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Sustainable Off-grid solutions for Pharmacies and Hospitals In Africa

Sustainable Off-Grid Technologies for Drinking and Deionised Water for Hospitals in Africa

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SOFACT N°5

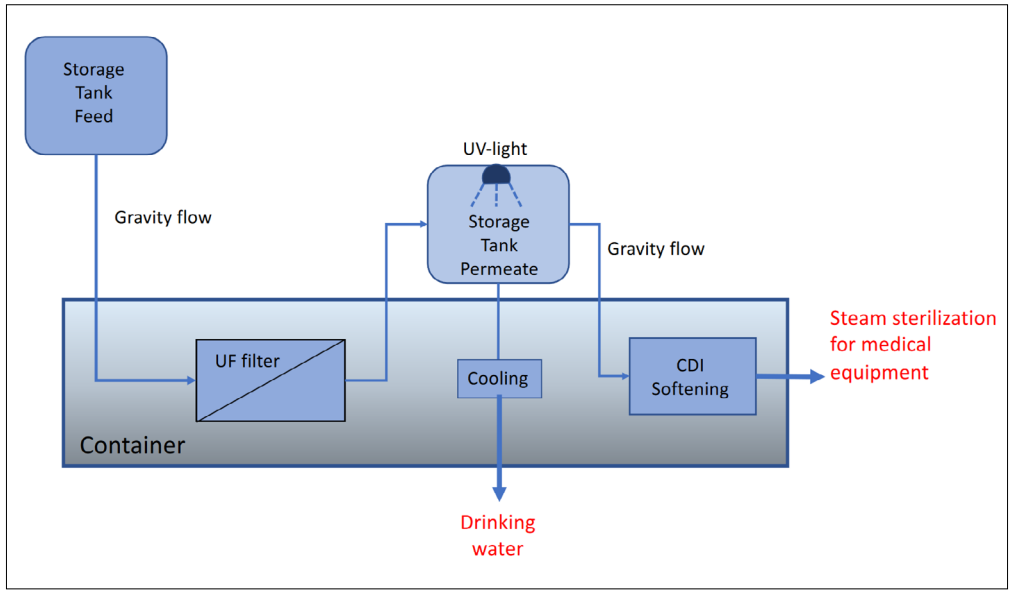
SophiA system aims to provide safe and clean drinking water along with steam production and solar cooling to the remote and rural health care facilities of sub-Saharan Africa. It is developed by a consortium of 13 partners from Africa and Europe.

The SophiA systems will be built in 40-foot container and equipped for water treatment, steam generation and refrigeration for medicines. The water treatment system employs mainly two technologies: ultrafiltration (UF) and membrane capacitive deionisation (MCDI).

First stage of the water treatment: The UF system comprising polyethersulfone (PES) based UF module manufactured by Martin Systems GmbH. All the suspended particulates and biological contaminants are rejected by the UF system to produce safe drinking water.

Second stage of the water treatment container: The MCDI system comprising carbon-based electrodes (C12 module) remove 90% of the ions from the water to produce deionized water (electrical conductivity below 15 µS/cm). The pure deionized water can be used for steam production and for sterilization purposes by the hospitals.

The treated water will be collected in water tanks equipped with ultraviolet (UV) systems, installed inside the containers for safe storage.



Safe water concept of SophiA container

The SophiA water treatment container employs two technologies: ultrafiltration (UF) in the first stage and membrane capacitive deionisation (MCDI) in the second stage.

The SophiA water treatment container can produce a minimum of 1,000 L drinking water and 500 L deionized water per day, which can be stored separately in two 1,000 L tanks placed inside the container. The water treatment technologies for SophiA containers were tested in the laboratory of Karlsruhe University of Applied Sciences, Germany followed by assembly of the containers in South Africa.

These assembled containers will be shipped to 4 health care facilities in Burkina Faso, Cameroon, Uganda, and Malawi for commissioning and further study.

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Find more about this study from the original publication:
https://sophia4africa.eu/download/62026/?tmstv=1712011712

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