APPLICATION REPORT

COMPRESSED AIR MEASUREMENT

Pharma Industrial Energy Efficiency

"The versatility of the FLUXUS® G601 flowmeter fits our customer's needs perfectly. On compressed air applications, it allows them to quantify their consumption and serves as a reference for inline flowmeter control. It is also used to control raw water flows, some-times loaded with particles."

Ronan Blot,
Regional Sales Manager,
Flexim France.

Measuring Task

Various temporary measurements of compressed air as well as other gas and liquid flows and thermal energy rates in order to increase consumption transparency and energy efficiency

A major international pharmaceutical company operates a manufacturing and specialized packaging plant for dry powder medication (pills, coated tablets, capsules) and injectable solutions in ampoules in the southwest of France. The plant manages complex processes such as the production of controlled-release micro-granules, continuous dry granulation, and slugging.

For both production and packaging, compressed air is an important utility. Unfortunately, compressed air is fundamentally an unfavourable medium in terms of energy efficiency. Its generation requires much more mechanical or electrical energy than can be used by itself. In order to increase energy efficiency, it is therefore mandatory to monitor compressed air consumption and to detect possible leakages.

The produced compressed air volumes and the major flows in the distribution network are monitored at the plant with built-in thermal mass meters. They are extremely sensitive to humidity as a matter of principle.

If their transducers are covered with condensation water, the cooling produced during evaporation causes a huge measurement error. Therefore, the process engineers chose a suitable way to control fixed compressed air flow meters and measure consumption rates at points where no measuring device is installed.

Solution

Flexim's portable FLUXUS® G601 proves to be the ideal instrument for this kind of measurement. Since acquiring the equipment, process engineers have developed more and more applications for the versatile measuring system. In addition to checking permanently installed compressed air flowmeters and the temporary measurement of compressed air consumption, the clamp-on ultrasonic system is suitable as an all-purpose device for measuring practically everything that flows, from gases to liquids.

With its two temperature inputs to which Pt100 temperature sensors are connected, the FLUXUS® G601 CA Energy is also a complete energy meter. Heat flow measurement with FLUXUS® is carried out using the differential method, i.e. by determining the amount of heat flowing into and out of the system.
FLUXUS® measures the volume flow of the heat transfer medium flowing through the consuming system as well as the temperatures in the flow and return. FLUXUS® calculates the current output of the system, i.e. the energy flow, from measured values based on enthalpy curves which are stored in the device for various heat transfer media. FLUXUS® can also be used as an energy meter due to the volume meter integrated in the measuring transmitter. A standard application of FLUXUS® G601 CA Energy as a heat flow meter is to monitor the efficiency of heat exchangers as part of predictive maintenance.

The users at the plant appreciate the extraordinary versatility and practicability of the robust measuring system. For pharmaceutical applications, non-intrusive acoustic measurement from the outside of the pipe has three main advantages: There is never any risk of contamination of the medium flowing inside, being it e.g. ultra-pure water or ultra-pure nitrogen, nor will the externally mounted ultrasonic transducers ever cause any leakage. Last, but not least, installation of a flow measurement point with FLUXUS® takes place during ongoing operation and does not affect the availability of the plant.

The compressor room

Temporary compressed air flow measurement with FLUXUS® G601

The ultrasonic transducers are fixed in a Variofx P mounting system onto the outside of the 140 mm stainless steel pipe

Measuring Points and Instrumentation

Pipelines	typically stainless steel, diameters ~ 2“ – 6‘
Medium	compressed air, various liquids and gases
Measuring equipment	1 portable FLUXUS® G601 with GRM transducers and Variofix P mounting system

Advantages

- Reliable and accurate non-intrusive recording of compressed air quantities (standard volume flow)
- Cost savings by detecting leaks and recognition of efficiency potential through optimised operational management
- Extremely versatile measuring system: one single device for many measuring points and tasks
- Fast and competent support by Flexim’s team

For more information, visit
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