



# Water Conservation Behind Bars

SHAWN BUSH

**Clean, fresh water is a limited resource. Although a majority of our planet is covered in water, it is unfortunately salt water that can be consumed only after undergoing the expensive process of desalination. In addition, using excessive amounts of water strains septic and sewage systems and can cause contamination of groundwater. The less water used or wasted, the less fresh water will become contaminated. Therefore, conservation of clean, fresh water is vital. Water conservation also reduces energy use and saves money. For jails and other correctional facilities, the ability to control water consumption—thereby reducing costs and at the same time managing security issues—is a priority.**



## The less water used or wasted, the less fresh water will become contaminated.

Typically, most facilities have a manual flush valve with little to no control of how often an inmate can flush. Inmates will use the toilet to flush bed sheets, clothing, and contraband. One way to minimize the cost of water yet maintain security is through the use of electronic plumbing controls. Electronic plumbing controls, particularly an electronic flush valve system, are suitable for high-security areas, where the plumbing system is often subject to a high level of abuse by inmates and the facility's control of water is often limited.

With an electronic flush valve system, when an inmate flushes twice within five minutes, the control panel locks the toilet for an hour. Inmates often abuse a typical system by flushing repeatedly to lower the water pressure, which does not allow a manual flush valve to seal and eventually floods the cell. An electronic flush valve can produce a seal with minimal water pressure,

preventing inmate-induced and other potential flooding scenarios. Officers can also use a computer monitoring system linked to each flush valve to see who is repeatedly pushing the flush button. They can then shut down the water before a contraband search.

An electronic flush valve system also allows control of runtimes and lockouts as well as the amount of water used during each toilet flush—a key factor in reducing the amount of water usage. In fact, 90 percent of the actual savings comes from controlling the amount of water used. The remaining 10 percent of savings is achieved by the lockout feature, which limits the number of flushes per hour. For example, one system can take a 3.5-gallon fixture's flush down to 1.6 gallons and a 1.6-gallon fixture down to 0.9 gallons. This system still passes all plumbing tests and complies with plumbing codes. The electronic flush valve can be linked to a controller that allows the facility to designate how much water it would like to save.

Electronic flush valve systems are designed for detention facilities of any size and can be retrofitted for an existing plumbing system or for new construction applications. The controllers and touch-screen computer system can be calibrated based on the layout and needs of the facility. In addition, as long as the system has a water-resistant controller without penetrations in the lid, conformal coating on the PCB, and is properly designed, the system should not be affected by climate.

So how much water can be saved with this type of system in a correctional facility? In comparing a manual system to an electronic flush valve system, a meter to monitor before-and-after water usage for 30 days typically showed a 65 to 80 percent savings in water usage.

Whether a large prison located in a metropolitan area, a small rural jail, or somewhere in between, correctional facilities share the common objective of improving water conservation while maintaining security. ■

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