

Ammonia Plant Saves \$11,000 With Conditioning Orifice Plate Technology

RESULTS

- Reduced material, labor, and procurement costs
- Reduced straight run piping required for measurement
- Provided accurate measurement in dynamic flow conditions



APPLICATION

Inlet water pipe for steam producing process

CUSTOMER

Ammonia Plant in the Midwest United States

CHALLENGE

An ammonia plant required a better solution for taking measurements in the inlet water pipe that runs to the economizer (the process that uses waste heat from the plant to produce steam). The piping design creates dynamic flow conditions causing inaccurate measurement at the existing Differential Pressure (DP) measurement point.

The 3-in. diameter inlet water pipe runs approximately 20 feet above ground level for about 50 feet to the existing DP flowmeter. After the existing DP measurement point, the water feed pipe makes a 90-degree turn that extends 50 feet to the top of the economizer. The measurement point meets all the requirements of a DP flow application but the dynamic condition of the flow (swirling flow) caused inaccurate measurement.

SOLUTION

The customer wanted to retrofit the existing DP primary element and not have to redesign the current piping layout. Emerson supplied the Rosemount 1595 Conditioning Orifice Plate which is designed for applications with limited pipe run, only requiring two pipe diameters from an upstream flow disturbance such as double elbows, valves and reducers. This unique design achieves an accuracy of $\pm 0.5\%$, making it the best performing DP primary element.

The 1595 Conditioning Orifice Plate provided an accurate measurement and eliminated the dynamic flow conditions that had previously hindered the measurement point. The company estimated savings of \$11,000 by reducing material, labor and procurement costs.

By requiring less straight run, the company saved thousands of dollars in material, labor and procurement costs.



Figure 1. Rosemount 1595 Conditioning Orifice Plate

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Rosemount 1595 Conditioning Orifice Plate

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