

Heat Interface Units (HIUs) : Optimise your energy performance with our steam flow measurement solutions

Production of energy

Keywords

- Heat Interface Units (HIUs)
- Heat networks
- District heating
- Energy performance
- Steam flow metering
- Bi-directional metering
- Energy Savings



Context

For several years now, the irremediable depletion of fossil fuels and the urgent need to slow down global warming have led us to rethink the energy mix. Requirements for low carbon energy solutions for homes have prompted a rethink on how heating and hot water needs are serviced. District heating, also known as community district, is part of this ecological transition.

A central heat source (which can be an energy centre/plant room) feeds energy into the heat network which is distributed via pipes throughout an area. The central heat source could be boilers, combined heat and power (CHP), biomass boilers or recycled industrial waste heat. Heat interface units (HIUs) then feed it to individual consumers.

Demand for heat networks is growing and operators are expanding them to optimise the energy performance of sites while offering their customers attractive prices.

Challenges

A heat networks operator provides heating to customers in Paris, France, through a system of steam boilers.

The flow of steam fluctuates according to customer demand and seasonality. The heating demand is high in winter and low in summer. The metering application is measuring steam flow at 202°C produced by gas and biomass boilers.

During boiler shutdowns or power shortages, steam is supplied from another production site. This requires bi-directional measurement to measure steam in both directions over wide flow ranges.

In order to save energy, the heating operator wants to minimise the pressure losses of the future meters.



The Fuji Electric solution

Difficult flow applications require close collaboration between the meter manufacturer and the end user to fully understand the process operating conditions, noise and vibration of the surrounding machinery.



The V-Cone® flow meter was chosen for this project because of the lack of straight lengths required. Optimised for confined spaces, the V-Cone® flow meter was easily integrated into the existing configuration, eliminating the need for re-piping.

Orifice plates and vortex flow meters could have measured steam flow in this situation. However, the straight length requirements of orifice plates would have required modifications and additional pipe lengths. The wide flow range of the application would have required two vortex flow meters. Both solutions would have resulted in significant additional pressure losses and costs that would have been unacceptable to the heating district operator.

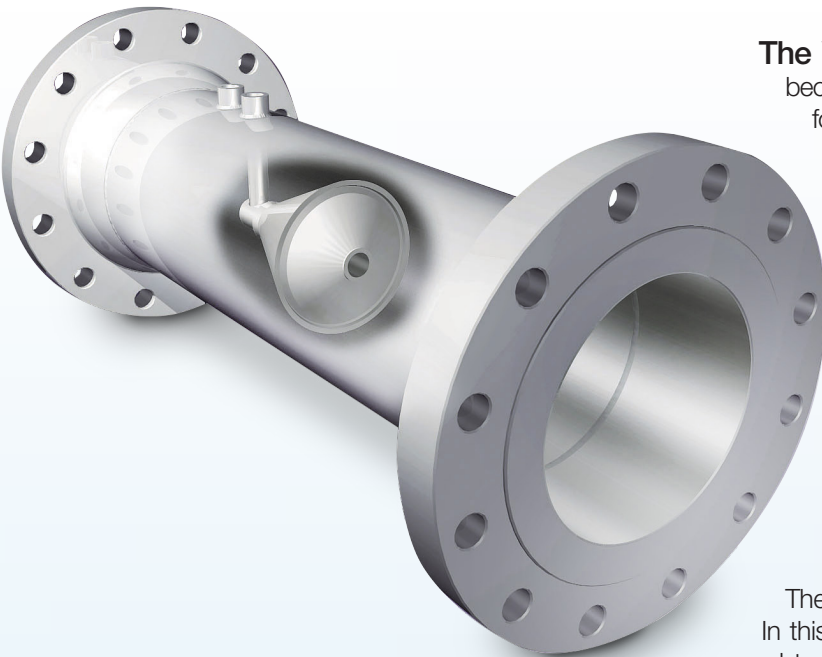
The V-Cone® technology claims a rangeability of 10:1. In this application, 4 differential pressure transmitters were used to accurately measure the desired flow range (20:1) in both directions.

The Fuji Electric solution also included pressure measurement, temperature measurement, energy flow computers, cabinets and accessories: condensate pots and isolation valves.

Overall, the V-Cone® flow meter proved to be an ideal choice for accurate measurement over a wide range of bi-directional flow.

Since 2016, the V-Cone® flow meter has been certified in the ISO5167-5 standard, which allows it to be used for custody transfer metering. The versatility of the V-Cone® flow meter for a wide range of flow and fluid conditions, as well as the ability to customise, make it a viable and sustainable solution for many new and retrofit flow measurement applications.

Another advantage of this measurement is that it can be calibrated on site without the need for removing the flow meter and without stopping steam production. After the success of this challenging measurement, the heating operator decided to install similar measurement devices for hot condensate returns.





- Reduce pressure losses
- Reduce your production costs
- Maximise your energy efficiency
- Increase your profitability

V-Cône® flow meter

Simple installation without pipe modifications

No straight lengths or flow conditioners required

Energy savings and production gains

Lowest pressure drop on the market

Accurate and repeatable bi-directional transactional

Complies with ISO5167-5 flow measurement standard

Maximum flexibility

Wide range of flow conditions and media (steam, gases, liquids)

Wide measuring range

Captures low and high flow rates

Low maintenance costs

Lifetime of over 25 years of the main element, calibration without production downtime



V-Cône®
Flow meter



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