flowmeter installed between standard pipe flanges

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