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# BETTER BY DESIGN

High-performance waterfree urinal technology

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Phone: (800) 608-6568  
Fax: (409) 840-5545  
[info@ameraproducts.com](mailto:info@ameraproducts.com)



**FALCON**  
WATERFREE TECHNOLOGIES®

## ■ SIMPLY INNOVATIVE

Every once in awhile, the evolution of technology makes a quantum leap. This could not be better demonstrated than with Falcon Waterfree® urinals. Forward-thinking technology and design innovation have produced a highly engineered waterfree urinal that is elegantly simple and effective.

More than 350,000 Falcon Waterfree urinals are in use in 50+ countries around the world in every type of commercial and institutional facility. Fortune 500 companies including Cisco, Volkswagen, Adobe, Coca Cola, Toyota, Hilton, McDonald's and countless others have selected Falcon Waterfree to address environmental and hygiene goals while reducing operating costs.



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## IDEAL FOR NEW CONSTRUCTION AND RESTROOM UPGRADES

Simply put, Falcon Waterfree® urinals are the most practical and efficient urinals available for new construction and restroom upgrades. In new building installations, no need exists to connect to a water supply – only to a drain line. For urinal upgrades, the existing water supply is simply capped off and the waterless urinal is connected to the drain line. Many restroom upgrades present unique challenges due to wall conditions and old plumbing systems, but the design of the Falcon Waterfree urinal and adaptive installation hardware easily accommodate most variations.

## HOW IT WORKS

The Falcon Waterfree system consists of vitreous china fixtures with a patented cartridge that locks into the urinal base. The design of the urinal bowl and use of nonporous materials ensure that all urine passes into the cartridge. That's all there is to it – no flush valve assembly, no water supply hookup, and no wasted water.

The heart of the technology is the cartridge, which provides odor-free operation and easy maintenance. The pleasant-smelling sealant liquid inside the cartridge provides an airtight barrier between the drain and the restroom to prevent odors from escaping. Other types of waterless urinals require frequent replenishment of costly sealant liquid and regular maintenance that can keep a urinal out of commission for up to 20 minutes during maintenance. In comparison, the Falcon Waterfree sealant liquid can last for the life of the cartridge so there is usually no need to add sealant liquid between cartridge changes; plus, cartridge replacement takes only a few minutes. The cartridge also acts as a trap for uric sediment that could otherwise contribute to drain pipe clogs.

The Falcon Waterfree system provides a hygienic and odor-free environment, cleaner pipes, and no water waste. The only daily maintenance is routine spray-and-wipe cleaning of the fixture, and an easy cartridge change and system flush is needed only approximately two to three times per year, depending upon usage.

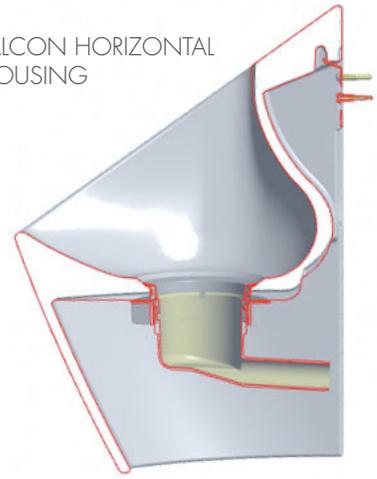
## PIPE-IN-PIPE TECHNOLOGY

Falcon Waterfree urinals are the only urinals in the world with a universal coupling and housing design that provides downhill slope throughout the system. This means that some in-wall plumbing problems can actually be corrected by installing Falcon Waterfree urinals.

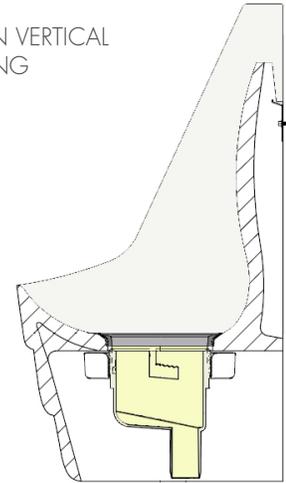
\*Pipe in Pipe technology and vertical housings are available in select regions.

Please contact your Falcon Sales Representative for more information about the Falcon technologies available in your area.

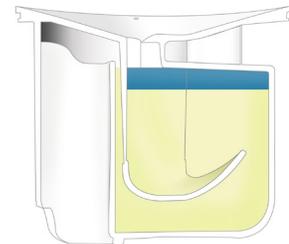
FALCON HORIZONTAL HOUSING



FALCON VERTICAL HOUSING



FALCON CARTRIDGE



FALCON PIPE-IN-PIPE TECHNOLOGY

Falcon-exclusive insert pipe and rubber bushing fits into the existing drain pipe, addressing common slope problems



Flow of urine drops into the middle of the drain pipe, reducing clogging potential



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## ■ BLUEPRINT FOR SAVINGS

Using fresh water to dispose of urine, which itself is about 95 percent water, makes no economic sense – particularly in a world facing a very limited water supply. Falcon Waterfree urinals reduce costs in three key ways:

### **LOWER INSTALLATION COSTS:**

They are less expensive to purchase and install because they have no flushing mechanism. All that is required are a drain line and time for installation (typically less than an hour per fixture). Costs are even lower in new construction because no water supply lines are needed.

### **LOWER WATER/SEWER COSTS:**

They save 100 percent of water costs for regular operation and virtually eliminate sewer costs, both of which are sure to rise in the future. Waterless urinals also eliminate the energy costs associated with pumping water to and from the fixture. While ultra low flush urinals may use a little water, they rely on valves that are prone to leaks, wasting tremendous amounts of water and money.

### **LOWER MAINTENANCE COSTS:**

Because they have no flush valves, there are no costs to repair stuck or broken valves, and there's no costly cleanup of flooding caused by clogged drains. Clogs and cleaning are reduced because drain lines remain free of hard-water calcification. Daily maintenance is a quick "spray and wipe" of the urinal.





The Falcon Waterfree Savings Analysis considers all factors that determine your payback on upgrading to waterless urinals. Three examples below illustrate how the Falcon Waterfree urinal system generates savings. Variables are annual usage, water and sewer rates, and volume per flush. In select regions, special time payment and rebate programs can result in zero-cost or immediate payback installations, since savings are often greater than monthly payments. Please contact your Falcon representative for more information.

### SAVINGS ANALYSIS ASSUMPTIONS

	STADIUM	SCHOOL DISTRICT	OFFICE
Number of male visitors per day	12,000	12,000	2,500
Number of urinals	187	375	200
Total uses per day per facility	24,000	36,000	7,500
Water volume per flush (gallons)	1	1.5	1
Operating days	330	180	290

#### WATER SAVINGS ANNUALLY

Gallons	7,920,000	9,720,000	2,175,000
Dollars	\$57,478	\$79,587	\$10,180

#### SEWER SAVINGS ANNUALLY

Gallons	7,920,000	9,720,000	2,175,000
Dollars	\$38,179	\$202,664	\$16,187

#### MAINTENANCE SAVINGS ANNUALLY

Flush Urinal: Maintenance/Valve Repair (\$75 avg per urinal)	\$14,025	\$28,125	\$15,000
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#### OPERATIONAL COSTS ANNUALLY

Falcon: Replacement Cartridges (\$35 per average 7000 uses)	\$39,600	\$32,400	\$10,875
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### ESTIMATED TOTAL ANNUAL SAVINGS WITH FALCON WATERFREE URINALS

(Water savings + sewer savings + maintenance savings - operating costs)	\$70,082	\$277,976	\$30,492
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#### CALCULATION ASSUMPTIONS

1. Water and Sewer Rates based off of 2012/2013 Black and Veatch report
2. Stadium rates based on Los Angeles; School District rates based on Atlanta; Office Building rates based on New York City
3. Operational Costs calculated using total uses per day, operating days, 7000 use lifespan and \$35 cost of cartridge

“No more leaks, no more floods, no more constantly running valves wasting our region’s water. Additionally, there have been no adverse effects on our existing plumbing systems. These successful installations in Southern California have led to implementation of these fixtures in our other properties around the country.”

Vice President - Engineering, AEG STAPLES Center and NOKIA Theatre

“We not only contribute to the long term stewardship of this precious (water) resource; we are also seeing as a return on investment, an average in excess of \$200 annual savings at each of our 125 locations installed to date.

Director Ops, Engineering and Resources, Jack in the Box

“[Urinal flush valves degrade, leading to excessive flush volumes. We recommend waterfree urinals because] they never consume any additional water and have been successfully installed in many high-use facilities.”

2009 Infrastructure Academy survey of 3,428 urinals.

“As water has become more scarce and costly in our region, the decision to convert (entirely) to waterfree urinals has not only been socially responsible, but fiscally responsible as well. The District has verified an average savings of \$150 per urinal per year when compared to a flush urinal.”

Assistant Director of Facilities,  
Corona-Norco Unified School  
District



“We are looking to expand our implementation nationally as water issues are prevalent in all areas of the United States. We hear positive comments from both our facility managers and our shoppers. [Falcon] non-water urinals have only positive impacts on our facilities: environmental and resource benefits along with real dollar savings.”

LEED AP Senior Director of  
Technical Operations,  
Westfield, LLC

## ENVIRONMENTAL BENEFITS

Only around 3.5 percent of the water on earth is fresh and usable by humans, which highlights the importance of eliminating unnecessary water use. Each Falcon Waterless urinal can save up to 40,000 gallons (151,000 liters) or more of fresh water each year. That is the equivalent of nine tank trucks of water which could be used for more essential purposes.

Plus, with waterless urinals, water does not have to be pumped to or from the urinal. This saves energy, which in turn reduces carbon dioxide emissions associated with energy production that contribute to global warming. Calculations by RAND Corporation show that water-flushing urinals are responsible for 20.7 million tons of CO<sub>2</sub> emissions each year, which can be totally eliminated by converting to waterless urinals - this savings is the equivalent of annual CO<sub>2</sub> emissions from 3.8 million automobiles.

## EARN LEED POINTS

Falcon Waterfree urinals promote the water conservation goals of the LEED Green Building Rating System. Up to 13% of the points required for LEED-EBOM can be earned by upgrading existing urinals to Falcon Waterfree urinals, which is more than can be earned with low-flush urinals. Falcon helps architects, engineers, and project managers achieve LEED prerequisites and credits in the following rating systems:

- NC - New Construction and Major Renovations
- EBOM - Existing Buildings Operations & Maintenance
- CI - Commercial Interiors
- CS - Core & Shell
- Schools
- Retail

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“The dual barrier system provided in the Falcon Waterfree urinals are predicted to be 500 times more effective against the back-migration of sewer gases as compared to conventional P-trap water barriers.”

Dr. Michael R. Hoffman, Professor of Environmental Science and Dean of Graduate Studies at the California Institute of Technology



## ■ HYGIENIC AND AESTHETIC BENEFITS

Falcon Waterfree urinal systems reduce odors and contribute to a cleaner, more sanitary restroom when compared to all types of flush urinals.

A few facts explain why:

- Urine is essentially odorless. Urine odor primarily results from the reaction of urine with water and air. Without water, the bowl quickly dries between uses and produces no detectable odor. Plus, once urine passes through the sealant liquid in the cartridge, an airtight seal is created between the drain and restroom.
- Bacteria and viruses thrive on moist surfaces, and the wet surface of a flush urinal is a breeding ground for their growth. Flushing doesn't kill bacteria and viruses; rather, the flush creates a plume that spreads them to every surface in the restroom.

Millions of users around the world demonstrate that Falcon Waterfree urinals not only make better economic sense, but they also make restrooms safer and more pleasant.

“Waterfree urinals offer a major improvement in public sanitation. Flushing is eliminated, which greatly reduces the almost continuous production of microbial aerosols, and the surface and sides of urinals are drier, which reduces the survival of human disease-carrying microorganisms and prevents their growth. The flush handle is also eliminated, which would prevent hand-to-flush handle transfer of pathogens from one individual to another during the use of the urinal.”

Dr. Charles P. Gerba, Professor of Environmental Microbiology at the University of Arizona

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“The waterfree urinals are amazing! The units at FORSCOM Headquarters have worked out so well that now the higher-ups want to do the rest of them. They’re an answer to a prayer. By installing waterfree units in just one building, we will save \$106,000 per year.”

Luke Wyland, Energy Manager,  
Fort McPherson, Georgia



“By installing a waterfree urinal, with predominantly dry surfaces and no flushing actions, the exposure to airborne bacteria is reduced tremendously. With proper attention, the maintenance requirements for this urinal are absolutely minimal compared with keeping mechanical flush systems operational and leak free.”

Brian Yeoman, The University  
of Texas, Health Science Center  
at Houston

## ■ PLANNING CHECKLIST: BENEFITS OF GOING WATERFREE

Falcon Waterfree urinals offer numerous benefits that will make your job easier and help fulfill your strategic facility plan.

### FALCON WATERFREE URINALS (COMPARED TO MANUAL AND AUTOMATIC FLUSH URINALS)

#### COST SAVINGS

- Lowest initial product cost
- Lowest installation costs - fewer materials, less labor
- Lowest operating costs - zero water consumption for regular operation, negligible sewer charges, and no need for odor-control products
- Low maintenance costs - replace the cartridge two to three times per year
- Reduce vandalism and eliminate floods - no water supply, valves, or sensors to be tampered with

#### HYGIENE

- Touch-free operation
- Odor-free fixture
- Bacteria reduction through elimination of water and flush plumes

#### ENVIRONMENT

- Water conservation - up to or more than an average of 40,000 gallons per year, per urinal
- Reduction in the use of harsh cleaners
- Energy savings by avoiding water/waste pumping and sewage treatment

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## CHOOSING THE RIGHT URINAL

When it comes to urinals, nothing compares to the technological innovation and unsurpassed performance of Falcon Waterfree urinals which offer numerous benefits that will make your job easier and help fulfill your strategic facility plan. With a few facts from you, we can quickly respond with a proposal that includes a customized savings projection. Contact us for your proposal.

	FALCON WATERFREE	MANUAL FLUSH	AUTOMATIC FLUSH	OTHER WATERFREE BRANDS
WATER CONSUMPTION	None, for regular operation.	Up to 40,000 gallons or more per year.	Up to 40,000 gallons or more per year.	None.
ROUTINE CLEANING	Spray and wipe with cleaner.	Harsh cleaners required for removal of hard water scale.	Harsh cleaners required for removal of hard water scale.	Proprietary cleaners may shorten life of sealant liquid.
ROUTINE MAINTENANCE	Replace cartridge as needed (2-3 times per year, about 5 minutes per change).	Repair/replace leaking or broken flush valves (1 hour average per incident).	Replace batteries and calibrate flushes (5-10 minutes). Repair/replace leaking or broken flush valves (1 hour average per incident).	Replenish sealant liquid every 1-2 weeks. Clean all trap seals every 2-4 weeks (up to 20 minutes).
REQUIRED SUPPLIES	Replacement cartridge kit (lowest total cost compared to other urinal options).	Valve repair kit. Screens and deodorizer pucks.	Batteries. Valve repair kit. Drip dispenser systems for deodorizer. Screens and deodorizer pucks.	Sealant liquid. Replacement cartridge and service tools.
PIPE-IN-PIPE TECHNOLOGY	Falcon-exclusive feature. Provides good flow and minimizes clogging.	Not available. Lack of downhill slope in urinal system and horizontal pipe nipple may lead to clogs.	Not available. Lack of downhill slope in urinal system and horizontal pipe nipple may lead to clogs.	Not available. Lack of downhill slope in urinal system and horizontal pipe nipple may lead to clogs.
DRAIN PIPE MAINTENANCE	Soft uric sediment is flushed away during the process of replacing the cartridge.	Hard calcite buildup must be removed with cutting tools, requiring the restroom to be out of service.	Hard calcite buildup must be removed with cutting tools, requiring the restroom to be out of service.	Soft uric sediment is flushed away during the process of replacing the cartridge.
HYGIENE	Touchfree operation. Reduced bacteria. No flush plumes.	Flush handles convey bacteria. 5-times more bacteria than waterfree urinals. Flush plumes spread bacteria-laden moisture around restroom.	Touchfree operation. 5-times more bacteria than waterfree urinals. Flush plumes spread bacteria-laden moisture around restroom.	Touchfree operation. Reduced bacteria. No flush plumes.



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