FCI ST100

High Flow Rate Hydrogen in Chemical Plant

Application Note Case Study ANCS 015

Problem

A major manufacturer of polysilicon materials needed to measure a high flow rate of hydrogen in their plant operations. The process pipe runs of 100 mm [4 inch] diameter pipe were already installed and in operation. To overcome the high flow rate and wide turndown needed, other flow meter suppliers were advising the plant's engineers to install larger diameter piping or expansion pipe runs to decrease the flow rate to bring it into a range within which their technology could measure. Replacing plant piping was an unacceptable solution due engineering, installation and plant shut-down costs. Further, the plant engineers had tried constant ΔT technology type thermal flow meters at other plants with limited success.

Flow Conditions

- Pipe diameter: 4 **"** [100 mm]
- Flow rate: 0 lb/hr to 6600 lb/hr [0 kg/hr to 3,000 kg/hr]
- Temperature: 68 °F [20 °C]
- Pressure: 29 psi to 87 psi [2 bar to 6 bar]
- Media composition: Hydrogen
- Straight run available: 20 diameters

Solution

Install an FCI constant power technology thermal flow meter Model ST100. The ST100 measured the hydrogen high flow rate and measured over the full, wide flow range required by the plant's engineers. Further, the insertion type thermal flow was easily installed in the existing pipe. Because the ST100 could meet the full flow range and be installed in the existing pipe, the plant was able to avoid the significant costs of re-piping as was being required of alternative flow meter technologies.

FCI ST100 Series

Benefits

- Original pipe size could be maintained saving significant costs to the plant
- High flow rate for hydrogen saved cost of re-engineering and kept plant in operation
- Wide turndown achieved with single meter, avoided cost of purchasing and installing multiple meters and adding more piping to meet straight-run requirements.
- Lowest installation costs with single-tap point, insertion-style.