

ASK THE EXPERTS vol. 6

**Valorising the end-products of domestic and industrial
wastewater treatment**

25.04.2023

Pilot project for wastewater treatment and reuse at
Uhuru Park, Nairobi / Kenya

Technology Neutral Engineering & Consultancy Company



Municipal Wastewater treatment plants

Range 50 – 500 000 PE and Secondary waste handling



Industrial Wastewater treatment plants

Oil and Gas; Chemical; Food & Agriculture



Raw and Process water treatment plants

Drinking water; Process water Utility water



New Technology development

Biological carbon treatment; Nitrogen removal; Phosphorous removal

Since 1997

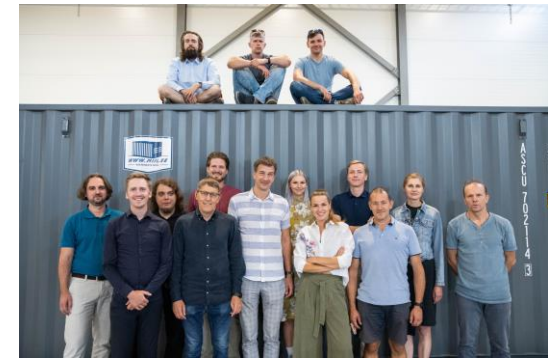
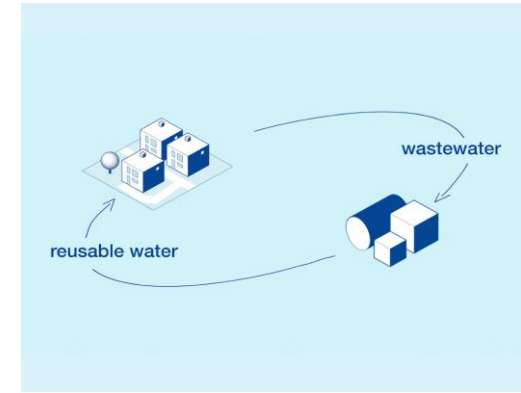
Tartu, Estonia

12 employees

SPACEDRIP

SPACEDRIP develops and manufactures automated wastewater treatment and reuse systems

- Wastewater & greywater reuse for non potable and potable application
- Treatment and reuse systems for 25-2000 people
- Provides systems to water companies, real estate developers and defense sector
- 40 systems commissioned by the end of 2023
- Estonian company founded in 2020 with 15 people in team



Pilot project for wastewater treatment and reuse at Uhuru Park Nairobi



Project

Project funded by The Estonian Environmental Investment Centre (EIC) and the Ministry of the Environment



Location: Uhuru Park, Nairobi, Kenya

Time (year): 2023

Challenges

President William Ruto:

"Government has resolved to not only reclaim Nairobi's reputation as Africa's green city but also live up to its ancestral identity as the river of cool and fresh water."

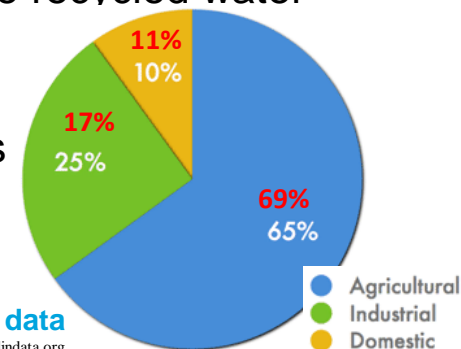
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Nairobi City Water production is approximately 500 000 m³ per day. However, 800 000 m³ of water per day is needed to meet the existing demand.

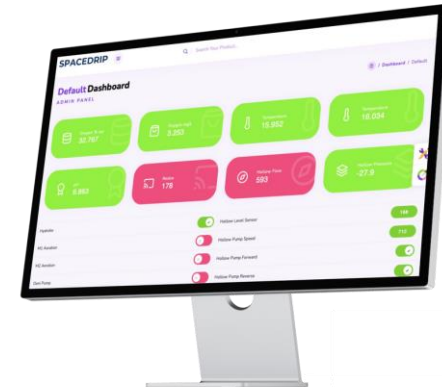
Clean drinking water is currently wasted for flushing toilets, irrigation etc. for which technically safe recycled water could be used.

Water reuse systems can save more than 50% of water usage.



Solution deployed

- Treatment of up to 50m³/d
- Fitted into a 20ft. container
- Automated system with sensors
- Live overview with software
- Water reuse for park irrigation
- Average energy use of 80 kWh/day



Solution deployed

Sedimentation tank

Nitrogen removal

Membrane bioreactor with microfiltration membranes and sensors

Technical chamber with water reservoirs, pumps, blowers and automation



Solution deployed

WWTP inflow = stormwater drain

incl. septic tank overflow and industrial discharge



Sprinklers in the park

Treated effluent used for irrigation

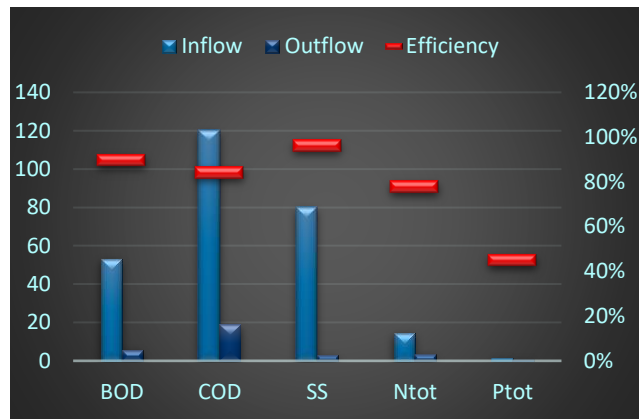


Results obtained

Comissioning of the system



Input and output



Up to 25% of Uhuru Park irrigation water is now taken from treated wastewater (= “valorisation”)

Proof of compact automated plug and play technology

Conclusions

Technical water for toilet flushing, irrigation and other places could be used instead of clean drinking water

Treatment systems that are compact, fit in the small areas and allows to use the existing infrastructure

Operation of the system should be automated to cut maintenance and energy costs. Maintenance planning based on software data avoids system breakdowns



Thank you for your attention!

Any Questions?

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African Water and
Sanitation Association
Association Africaine de
l'Eau et de l'Assainissement



German Water
Partnership