

APPLICATION NOTE

RWE Innogy - Didcot Power Station

DUST RESISTANT AVERAGING PITOT TUBES - FROM SYSTEC

BACKGROUND:

Didcot A, has four 500MW coal/gas fired generating sets burning pulverized coal to produce steam. The steam is fed through a turbine to produce electricity.

THE PROBLEM:

PRE HEATED COMBUSTION AIR FLOW MEASUREMENT.

The plant was built with a heat recovery system that utilizes the heat in the exhaust gasses to heat a slowly rotating 'heat wheel' that subsequently preheats the combustion air. The plant was built with large venturi metering sections that produce a low dp. These, combined with the long impulse lines, always proved to be a problem for obtaining a good flow reading as there was inherent 'noise' on the measurement signal.

In addition, dust is carried over on the heat wheel in to the air inlet, giving rise to dust coverage and blockage of normal alternate sensors installed in the air flow.

The Venturi throat is approximately 2m wide and 1m deep.

CLIENT TESTING:

The I/C engineer wanted to test 2-3 different instruments to see which was the most reliable, robust and resistant to blockage. Three pitots were tested from different manufacturers which were installed and run to see which would continue to provide a measurement signal after a long installation and which would be least susceptible to blockage and fouling. After a three month test, the Systec DF25 Sensor from Flowline was selected as there was no decay in the measured dp.. The devices from the other manufactures showed a decay in the measured dp. The Improvement in the dp created is from approx 6 mbar (Venturi) to 12 mbar (DF25).

FLOWLINE'S METERING SOLUTION:

The DF25 Averaging Pitot Tube from Systec has been designed to be suitable for use on applications with very high dust loads. This system does NOT have an air purge kit as standard but they are available where required. The unit is used in conjunction with the SIEMENS DSIII draft range dp cell that has a full scale range of 1-20mbar.

The DF25 was supplied with a three way manifold so the cell can be isolated and removed for calibration and testing.

EQUIPMENT DESCRIPTION:

The Systec range of DF8, DF10, DF25, DF44 and DF50 range of sensors are available for very small pipes to very large stacks up to a maximum size of 15m. They can be used for high pressure steam and can be supplied as a fully hot tap system. Full mass correction can be supplied with integral or separate Temperature and Pressure Sensors and the correction can be supplied by the Systec Flowcom that comes with many data tables preprogrammed in the unit, and it includes the GERG88 Natural Gas Calculation. The DF range of sensors are suitable for liquids gasses and steam, and a range of dirty flows such as pulverized coal feeding coal fired power stations. The ports are of an over sized design(8 mm on the DF25) so that blockage does not occur and condensate will not form in the impulse lines causing false dp readings. Multi Variable transmitters are also available on request.

flowline
SPECIALISTS IN FLOW MEASUREMENT

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Further Information



For Further information on the Systec DF25 Deltaflow range of sensors contact Flowline on 020 8207 6565

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EQUIPMENT DESCRIPTION:



EQUIPMENT SPECIFICATION:

32 OFF
Differential Pressure
Primary Element:-
Systec DF25,
DN1800,
SIEMENS DSIII
dp cell
20mbar