



APPLICATION NOTE Power Industry

Steam and saturated steam heat measurements for energy producers

- Volume flow, temperature and pressure measurements with a measuring device
- 2-wire technology
- Problem-free deployment

1. Background

With public utility companies, exact heat quantities have to be recorded for internal calculation purposes. To do this, mass flow measurements of steam and saturated steam are needed, in order then to be able to determine the exact energy consumption of the different departments.

2. Measurement requirements

The measuring devices must be able to measure steam and saturated steam.

Parameters

Mediums	Steam and superheated steam.
Volume flow	1× 34 t/h, 1× 7 t/h and 2× 5 t/h
Pressure	8...12 bar
Density	4.6...6.6 kg/m ³
Viscosity	0,0148...0,01543 mPa•s

Because of the very limited space, flow conditioners have to be deployed at two measurement points, in order to keep the inlet runs short.



Distribution station

3. KROHNE Solution

For these applications, KROHNE supplied four OPTISWIRL 4070 C Vortex flowmeters for steam and saturated steam measurements. All devices have flange connections. The installation sizes for the saturated steam measurements are 1 x DN 200 and 1 x DN 100 in pressure rating PN 40. KROHNE supplied 2 devices with pressure and temperature compensation for the feed water warming and vessel pre-warming, for measuring superheated steam in the installation size DN 80, pressure rating PN 40. 2 PT 100 temperature sensors and 1 compact μ flow calculator were deployed for each measuring point, for the calculation of the net heat quantity.

4. Customer benefits

The Vortex flowmeters from KROHNE deliver enormous price advantages for the customers, through the integrated pressure and temperature compensation and the integrated saturated steam calculation. The heat energy and thus the gross heat quantity can be recorded in the device, through the measurement of pressure and temperature. This removes the need for costly installations of additional pressure and temperature sensors and flow calculators.



Boiler room

5. Product used

OPTISWIRL 4070 C

- 2-wire vortex flowmeter with integrated pressure and temperature compensation
- Non-wearing, fully welded stainless steel construction with high corrosion, pressure and temperature resistance
- Maximum measurement reliability thanks to Intelligent Signal Processing (ISP), stable measurement results, free from external disturbances
- Ready to use immediately thanks to plug & play
- Maintenance-free measuring sensor design
- PACTware available at no extra cost
- Pressure and temperature available via HART



Contact

Please visit our website for a current list of all KROHNE contacts and addresses.



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