

New Non-invasive Steam Flow Meter & Monitoring Service

Abstract

When process engineers and plant managers need to measure steam flow rates, serious consideration and expenditure was always required due to the issues and costs of isolating processes and installing inline steam meters.

Equipment Used

The Panametrics PT878GC Portable Flow Meter.

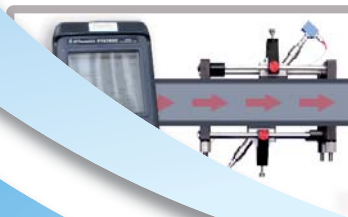
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New Non-invasive Steam Flow Meter & Monitoring Service

Background

Manufacturers the world over have been asked repeatedly whether there is a non-invasive steam flow meter system for measuring steam flow rates. Until recently, the answer has always been no but new technology, pioneered by Panametrics and distributed by RS Hydro passes the control back to the process engineer.

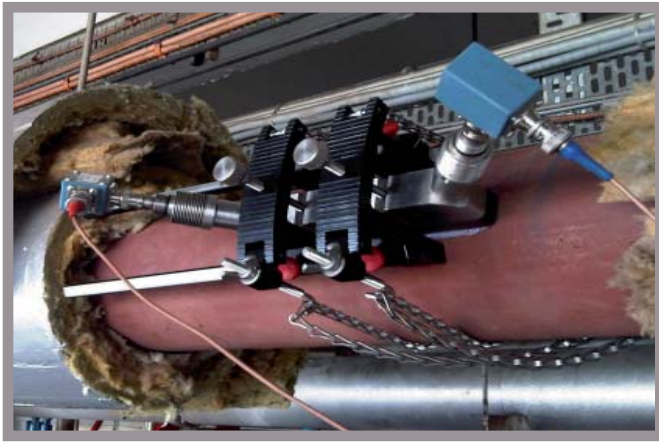


fig1. The gas meter installation.

Steam Flow Rate Surveys at Mars

Just like liquid flow metering, steam flow meters also require maintenance and replacement. Installing new or replacement inline steam flow meters can be a costly and daunting process involving shutdowns and loss of production. With increasing energy costs, optimising steam production/usage is also a guaranteed way to reduce your energy consumption. Mars Foods recently contracted RS Hydro due to concerns over boiler efficiency and internal useage of steam. RS Hydro are the only company in the UK who offer a comprehensive steam flow measurement and flow survey service using clamp on steam flow meters.

A non invasive flow measurement service was required because the engineers at the plant could not shut down the steam system for inline flow meters. RS Hydro were required to monitor steam usage across the manufacturing plant for a period of one

week at three separate locations: (1) output from the boiler (12" CS Sch40 -10 bar); (2) flow to canning operations; (8" CS Sch40 – 6barg) and (3) flow to plant (6" CS Sch40-7barg).

PT878GC for Steam Flow Calculations

Three PT878GCs were used to conduct the survey and recorded flow, mass flow, velocity and totals every 5mins for one week. After erecting scaffolding 24" of insulation were stripped off the overhead steam pipes. All three flow meters were installed by an RS Hydro field engineer within one day. This involved the installation of non invasive flow sensors, brackets, pipe dampening material (when required) and programming the handheld electronics. Such is the pedigree of the PT878GC, the flow meters were able to work at only 6 barg.

The RS Hydro engineer returned a week later to download the data and remove each flow meter. The data was subsequently sent to Mars engineers for analysis. During the testing, the UK experienced a prolonged spell of abnormally cold weather which helped Mars engineers understand the ability of their steam supply system at higher loads.

Full Steam Ahead

RS Hydro has extended its flow metering services to include comprehensive steam flow monitoring using either portable and permanent clamp on systems. Where it is not possible to install clamp on systems, RS Hydro offer a comprehensive range of vortex flow meters with internal pressure and temperature compensation. Systems are available in portable, field mount and explosion proof designs with temperature and pressure compensation to provide accurate mass flow measurement. For inline systems, RS Hydro also provide vortex flow meters.