University Successfully Reduces Utility Costs with Conditioning Orifice and MultiVariable™ Technology

RESULTS

- Improved steam management
- Reduced energy/utility costs
- Reduced operations and maintenance costs

The high turndown capability of the 3051SMV eliminated the need to seasonally swap orifice plates or stack transmitters.

APPLICATION

Steam flow metering at 12 university buildings

CUSTOMER

University in Northeast USA

CHALLENGE

A university in northeast USA experiences a high steam output during the winter months while heating 12 of the campus buildings, and low output during the summer months when heating is not necessary. Because of the varying flow rates throughout the year, the university was not monitoring their steam flow usage due to the problems associated with traditional technology.

Traditional differential pressure transmitter technology did not allow for accurate readings during the low flow periods of the summer months. Instead, orifice plates would need to be switched with smaller beta orifice plates during these low flowing periods in order to increase the DP measurement signal so that the transmitter can accurately read the flow. Another option the Project Engineer faced was "stacking" transmitters at each measurement point, using the high range transmitter during the high flow months and the low range transmitter for the low flow months. This, however, would lead to the added cost of purchasing and installing two transmitters for every measurement point. Finally, there was limited straight pipe run available that did not allow for conventional orifice plates to be installed without the increased cost of flow straighteners.

Due to the cost and inaccuracies associated with all of the traditional measurement approaches, the university had no instrumentation installed and was not monitoring their steam usage. The inability to manage this steam usage led to unknown energy and utility costs for the university. Additionally, they were not able to determine if they were insufficiently heating the campus buildings and creating an uncomfortable climate, or excessively heating the buildings and potentially costing them more in energy than necessary. Finally, swapping orifice plates seasonally would greatly increase their operations and maintenance cost.

Figure 1. 3051S MultiVariable Transmitter

ROSEMOUNT®

For more information:
www.rosemount.com

EMERSON™
Process Management

SOLUTION

The university installed Rosemount 1595 Conditioning Orifice Plates to eliminate the need for extended amounts of straight pipe or flow straighteners. They also installed Rosemount 3051S MultiVariable Transmitters, with Ultra for Flow capabilities, mounted on top of the steam application. The high turndown capability of the 3051SMV along with the top mount configuration allowed the university to maintain accurate readings during the low flow conditions, eliminating the need to seasonally swap orifice plates or stack transmitters.

The ability of the Rosemount 3051S MultiVariable Transmitter to maintain a high level of accuracy during low flow conditions has allowed the university to successfully measure and manage their steam usage, making it possible to reduce their energy/utility costs. It has also eliminated the need to switch orifice plates seasonally or stack multiple transmitters, thereby reducing operations and maintenance cost while increasing uptime. Additionally, the use of Rosemount 1595 Conditioning Orifice Plates has allowed the university to install measurement points in areas with little straight pipe run without the use of flow straighteners. By using both technologies, the university achieved an accurate differential pressure measurement while decreasing the overall cost at each of the 12 campus buildings.

Figure 2: 1595 Conditioning Orifice Plate

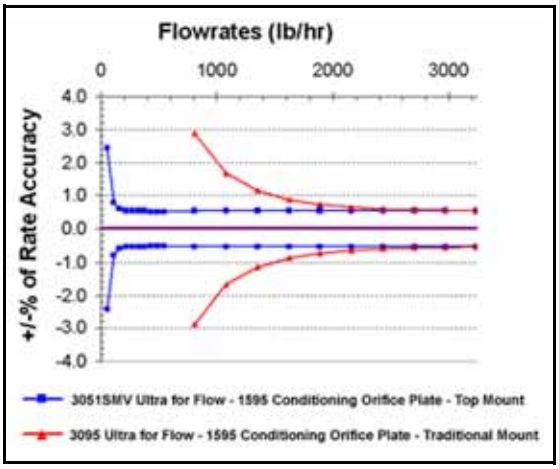

Figure 3. Total System Performance Comparison

RESOURCES

Rosemount 3051S MultiVariable Transmitter
http://www.emersonprocess.com/rosemount/products/pressure/m3051smv.html

Emerson Process Management
Rosemount Division
8200 Market Boulevard
Chanhassen, MN 55317 USA
T (U.S.) 1-800-999-9307
T (International) (952) 906-8888
F (952) 949-7001
www.rosemount.com

Emerson Process Management Flow
Neonstraat 1
6718 WX Ede
The Netherlands
Tel +31 (0) 318 495 555
Fax +31 (0) 318 495 556

Emerson FZE
P.O. Box 17033
Jebel Ali Free Zone
Dubai UAE
Tel +971 4 811 8100
Fax +971 4 886 5465

Emerson Process Management
Emerson Process Management Asia
Pacific Private Limited
1 Pandan Crescent
Singapore 128461
T (65) 6777 8211
F (65) 6777 0947
Enquiries@AP.EmersonProcess.com

ROSEMOUNT®

For more information:
www.rosemount.com

EMERSON™
Process Management

00830-3400-4801, Rev AA