

# Modernize Your Cooling System With Our BTU Meter Solution, Featuring Sensor Matching Technology. Consider Your Questionable Measurements Solved.

## World-Renowned Performing Arts Center Improves Energy Management With Pro-Tech BTU Meter Solution

Our customer was having difficulty controlling the primary and secondary chilled water loops within its cooling system. The chilled water flows were frequently oscillating far above and below their temperature and flow rate setpoints, causing frequent, rapid loading and unloading of not only the chilled water pumps, but also the chillers themselves. As a result, the facility was forced to ramp up its flow setpoint in order to achieve the desired cooling performance—despite the system's extreme fluctuations. The combination of rapid equipment cycling with the elevated setpoint meant that our customer was using far more energy than necessary to operate the facility.

The control difficulties were traced back to errors in chilled water flow measurements. The existing clamp-on ultrasonic BTU meters had limitations including poor measurement accuracy, slow response time, and inadequate turndown. The inaccuracies from each of the individual flow and temperature measurements were compounded in the overall BTU calculations, leading to significant BTU measurement error. Furthermore, poor measurement response time introduced delays between flow changes and system response, which meant corrective actions were unable to keep up with real time system changes.

Another source of error was that the existing meters had been sized for peak summer usage. Due to the limited turndown capabilities of clamp-on ultrasonic flow meters, they were not able to capture the much lower winter flow rates. As a result, flow rates could not be measured for control purposes during the off-season, nor could usage be billed properly. Any routine maintenance or measurement verification required the meters be taken offline, which led to additional measurement downtime.



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## Our BTU Meter Solution Helped Optimize Chiller Water Flows

Implementing Pro-Tech's Meter Solution improved measurement accuracy, responsiveness, and uptime—enabling the facility to minimize fluctuations and more tightly control flow and BTU outputs. The decrease in cooling system variability allowed our customer to decrease their setpoint from 1,000 Gallons Per Minute (GPM) to only 450, while maintaining the same cooling performance. Decreasing their setpoint and minimizing equipment cycling significantly improved the system's overall operating efficiency.

Our BTU Meter Solution is comprised of premier measurement devices that offer industry leading accuracy. The Rosemount™ 8700 Magnetic Flowmeter, with the high accuracy D1 option, offers premier flow measurement accuracy and responsiveness. Including the advanced diagnostics DA2 option enables maintenance personnel to verify the meter's performance quickly and easily without having to take the meter offline. Rosemount temperature transmitters deliver industry-leading temperature measurement accuracy. Including transmitter-sensor matching further improves measurement accuracy by characterizing the temperature response curve of each specific sensor and programming that response curve into its respective transmitter (via Callendar-Van Dusen constants). Our flow computer receives these flow and temperature measurements instantaneously and calculates a highly accurate BTU measurement. The total BTU consumption is available via local display and can be sent to the control system over a variety of communication protocols.

Our local team of experts can tailor each BTU Meter Solution around the needs of that system. Every time our solutions are installed, a member of our local service team provides integration and commissioning support to ensure that the system is installed and tuned optimally to provide the best possible BTU measurement.

## Proven Results



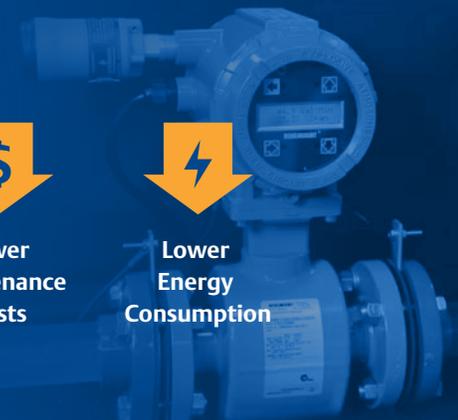
Increase in  
Temperature  
Accuracy



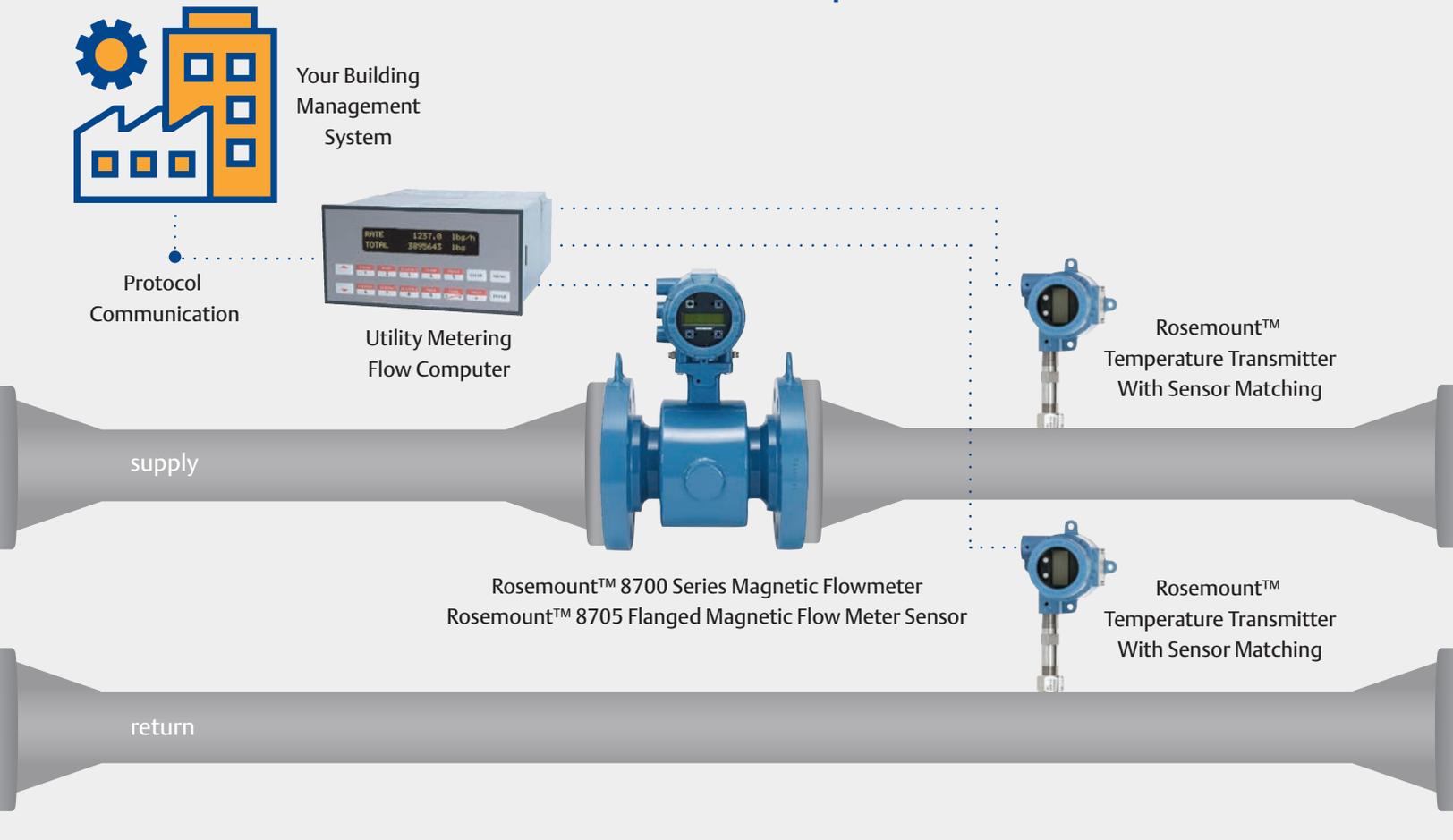
Lower  
Maintenance  
Costs



Lower  
Energy  
Consumption



## BTU Meter Solution Components



## BTU Meter Solution Advantages

- Industry leading performance with flow reference accuracy of 0.15%
- Custom temperature sensor curve using Callendar-Van Dusen constants improves measurement accuracy by 75%
- Supports all main HVAC protocols: BACnet IP, BACnet MS/TP, Metasys N2, Modbus TCP, AB Ethernet IP, AB DF1, LonWorks
- Provides accurate measurements for management system to lower carbon footprint for LEED certification
- Available as single source offering through Pro-Tech Solutions
- Local service for design, start-up, and troubleshooting throughout the Greater NYC Metro Area

### About Pro-Tech

Pro-Tech Solutions is a provider of precision quality industrial process control instrumentation and signal conditioning throughout the Greater NYC Metro Area. Pro-Tech Solutions is a factory authorized representative for Emerson measurement, flow, and tank gauging instrumentation, and services. We also sell and service complementary products from a broad range of manufacturers. Our diverse instrumentation product and services portfolio enables us to connect our customers with innovative technology, local applications engineering expertise, and lifecycle services that optimize the reliability, safety, profitability, and performance of any operation.