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MARTIN
MEMBRANE SYSTEMS
A WILCO COMPANY



DaMe and ViWaT-Operation have been initiated and are co-ordinated by the German Institute for Environmental Engineering and Management in cooperation with, the Vietnam National University – Hanoi University of Sciences (VNU-HUS), the University of Architecture, Engineering and Geodesy, Bulgaria (UACG), the HCM University of Natural Resources and Environment (HCMUNRE), the Wilo-company Martin Membrane Systems and the National University of Laos (NUOL).

Background: Under the research program “South East Asia – Europe JSF”, the project “IWRM DaMe” was launched, a bi-directional dialogue about Integrated Water Resources Management in the river catchments Danube and Mekong, to improve rural water supply and reuse. Upon the invitation of the VGI, this poster for the NIC presents one of the technology solutions for IWRM-DaMe, which IEEM has developed in cooperation with VNU-HUS in the Mekong Delta under the German-Vietnamese research project “ViWaT Operations” funded by the EU, BMBF and MOST.

Requirements and Needs: The most important requirements and needs of > 3 million people who have to rely on drinking water delivered in canisters via motorbike or boat, which could be solved with a MFDWS plant are:

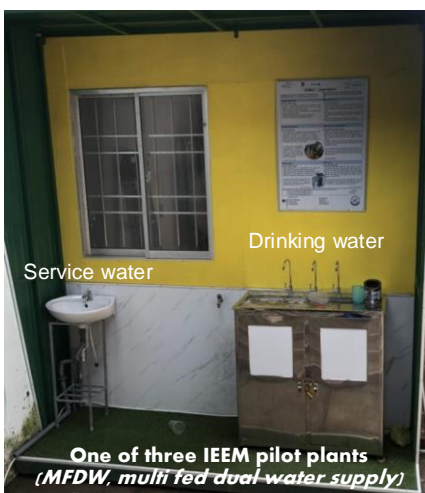
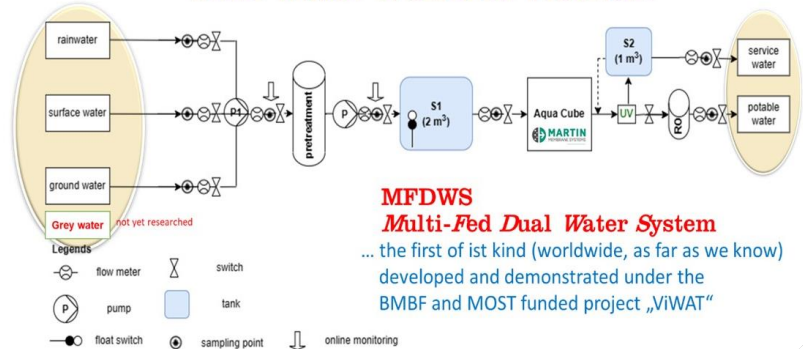


1. Avoiding chemicals which need safe storage and handling; rely on processes easy to automate and run with remote operational support.
- ✓ *The plant is a mechanical process with gravel, sand and membrane filtration; it does not include chemical or biological stages which need sophisticated operations and maintenance.*

2. Using of more than just one water source, which is needed at many locations, because rain water is not available in the dry season, groundwater is scarce cannot be over-exploited any longer, and surface water is contaminated during droughts.

- ✓ *The process technology is designed with equipment for flexible raw water input, ready to use water from rain, ground or surface, respectively the best mixture of water sources depending on availability at location and time (multi fed water supply plant).*

Process technology used and calculated for the Mini Water Works in Vietnam



3. Limiting the operation of expensive plant units to times and quantities of demand relevant for the post-desalination with RO (reverse osmosis).

- ✓ *The plant has 2 separated outlets (taps) for dual water supply, one for service water (which makes > 80% of total volume) and one for drinking water (less than 20% volume). Unless the raw water sources used show a high salt concentration or NH₄⁺, TOC (like during severe draught), even the drinking water production does not need RO post-purification.*

4. Be affordable, not too expensive in VND/m³ or VND/pers./day; verified not on paper only, but under full-scale pilot plant operations.

- ✓ *The pilot plants, fully equipped for MFDWS (multi fed dual water supply), are safer and cheaper than drinking delivered by motorbike or boat in canisters (sold for maybe 50.000 VND per 19 litre canister). Even if cheap service water can be bought from tankers on site, the MFDWS plant is still cheaper unless the drinking water consumption is significantly lower than 5 litres per person and day.*