Optimising compressed air supply with ultrasonic clamp-on flowmeters

Providing reliable and precise measured values for compressed air, clamp-on ultrasonic flowmeters offer the added benefit of a straightforward retrofit. Using ultrasonic sensors, the flowmeter is clamped to the outside of the compressed air pipe, and because it's non-intrusive, this measurement technique is ideal for applications where the pipe is under pressure or where the fluid is difficult to access. The flowmeter can be installed with no need to shut down the compressed air system or disrupt the flow of the air.

Highly accurate, clamp-on ultrasonic flowmeters are able to measure a wide range of flow rates and pipe sizes. Using the time it takes for the sound waves to travel between the sensors, the flowmeter calculates the flow rate of the compressed air. Because the sound waves are affected by the speed of the compressed air, the flowmeter also measures the velocity of the air and uses this information to determine the flow rate.

Compressed air balancing

Supplying compressed air to a chemical park at various pressure levels, as well as control air, one of Germany's largest chemical-technical service providers tasked FLEXIM with flow measurement of the entire volume of compressed air generated in their L57 power plant. They had been using inline flowmeters which were consistently showing discrepancies in the balancing of generation and consumption qualities. It was suspected that there was an incorrect quantity measurement on one of the generating units, so to get to the root cause of the problem it was decided to empirically record the total amount of compressed air generated in the L57 power plant through a control measurement. Downtime was out of the question, so non-invasive clamp-on ultrasonic flow measurement was the obvious solution.

Dealing with a disturbed flow profile and possible very high flow velocities

The unique challenges of this measurement lay in the disturbed flow profile and the possibility of very high flow velocities, with the most suitable measuring point being located behind a bend. A key advantage of non-invasive clamp-on ultrasonic flow measurement is that it can be tested without disturbing plant operation, so following revealing test results, a stationary clamp-on ultrasonic system was permanently installed.

Clamp-on flowmeters offer fast channel switching for good compensation of the disturbed flow profile, and its high measuring dynamics also facilitate the recording of small consumption quantities.

For more detailed information on the benefits of non-invasive ultrasonic flow measurement in the chemical industry, contact Simon Millington - www.flexim.co.uk | sales@flexim.co.uk | +44 (0)1606 781 420