

ABB Swirl flowmeters Campus Sub Metering

District Heating and Cooling

In taking on the tasks of going green, focus on energy management is becoming a priority within the walls of educational campuses, hospitals, and a variety of public and private institutions.

As these enterprises look towards generating cost savings as well as increasing revenues, metering of steam flow, chill water and domestic water can no longer be on an allocation basis. Without the definitive measurement of the process flow, meeting fiscal goals cannot be achieved.

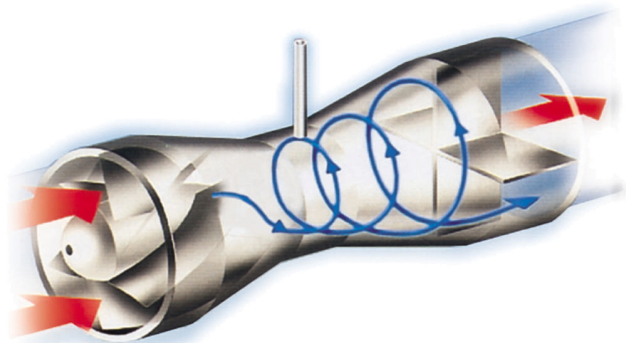
From a regional aspect, communities established prior to the 70's will generally rely on simplistic allocation methods for internal accounting or external billing. The allocation is generally calculated to a square footage basis that would not account for seasonal or day / night usage. Under allocated accounting, the cost actual energy spent to generate heating or cooling equipment will almost never balance to the income targets. The key to overcoming this deficiency is the understanding and implementation of a flow metering system that is accurate, cost effective and virtually maintenance free.

Most any facility that requires accurate reporting of energy usage will find that the real estate available to install a suitable flow metering solution is generally sub-par to the installation requirements. Meters intended for use on steam or hot water generally require 20 to 30 diameters of up and downstream piping for sufficient conditioning of the flow profile to maintain performance standards. Additionally points along the piping may need to be accessible for installation of temperature and / or pressure transmitters to complete the installation of an accurate flow solution. In many instances the physical boundaries of tunnels, pits and other near accessible areas where feed piping exist limits the choice of a flow device. Beyond the flowmeter itself manipulation of the data may need to be converted to specific terms to meet industry reporting norms.



The ABB Solution: Swirl flowmeter FS4000

ABB presents a flow solution that overcomes installation obstacles found in boiler rooms, dorms, utility closets and other areas of vintage buildings. The swirl flowmeter has been developed to remove the dependency of upstream and downstream piping found with orifice plates, vortex shedders, and other mechanical driven flowmeters. Requiring only 3 pipe diameters upstream and 1 downstream, swirl flowmeters become more than suitable for installation in tight piping conditions. Coupled with a wider flow range than vortex or DP meters and performance in the range of $\pm 0.5\%$ of rate, a swirl flowmeter adds value beyond the installation consideration. Unlike a vortex flowmeter that typically needs to be sized smaller than the run pipe, a swirl flowmeter operates within the same size of the run due to its venturi like body.

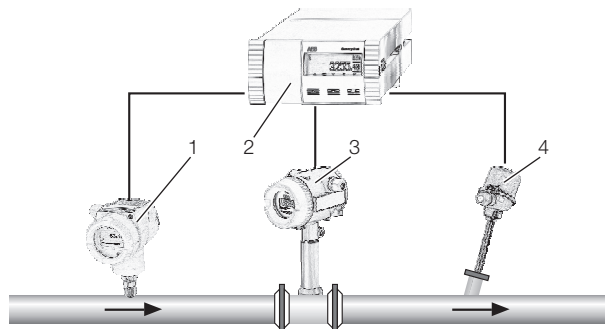


Operational principle of ABB swirl flowmeter

Putting it all together

While the value of the swirl flowmeter may exceed other devices from an installation and performance level, it does not complete the flow solution on its own. Remembering the goal of achieving accurate measurement, pressure and temperature compensation may be required for steam or gas feeds. Combined with the swirl flowmeter, ABB pressure and temperature products add to the equation of data acquisition that eventually migrates to a flow computer for final calculation of flow rates and billing units. By having each unit input data into the flow computer in absolute terms, confusion regarding actual versus standard volume flow and the impact of density change is removed as well as need for programming more complex data acquisition systems.

In its final form, the flow solution delivers an output scaled to standard or norm units, mass units or energy units as required. Reporting of the data is easily extracted from the flow computer into standard spread sheet format, bypassing more elaborate data acquisition systems, and can then be readily accessible to all that have the need. Together the products meet the original goal of implementing a cost effective, accurate measurement system that provides accounting and billing data that is needed to support energy conservation initiatives. By offering a wide range of measurement products, ABB is a leader in providing solutions for most any process control or monitoring application.



G10037

1 Pressure transmitter | 2 Measurement computer | 3 Flowmeter | 4 Temperature sensor

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