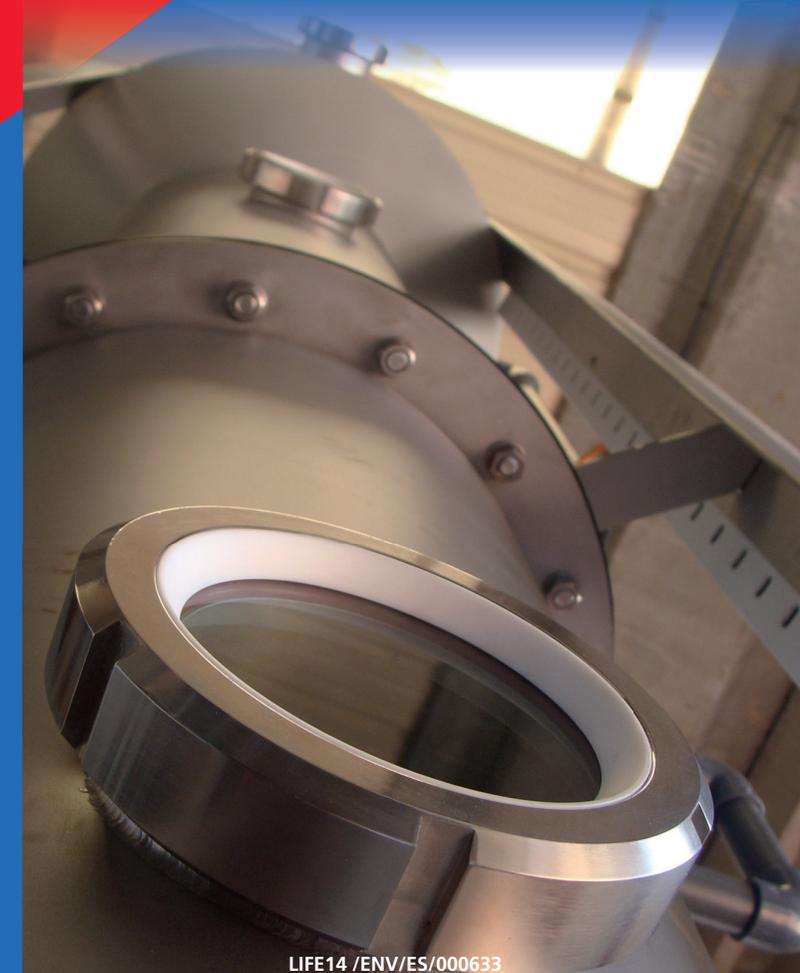


SAVING E

Two-stage autotrophic N-removal for mainstream sewage treatment



LIFE14 / ENV/ES/000633

With the contribution of the LIFE programme of the European Union



CONTEXT

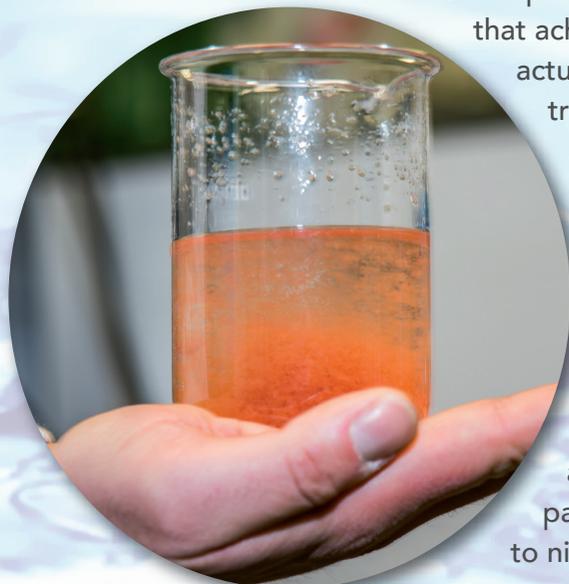
Currently, most of the technologies applied in the urban wastewater treatment plants (WWTPs) are based on biological processes with activated sludge systems. In conventional processes, ammonium-nitrogen is removed by nitrification and denitrification. Moreover, much of the organic matter is used for denitrification, instead of being recovered as methane in the biogas (renewable fuel energy). This makes the treatment of urban wastewater to require 8-15 kWh/inhabitant/year of electricity or what is the same a cost of 500 to 1000 million Euros for the countries of the European Union.

OBJECTIVES

The challenge of **SAVING-E** is to completely redesign an urban WWTP to convert it into an energy producer process rather than an energy consumer one and, at the same time, to ensure its operation is not affected, but even, improved it compared to the current WWTP.

TECHNOLOGY

SAVING-E technology treats the organic material entering with the wastewater in a high efficiency aerobic reactor with low oxygen consumption. The sludge produced in this reactor has much better potential for methane production than



that achieved in an actual urban sewage treatment plant. Subsequently, the wastewater enters to a partial nitrification aerobic-granular-reactor, where ammonium is partially nitrified to nitrite and, then, to a granular anammox reactor, where nitrite and

ammonium are converted to nitrogen gas without using organic material. **SAVING-E** aims to demonstrate a pilot scale and with real urban wastewater, both at high and low temperatures (10° C), that the energy balance of an urban wastewater treatment plant can be improved to make it a net energy producer process.

EXPECTED RESULTS

The project will demonstrate that the use of **SAVING-E** technology compared to current WWTP technologies will result in:

- (i) energy savings,
- (ii) reduced carbon dioxide emissions, and
- (iii) reduced operational costs.

Compared to current WWTP technologies, **SAVING-E** will generate the following benefits:

- ✓ A 50% **increase** in **biogas** production;
- ✓ A 10% **reduction** of **nitrogen** discharges;
- ✓ A 30% **energy savings** in the nitrogen removal process;
- ✓ A 40% **energy savings** in the overall treatment process; and
- ✓ A 20% **reduction** in **greenhouse gas** emissions.

LOCATION

The **SAVING-E** pilot plant is located within the WWTP plant of Rubí-Valldoreix.

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GPS: 2,003419 41,461447