

PROJECT PARTNERS



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IMECAL, Industrias mecánicas Alcudia, S.A
Website: www.imecal.com



IVEM, Ingeniería de verificaciones electromecánicas y
mantenimientos, S.L
Website: www.ivem.es



SCFI, Smarter environmental technologies
Website: www.scfi.eu



URBASER
Website: www.urbaser.es

Supercritical water co-oxidation (SCWcO) of urban sewage sludges and wastes



A project funded by the
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LIFE12 ENV/ES/000477

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THE PROJECT

The LO2X project aims to demonstrate the environmental and socio-economic benefits of a **synergic co-treatment of sewage sludge and wastes** (raw or digested manure, high load food processing wastes, pesticides, leachates and others) with energy and phosphorus recovery **through supercritical water co-oxidation (SCWcO)**.



Supercritical oxidation is an advanced technology that is recently being of interest as an alternative to treat some wastes.

The technology is based on the particular properties of water under temperature and pressure conditions beyond its critical point ($T > 374^{\circ}\text{C}$ and $P > 217,7 \text{ atm}$). In such conditions, water may oxidise completely (efficiency 100%) any organic compound to simple molecules: water (H_2O), carbon dioxide (CO_2), nitrogen (N), etc.

By means of this technology, organic pollutants do not require further inertisation treatment, facilitating final disposal of a small fraction. Furthermore, the process may show a net positive energetic balance due to the possibility of recovering heat produced by exothermic reactions and energy from water expansion after supercritical processing.

LO2X PROJECT

Programme: Life+ (LIFE12 ENV/ES/000477)
Duration: 01/10/2013 - 31/12/2016
Budget: 2 948 698 € (EU contribution: 50 %)

More information in: www.lo2x.com

OBJECTIVES

- 01** Design and construction of a prototype for the oxidation in supercritical water of mixtures of sludge (main matrix with phosphorus (P) and embedded energy from organic content) and other wastes for synergistic enhanced performance.
- 02** Determination of operating conditions and mix ratios for best process yield and energy balance, linking water/energy and contributing the achievement of climate neutral waste water systems and a 20% energy improvement in wastewater treatment for 2020.
- 03** Determination of operating conditions to optimise P recovery from wastes. Contributing to the objectives of the Resource Efficiency Roadmap (Wastewater Treatment Plants WWTP as resource factories).
- 04** Determination of reduction in the final amount of waste generated in a WWTP and better quality for safe disposal, contributing to the objectives of the Waste Directive and the phasing out of land filling of organic wastes.
- 05** Determination of economic balance linking environment, innovation & socioeconomic growth.

EXPECTED RESULTS

- 100 % eliminación of pesticides in the feed of the SCWcO process
- 100% elimination of ammonia in the feed to the process
- Positive energy balance (net production) in front of current energy demanding processes to treat sludge and wastes considered
- 100 % recovery of phosphorous entering the treatment
- 90% reduction of sewage sludge leaving the WWTP in relation to current production
- >10% reduction in sludge cost (investment+running cost/DM treated) treatment versus baseline scenario