Waterless Urinals
Myths and Realities

Simon Pearce
Gentworks

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SoPHE

The Gentworks perspective

- Founded in 2001, about 50% of revenues from water-saving products and services.
- Reselling a wide range of urinal types and flush controls
- Sales of waterless urinal products and services gathering pace
Are waterless urinals becoming ‘mainstream’?

- 5% of urinals in the UK are waterless (?)
- Major urinal manufacturers embrace the concept

![Armitage Shanks Twyford Duravit](images)

- Predictions of 15% of urinals sold this year being waterless
- The McDonalds effect

Benefits of waterless urinals specific to new build (and major refurbishments)

- No laying in of water supply pipes
- No cistern or downpipes to install or maintain
- No flush control systems to fit or maintain
- No electrics for the flush control systems

![Gentworks](images)
Generally marketed benefits pre-handle objections

Benefits:
- No floods - *undoubtedly*
- Less blockages – *almost always*
- Improved hygiene - *usually*
- Easier to clean - *mostly*
- Less overall maintenance – *usually, but sometimes not.*

The truth about urinal flush controls

- Water regulations state that flushed urinals “shall be fitted with an isolating valve controlled by a time switch ....or with some other equally effective automatic device”
- For most sites, flush controllers should reduce consumption per urinal to between 25 and 45 cubic metres per year
- Most urinals are fitted with flush controllers so how can it be that “average” flushing frequency is almost as high as if no flush controllers were fitted at all?

- Number of flushes after activation?
- Is it working?
- Is it connected to the cistern water supply?

If water usage under control, will it stay that way?
Urinal water consumption - the real world
(Source: The 6 most recent site surveys by Gentworks engineers to Jan’13)

Why work with averages when an accurate assessment can be made?

<table>
<thead>
<tr>
<th>Site Description</th>
<th>Average water spend per urinal, per year</th>
<th>Number of urinals</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Building</td>
<td>£95</td>
<td>37</td>
<td>Tyne &amp; Wear</td>
</tr>
<tr>
<td>Office Building</td>
<td>£211</td>
<td>14</td>
<td>London</td>
</tr>
<tr>
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Annual average cubic metres of water per urinal

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The obligatory Case Study

Total water usage at both buildings in 2004 = 38,510 m³
Total water usage at both buildings in 2005 = 16,134 m³
Saving on water usage = 58%  

The chart below highlights the impressive results that this environmental initiative had on the overall water usage at Exchange Tower.
Challenges for waterless urinals

Save water and money but DON’T:

- smell bad
- look nasty
- create maintenance headaches

- Uric acid salts, even when not combined with limescale from water, can clog waste pipes. Moreover, hair and other debris inevitably finds its way into the wastes.

- Waterless urinal products use a variety of methods to prevent odours and blockages.

Method 1: Liquid Barrier

**How it works:**
- Urine passes through an oil-based sealant
- Trap collects debris to help prevent blockages in waste pipes

**Potential problems:**
- Barrier fluid degraded by misuse
- Cartridge change frequency unpredictable = costs difficult to predict
Method 2: Valve Barrier

How it works:
- The pressure of urine flow causes a valve to open.
- The valve closes when the flow stops, preventing foul air from the drains being emitted into the washroom.
- Often complemented by a microbiological block to help prevent the build-up of uric acid salts.

Potential problems:
- Incompatible cleaning fluids and use of water impairs valve operation.
- Debris can cause valve to stick open, allowing fumes into washroom.

Method 3: Microbiological

How it works:
- Urine touches a block containing microbial spores.
- The spores become active bacteria that multiply and ‘digest’ urine in the trap and waste pipe.
- Hair and debris are washed away by weekly sluicing with chemical diluted with warm water.

Potential problems:
- Failure to flush through with chemical on a regular basis will allow hair and other debris to clog the trap and waste pipes.
- Incompatible cleaning products kill all the beneficial bacteria and disable the system.
4. Other approaches

**Extractor fan**
- A low watt fan draws odours from the urinal waste run and expels them from the building
- Urinals in a run share a single trap that needs to be emptied periodically
- Weekly sluicing required to flush through debris

**Products 1: “Popular” purpose-built waterless bowls**
e.g. Aridian, Falcon, Urimat, Uridan

- Aridian from Ideal Standard
- Largest UK installed base by far
- Flax from Falcon Waterfree
- From the manufacturers of the Falcon cartridge
- Urimat – several bowl designs
- Valve/siphon mechanism – needs emptying and servicing
- Uridan – several bowl designs
- In-built fluid-barrier trap – needs emptying and servicing

- widely available
- takes replaceable Falcon fluid-barrier cartridge
Products 2: Standard Urinals without Spreaders

- Will meet government criteria for “flush-free” because no possibility of urinals being converted to flushing
- Currently low volume production runs so price premium for no spreader hole
- Bundled with a retrofit waterless urinal system
- Bowls are available without bundled system so buyers can choose an alternative retrofit waterless system

Products 3: ‘Standard’ Urinals with Retrofit

- Almost all urinal bowls with a 1.5” drain can be converted to waterless
- Spreader hole can be filled with standard plastic or chrome cistern stopper
- Lower cost bowls because of volume manufacture
- Several waterless systems to choose from - e.g. Aquafree, Whiffaway/Saracen
- There will be many more ‘waterless’ retrofit systems
**Urinal ‘insert/sleeve’ wars**

- An increasing choice of microbiological and valve waterless urinal systems for retrofitting into standard urinals
- Many marketed as ‘low-flush’ currently but most are equally applicable to waterless use
- Several start-up companies plus same products under several brand names
- Some good, some not, some overpriced …..constantly changing

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**Suppliers try to protect their consumables income**

- Offer urinal bowls that only accept one model of cartridge
- Keep tight control of distribution, maintain different country/region pricing
- When installing in new-builds, make pipework difficult to change to an alternative waterless system
- Make receptacle for waterless cartridge only accept that cartridge
- Long term rental/servicing agreements
Considerations when choosing waterless

For new builds and major refurbishments
- Assess savings in construction costs from no water supply to urinals or flush controls
- Choice of urinal bowl
  - Cost
  - Bowl material and design
  - Standard or non-standard waste outlet
  - Are replacement bowls likely to be available in many years?

Considerations when choosing waterless

For all waterless installations, including retrofit
- Is a service contract required by the supplier? What are the total on-going costs, both external and internal? Interrogate!
- A waterless system will save water, but will it really reduce overall expenditure?
- Will the system work at the specific site? Will the cleaners and maintenance staff take care of it?
- What is the degree of ‘lock-in’ to a single supplier and/or waterless technology? Can the supplier be trusted for years to come?
Waterless is not the only way

- Individual sensor controls – Armitage Shanks, Dart Valley Systems, Delabie and Cistermiser
- Cistern flush controls – many small players plus leading brands, including Cistermiser and Dart Valley Systems
- ‘Low-flush’ solutions– an alternative to waterless

About the ‘low-flush’ method

An alternative to waterless promoted by the leading washroom services companies
- Flushing once every 4 to 12 hours
- More widely accepted than waterless
- Typically more expensive than waterless
- Tends to require more maintenance than waterless – service contract strongly recommended
- Hangover from bad waterless experiences?
Comparative water savings

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<tr>
<th>Category</th>
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<tbody>
<tr>
<td>Uncontrolled</td>
<td>236</td>
</tr>
<tr>
<td>Flush restricted</td>
<td>118</td>
</tr>
<tr>
<td>Sensor activated</td>
<td>42</td>
</tr>
<tr>
<td>Low flush system</td>
<td>8</td>
</tr>
<tr>
<td>Waterless</td>
<td>0</td>
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</table>

Flush controls can save a lot of water, but consumption often increases.

Summary: Waterless Urinals

Potential pitfalls:
- Costly lock-in to single supplier or manufacturer
- Not all the designs work well
- Success dependent on cleaning and maintenance regimes

Potential advantages of waterless:
- Lower cost for new builds
- Less problems
- Continuous water savings are assured!