# Innovaciones en Saneamiento para Poblaciones Vulnerables

**IHE Delft Institute for Water Education**

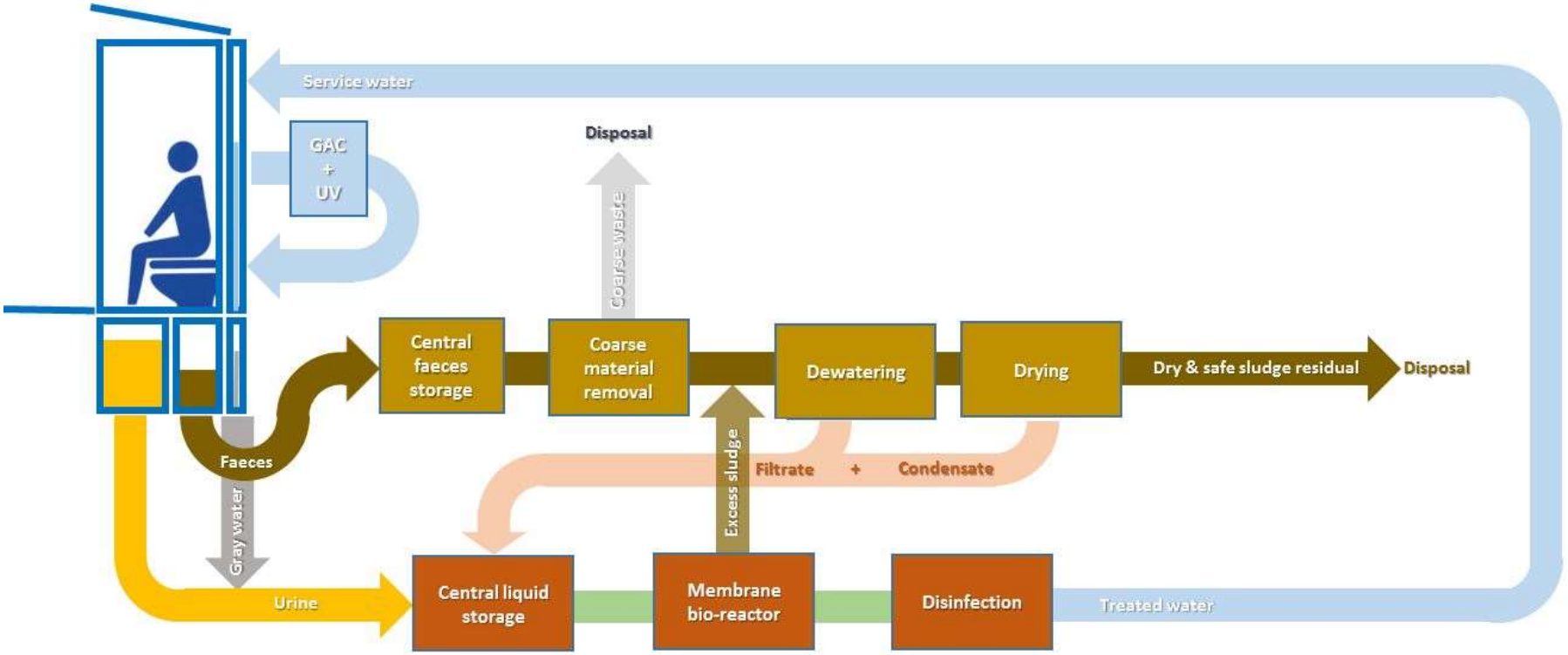
www.un-ihe.org

# Mission

La misión de IHE Delft es contribuir con la educación y entrenamiento de profesionales, expandir el conocimiento por medio de la investigación, y crear capacidades locales en organizaciones vinculadas al sector, centros de conocimiento/investigación, y otras instituciones activas en el sector agua, ambiente, e infraestructura.

# SaniUP project

The SaniUP project ('Stimulating local innovation on sanitation for the urban poor in sub-Saharan Africa and South-East Asia') aims to stimulate local innovation on sanitation for the urban poor through research and to strengthen the sanitation sector in developing countries through education and training. This website compiles more than 150 documents generated by the project staff including PhD and MSc theses, scientific ISI publications, research videos and interviews.


Service water
GAC
+
UV
Disposal
Coarse waste
Central faeces storage
Coarse material removal
Dewatering
Drying
Dry & safe sludge residual
Disposal
Faeces
Gray water
Excess sludge
Filtrate
+
Condensate
Urine
Central liquid storage
Membrane bio-reactor
Disinfection
Treated water

# Fiona Zakaria (Indonesia)

**PhD fellow**

IHE Delft | Netherlands

**Rethinking emergency sanitation (Netherlands, the Philippines and Kenya)**

| | |
|---|---|
| 2017 \| Evaluation of a smart toilet in an emergency camp<br>Paper By Fiona Zakaria et al. | Download (0.1 MB) |
| 2017 \| User acceptance of the eSOS® smart toilet in a temporary settl...<br>Paper By Fiona Zakaria et al. | Download (0.0 MB) |
| 2016 \| Effectiveness of UV-C light irradiation on disinfection of an eS...<br>Paper By Fiona Zakaria et al. | Download (0.1 MB) |
| 2015 \| Decision support system for the provision of emergency sanita...<br>Paper By Fiona Zakaria et al. | Download (0.1 MB) |
| 2015 \| eSOS® – emergency Sanitation Operation System<br>Paper By Fiona Zakaria et al. | Download (0.0 MB) |

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Child Friendly Space

# eSOS Monitor®

## TOUCH SCREEN & STATISTICS

1
2
3
APP
MEDiLOO app

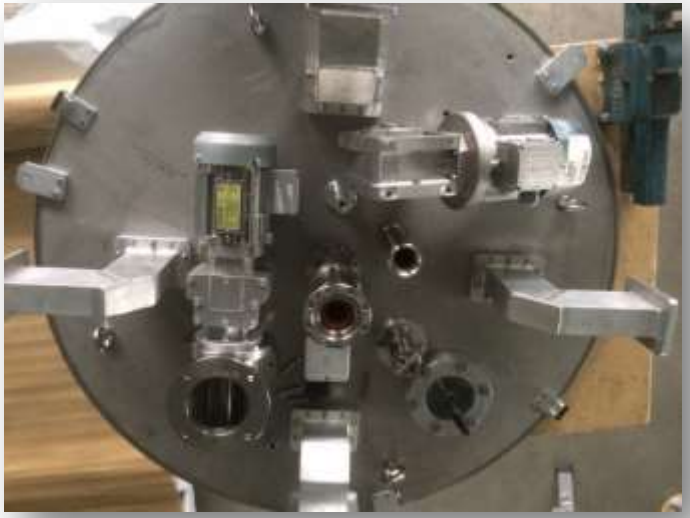
# Peter Matuku Mawioo (Kenya)

**PhD fellow**

IHE Delft | Netherlands

**Microwave-based sludge treatment technology (Netherlands, Slovenia and Kenya)**

| | |
|---|---|
| 2017 \| A pilot-scale microwave technology for sanitization and drying.<br>Paper By Peter Matuku Mawioo et al. | Download (0.3 MB) |
| 2016 \| Evaluation of a microwave based reactor for the treatment of ...<br>Paper By Peter Matuku Mawioo et al. | Download (0.2 MB) |
| 2016 \| Microwave treatment of faecal sludge from intensively used to...<br>Paper By Peter Matuku Mawioo et al. | Download (0.1 MB) |
| 2015 \| eSOS® – emergency Sanitation Operation System<br>Paper By Fiona Zakaria et al. | Download (0.0 MB) |



# The Shit Killer®

UNESCO IHE DELFT

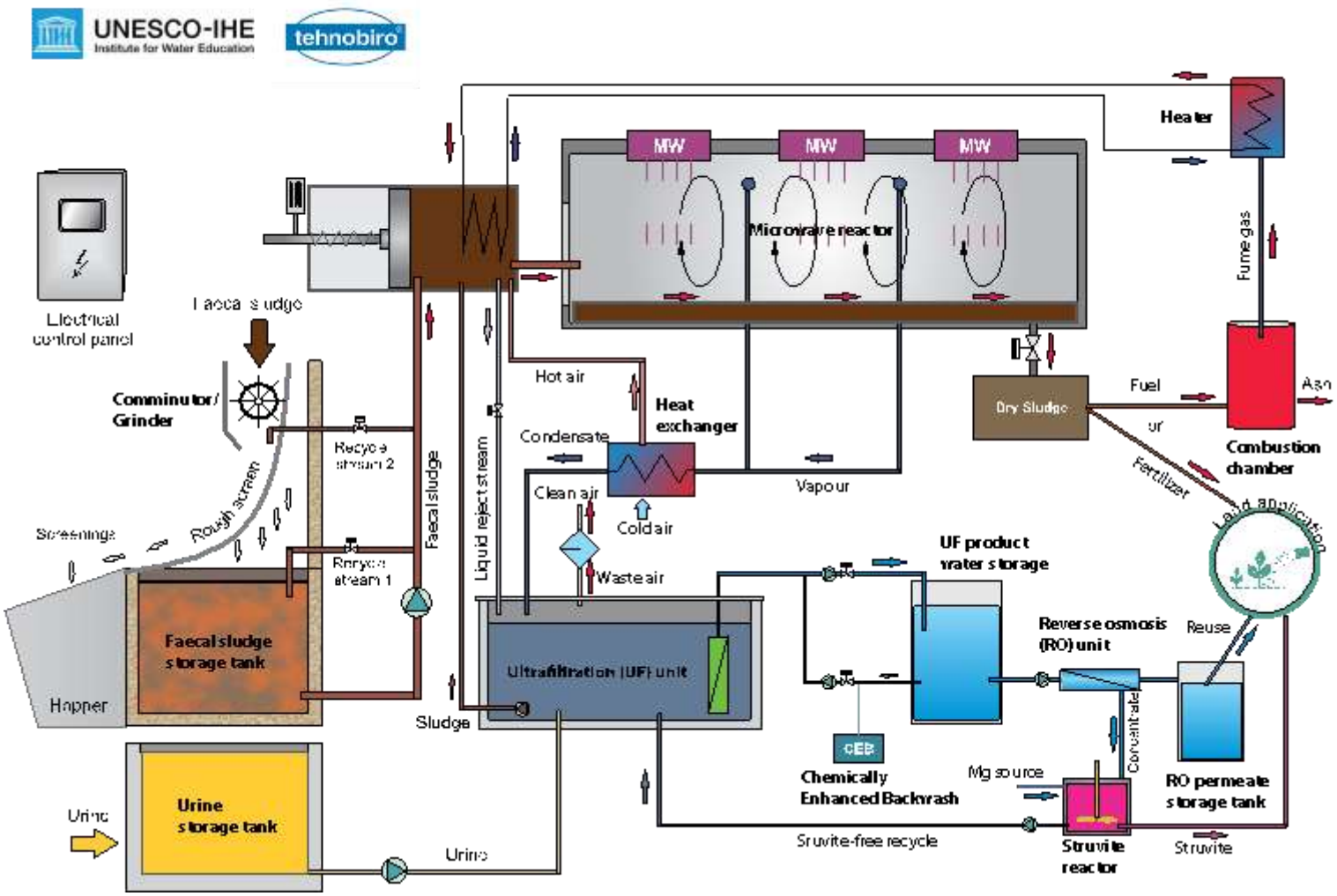
tehnobiro®

Fresh faeces
90 % DS

Centrifuged WAS
80 % DS

Septic sludge
90 % DS

WAS
90 % DS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Institute for Water Education
tehnobiro
Heater
MW
MW
MW
Microwave reactor
Fume gas
Electrical control panel
Faecal sludge
Comminutor / Grinder
Hot air
Heat exchanger
Condensate
Dry Sludge
Fuel
Ash
or
Combustion chamber
Fertilizer
Land application
Recycle stream 2
Faecal sludge
Liquid reject stream
Clean air
Cold air
Vapour
Screenings
Rough screen
Recycle stream 1
Waste air
UF product water storage
Reverse osmosis (RO) unit
Reuse
Faecal sludge storage tank
Hopper
Ultrafiltration (UF) unit
Sludge
CEB
Chemically Enhanced Backwash
Mg source
Concentrate
RO permeate storage tank
Urine
Urine storage tank
Urine
Struvite-free recycle
Struvite reactor
Struvite

Funded by
Ministry of Foreign Affairs of the Netherlands

Shit Killer®
Shit Killer®

# Global Sanitation Graduate School

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