Intelligent Water Solutions for Campuses
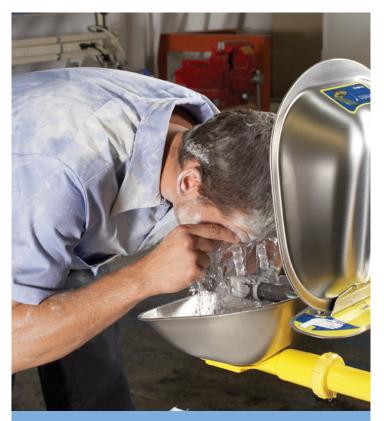
Managing Risk, Sustainability & Staffing

BY DAVID BENAIGES

Private college and university campuses face mounting operational pressure. Aging infrastructure, rising energy costs, increasing sustainability expectations, and ongoing staffing challenges converge to create a perfect storm—particularly in facilities management.

Among the most vulnerable and often overlooked systems are those involving water: mechanical rooms, domestic hot water loops, hydronic heating systems, and plumbing infrastructure. These systems are critical to day-to-day operations yet often operate without modern oversight.

Now, with the emergence of intelligent water management solutions, institutions can monitor, optimize, and safeguard their water systems in real time. These platforms use sensors, data analytics, and remote access tools to help teams identify inefficiencies, prevent failures, and support sustainability goals—without requiring a full overhaul of infrastructure.

Through delivering proactive, data-driven insights, intelligent water management platforms help operations and facility managers take complete control of their water systems and gain actionable insights. For facilities leaders in higher education, these water management solutions offer a new and increasingly necessary path forward, one that improves responsiveness, enhances operational resiliency, and supports long-term strategic goals.

The Hidden Risks in Campus Water Systems

Water-related failures in campus buildings are rarely small problems. A loss of hot water in a dormitory, a frozen pipe in an academic wing, or a boiler shutdown in winter can quickly spiral into emergencies that disrupt learning and may even impact student and staff well-being. Unfortunately, water systems—particularly heating and recirculation loops—are notoriously difficult to monitor with traditional tools.

Older campuses with dated equipment can face additional risks. Mechanical rooms are often spread across large sites, pipes are buried or hidden behind walls, and documentation may be outdated or nonexistent. Maintenance teams often rely on daily walk-throughs, handwritten logs, or occupant complaints to detect issues, but this strategy leaves much to chance. Without real-time visibility into temperature, pressure, and flow patterns, problems can go unnoticed for hours or days, particularly during weekends or winter breaks. That delay can lead to service interruptions, property damage, or even reputational harm if families or prospective students learn of facility shortcomings.

Simply put, intelligent water management systems allow building teams to transition from reactive firefighting to proactive system monitoring and optimization. To remain competitive and adequately prepared for the future—including achieving water system efficiencies and avoiding possible failures—facility leaders must adopt a strategy that addresses three emerging industry challenges:

Challenge 1: The Need for Speed and Precision in Maintenance Response

In an era of high service expectations, colleges can no longer afford reactive maintenance when it comes to water systems. Whether it's hot water for residence halls, consistent heating in classrooms, or maintaining safe operating conditions in science labs, quick response is essential.

Intelligent water management platforms allow facilities teams to detect anomalies in real time. Sensors monitor temperature, pressure, and flow around the clock, sending alerts the moment performance deviates from expected norms. Teams can then respond—often before students or staff even notice an issue.

Case in point: one boarding school on a 1,100-acre campus learned the value of intelligent water management systems firsthand. After experiencing a pump failure that left multiple buildings without hot water for two days, the school deployed a digital water monitoring system to help prevent similar incidents. Within weeks, the system flagged two critical temperature drops: one in the chapel's boiler room, where a transformer had blown; and another in the gymnasium, where a thermostat had been accidentally misadjusted. In both cases, maintenance was able to respond during off-hours and correct the issue before school resumed. The result? No disruption, damage, or emergency repair costs.

For higher education institutions, that kind of responsiveness isn't just a technical win—it is increasingly a service expectation and a strategic differentiator.

Challenge 2: The Push for Campus Sustainability

Sustainability has become central to the mission of many private colleges and universities. From LEED buildings to campus-wide climate pledges, schools are increasingly expected to reduce their environmental footprint, including water and energy

consumption. But without detailed, data-driven insights for each building, progress can stall.

Intelligent water management systems offer the data transparency institutions need to move forward. They identify inefficiencies in heating loops, detect overuse in specific buildings, and highlight system behaviors, such as unnecessary recirculation heat loss, that waste energy. Some solutions even allow users to adjust system setpoints based on analytics, helping facilities fine-tune performance.

In another commercial example, a 400,000-square-foot office building used one such system to uncover excessive recirculation heat loss and optimize heating parameters, helping achieve internal carbon reduction goals and cutting costs. For campuses managing dozens of buildings, similar insights could yield substantial savings.

Beyond the numbers, intelligent monitoring supports sustainability reporting. With dashboards and historical trends, facilities staff can document improvements, comply with reporting requirements,

and showcase progress to boards, donors, and other stakeholders.

In short, intelligent water management supports smarter stewardship and strengthens a school's brand as a forward-thinking institution.

Challenge 3: Bridging the Skilled Labor Gap
The skilled trades shortage continues to affect institutions nationwide. Facilities departments, once staffed by experienced technicians with decades of institutional knowledge, now face high turnover, increasing retirements, and fewer young professionals entering the field.

For campus maintenance teams, this creates two problems: 1) knowledge loss, and 2) limited capacity. Teams are being asked to do more with fewer people and incomplete memory of historical building issues.

Intelligent systems help bridge that gap. Real-time dashboards, system alerts, and automated data logging reduce reliance on manual checks and

paper records. Teams can quickly see when and where something malfunctions—without relying on a technician's intuition or memory.

On sprawling campuses with distributed building infrastructure and dynamic priorities, these water management platforms optimize the usage of labor across the entire site. Intelligent systems can help to completely reimagine campus priorities, helping to elevate building issues that were forgotten—or even unknown—and freeing staff to focus on other ,non-water priorities.

At one large educational campus, implementing an intelligent water management platform reduced manual temperature checks by over 80 percent, freeing up significant staff time for preventive work. For smaller institutions with limited personnel, these efficiencies can mean the difference between a proactive maintenance program and chronic firefighting.

Perhaps most importantly, these systems help train new employees. Visualizations of system behavior, step-by-step alert tracking, and historical performance data provide a built-in learning environment, which supports faster onboarding and more confident decision-making. On demand expert customer guidance also ensures successful implementation.

Why Intelligent Water Management Matters in Higher Education

Campus infrastructure is vast, interconnected, and aging. At many institutions, plumbing and mechanical systems were installed decades ago and have been modified over time with little documentation. That makes monitoring and optimization difficult without the help of technology.

Intelligent water management offers a scalable, cost-effective solution. It provides visibility where there was once guesswork. It helps identify root causes of issues rather than treating symptoms. And it empowers facilities leaders to make informed decisions about repairs, upgrades, and performance improvement.

Consider Legionella, the waterborne pathogen responsible for Legionnaires' disease.

According to the CDC, most building-related outbreaks are caused by preventable failures in water system design or management. With remote temperature and flow monitoring, maintenance teams can ensure water conditions remain within safe range, reducing risk and liability.

What's more, intelligent systems support compliance with ASHRAE standards, health codes, and internal safety protocols. With automated logs and downloadable reports, schools can maintain more accurate records consistently.

Selecting a Smarter Path Forward

Not all digital water tools are created equal. Some focus narrowly on leak detection. Others emphasize submetering or energy modeling. Truly intelligent water management platforms go further to integrate data from across the mechanical room to provide comprehensive oversight.

Campus decision-makers should look for water management systems that:

- **Install easily** and work with existing equipment (no system shutdowns required)
- **Monitor multiple performance indicators**, including temperature, pressure, and flow
- **Deliver real-time insights** to effectively identify the most critical actions, including the capability to remotely shut off water during emergencies
- **Offer secure, cloud-based dashboards** accessible from any location
- **Include 24/7 expert support** to help interpret data, troubleshoot and guide optimization
- **Deliver ROI within a defined timeframe**, perhaps within the first year

Intelligent Water Management is a Strategic Imperative

Water management has long been treated as a back-of-house responsibility. But today's challenges—aging systems, climate-driven expectations, labor constraints, and student service standards—require a more strategic approach.
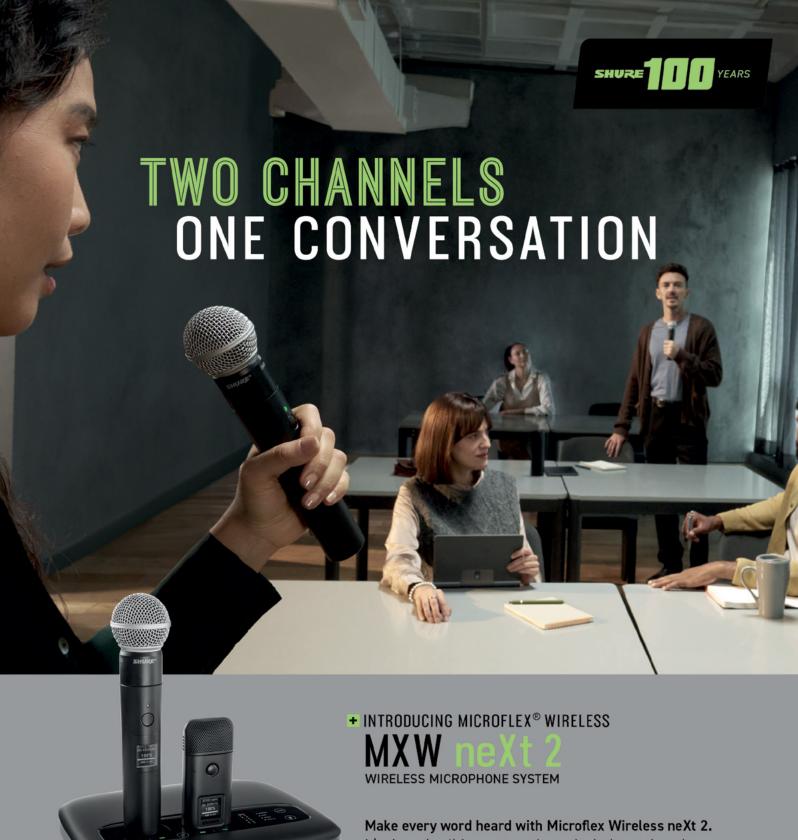
Intelligent water management platforms represent a shift toward proactive infrastructure stewardship. They offer campus leaders a way to reduce risk, increase system efficiency, and extend the capacity of their staff, all without overhauling existing infrastructure.

For private colleges and universities, these solutions are not a luxury. They are a modern necessity, one that supports operational excellence, sustainability leadership, and long-term institutional resilience.

Now is the time for campus decision-makers to ask: What don't we know about our water systems—and what would it mean to finally have those answers?

ABOUT THE AUTHOR: David Benaiges is Vice President of Intelligent Water Solutions at Watts Digital, where he spearheads the effort to transform how commercial buildings manage water. Under his leadership, Watts Digital is advancing Nexa, an intelligent water management platform that empowers users with real-time data, actionable insights, and remote capabilities, enabling smarter decisions that optimize performance, reduce risk, and drive sustainability. Watts, a trusted name in water solutions since 1874, continues to evolve through digital innovation to meet the needs of modern water infrastructure. Learn more at www.watts.com.