

Application note



Panametrics helps keep Sweden warm

Summary

Luleå Energi AB is a Swedish company that supplies electricity and district heating to approximately 80,000 residents in the Luleå municipality.

Optimizing the energy flow across heating applications is always critical, but especially so in a region that often stays below freezing for several months of the year.

To optimize the overall efficiency of the heat distribution system, adiabatic hot water tanks are used by the customer as reservoirs to be able to supply the population with hot water in peak-demand periods.

Finding the balance between a technically sound solution and a reasonable budget, is always a challenge, but given the criticality of the system and its impact on the residents of Luleå, the customer wanted a fit-for-purpose, best-in-class solution.

Application

Medium:	Heating water
Pipe size and material:	DN600 (24") and DN250 (10") / Carbon Steel
Flow rate:	4000m ³ /h (bi-di)–900m ³ /h (17,611 GPM (bi-di) – 3,960 GPM)
Temperature:	Up to 120°C (248°F)
Requested accuracy:	Better than 2% of reading

Benefits:

- Easy to install with no process interruption
- Easy to set up and program
- Strong reputation and local support in water measurement
- Bidirectional measurement / Large pipes
- Reliability and accuracy



Challenges

Flow meter solutions were required for a newly constructed 30.000 m³ buffer tank, which has two main functions. Firstly, to serve as a “heat accumulator” to improve the overall system efficiency. Secondly, to cope with the demand from across the region in peak periods.

These systems use big pipeline sizes, as the heat-flow needs to be able to reach an entire population quickly. While inline flow meters would have been suitable in this application, they were considered cost prohibitive by the customer.

The customer recognized that monitoring the energy transfer had to be accurately managed to ensure:

- Enough heat is available to cover the demand
- Energy leaks and losses are detected quickly.

Solution

Panametrics supplied in this case:

- 2x PanaFlowLC with XMT1000 2-path XMTXP R10 (24”)
- 3x AT600 + C-RS 402 2 Traverse (10”)

Panametrics recommended two solutions:

- Ultrasonic clamp-on PanaFlowLC flow meter with dual path configuration – this provides Luleå with accurate and reliable flow measurement data while also getting a redundant measurement in case one path fails.
- Ultrasonic clamp-on Aquatrans AT600 – this provides the best-in-class measurement solution for a fraction of the cost of inline flow meters with very low cost of installation and ownership.

Panametrics has an installed base of several dozen units in different sites for this very same application.

Having installed Panametrics solutions, Luleå Energi is now benefiting from accurate and reliable flow measurements. and is better able to provide residents with uninterrupted hot water even in periods of high demand.

