Meriam Instrument
a ScottFetzer company

APPLICATION NEWSLETTER

PROBLEM: Gas Flow Measurement in Large Ducts.

Plant Maintenance and Instrumentation Engineers often face the problem of having to measure gas flows in large ducts. The applications vary from HVAC applications to controlling gas flow in a heat treating process.

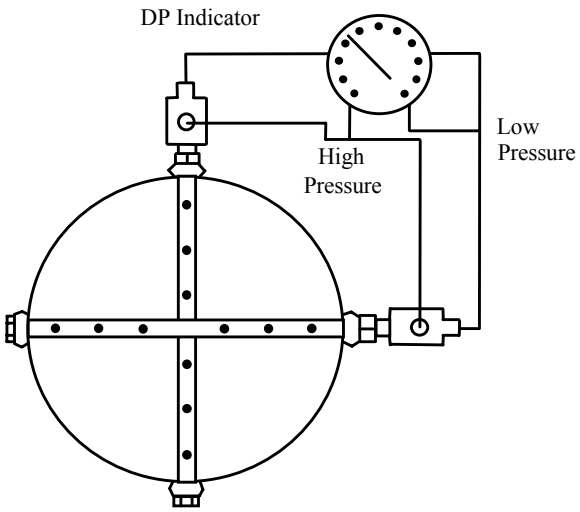
Typically the gas is flowing at a low pressure. The permanent pressure loss caused by the primary element's intrusion into the flow stream must be minimal. To insure that the permanent pressure loss is minimal, primary elements with a narrow profile, such as a pitot tube, are preferred. However, there is usually not enough straight run of the large diameter duct to insure a good flow profile. A skewed flow profile can result in areas of higher or lower velocity going undetected by a narrow primary element. These factors combine to make accurate measurement of an average flow rate very difficult.

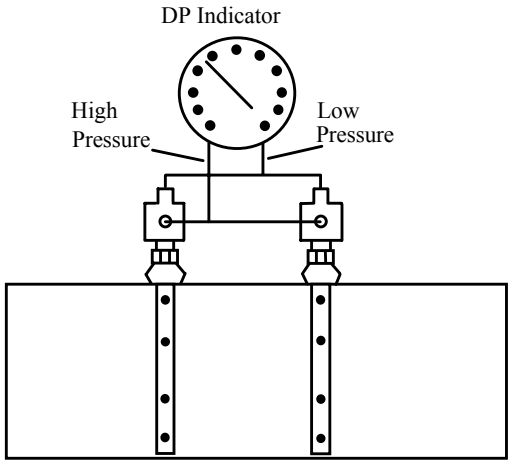
SOLUTION: Mounting two Accutubes in the duct increases the accuracy of the flow measurement. In round ducts the probes are mounted perpendicular to each other. In a square or rectangular duct they are mounted either parallel or perpendicular to each other, depending on which orientation best fits the dimensions of the ducting. The high pressure ports on the Accutube are manifolded into the high pressure side of the readout device and the low pressure ports are manifolded into the low pressure side.

Installing two Accutubes doubles the area of the duct being monitored. This reduces the chance that areas of higher or lower velocity will escape detection. Therefore, the average flow rate is calculated more accurately than it can be with a narrow, single measurement point, insertion style devices such as a thermal mass flow or turbine meters.

Even with two probes in the flow stream, the Accutubes remain a relatively small obstruction and the permanent pressure loss is kept very low. The result is that less energy is required to push the gas past the Accutube than through other meters such as venturis or orifice plates. The energy saved goes directly to the bottom line in lower operating costs.

Another direct benefit of the Accutube versus other types of primary elements is lower installation costs. When the cost of the Accutubes, a readout device and installation are considered, the Accutube can be installed for significantly less money than other technologies.





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