

**ECOINNOVATION**

Topics Online „Eco-Innovation“ presents cutting-edge and fascinating best practices for increased resource productivity. In the tradition of „Factor Four“ they show what is possible, present obstacles and how green lead markets can emerge.

Best Practice

## »» Waterless Urinals

### Saving Water and Improving Hygiene

**Conventional urinals use at least three litres of water per flush, whereas waterless urinals need neither water nor a flushing system. These urinals save costs and, above all, water without making concessions on convenience. At the same time they improve hygiene.**

Models made of sanitary ware and fibreglass-reinforced synthetic material are available. The urine flows off the smooth surface of the urinal into a siphon that serves to trap the odour – this is the centrepiece of all waterless urinals. In most cases, the siphon contains a biodegradable sealant liquid with a lighter-than-water specific density. This floats to the top, allowing the urine to flow through it and away, taking any odours with it. The liquid sealant remains in the siphon. In some cases, valves based on membrane technology or hydrostatic floats provide the function of the sealant.

Waterless urinals have no joints or cracks which bacteria can colonise. The special surface repels most liquids and impurities. Cleaning therefore involves less cost and effort than with conventional systems, and strong toilet cleaners are now unnecessary. With some systems, water and disinfectants are enough to guarantee hygienic operation.



#### Sustainability-effects

<b>ECOLOGY</b>	<p>Waterless urinals function without water, and even cleaning them requires less water than cleaning conventional systems. Every commercial or industrial urinal that is replaced by a waterless one saves a total of around 50,000 litres of water per year. The large water savings also mean a saving of several hundred kilowatt hours of energy per year and urinal, taking into account water purification and transport and later sewage treatment. Lowering energy consumption also reduces CO<sub>2</sub> emissions.</p> <p>Waterless urinals no longer require strong tenside and acid-based toilet cleaners and deodoriser blocks, meaning less sewage and less harmful substances in the water. The production, maintenance and later disposal of a technically complex automatic flushing system with water supply pipe are no longer necessary. The liquid sealant and the siphon have to be replaced only after several thousand uses. The liquid sealant (e.g. based on a fatty alcohol) is 100 percent biodegradable.</p>	<ul style="list-style-type: none"> <li>✓ Water consumption</li> <li>✓ Energy consumption</li> <li>✓ Emissions</li> <li>✓ Water pollution</li> <li>✓ Resource consumption</li> <li>✓ Waste</li> </ul>
<b>ECONOMY</b>	<p>Waterless urinals will pay for themselves within several months or a few years depending on where they are used. Savings vis-à-vis conventional systems are achieved in operating costs (water, cleaning, and maintenance) and in purchase and installation.</p> <p>Waterless urinals can be used in many different locations (e.g. gastronomy, public offices, businesses, universities), thus creating a large market. They are used all around the world. Waterless systems are particularly attractive in regions where water resources are limited and expensive, thus having a high export potential.</p>	<ul style="list-style-type: none"> <li>✓ Costs</li> <li>✓ Market volume</li> <li>✓ Export</li> </ul>
<b>SOCIAL</b>	<p>Waterless systems are more hygienic than conventional flush systems, and the surface does not attract bacteria and fungi to anywhere near the extent of flush urinals. A comparison of the appearance and the odour of heavily-used conventional and waterless systems comes out clearly in favour of the latter. This takes work off the cleaners' hands.</p>	<ul style="list-style-type: none"> <li>✓ Health</li> <li>✓ Quality of life</li> </ul>

## Obstacles and drawbacks

Many building owners fear to depart from a functioning water-flush system. The difficult financial situation of many public and private institutions impedes investments in sanitation.

Cleaning staff will have to get used to new cleaning methods to guarantee the faultless operation and hygiene of waterless systems as chemical cleaners and deodoriser blocks impair the functioning of the urinals. Some producers advise even against cleaning with water and recommend a special liquid cleaning agent.

The production of fibreglass-reinforced synthetic materials poses a health risk as they contain polyester resins. The use of styrene-free products is possible. Urinals made of sanitary ware are preferable because of the lower health risk, their carbon dioxide balance however is worse.

Neither ceramic urinals nor those made of fibreglass-reinforced synthetic materials can be recycled. Though the siphons can be recycled, in practice they are disposed of along with the residual waste. There is room for improvement here.

In countries such as Germany, the sense in saving water is not undisputable, since infrastructures require a certain minimum throughput. When less water is used, deposits and odour can develop in sewage pipes.

## Potential

There is a large market for waterless urinals, and the potential is far from exhausted. In Germany alone there are around six million urinals, and only around 100,000 of these have so far been converted to waterless systems.

The overall cost-benefit of the waterless systems is the driving force behind further investments. Rising water and sewage costs further shorten the amortisation period for waterless urinals, which is another incentive to invest.

Especially for regions with limited water resources, peripheral regions and e.g. major events, waterless systems do without any doubt make sense.

## Policy recommendations

Given the technological advances, any regulation prescribing that urinals in restaurant lavatories must be water-flushed are now completely obsolete and should be annulled. Invitations of tenders should take waterless systems into consideration, and economic viability studies should devote particular attention to the resulting longer-term costs (above all for water and sewage).

In the medium term, waterless systems should be considered when sewage pipes are planned in order to prevent over dimensioning and long water retention periods.

## Links and contacts

### Manufacturers and suppliers (examples):

Ateco Umwelttechnik GmbH	<a href="http://www.ateco-umwelttechnik.de">www.ateco-umwelttechnik.de</a>
F.ERNST AG	<a href="http://www.system-ernst.de">www.system-ernst.de</a>
Hellbrok Umwelttechnik	<a href="http://www.hellbrok.de">www.hellbrok.de</a>
Sinaqua Waterless System GmbH	<a href="http://www.sinaqua.de">www.sinaqua.de</a>
Urimat Schweiz AG	<a href="http://www.urimat.com">www.urimat.com</a>
Urinowa	<a href="http://www.urinowa.com">www.urinowa.com</a>
Waterless Hettwer	<a href="http://www.waterless-hettwer.de">www.waterless-hettwer.de</a>

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