



# LIFE MEMORY PROJECT



With contribution from the European Union's LIFE financial instrument

## Membranes for ENERGY and WATER RECOVERY

### Project Description

The purpose of LIFE Memory Project is to demonstrate at an industrial prototype scale the technical and economic feasibility of Submerged Anaerobic Membrane Bioreactor (SAnMBR) technology, to treat urban wastewater in an environmentally-respectful way. Having reached the industrial prototype stage, LIFE Memory is one step further in the development of SAnMBR technology as an alternative to traditional aerobic treatments for urban wastewater.

SAnMBR technology is based on the synergy between anaerobic treatment and membrane filtration process, producing bioenergy from the transformation of organic substances and reducing the greenhouse gases emission, given that the oxidation of organic matter, that takes place in aerobic processes, is avoided. The biogas thus produced is converted into heat and electricity that can be either used directly in the

WWTP or refined as biomethane for use as biofuel.

Simultaneously, the ultrafiltration process effectively disinfects treated water and keeps 100% of the micro-organisms in the anaerobic reactor. This benefit means it is possible to work with highly specialised and concentrated communities of microorganisms, which makes efficient anaerobic treatment of low-load wastewater viable for water reuse.

An additional advantage is the production of reusable water with a high nutrient content, making it very suitable for irrigation of farm land, public gardens and parks, golf courses, or for other industrial uses. Moreover, the space required for this technology is significantly smaller than is needed for a conventional aerobic facility, which makes installing compact and de-centralised plants near the source of contamination or place of reuse easier, thus furthering the concept of "sewer mining".



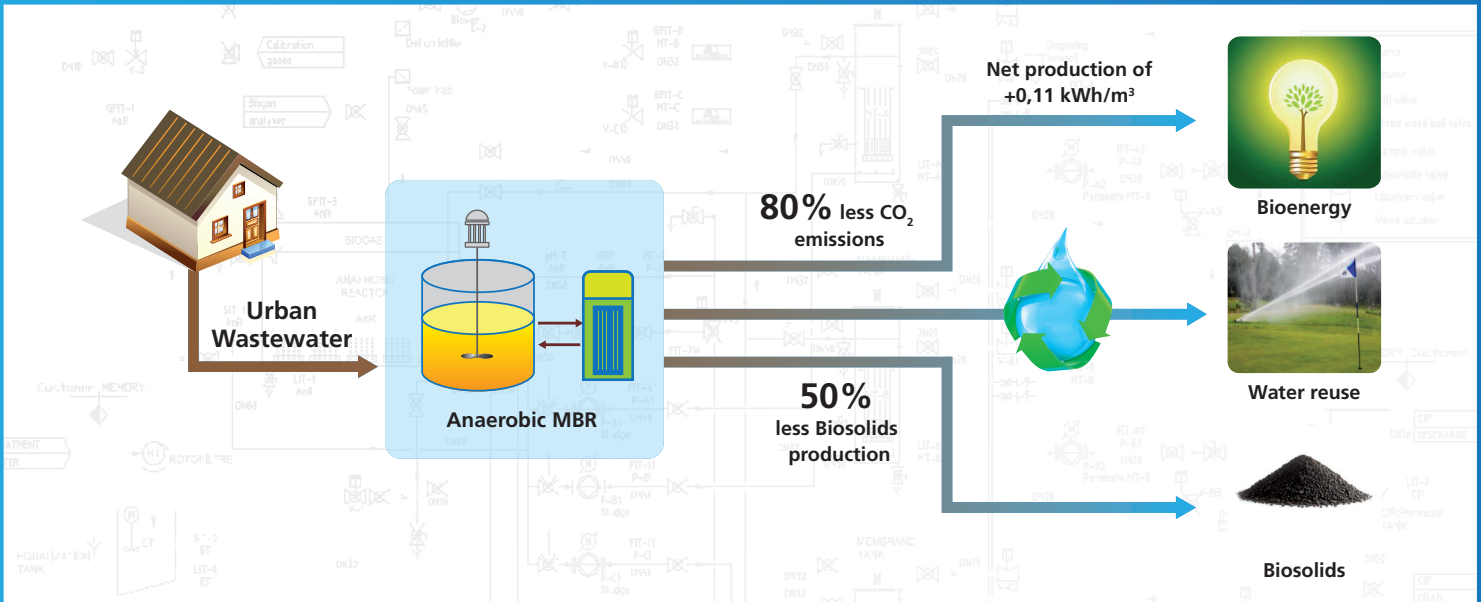
MBR Prototype



**Location:** Alcázar de San Juan (Ciudad Real, España)

**Duration:** From the 1<sup>st</sup> of July 2014 to the 30<sup>th</sup> June 2018

**Total Budget in Euro:** 2,102,327 € **Aqualia:** 966,024 €



Finally, another advantage is that it produces a smaller amount of biosolids, due to the low growth rate of the anaerobic biomass, which substantially minimises the generation of waste and emissions.

**Expected results**

The LIFE Memory project will result in:

- a reduction in energy consumption per m<sup>3</sup> of treated water, up to 70% less compared with conventional processes, achieving net energy production in certain cases.
- a reduction in CO<sub>2</sub> emissions from the oxidation of organic matter by

at least 80%, considerably cutting the carbon footprint of water treatment plants.

- a reduction in space requirement for the treatment facilities by at least 25%.
- a reduction in biosolids production by at least 50%.

Furthermore, the project will help to develop and implement a protocol to design, control and operate treatment plants based on SAnMBR technology.

**PROJECT PARTICIPANTS**

- FCC Aqualia, S.A. (leader)
- Koch Membrane Systems, Inc.
- Universitat de València
- Universitat Politècnica de València



**DETAILS OF FUNDING**

- Funding:** LIFE Programme for the Environment and Climate Action.
- Organism:** European Commission (EC).
- Project:** LIFE 13/ENV/ES/001353
- Grant:** Subsidy of 50% of budget.

**Funding Received**  
**Total Budget in Euro: 1,046,101 €**  
**Aqualia: 472,887 €**