



The commercial restroom's role in reclaiming sustainability

ROMAZZ/DREAMSTIME

Green Goals

BY MARK LAWINGER

All the water on earth is all the water we will ever have. Constantly used and reused in a never-ending cycle, earth's most precious resource is becoming scarce in regions across the globe as the population grows and increasing water demands place a burden on supply.

To put it simply, conservation alone will not be enough to meet water needs of the future. That's why many communities across the United States are utilizing water reuse — or reclaimed water — when flushing toilets and urinals to reduce the stress on local water resources. In fact, San Francisco, California's building code requires any new construction or substantially renovated structure over three stories to provide separate piping to supply non-potable water.

It's no coincidence this reclaimed

water revolution has its origins in the commercial restroom, given the fact restrooms typically account for more water usage than anywhere else within commercial buildings. According to the U.S. Environmental Protection Agency, restrooms account for 45% of total water use in schools and 37% in office buildings.

Yet, using reclaimed water is not without its challenges. The higher chemical concentrations can damage plumbing components and lead to increased maintenance requirements and premature product failure. To date, most flushometers have not been designed to operate under these highly challenging conditions. This makes specifying the proper flushometer to handle these elements of the utmost importance to preserve a restroom's operability while continuing to conserve water.

WHERE DOES RECLAIMED WATER COME FROM?

Commercial plumbing manufacturers are at a crossroads. With innovative flush volumes now cut to levels as low as 1.1 gpf in toilets and 0.125 gpf in urinals — not to mention the advent of water-free urinals altogether — there isn't much threshold left to lower flush volumes without inhibiting performance.

As a result, manufacturers have turned to reclaimed water as another alternative to combat water challenges for the restroom. The first step in understanding how to develop the right flushometer for the job is to fully grasp the composition of reclaimed water, as its chemical content makes it more aggressive than potable water.

The primary sources of reclaimed water are municipal systems, harvested rainwater and stormwater, as well as water captured from indoor sources such as lavatory sinks and showers.

Onsite treatment and filtration is typically required in certain instances such as stormwater runoff — water that has hit the ground — that can mix with contaminants, while a source like rain water is oftentimes clean enough for reuse without treatment. Reclaimed water is also much harder than potable water due to the many types of particulates and constituents it contains, such as salts and minerals.

FLUSHOMETER SPECIFICATION SCRUTINY

Flushometer specification is never a one-size-fits-all proposition, as both piston and diaphragm flushometers have proven to be more effective than the other, depending on the environment.

However, diaphragm technology is shown to be more effective when handling reclaimed water. Not only is it more adept at handling water with high chloramine content, but it can overcome back pressure that can occur in high-efficiency toilet and urinal fixtures. More importantly, diaphragm flushometers are better engineered to

operate with water containing sand, calcium deposits and other particulates which are often present in non-potable water.

In contrast, the material composition of piston flushometers' main high-pressure seal is more prone to abrasion from such particulates, resulting in compromised flush performance and leaks. While all flushometers decay over the course of their lifespan, diaphragm technology is designed to withstand harsh conditions and abrasive forces.

It's also important to set expectations with diaphragm technology. While diaphragms that have been designed for potable water will operate sufficiently with reclaimed water, they will not last as long, or perform as well as they would, with potable water.

POWER OF PURPLE

Commercial restroom manufacturers have cracked the code for recycling non-potable water with reclaimed water flushometers. Easily distinguished by its purple handle and components, these flushometers are designed to withstand the harsh conditions of reclaimed water.

Critical flushometer elements such as the cover, valve body, control stop and sweat solder kit are made of semi-red brass, an important contrast to a yellow brass flushometer that contains less copper and more zinc. Dezincification eventually leads to mechanical weakness — the primary focus of failures in reclaimed flushometers — and semi-red brass construction has superior dezincification properties.

Recycling reclaimed water is both the present and the future of water conservation. Managing non-potable water will go a long way in preserving the finite amount of water that we have on earth, making it not only critical to conserve precious and limited fresh water supply, but unavoidable.

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