INNOVATION AWARDS

P.I. PROCESS INSTRUMENTATION

INNOVATION AWARDS 2022

2022 Winner and Honorable Mentions

WINNER

FS10i Series Thermal Mass Flow Meter
Fluid Components International (FCI)

Thermal flow meter helps compressed air system manufacturer keep the pressure steady

Industrial compressed air system leaks have been identified for decades as a serious cost issue that also adds to the strain on the electric grid, according to the U.S. Department of Energy and many other agencies around the globe. As industrialized nations now struggle with energy shortages along with much is certainly true. If ignored by plant managers and engineers, air/gas leaks make it nearly impossible to achieve reasonable plant efficiency.

According to some estimates, compressed air systems waste as much as 20% or more of the energy required to operate them. Over time, the utility costs of operating these systems will easily pay for the detection and repair of leaks or the complete replacement of obsolete systems that have served beyond their useful expected life cycle.

Detecting air/gas leaks requires accurate flow measurement. There is an old saying in industrial process control that you can’t control what you don’t measure. In the case of air compressor systems, that statement is certainly true. If ignored by plant managers and engineers, air/gas leaks make it nearly impossible to achieve reasonable plant efficiency.

The problem

When engineers at CALMS Air needed a new and more dependable flow measurement solution to monitor compressed air leaks, the company contacted the applications group at Fluid Components International (FCI) about its thermal dispersion sensing technology.

CALMS Air was looking for an accurate meter with low flow measurement capabilities that could be easily installed in multiple line sizes and with ISO17025/NIST-traceable compressed air meter calibration to support its air monitoring products.

The FS10i Flow Meters provide a fluid-matched, calibrated and linearized way to measure compressed air and demand side monitoring to provide area functional monitoring to support compressed air optimization and energy management control system add-ons for permanent monitoring. The FS10i Flow Meters include a 10-segment LED array. For visual indication, the FS10i Flow Meters include a 10-segment LED array. This display illuminates proportionally to the flow rate and flashes if an alarm trip point is reached.

The FS10i Flow Meters are designed for a wide range of applications beyond air compressors. They are also ideal for any type of process or compressed air audits, sub metering of waste gas leak detection, zone monitoring, as well as cost allocation by measuring no additional pressure or temperature. They are also ideal for any type of process or compressed air audits, sub metering of waste gas leak detection, zone monitoring, as well as cost allocation by measuring no additional pressure or temperature. They are also ideal for any type of process or compressed air audits, sub metering of waste gas leak detection, zone monitoring, as well as cost allocation by measuring no additional pressure or temperature.

The solution

The engineers at FCI recommended the compact FS10i Thermal Flow Meter for use in CALMS Air applications. This flow meter was designed specifically for compressed air applications and other small line processes. The advanced thermal dispersion flow sensing technology and electronics offer a number of advantages.

These compressed air measurement advantages include thermal dispersion direct mass flow measurement requiring no additional pressure or temperature sensors, easy hot-tap installation and control that you can’t control what you don’t measure. In the case of air compressor systems, that statement is certainly true. If ignored by plant managers and engineers, air/gas leaks make it nearly impossible to achieve reasonable plant efficiency.

For safety instrumented systems (SIS) in critical and hazardous processes. The FS10i Flow Meters include a 10-segment LED array. This display illuminates proportionally to the flow rate and flashes if an alarm trip point is reached.

The FS10i Flow Meters support installation in line sizes from 1 inch to 20 inches. They operate over a wide, 100:1 turndown from 1 to 400 SCFM depending on the fluid media and line size. Their 316L stainless steel wetted parts ensure superior corrosion resistance in the pipe. High-temperature sensor tips are also available for corrosive applications, and the sensor is fully retractable inside the compression fitting.

An aluminum housing and protective rubber boot surrounding the display area make the FS10i suitable for installation in demanding IP 64/65/66 locations. The FS10i Flow Meter also carries global approvals: FM, FMc, ATEX, IECEx and EAC/TR CU (Div 2) and Zone 2/Zone 22 installations.

Conclusion

Thermal flow meters such as FCI’s Model FS10i are ideal to perform compressed air audits, sub metering of compressed air and demand side monitoring, as well as cost allocation by measuring no additional pressure or temperature. They are also ideal for any type of process or compressed air audits, sub metering of waste gas leak detection, zone monitoring, as well as cost allocation by measuring no additional pressure or temperature. They are also ideal for any type of process or compressed air audits, sub metering of waste gas leak detection, zone monitoring, as well as cost allocation by measuring no additional pressure or temperature.

The product engineers at CALMS Air have installed multiple FCI FS10i Flow Meters into various product lines sold to customers worldwide. They have been impressed with the accuracy, simplicity, dependability and versatility of this flow measurement solution and the way it allows their customers to maximize the operational efficiency, reliability and financial analysis of compressed air systems while also reducing their energy consumption and costs.