



WaterReuse



LIFE WaterReuse – improving water management efficiency at industries with organic load

LIFE12 ENV/ES/000184



Contact details:

Contact person: Pedro Muñoz
Destilerías Muñoz Gálvez S.A.
Tel: 34-968-253500
Fax: 34-968-341562
Email: munoz.p@dmg.es

Contact person: Miguel Ayuso
National Technological Centre for Food Industry
Tel: 34-968-389011
Fax: 34-968-613401
Email: ayuso@ctnc.es

Project description:Background

Water-use projections suggest that increases in agricultural, industrial and household water consumption will mean that demand for clean water in the EU will outstrip supply by 40% by 2030. Water consumption by the industrial sector is broadly proportional to the average income level, representing over 40% in high-income countries in Western and Central Europe. A key challenge, therefore, is to maintain and even develop levels of industrial production, whilst also improving water management. Approaches based on wastewater re-use can help to achieve the complimentary goals of reducing the demand for clean water and the discharge of polluted industrial effluents to the environment, while also converting wastewater streams into useful inputs for other processes.

Such cleaner and more sustainable production practices can be particularly valuable in the chemicals sector. The chemicals industry is the highest consuming industrial sector in Europe, accounting for 29.15% of water used in manufacturing. Furthermore, it presents a high return of streams to the environment, at around 85%.





WaterReuse

Objectives

The LIFE WaterReuse project aims to develop, validate and disseminate a sustainable system for the re-use of process water from industries with high organic loads, such as the chemicals sector. It seeks to overcome existing challenges to the implementation of recommended Best Available Techniques (BAT), resulting in important reductions in water and energy consumption and associated costs.

The project hopes to develop a definitive solution based on the use of electrochemical oxidation and membrane filtration. Energy will be supplied by solar panels and an intelligent system will help to lower energy demand at peak times. The project also hopes to harness the hydrogen by-product of the treatment process as an energy source.

The target is 100% removal of total suspended solids without the use of flocculants, coagulants, polyelectrolytes or organic nutrients used in standard treatments. The chemical oxygen demand (COD) of the water will be reduced, therefore avoiding CO₂ emissions from standard wastewater treatment plants (WWTPs) and the production of any polluted sludge. The cleaned water will be sent for re-use in processes such as reactions, vacuum production, cleaning and cooling.

The project will test and optimize the process on wastewater from both chemical and food companies involved in the manufacture of products such as flavorings, fragrances, juices, frozen foods and pickled foods. It will also carry out technical, economic and adaptation studies to support the transfer of the process to other industries producing wastewater with high organic content, including the beverage, dairy and organic chemical industries.

Expected results:

- ✓ Definition of a treatment solution for industrial wastewaters with high organic content, based on combined electrochemical oxidation and membrane filtration, with no chemical use, and achieving 100% removal of total suspended solids;
- ✓ Re-use of 95% of treated wastewater streams from chemical and food companies;
- ✓ A 13% reduction in water withdrawal by these companies;
- ✓ A reduction of 25.5 tonnes of COD per year in wastewater – avoiding the production of 16 tonnes of CO₂ per year from aerobic respiration in traditional WWTPs;





WaterReuse

- ✓ Energy consumption savings of 34% in comparison with standard WWTPs - equating to a reduction of 208.405 kWh per kilo of raw material processed and 61 tonnes of CO2 emissions(39%) per year;
- ✓ An additional energy production of 37.258 kWh from hydrogen by-product; A cessation in the production of sludge, eliminating about 150 t per year;
- ✓ A 63% reduction in operating costs – totaling €179.000 per year - from water, energy, chemicals and sludge disposal savings, and the production of hydrogen; Reduced investment costs – the projected cost of an industrial-scale system would be around 40% lower than standard WWTPs.

Environmental issues addressed:

Themes:

Environmental management - Cleaner Technologies
Water - Waste water treatment

Keywords

Clean technology, waste water treatment, industrial waste, WaterReuse, chemical industry

Natura 2000 sites

Beneficiaries:

Coordinator: Destilerias Muñoz Galvez S.A.

Type of organization: International enterprise

Description: MUGASA - Destilerias Muñoz Galvez S.A. is a private chemical company based in Murcia, Spain. It produces a wide range of products for fragrances and flavourings.

Partners: CTC - National Technological Centre for the Food and Canning Industry Research Business Association, Spain

Administrative data:

Project reference:	LIFE12 ENV/ES/000184
Duration:	01-OCT-2013 to 30-SEP -2015
Total budget:	1.688.437 €
EU contribution:	844.218 €
Project location:	Murcia (Spain)

