Rainwater Filtration System in Timelab's Waterlab

artist Katherine Ball

with
- Curd Detaellenaere of Watergenius
- Bart De Gusseme & Tom Vandermarliere of Farys
- Evi Swinnen, Veronique De Mey & Marieke Maertens of Timelab
- Sophie De Somere of Onbetaalbaar
- Nqobizitha "Tshaby" Tshabalala of NT Elektriciteitswerken
- Wim Vandersleyen Graphic Design
- Paul De Braeckeleer of De Muur
- Lieven Blancke Data Collection & Visualization
- Hans Koch of Biztory
- Stef De Boeck
- Yves Deweerdt of Vito
- Jan Floré of Karakters

This rainwater filtration system filters rainwater collected from Timelab's roof. It makes two qualities of water: drinkable rainwater and sanitary rainwater. Drinking rainwater is rainwater you can drink. Sanitary rainwater is rainwater you can use to wash your hands, shower, wash clothes, water the garden, flush toilets and make art. Through a network of tubes and pipes, sanitary rainwater is transported throughout the building to the bathrooms, washing machine, Knotfactory, and garden. **Roughly half of the water used in Timelab's building is now sanitary rainwater.**

Some parts of filters need to be replaced and maintained periodically, which is estimated to cost €650 per year. The parts that need to be replaced each year are: a new UVC bulb (€120), new activated carbon and limestone for the first filter (€250), new ultrafiltration membrane (€85), and a new reverse osmosis pre-filter made of activated carbon (€85). Every three to five years the reverse osmosis membrane needs to be replaced (€180). Every four years internal parts in the valve of the first filter (activated carbon & limestone) need to be replaced (€80). Every five years the UV ballast needs to be replaced (€150). 650€ is the estimated yearly average cost on a five year cycle based on 2023 prices for parts.

Water test results

On 8. June 2023, the rainwater filtration system was tested by Farys, the water utility for Gent.

In total we sampled the water at seven points: we tested the rainwater before filtration, at every step in the filtration process, the sanitary rainwater, the drinkable rainwater, and also the wastewater from the reverse osmosis concentrate. We also tested the city drinking water at Timelab that Farys distributes.

The test results showed the drinking rainwater (the final water after the reverse osmosis filter) is microbiologically safe to drink and to use. The full results and more information about the results are accessible in the waterlab. We will continue testing the system periodically and make the results publicly accessible on the wiki with information about all the parts in the system and how it is put together.

Team

The rainwater filtration system at Timelab was a team effort bringing together artist Katherine Ball with Curd Detaellenaere of Watergenius and Nqobizitha "Tshaby" Tshabalala of NT Elektriciteitswerken who installed the system and made it flow through the building; Bart De Gusseme & Tom Vandermarliere of Farys who advised how to integrate water testing and regulations into the system design, including making special water test taps; Evi Swinnen, Veronique De Mey & Marieke Maertens of Timelab who were engaged and provided support and vision on multiple levels; Sophie De Somere and Onbetaalbaar who staged the sink and water collectors; and Paul De Braeckeleer of De Muur who created gold metal elements.
The pictos explaining the system were drawn by Wim Vandersleyen Graphic Design and produced by Karakters in coordination with Katherine Ball. Lieven Blancke, Stef De Boeck and Biztory are working on future data collection and data visualization.

In Timelab's Waterlab, there is a gold sink with a faucet for drinking rainwater and a second faucet for sanitary rainwater. Visitors are welcome to drink the drinking rainwater and wash their hands in the sanitary rainwater.

Sanitary rainwater is made by filtering rainwater through activated carbon, limestone, and UVC light.

Drinking rainwater is made by filtering rainwater through activated carbon, limestone, UVC light, an ultrafiltration membrane with extruded activated carbon, and reverse osmosis.

Wastewater from the filtration system is pumped to Timelab's garden and the city sewer system. From the garden, plants transpire the water back into the atmosphere or it infiltrates into the groundwater. From the city sewer system, it goes to the Ossemeersen Wastewater Treatment Plant then into Gent's canals, the Schelde River, North Sea, and ultimately the Atlantic Ocean.

Costs

The filtration system cost €5,735.00 to install inside Timelab's Waterlab, including parts and labor. Including taxes (21% VAT) it cost €6,939.35.

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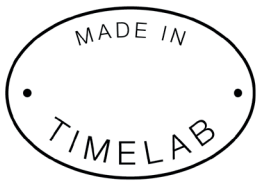

How does life change as we become participants in water filtration, supply management and urban hydrology?

How might our relationship to water change as we transition from being consumers of water to stewards of water?