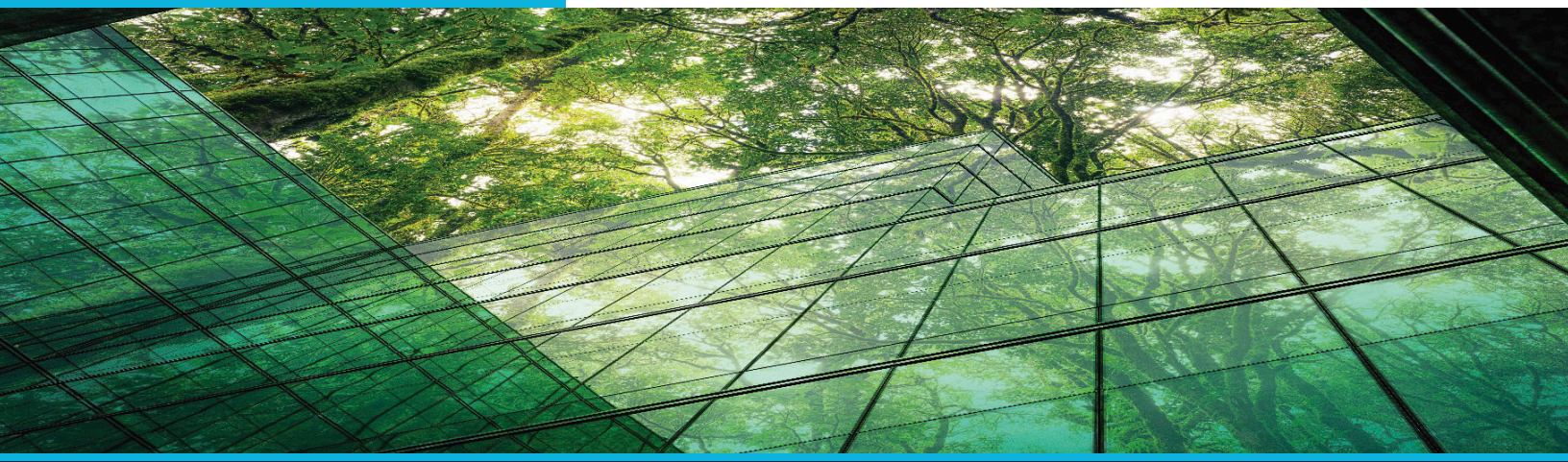
CASE STUDY • ENERGY EFFICIENCY



ACHIEVING SIGNIFICANT ENERGY SAVINGS AT NORTHEAST UNIVERSITY

Customer

Northeast University, a major public institution in the northeastern portion of the United States, embarked on an ambitious energy efficiency program to meet a state-mandated goal of reducing campus energy usage by 20% by the year 2020.

Application

The university's energy management team spearheaded this effort, overseeing energy maintenance for over 120 buildings across nearly 1,000 acres.

Challenge

Faced with the state's directive to improve energy efficiency by 20%, the team began by identifying areas where the most significant energy savings could be achieved. The university's campus, with its mix of aging infrastructure and modern facilities, posed several challenges, including outdated HVAC systems, inefficient lighting, and the need for real-time energy management. In partnership with Emerson, the university identified four core areas for improvement and focused on measurement instrumentation as the starting point – these focal points included flow metering, computer power savings, data insight and dashboard creation and flow control systems.

Results

Exceeding Efficiency Targets
Surpassed the state-mandated 20% energy efficiency increase well before the 2020 deadlines.

Scalable Solutions

The success of these initiatives led to the widespread adoption of ultrasonic flow meters across the campus. Currently, about 100 meters are in use for HVAC systems, with 70 additional meters recently installed for domestic water monitoring.

Improved Operational Control

The integration of building dashboards with ultrasonic meters gave the HVAC management team unprecedented control over system performance.

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Solution

With the application of over 100 Flexim FLUXUS Non-Intrusive, Clamp-On Ultrasonic Flow Meters, the university was able to gain the flexibility needed across such a large footprint. With Clamp-On Flow Meters, the transducers alternate as emitters and receivers. The transit time of the signal going with the flow is shorter than the one going against. The meter measures transit-time difference and determines the average flow velocity of the medium. Since ultrasonic signals propagate in solids, the meter can be mounted directly on the pipe and measure flow non-intrusively, eliminating any need to cut the pipe.

With the combination of real-time monitoring, advanced metering, and optimized system control, Northeast University surpassed the state-mandated 20% energy efficiency increase well before the 2020 deadline.

The success of these initiatives led to the widespread adoption of ultrasonic flow meters across the campus. Currently, about 100 meters are in use for HVAC systems, with 70 additional meters recently installed for domestic water monitoring. The university continues to expand its energy efficiency measures building by building.

Additionally, the university realized improved operational control as the integration of building dashboards with ultrasonic meters gave the HVAC management team unprecedented control over system performance. They could now monitor and adjust various parameters such as water flow, temperature, and system operations in real-time, leading to further energy savings and system optimization.

By embracing innovative technologies and emphasizing real-time control and accurate measurement, the university has achieved remarkable energy savings and operational improvements. This case study demonstrates that with the right strategies and tools, significant energy efficiency gains are achievable, even in large and complex campus environments.

> *We decided to put one meter on our chemistry building, which had been a problem for us, w agreed to a trial period on both chilled and hot water that reached up to 350 °F. The measurements were within one percent with no drift. It finally gave us accurate data on that building that we had been lacking. Given that success, we began replacing our differential flow meters with the ultrasonics.*

Figure 1. *Northeast University's proactive approach to energy management serves as a model for other institutions seeking to meet stringent energy efficiency goals.*

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