

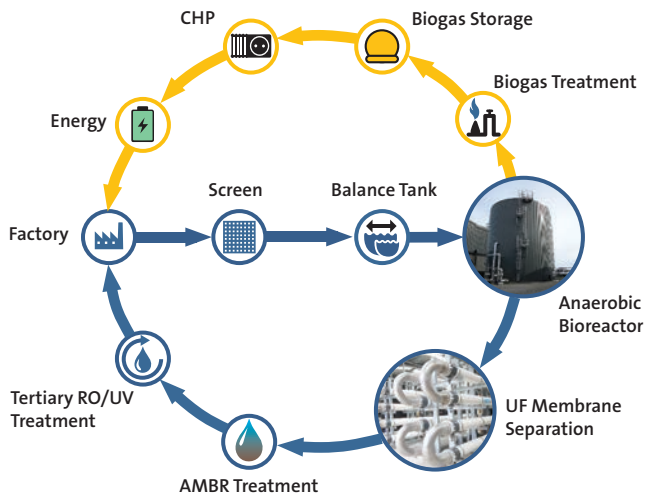


## TECHNOLOGY

### AnMBR LE™ - ANAEROBIC MEMBRANE BIOREACTOR Maximising COD Removal and Biogas Production

#### ANAEROBIC MEMBRANE BIOREACTORS

As pressure intensifies to reduce medium and long term operational costs, anaerobic processes are becoming increasingly attractive and economical in many applications. For situations where higher rate and granular sludge based AD processes are not appropriate (e.g. those with very high COD concentrations, high TSS, FOG and salinity) or a customer is looking to maximise organic conversion and gas cogeneration, anaerobic MBRs can provide a cost effective solution.



#### AnMBR LE™ ANAEROBIC MEMBRANE BIOREACTOR

The AnMBR LE™ system combines a low rate completely mixed anaerobic reactor with Aquabio's proprietary low energy UF membrane separation system. This combination results in a number of advantages in circumstances which favour anaerobic treatment with a focus on very high COD removal rates and biogas recovery. The membrane separation stage provides complete solids retention thus uncoupling the hydraulic and solids retention times allowing for optimised long sludge ages which maximises COD reduction and provides higher biogas yields. The process is more tolerant to TSS and FOG than granular anaerobic systems and thus provides simplified pre-treatment requirements.

#### APPLICATIONS

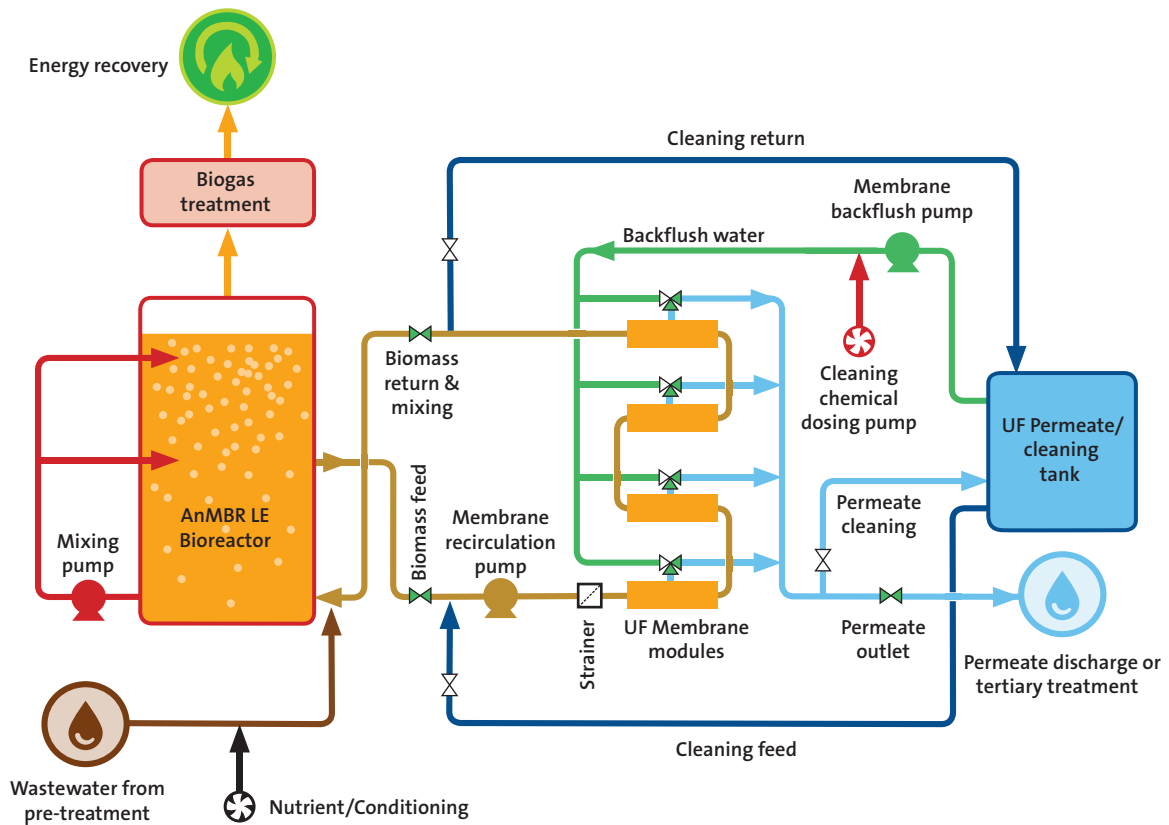
Suitable for highly concentrated organic wastewater streams with COD concentrations in excess of 15g/l up to 250g/l

Low/medium flow rates, from 90 to 2500m<sup>3</sup>/day

When Sludge Bed and granular AD technologies are less suitable e.g. wastewaters with very high COD, high TSS, salinity and/or fats oil and grease

Where there are concern about media, or packed bed, technologies

Combined with Aquabio's AMBR/RO/UV water re-use technology for potable/demineralised applications



## KEY FEATURES/BENEFITS

High quality effluent >98% Total COD removal	Completely enclosed pumped sidestream
Greater Tolerance of TSS, salinity and Fats, Oil & Grease	No gas (e.g. methane, nitrogen) scouring is required for the membranes
No biomass retention problems	Effective management of scale
Uncoupled hydraulic and solids retention times with complete solids retention and controlled sludge age	CIP 'in loop' cleaning
Low energy biomass separation	Advanced pretested, standardised software and control system
No Flocculants/Coagulants required (which can cause process issues and create high OPEX costs)	Lower cost of membrane replacement
Simpler pre-treatment	Reduced maintenance, no cranes or working at height required with external to Bioreactor Servicing
Robust and consistent performance	Modular design allows for ease of expansion

## AQUABIO AND FREUDENBERG FILTRATION TECHNOLOGIES

Aquabio is part of Freudenberg Filtration Technologies. As a global technology leader in air and liquid filtration, Freudenberg Filtration Technologies works closely together with its customers to develop high-performance, energy-efficient filtration solutions. The company offers a comprehensive package of wastewater solutions, including consulting, development, construction and operation of complete filtration systems using cutting-edge Aquabio technology. Freudenberg's customized solutions make industrial processes more economic, conserve resources, protect people and the environment and thus contribute to improving quality of life.

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