

# Recovery and utilisation of nutrients for low impact fertiliser



## Technology fact sheet – Aerobic Membrane Bioreactor

### Treatment and reuse of grey water

An aerobic membrane bioreactor (aMBR) combines an activated sludge process and membrane micro or ultra-filtration to separate solid material and clean water. The activated sludge process includes aerobic oxidation of organic matter to  $\text{CO}_2$ , and nitrogen removal. The stream with rejected biomass is called concentrate and the treated effluent is referred to as permeate. The driving force for the separation process is the pressure difference between the feed and permeate, also called transmembrane pressure. The design and configuration of an aMBR varies widely in geometry, used material, membrane pore size, the orientation of water flow and the way it is mounted. An aMBR is particularly suitable for the treatment of low strength waste water such as grey water (GW, from e.g. shower, washbasin), because of their compactness and superior water reuse potential for non-potable purposes. The high reuse potential is due to the physical filtration process which rejects pathogens and provides a permeate with high quality in terms of turbidity, solids and colloidal matters. In Vigo an aMBR is used for GW treatment, using ultrafiltration flat sheet membranes. Permeate is then 100% reused for toilet flushing in the building. In Ghent, the aMBR is used for combined treatment of GW and struvite precipitation effluent. After heat recovery and further polishing the permeate is used as process water for industry.

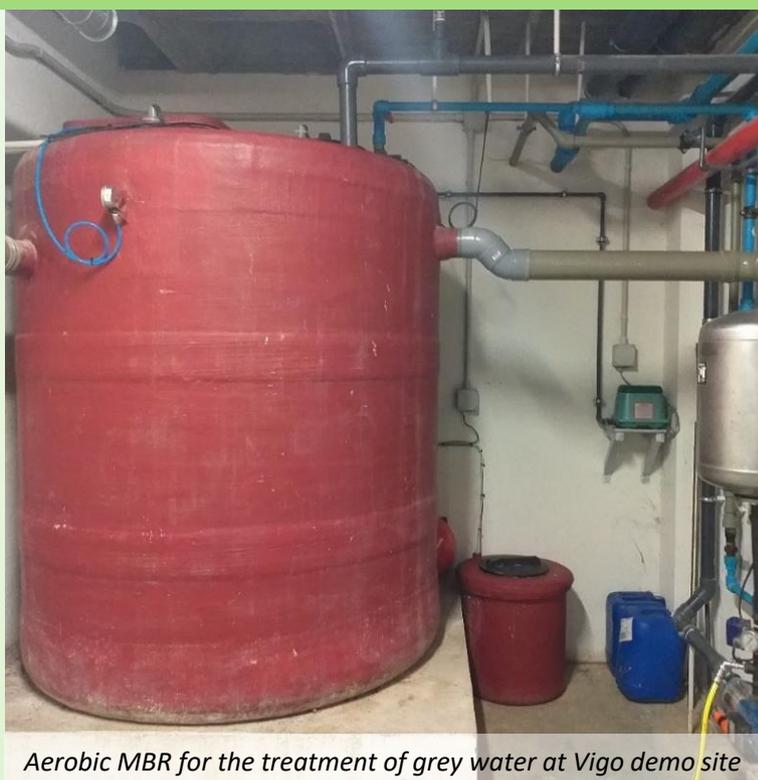
### Key facts

- Suitable for diluted wastewaters
- High quality effluent (permeate): free of suspended solids and pathogens
- Small footprint
- Operation at high biomass concentration
- Low sludge production

### Application in Run4Life demo sites

- Input: GW, struvite precipitation effluent
- Output: concentrate, permeate
- Applied in Vigo and Ghent

*The grey water treatment technology is not managed within the Run4Life project. In Ghent it is part of the Nereus project, in Vigo it was already installed on site.*



Aerobic MBR for the treatment of grey water at Vigo demo site

