German-African Partnership for Water and Sanitation - GAPWAS

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

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aqua consult baltic OÜ

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 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.”

22-02-2023

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 50 m$^3$/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

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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