



FCI ST100L with  
Vortab® flow  
conditioner

## Sub-Metering of Gas Usage for Billing

*Application Note Case Study ANCS 006*

Many colleges and universities use various gases in their facilities, particularly in laboratories and laboratory classes. These gases are supplied from a centralized location, then distributed to individual labs via a network of piping. However, individual labs and departments are structured and measured as separate cost centers and business units. A major university in California was using an extensive amount of nitrogen, and wanted to install point-of-use gas mass flow meters on the nitrogen distribution pipes to accurately measure the usage and assign cost by department.

### **Problem**

The nitrogen usage varies widely depending on factors such as class size. With small classes the flow rate can be very low with an undeveloped flow profile. They need to accurately measure and record a totalized flow on a daily basis to provide to cost accounting. They want to view both flow rate and totalized flow on demand.

### **Flow Conditions**

- Line size: 1" [DN25]
- Process connection: 1" NPT
- Pressure: 100 psig [7 bar(g)]
- Process temperature: 50 °F to 100 °F [10 °C to 38 °C]
- Flow rate: 0.72 SCFM to 150 SCFM (0,02 NCMM to 4,25 NCMM)
- Media: Nitrogen

### **Solution**

Install a flow meter, performance optimized for use in nitrogen and with wide turndown, into the 1 inch [25 mm] distribution line feeding the individual department labs. Install FCI constant power technology thermal flow meter, Model ST100L, with -FP sensor head, and integral Vortab flow conditioner built-in to the spool-piece. The Vortab flow conditioner will create a repeatable and distortion-free flow profile throughout the entire flow range, including the low flow rates, to ensure accurate measurement. The best-in-class digital/graphical LCD provides a continuous, easy to read local readout of flow rate and totalized flow.

**FCI ST100 Series: Model ST100L-41F700012DD1EHK0001**

### **Benefits**

- Low flow measurement sensitivity, down to 0.25 fps [0.07 mps].
- Wide turndown, 100:1 standard.
- Vortab flow conditioner for accurate measurement at very low flow rates, and through transitional flow range.
- Low cost, easy installation.
- Pulse output for future connection to a remote totalizer.
- Side benefit: Low flow sensitivity detects leakage and provides early signal for maintenance and reduced cost to department as well as university as a whole.