

Multi-Parameter Bench Standard for Manufacturer's Flow Test Bench

Application Note Case Study ANCS014

Problem

Mazzei Injector Company, the world's leading manufacturer of mixing and contacting technologies, wanted to build a flow test bench to accurately measure air flow, but with the flexibility to measure at three different flow rates without having to change out sensors, elements or complex manifolds. They also wanted to measure pressure and temperature in the test bench pipe. They had experience with other flow meter technologies such as turbine, venturi, pitot tube, and orifice plate, but none had the range-ability, changeability, and multi-variable measurements they were seeking.

Flow Conditions

- Pipe diameter: 2.5" [DN65]
- Flow rate: (Three ranges)
 - 30 SCFH to 120 SCFH [0,8 NCMH to 3,4 NCMH]
 - 90 SCFH to 1200 SCFH [2,6 NCMH to 34 NCMH]
 - 900 SCFH to 5000 SCFH [25 NCMH to 141 NCMH]
- Temperature: 80 °F [27 °C]
- Pressure: 30 psi [2 bar]
- Media composition: Air
- Straight run: Sufficient, but flow conditioner desired to ensure repeatable flow profile under all conditions.

Solution

Install an FCI constant power thermal dispersion flow meter Model STP100 along with a Vortab® VIP flow conditioner. The STP100 is a "triple variable" meter providing all three desired measurements of flow rate, temperature and pressure. The STP100 is also capable of storing up to five (5) calibrations, so all three of Mazzei ranges are stored and recallable by test stand operator on demand. The VIP flow conditioner is easy to install and its low pressure drop minimizes energy usage to power the flow stand.

FCI Model STP100 Flow Meter

Vortab Model VIP Flow Conditioner

Benefits

- Multi-variable measurements and multiple calibrations achieve significant cost savings over having to purchase multiple single purpose sensors and multiple flow meters.
- Continuous savings in labor costs and time by not having to constantly swap-out pipe sections, meters or sensor into test bench.

