

APPLICATION NEWSLETTER

PROBLEM: Maximizing Burner BTU Output

The project engineer at a hazardous waste incinerator needed to measure the mass flow rate of the gas and air going to a burner. This facility uses a rotary kiln to burn the hazardous wastes. The EPA requires that the BTU output of the burner be closely controlled to insure that the waste is burned completely. To control the BTU output, he needed a primary element in both the gas and air pipes to accurately measure the mass flow rates of the gases. Also, the elements had to tie into the DCS at the plant. The DCS monitors the mass flow rates of the air and gas and adjusts them if they are not in the proper ratios. The element had to operate over a 10:1 turndown of the flow rate. The static pressure was just 20 inches W.C. so permanent pressure loss had to be minimal.

SOLUTION: Meriam Instrument's solution to this application was to install 21T Accutubes in the lines. DP transmitters with a 4-20 mA output provided the communication to the DCS. Because of the large turn down requirement, a stacked DP arrangement was needed. At the maximum flow rate the DP was 5.8 inches W.C. This meant that permanent pressure loss would not exceed 0.58 inches W.C.

Price for the 21T with the two DP transmitters, an absolute pressure transmitter and RTD was about \$3000. The project engineer indicated that the other technologies that he had been considering with similar performance characteristics cost \$7500 to \$10000. The Accutube could have been used in a less sophisticated system as well. If the adjustments were made manually, local indicators such as the Digital Gauge or manometers could be used at a greatly reduced price.

