ELECTRONIC SENSOR FAUCETS IMPROVE HYGIENE AND CONSERVE WATER IN COMMERCIAL RESTROOMS

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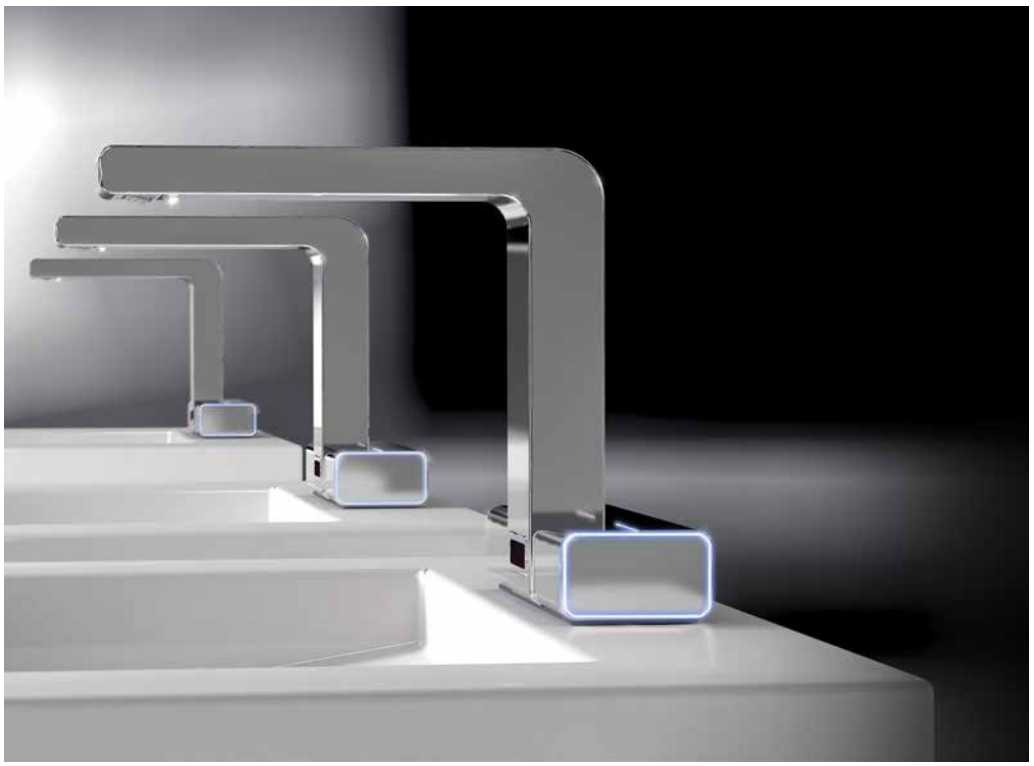

LEARNING OBJECTIVES

At the end of this program, participants will be able to:

1. Understand how electronic sensor faucets improve hygiene in commercial settings.
2. Examine the various technologies, options, and settings available in electronic sensor faucets.
3. Describe the importance of electronic sensor faucet selection for specific markets and applications.
4. Identify how electronic sensor faucets contribute to water conservation.
5. Understand how regulatory compliance factors into electronic sensor faucet selection.

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By Paige Lozier

IMPORTANCE OF HANDWASHING

Visitors often judge a company or institution on the condition of its restrooms. Therefore, restrooms tend to receive special attention when undergoing new construction or renovations. New plumbing technologies, product aesthetics, and their ability to provide a hygienic environment can go a long way toward boosting a facility's overall image. These products can reduce operating costs, conserve water and energy, and improve hygiene.

Although users often believe flush handles are the dirtiest touch point in the restroom, sink areas are usually more germ-laden, as this is where bacteria are shed from hands during washing. Of course, this does not mean restroom visitors should skip handwashing. According to the U.S. Centers for Disease Control and Prevention (CDC), proper handwashing is the single most effective means of preventing the spread of germs that can result in everything from the common cold and diarrhea to more serious and potentially life-threatening diseases.

The Association for Professionals in Infection Control and Epidemiology (APIC) states that, "Handwashing causes a significant reduction in the carriage of potential pathogens on the hands." Yet, according to APIC's *Guideline for Handwashing and Hand Antisepsis in Health Care Settings*, proper handwashing occurs only about

The advantages of sensor-operated faucets extend beyond the public restroom to almost any other type of handwashing station, especially in applications requiring the highest levels of cleanliness. Photo courtesy of Sloan Global Holdings, LLC

half as often as it should and usually for a shorter duration than recommended. For users to gain the most benefits from handwashing, specifiers should pay close attention to faucet details.

In restrooms with manual faucets, handles are a prime breeding ground for germs. Touching faucet handles after washing simply re-contaminates hands and reverses much of the good that came from washing in the first place. While some experts recommend that restroom visitors use a paper towel to turn faucets off, the reality is users are either unaware of this advice, do not care to follow it, or restrooms are not stocked with paper towels.

Therefore, touchless, sensor-operated faucets can contribute to a higher level of handwashing hygiene. The advantages of sensor-operated faucets extend beyond the public restroom to almost any other type of handwashing station, especially in applications requiring the highest levels of cleanliness. For example, proper handwashing is particularly essential with healthcare workers, who can unwittingly accelerate worker-to-patient and patient-to-patient germ transmission. Additionally, anyone involved in food preparation should also take special precautions to prevent food contamination that can be difficult to identify and even more difficult to stop.

Sensing technologies based on electronics are most often used for hands-free activation of plumbing fittings such as faucets to improve user accessibility in compliance with the Americans with Disabilities Act (ADA) and improve overall hygiene and restroom cleanliness. Electronic plumbing fittings offer sanitary, touch-free operation, while conserving water and energy in that they only dispense water when the sensor detects a user and can also limit water delivery duration.

MEETING A NEED—THE HISTORY OF HANDS-FREE FAUCETS

Hands-free faucets have been around since the 1970s, when they were sold under the name "promixity faucets" and were marketed to offer several advantages, including greater convenience, less maintenance, and improved hygiene. Many companies tried to create faucets that would allow water to flow without use of a handle or push-button to minimize spreading germs in public restrooms, as well as to make faucets easier to use for people with disabilities.

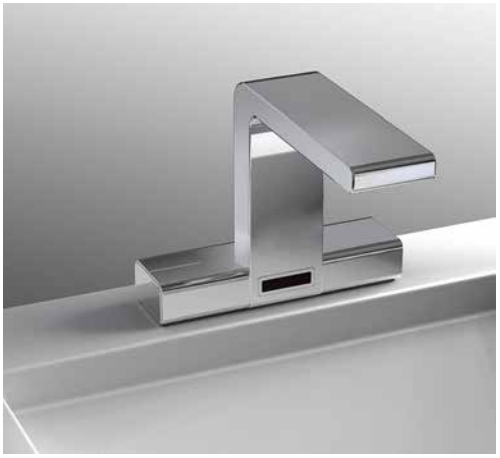
Early product development was somewhat unsuccessful until a breakthrough in

Electronic faucet research and development efforts became even more critical with the passing of the Americans with Disabilities Act in 1990. Photo courtesy of Sloan Global Holdings, LLC

plumbing technology occurred in the early 1970s when Chicago's O'Hare International Airport underwent a major renovation. The job included retrofitting the airport's public restrooms with toilets featuring new flush-valve technology, which used sensors to monitor the light level in individual stalls. When an object blocked the sensor, a timer activated and prepared the toilet to flush when the object was removed. Faucet manufacturers studied this technology and realized that if it were modified, it could potentially work in their products. Electronic faucets did not reach critical mass until 1985 when the electronic hand washing faucet was designed and then also tested at O'Hare, teaching America how to use automatic faucets.

According to Plumbing and Mechanical Magazine, "Throughout the late 1980s and early 1990s, many faucet companies created prototype electronic faucets operated by wiring, power source, and sensor technology. A big push for the use of sensing faucets came when the U.S. government issued the Energy Conservation Act of 1992." This legislation dictated new water use levels for faucets, thus increasing the need for efficient hands-free products. Electronic faucet research and development efforts became even more critical with the passing of the Americans with Disabilities Act in 1990. With the creation of a sensor faucet, a person would be able to operate it without the use of hands, fingers, or the use of force, making it an ideal ADA compliant product.

In the mid-1990s, with improvements in sensory technology, many faucet companies had either successfully brought an electronic faucet to market, or were developing improved products. Energy efficient and cost effective battery-powered faucets were developed, which led more organizations to install them in their facilities. As people began to learn of the faucet's hygienic benefits and ease-of-use, the products became much more accepted and requested for use in new building and remodeling projects.



Digitally calibrated electronics automatically adjust to environmental conditions, preventing false faucet starts while maintaining operational sensitivity. Photo courtesy of Sloan Global Holdings, LLC

MODERN SENSING TECHNOLOGY

Sensing technology has improved over the years. Digitally calibrated electronics automatically adjust to environmental conditions, preventing false faucet starts while maintaining operational sensitivity. This same technology allows the faucet to adapt to various sink sizes, shapes, and finishes so water continuously flows without interruption, eliminating the need for manual adjustment of the sensors during installation. Spout styles gradually evolved to mimic those offered in popular residential models. Most recently, the addition of specialty finishes have provided companies with a step-up option to match other fixtures and fittings in their facilities.

Typically, an electronic faucet operates by means of an infrared sensor. Once the user enters the sensor's effective range, the solenoid activates the water flow. Tempered water flows from the faucet until hands are moved away; the loss of reflected light initiates an electrical signal that deactivates the solenoid valve, shutting off the water flow. The circuit then automatically resets and is ready for the next user.

Touchless faucets are designed to operate for a pre-set amount of time when a user's hands are in the active area. This type of faucet uses approximately 3.8 L (1 gal) less water than a manual faucet which, in a public restroom,

continues to flow while a person lathers and dries their hands. In contrast, sensor-operated faucets turn off during this stage. More water can be saved when sensor faucets automatically switch off as soon as users remove their hands from the wash area, as opposed to metered and manual faucets that can be left running for extended cycles, sometimes even after users leave the restroom. These energy savings over the faucet's lifetime reduce a facility's water and wastewater bills. As companies struggle to contain operating costs, or face pressure to reduce overall water usage in water-scarce regions, water reduction from faucets makes sense in the long run.

Today's electronic sensor faucets incorporate many new technologies, features, and configurations. Photo courtesy of Sloan Global Holdings, LLC

TECHNOLOGIES, SETTINGS, FEATURES, AND CONFIGURATIONS

Today's electronic sensor faucets incorporate many new technologies, so before moving on let's talk about some of these options so that you have a better understanding for the remainder of the discussion.

Today's commercial sensor-operated faucets are designed for strength and vandal resistance. They typically feature locking spray heads, below-deck electronics and armored cabling to reduce vandalism and water damage. Cost savings over traditional faucets can be measured in increased water savings and a faster return on investment.

For typical restrooms, there are numerous styles of hand-washing faucets, featuring either tempered or hot/cold water operation, which mount on a deck or wall. Various spout styles are suitable for a range of applications,

Higher flow rates are permitted for residential or "private" faucets in homes, hotel rooms, and private hospital rooms. Any other "public" or commercial installations are much more restrictive. The flow rate can influence which type of spray head is chosen to maximize customer satisfaction. Photo courtesy of Sloan Global Holdings, LLC

including kitchen/foodservice, healthcare and other commercial, industrial, and institutional uses. Each category offers specific feature options including:

- A variety of flow outlets;
- User-specific electronic controls for run times;
- Vandal-resistant options;
- AC- or DC-battery powered electronics;
- Above- or below-deck mixing valves; and
- Wall- or deck-mount installation.

SENSING TECHNOLOGIES

There are two different kinds of sensing technologies available, Active Infrared (IR) and Capacitance (C).

Active Infrared sensing operates when a user's hands reflect an invisible light beam, alerting the faucet to begin the flow of water. Infrared models are designed to provide easy, above-deck access to key components, and offer additional user enhancements.

Capacitance (C) sensing utilizes the human body's own natural conductivity. When the faucet senses a hand, it starts the flow of water. There is no sensor window and critical components are protected in a watertight, below-deck box. In some instances the proper functioning of Capacitance technology can be inhibited by metal fixtures or the proximity of large metal objects.

The addition of an above-deck mixing valve to hands-free electronic faucets has created a product that satisfies users' demands for good-looking, hands-free products with readily available hot/cold adjustment. Mixing/sensing hands-free electronic faucets not only allow for a pre-programmed duration of continuous water flow, but also allow users to preset, or adjust, the temperature of the water being dispensed to satisfy their needs.

UNDERSTANDING SPRAY HEADS

Let's talk a bit about spray heads, or what a layperson would typically call an "aerator". There are four main ways spray heads affect the stream of water coming from the tap. The first is a typical aerator spray head, which is most often used in homes and apartments and the only one that truly mixes air into the water. It produces a larger, whiter aerated stream that is soft to the touch and non-splashing. By definition, an aerator spray head adds air. Installing one on the end of a faucet adds air to the water flow. Mixing air into the flow of water produces a steadier, more stable stream. An aerator is usually a simple, mesh screen made of metal or plastic that is attached to the end of a faucet with housing. As water flows through this screen it is divided into many small streams with air in between. This allows for the feeling of high pressure with less actual water consumption.

While drawing air from the room around the faucet isn't a problem in most residential and commercial facilities, it can be a concern in hospitals, senior care facilities, and medical labs. Room air can contain bacteria and when mixed with water it could potentially contaminate drinking water. For this reason, "laminar flow" spray heads are recommended for use in healthcare facilities. Laminar spray heads provide a single, crystal clear, non-aerated, non-splashing stream that is most useful for high flow applications or healthcare facilities.

When the flow rate is too low to produce an aerated or laminar stream, a "multi-laminar" spray head is used to produce a miniature shower pattern to provide full, non-splashing coverage of the hands during washing. Multi-laminar spray heads are recommended for use in public restrooms. The final type of spray head is the "rain shower" device with numerous small nozzles that produce a wider, yet soft

stream of water that is divided into small drops for an appealing aesthetic effect.

It is important to note that flow rate requirements in the United States differ between residential and commercial applications. Higher flow rates are permitted for residential or "private" faucets in homes, hotel rooms, and private hospital rooms. Any other "public" or commercial installations are much more restrictive. Plumbing regulations and codes throughout the United States limit the flow rates of commercial faucets to 0.5 gpm, though higher flow rates are permitted for specific applications like surgical scrub stations. Even lower flow rate requirements exist for commercial applications that are certified to LEED v4 requirements or for CalGreen compliant installations in California. The flow rate can influence which type of spray head is chosen to maximize customer satisfaction.

Hard wired units can be configured with battery back-up power in case of power supply disruptions, and there are solar and water turbine technologies available to harvest energy from the environment to supplement other power supplies. Photo courtesy of Sloan Global Holdings, LLC

SENSOR FAUCET POWER OPTIONS

Several power options come into play when specifying sensor faucets. Hard wired units connect to the site electrical supply. Battery technology permits some sensor faucet installations without having to make an electrical connection to a central power supply. Hard wired units can be configured with battery back-up power in case of power supply disruptions, and there are solar and water turbine technologies available to harvest energy from the environment to supplement other power supplies. For all of these there is often an audible tone or light-emitting diode (LED) to signal when it is time to replace a battery and perform other diagnostics.

QUIZ

1. True or False: According to the CDC, proper handwashing is the single most effective means of preventing the spread of germs.

2. Which sensing technology operates when a user's hands reflect an invisible light beam, alerting the faucet to begin the flow of water?
   a. Active Infrared
   b. Capacitance

3. Which faucet flow device is recommended for use in healthcare facilities?
   a. Laminar flow spray head
   b. Multi-laminar spray head
   c. Rain spray head

4. Which of the following is a power option for sensor faucets?
   a. Battery
   b. AC Hardwire
   c. Battery supplemented by solar or turbine power harvesting
   d. AC Hardwire supplemented by battery back-up
   e. All of the above

5. True or False: A gooseneck spout is ideal for applications including medical, foodservice, wash sinks, and scrub sinks, as the design is out of the user's way when handwashing.

6. In what setting are faucets more prone to vandalism?
   a. Healthcare
   b. Education
   c. Executive
   d. Hospitality

7. Dodge Data and Analytics indicates that the specification rate for electronic sensor faucets was _____% and rising in 2015.
   a. 50%
   b. 10%
   c. 5%
   d. 26%

8. What is the maximum flow rate allowed for faucets to meet the CalGreen Tier 2 standard?
   a. 0.4 gpm
   b. 0.35 gpm
   c. 0.5 gpm

9. True or False: Under LEED v4, designers must employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation).

10. Which environmental regulation limits contaminants such as lead in drinking water from endpoint devices?
    a. LEED
    b. EPAct
    c. CalGreen
    d. NSF 372

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Sloan is the world's leading manufacturer of commercial plumbing systems. Sloan has been at the forefront of the green building movement since 1906 and provides sustainable restroom solutions by manufacturing water-efficient products such as flushometers, electronic faucets, and soap dispensing systems, sink systems and vitreous china fixtures for commercial, industrial and institutional markets worldwide.

This article continues on http://go.hw.net/AR116Course1. Go online to read the rest of the article and complete the corresponding quiz for credit.

The choice of whether or not to choose deck or wall mounted units is dictated by overall lavatory design and the purpose for which the faucets will be used. Photo courtesy of Sloan Global Holdings, LLC

Power harvesting is a relatively new technique being utilized to improve eco-minded electronic faucets. This is a more sustainable method of powering the fixture than battery or hardwire-only designs. Solar, or photovoltaic, technology harnesses ambient light (e.g. from fluorescent bulbs), while turbine, or hydraulic, technology harnesses power from the water supply. Power harvesting technologies allow electronic plumbing fittings to save energy and reduce costs by extending the life of the battery. In an optimized installation, the battery is supported by a power harvesting technology that charges a capacitor that powers some function of the fixture. This allows for a very long battery life that is often limited only by the shelf life of the battery itself.

FAUCET SPOUT OPTIONS

Electronic sensor faucets are usually mounted upon a counter-top "deck" or in a wall above a basin. The choice of whether or not to choose deck or wall mounted units is dictated by overall lavatory design and the purpose for which the faucets will be used. Wall mounted faucets are often preferred when ample room is required for activity below the spout—like hand and arm scrubbing in healthcare settings or pitcher and bowl filling in a food service application. Wall mounted faucets are also often paired with artistic or raised sink basins in order to increase their dramatic effect and to ensure spout clearance over the side of the basin.

Gooseneck style spouts can be selected for use with a wall or deck mounted faucet as an ideal option for applications including medical, foodservice, wash sinks, and scrub sinks, as the gooseneck or surgical bend design is out of the user's way when activities are being performed.

At a scrub sink in a hospital, for example, specifiers typically select a gooseneck faucet with a surgical bend spout and either a multi-spray or laminar-spray head. The gooseneck faucets allow space to wash hands, as well as forearms. Laminar flow spray heads do not splash, objects are wetted quickly, and air is not introduced to the water stream, which is very important in facilities that are concerned about the spread of bacteria such as legionella. At a hand-washing sink in a cafeteria or an office lunchroom, a gooseneck faucet with a multi-spray head aids not only in hand cleansing but cleaning of teaching aids and utensils.

Deck mounted faucets are more common, particularly in educational or institutional applications where vandal resistance and ease of service are desired. The height above the basin is reduced compared to wall mounted faucets or to faucets with gooseneck or surgical bend spouts and this potentially reduces splashing and horseplay by the users. Deck mounted faucets are usually available in a wider variety of styles and come with more potential options than wall mounted units.

In hospitals and schools faucets are a highly effective way to reduce the spread of germs and bacteria because hand contact is not required for their use. Photo courtesy of Sloan Global Holdings, LLC

IMPORTANCE OF ELECTRONIC SENSOR FAUCET SELECTION FOR SPECIFIC MARKETS AND APPLICATIONS

Healthcare, Foodservice, and Education

Choosing the right faucet style depends on factors such as the setting, use, and sink type. In hospitals and schools faucets are a highly effective way to reduce the spread of germs and bacteria because hand contact is not required for their use. Such faucets are doubly significant because they greatly decrease instances of cross contamination resulting from multiple people handling infected fixtures. In fact, healthcare workers and school foodservice workers, or any foodservice employee for that matter, may even wash more frequently because of hands-free faucet activation.

In schools unwashed or poorly washed hands can transfer harmful micro-organisms from food to a student or from a foodservice worker to food to a student, as well as from direct hand-to-hand contact, or indirect hand-to-object contact. Schools can control the spread of foodborne illness by installing touch-free, sensor- operated handwashing sinks in cafeterias. By having adequate handwashing equipment conveniently located, foodservice workers are more apt to comply with recommended handwashing procedures as defined by the Food and Drug Administration (FDA) and the Centers for Disease Control and Prevention (CDC), and the U.S. Department of Agriculture (USDA). The FDA's protocol requires four seconds to wet hands, 20 seconds of lathering (outside the water stream), and another four seconds of rinsing. Some touch-free faucets use a visible LED that remains lit while hands are washing. The LED also may prompt some healthcare and foodservice workers to wash their hands for the amount of time prescribed by the FDA or their employer.

The plumbing products most appropriate for a high-end hotel or executive restroom will differ from those most suited for school and university restrooms, where large numbers of boisterous students may charge through the doors all day long. Photo courtesy of Sloan Global Holdings, LLC

Electronic sensor-operated faucets are not only necessary for the foodservice sector of an education setting, but for a school's student and public restrooms. They are not only beneficial from a hygiene and maintenance point of view, but for water conservation as well. The plumbing products most appropriate for a high-end hotel or executive restroom will differ from those most suited for school and university restrooms, where large numbers of boisterous students may charge through the doors all day long. Depending on the facility, students and the general public are more prone to vandalize or misuse plumbing, and they're more apathetic about or less familiar with their surroundings. But installing plumbing that can stand up to rough-and-tough student use doesn't have to compromise efforts to save water.

In fact, a plumbing technology originally designed to solve problems common in high-use/high-abuse restrooms also enables schools and universities to use water more efficiently. Monitored control systems can be used in conjunction with other plumbing products to substantially reduce restroom water use. In these restrooms, where facility managers can't count on user cooperation, plumbing products and systems that are automatically set to use water more efficiently are the best bet.

Sensor-operated, low-consumption faucets with 0.5 gallon-per-minute sprayheads are suited especially for high-use restrooms and are the national standard. These water-efficient plumbing products automatically regulate water flow. Plus, there's less chance of breakage that results because users are not turning knobs or pushing handles.

This type of control system has wide-reaching uses in education settings. Remote monitoring and control of one or all sinks, water closets, urinals, and showers in a facility make it easy to turn water flow on and off to plumbing products when students pull pranks that could damage plumbing or when they attempt to flush contraband. These controls also help with scheduled or emergency maintenance, and regulate plumbing in seasonal facilities such as fieldhouses and residence halls.

Because monitored systems provide views of when and how long each system-connected sink, water closet, urinal, or shower is used, they also offer administrators valuable usage information that relates directly to water efficiency. Using these system views, administrators could calculate how much water certain plumbing products use or determine traffic patterns in different sections of a building. Administrators then would have solid data to make the case for investing in more water-efficient plumbing or to take other water-saving steps.

Executive Restrooms

A brilliant solution for discriminating restroom visitors who appreciate beauty and desire water to flow according to their needs, is faucets that run automatically yet allow guests to adapt the water temperature at their discretion. Using the fingertip lever on the side of the faucet, visitors may control water temperature, which is visually indicated by an illuminated color ring near the top of the faucet. For example, a ring turns red when the lever is pulled forward for hot water, when the lever is set upright the ring

Using the fingertip lever on the side of the faucet, visitors may control water temperature, which is visually indicated by an illuminated color ring near the top of the faucet. Photo courtesy of Sloan Global Holdings, LCC

becomes white to indicate tempered water, and pushing the lever back for cold water changes the ring to blue. The ring is illuminated dim white when the faucet is in standby mode.

Whatever faucet you choose, there are some important functions to consider for optimal performance. Both above and below deck electronics are built to water resistance standards, while a splashproof circuit control module provides reliability so water doesn't mess up the sensor. Troubleshooting LED indicator lights simplify troubleshooting. Finally, rugged construction will provide longevity for high traffic commercial installations. There should be a sensor range adjustment screw, and a metal jacketed wire protection for the solenoid lead, which provides security from vandalism.

Additional Setting Options

In addition, various settings increase function in certain applications and may be more appropriate for non-public restrooms. Such faucets permit greater user control, enabling the user to adjust the water temperature or place the faucet into optional function modes, including "continuous run" and "temporary off" simply by pressing a button on the spout. Allowing a faucet to be set to run for longer intervals—up to several minutes per activation—is especially vital in some healthcare applications in which a constant flow is required, or for janitorial staff that need running water for cleaning.

In a well-designed faucet these modes are hidden and only perceptible to need-to-know personnel, making them ideal for use in hospital rooms, executive rest rooms, and other locations where the primary user has regular contact and therefore familiarity with the faucet.

In settings where legionella or other microbiological control is desired, some automatic sensor faucets come with a built-in "flush" mechanism. A flush setting will cause the faucet to automatically activate at programmed intervals in order to reduce the potential for water stagnation and biofilm growth.

Finally, there are user-friendly variable time-out settings, which turn the faucet off after a certain amount of time, increasing water efficiency. The faucet time out setting determines the maximum time the faucet will run upon continuous activation. You should consult the manufacturer for time out settings to meet individual application requirements.

Under LEED v4, the current baseline for Commercial Lavatory Faucets is a maximum flow rate of 2.2 gpm at 60 psi for private applications only (such as hospital patient rooms and hotel or motel guest rooms). Photo courtesy of Sloan Global Holdings, LLC

HOW ELECTRONIC SENSOR FAUCETS CONTRIBUTE TO WATER CONVERSATION

Conserving water in today's culture has become more than a trend; it is a necessity and water efficiency is becoming an integral part of any building design. Over the next five years, water efficiency and conservation will become critical factors in green design, construction, and product selection, according to McGraw-Hill Construction's latest *SmartMarket Report, Water Use in Buildings*. Hence, the need for sustainable water strategies continues to emerge in building designs.

According to the United Nations Environmental Program, buildings use 20% of the world's available water. The U.S. Department of Energy estimates that commercial buildings use 88% of the potable water in the United States—a

resource that becomes scarcer each year. Because toilets and faucets account for most of the water used in commercial restrooms, water-efficient solutions pave the way to reaching sustainable goals. By using high-efficiency products, water conservation and efficiency programs are significantly decreasing the use of water within buildings. In fact, water-efficient fixtures can reduce consumption by 30% or more. Dodge Data and Analytics indicates that the specification rate for electronic sensor faucets was 26% and rising in 2015.

Some electronic sensor-operated faucets use as little as one-half gallon of water per minute, a conservative flow that saves water while aptly supporting proper handwashing hygiene. As we've discussed, these faucets are either hardwired or powered by battery, solar, or turbine energy. Solar faucets resourcefully derive power from any natural or artificial light source, and in so doing, they reduce reliance on two precious commodities: water and energy.

Eco-minded professionals throughout North America tap these faucet technologies to achieve their water-efficiency goals and LEED® objectives. Such faucet technologies can also help meet flow rates mandated by The California Green Building Standards Code (CalGreen). CalGreen is the first statewide green building code in the United States and buildings can meet two threshold levels, Tier 1 or Tier 2. As of April 2015, CalGreen requires sensor faucets to have a maximum flow rate of 0.4 gpm for Tier 1 or 0.35 GPM for Tier 2.

LEED v4 Water Use Reduction will replace LEED 2009 in November 2016. The Water Efficiency (WE) section of LEED v4 addresses water holistically, looking at indoor use, outdoor use, specialized uses, and metering. The section is based on an "efficiency first" approach to water conservation.

The intent of the Water Use Reduction Credit is to increase water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems. Designers must employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation). Fixtures used for clinical use, such as surgical scrub sinks and exam room sinks are exempt from this calculation.

Electronic faucets should be certified as compliant to National Sanitation Foundation (NSF) 372. Photo courtesy of Sloan Global Holdings, LLC

The current baseline for Commercial Lavatory Faucets is a maximum flow rate of 2.2 gpm at 60 psi for private applications only (such as hospital patient rooms and hotel or motel guest rooms). A maximum flow rate of 0.5 gpm at 60 psi is the baseline for all other applications, while 0.25 gallons per cycle is the baseline for metering faucets. This means that for most applications 0.4 gpm, which is a 20% reduction from 0.5 gpm, is required to receive this credit.

REGULATORY COMPLIANCE FOR ELECTRONIC SENSOR FAUCETS

Electronic faucets should be certified as compliant to National Sanitation Foundation (NSF) 372, which is the result of the Safe Water Drink Act, signed by the President and put in place January 4, 2014. NSF 372 requires that all parts that are touching water should not contain more than a cumulative 0.25% Pb. Faucets are tested and certified by a third party certifier and will bear the NSF 372 mark if they conform to this standard.

In addition, all faucets are required to be tested and certified as compliant to ASME A112.18.1/ CSA B125.1. This joint Standard was developed in response to an industry request for a Standard for testing plumbing supply fittings that would be acceptable in both Canada and the United States. Its coverage is restricted to devices located between the supply line stop and the terminal fitting.

Finally, faucets shall be compliant to the Universal Plumbing Code (UPC) which is a model code developed by the International Association of Plumbing and Mechanical Officials to govern the installation and inspection of plumbing systems as a means of promoting the public's health, safety and welfare. The UPC is designed to provide consumers with safe and sanitary plumbing systems while, at the same time, allowing latitude for innovation and new technologies.

There are also local plumbing codes to deal with, which can vary from city to city. These include the Commonwealth of Massachusetts Code Compliance, CALGreen, the City of Los Angeles Water Efficiency Ordinance, and the Vermont Lead Reduction Law, among others. And of course, faucets must be ADA compliant in most commercial restrooms.

SUMMARY

Today, electronic faucets are as much a part of our culture as electric hand dryers and auto-flush toilets.

Since these faucets are preset to shut off after a certain amount of time, they save a significant amount of water, and accidental flooding can't occur if a user leaves it running. And, because they are hands-free, they help reduce the spread of germs and keep the vanity area clean. Further research and development will allow manufacturers to continually roll-out enhanced features that will make electronic faucets more convenient to use, as well as easy to install. As new technologies are created, the electronic faucet will continue to evolve offering new solutions to plumbers' and contractors' needs. ■