



MAINTENANCE AND CONSTRUCTION

by Robert Kravitz

IoT: The Future of Campus Restrooms

A relatively new technology in the professional cleaning industry—and possibly a new idea for many administrators of private colleges and universities—is the “internet of things” (IoT). Using these technologies can help administrators and custodial workers keep school facilities clean and healthy on an ongoing basis.

History and Definition of IoT

The internet of things dates back to 1999, when it was developed by a worldwide manufacturer of, among other things, cleaning solutions. Ten years later, the technology began to be used in facilities and by the professional cleaning industry. In a nutshell, IoT is a network of physical objects—whether they be buildings, vehicles, devices, or something else—that are part of network connectivity via sensors and software. As such, these items are able to both collect and exchange useful data. In the case of restrooms on college campuses, gathered data is sent to university administrators and cleaning professionals.

To better understand what IoT is and how this new technology may prove beneficial to private school administrators—along with the people who clean and maintain these facilities—let’s imagine a scenario involving a private university with 15,000 students. According to the National Association of Independent Colleges and Universities, enrollment in private or nonprofit institutions in the United States ranges anywhere from 100 to more than 30,000 students, with an average of 2,000 students, so our example facility is on the larger end of the spectrum.

Along with 15,000 students, another 1,500 people will typically work for a school this size as professors, staff members, facility managers, custodial workers, and others. According to the Occupational Safety and Health Administration, all commercial buildings in the United States with more than 200 people—in this case, students, staff, visitors, etc.—must have one toilet and one urinal installed per 50 people. This requirement means that our hypothetical college has approximately 330 toilets and another 330 urinals, along with faucets in all restrooms and showerheads in locker rooms scattered throughout the campus.

Here's a common problem: on average, two or more toilets or urinals need maintenance attention every day. If anyone is notified at all, it may take several days for a student or staff member to bring the malfunctioning toilet to the attention of school management. After notification, maintenance crews may not be able to address the issue for several additional days. Such scenarios have proven to be real inconveniences for the facility; this type of maintenance issue may create unsanitary situations, as well.

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Addressing Problems in Real Time

If maintenance workers and administrators had some way to tell if a toilet, urinal, faucet, or showerhead was broken as soon as the damage occurred, such monitoring would allow campuses to address such problems in real time. Facilities and Maintenance would no longer have to depend on an alert from a student or staff member. Furthermore, the same system can report when paper products are needed in one restroom, soap refilled in another, and unexpected cleaning attention in another. IoT can provide this sort of real-time data, telling

college administrators when and where a problem exists—most often in restrooms—so that it can be attended to as quickly as possible.

The Restroom Monitor

“Essentially, IoT—at least when used in restrooms, where the technology is increasingly found—is a connectivity and monitoring technology,” says Michael Wilson of AFFLINK, which provides ordering and product selection technologies to assist schools and universities. As described in the scenario mentioned earlier, “IoT technology alerts school administrators about a

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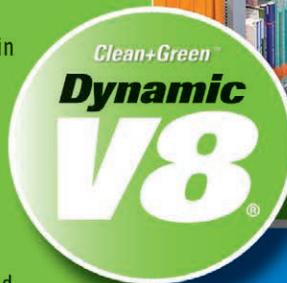
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problem, its specific restroom location, the exact stall, and when the problem was detected—all so it can be attended to promptly.”

With some systems, a message is sent out to both a school administrator and the custodial manager in charge of that area of the campus at the time of day. These multiple layers of messaging can help to expedite communication and resolve the situation.

Other Benefits

Having such technology in a restroom can assist administrators in higher education in several ways, including keeping the university’s image at the desired level. The reality is that in just about any commercial facility, restrooms are complaint centers. “If a restroom is soiled and out of paper products or soap, there is debris on the floor, or a trash bin is overflowing, this turns a restroom cleaning ‘issue’ into a serious problem,” says Wilson. “Soiled and messy restrooms can affect the morale of students and staff and certainly are not anything school administrators would want parents or school visitors to see.”

Additionally, Wilson says IoT can help administrators in other ways, such as the following: It

can indicate if a restroom needs to be cleaned more often than is now scheduled. “Often restroom cleaning is on a set schedule based on when a cleaning worker is in that location,” explains Wilson. “IoT turns things around so that cleaning is based on when the restroom needs to be cleaned.” IoT can indicate when a restroom gets the most use during the day so that custodial workers can attend to the facility after these busy periods. Similarly, the technology can help administrators and custodial workers prioritize how often restrooms may need to be cleaned during the day; some restrooms invariably need more cleaning attention than others. IoT can help determine the amount of supplies needed per day in restrooms, helping to stock them more efficiently.

Keeping Tabs on Supplies

Many IoT systems now allow custodial workers to place “tabs” on supplies to help monitor when products should be reordered. Such ongoing inventory oversight can complement other technologies like web-based dashboard systems that help prevent schools from running out of supplies; these systems can lead to cost benefits

as well. Wilson explains that universities often purchase large quantities of supplies simultaneously, which leaves a great deal of operating capital stacked in the janitorial closet. Being able to strategically plan when to buy supplies—in the quantities needed—can lead to significant cost savings.

Future Trends

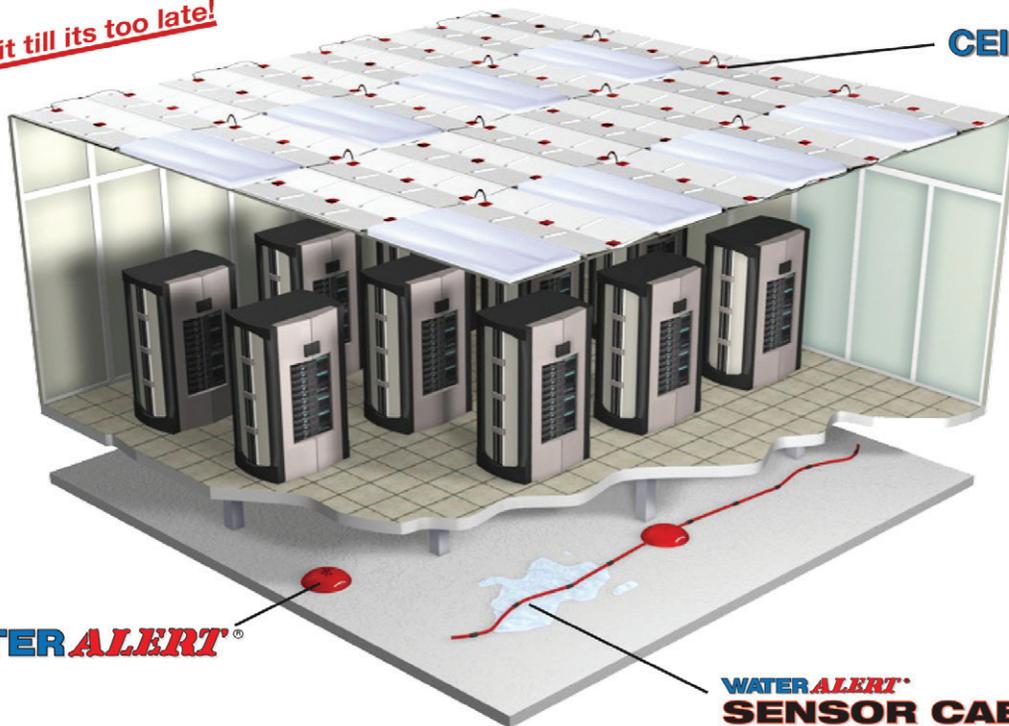
The focus of most private universities is, of course, to keep up with educational trends to best serve the needs of students. However, new trends also are evolving in the ways schools order and select supplies as well as the ways campuses are cleaned and maintained. IoT is a primary example of these trends. Knowing when or where there is a problem—even before it becomes a problem—can help administrators and maintenance personnel keep campus restrooms clean, healthy, and inviting.



ABOUT THE AUTHOR: Robert Kravitz is a frequent writer for the professional cleaning and building industries.

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