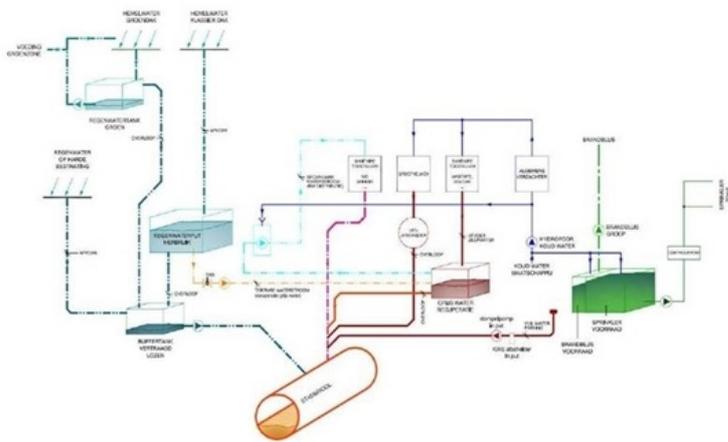


## Saving precious drinking water? - 'The Hof van Saeys' and 'new docks cases'

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In recent years we have heard it regularly in our media: water is becoming a scarce commodity. Various sustainable alternatives exist to save on precious drinking water. The De Nieuwe Dokken project in Ghent and the Hof Van Saeys project in Dendermonde are textbook examples of what is possible in this area.



Rainwater recovery is not new. The water that falls on roofs and paved surfaces is collected in a well and used for flushing toilets and in certain cases also for washing machines. However, wastewater flows from buildings can also be given a new lease of life. Water that runs out of showers, sinks and baths – so-called 'grey water' – normally disappears into the public sewage network. Faecal water from the toilets – black water – goes to a septic tank, the overflow of which also goes into the sewage system.

However, it is perfectly possible to recover the grey water and upgrade it for reuse in the same building. This requires a separate drainage line to avoid mixing with the greasy water from sinks and dishwashers. The grey water flows through this drainage pipe to a wastewater buffer. There it is cleaned in two phases: first by coarse filtering, and then by membrane filtration, whereby the water is pumped through various membranes. The cleaned water is then stored in a second buffer, from which it is pumped up for use for toilet flushing or for any outdoor taps.

The influx of grey water to the wastewater buffer is fairly continuous according to a profile specific to the type of building. If the buffer is too small, a portion of the dirty water will still run into the sewage system. To avoid this, the buffer must therefore be sufficiently dimensioned. The cleaned water buffer is also best sufficiently large. If its level falls too low, it is supplemented with water from the rainwater buffer.

Heat can also be recovered from collected grey water. This heat is injected into the district heating network to which homes and other spaces are linked.

### Recycled grey water as process water

Treated grey water can also be used as process water. In the De Nieuwe Dokken project, this is done by making this grey water available to Christeyns, the nearby producer of hygiene products.

Residential units, shops and offices can be equipped with vacuum toilets. These require only 1.3 litres of water per flush, 4 to 5 times less than traditional toilets. This has the advantage that the residual fractions ending up in the faeces buffer are much less diluted, allowing them to be easily fermented into biogas that can serve as fuel for a biogas boiler. This transfers its heat to a heating network. The residual fermentation product is struvite that can be used as fertilizer in green zones or vegetable gardens.

Grey and black water do not have to be lost at all. Gray water can be perfectly cleaned and reused as rinsing, washing and process water. To recover heat from it, a collective heating installation is required on the site or nearby, just as it is for heat recovery from black water. From the latter we also extract fertilizer that can be reused in the food cycle.

At De Nieuwe Dokken and Hof Van Saeys we combine these options and use the wastewater down to the last drop. This ensures enormous savings in the use of municipal water, which is an asset in the current problem of freshwater scarcity.

Like to know more about smart and sustainable reuse of wastewater? Contact our expert Ruben Putman via [ruben.putman@ingenium.be](mailto:ruben.putman@ingenium.be).