

Addressing the Appetite for Water

Although there were grand ships before it, some say the first ship referred to as a “floating city” was the RMS *Queen Mary*, which had its maiden voyage in May 1936. With capacity for more than 2,000 passengers and 1,100 crew members along with scores of onboard amenities, sports activities, children’s nurseries, a first-class dining room, and smaller restaurants and bars, it was—if not a floating city—certainly a grand floating village by any measure.

And just as with any community on land or at sea, the *Queen Mary* consumed large amounts of energy and potable (drinkable) water. Although we do not know how much water it actually used per day or per passenger, we do know that cruise ships have a seemingly insatiable thirst for fresh water.

It is estimated that some of the larger modern cruise ships use more than 260,000 gallons of fresh water *every day*. This means a typical seven-day cruise may require more than 1.5 million gallons of water...a huge amount, especially if the ship must load water at some of the more water-poor areas of the world such as Africa or the Middle East.

The water is used for baths and showers, pools, laundry, ship mechanicals including cooling, and even purely decorative features such as waterfalls and fountains. And just as with large buildings on land, considerable amounts of water are necessary for sinks, toilets, and urinals in bathrooms. In fact, for buildings, restrooms consume more water than any other area of the facility with the possible exception of landscaping.

The newest state-of-the-art ships are equipped to address and reduce this demand for water. For instance, some now have systems that transform salty seawater into potable water. Although this is helping tackle the problem, the equipment and procedure can be costly. Instead, ship owners may be able to learn much about water conservation from what facility managers, especially those in hotel properties, are doing to reduce water consumption, particularly in their restrooms.

Water-Reducing Strategies

In April 2010, a survey in a leading building trade publication asked facility managers what steps—if any—they were taking to conserve water. The survey found that fully 89 percent of the managers questioned did believe water concerns will intensify around the world in coming years, which will likely lead to increased charges for water. For these reasons, 72 percent indicated that installing water-conserving restroom fixtures is “important” or “very important.”

Asked what types of water-conserving fixtures they have installed or are considering installing, the managers indicated the following:

- High-performing (reduced-flow) toilets and urinals, 28 percent
- Reduced-flow faucets, 23 percent
- Waterless urinal systems, 15 percent
- Reduced-flow showerheads, 15 percent
- Water-conserving landscaping, 19 percent

A closer examination of these fixtures indicates how they can assist cruise ship owners in reducing water consumption as well:

Toilets: Today reduced-flow toilets are designed to use no more than 1.6 gallons per flush (gpf), about half the amount consumed by toilets made before 1992. However, new systems are available that use even less—1.29 gpf. Dual-flush toilets provide 1.6 gpf to remove solid waste and .8 gpf to remove liquid waste. The handles or buttons on the toilets allow users to decide which flush is needed.

A study by Purdue University from June 2004 to June 2005 found there was as 45 percent reduction in water use when these reduced-flow toilets were installed. Taking things a step further, air-compressed toilets, which are growing in popularity in areas of the country where there are chronic water problems, use a combination of compressed air and water to quickly and effectively remove waste from the bowl.

Faucets and Showerheads: Reducing the flow rate on faucets and showerheads is rather simple. Installing an aerator on existing fixtures can limit the amount of water released. In most cases using new technologies, users cannot tell the difference between older, water-hungry faucet/showerhead systems and those incorporating new aerator technologies.

Studies also indicate that automatic or sensor-controlled faucets take water conservation a step further. Mainly this is because the systems are designed to stop water flow as soon as hands have been removed from the “active area.” These sensor-controlled systems are far more dependable than earlier models and can prove to be a valuable water-conserving measure for a ship’s public and private restrooms.

Urinals: Many managers are startled to hear that one conventional urinal uses about 40,000 gallons of water per year. Reduced-flow urinals, using from .5 to about 1 gallon of water per flush, have helped lessen the amount of water used; until recently, this type of reduced-flow fixture was about the only option available, especially for ships. However, no-water or waterless urinals are now available for installation on ships. First introduced in the United States in 1991, no-water urinals have a trap or cylinder at the base into which urine flows to prevent odors from being released into the restroom. The urine eventually moves down a central tube, similar to a water-using urinal.

Green Cruising

The expression “Green cruising” is now a buzz phrase in the industry. Ship owners are incorporating a variety of measures to reduce the fuel and energy needs of ships as well as the waste they generate. And as a bonus, quenching a ship’s thirst for water can also help reduce its fuel needs. Water is heavy. Incorporating the restroom fixture strategies discussed here can help reduce the amount of water a liner needs to carry, which can lead to a reduction in fuel consumption.

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