Lo2x project

www.lo2x.com

Project cofinanced by European Union through LIFE programme LIFE+12 ENV/ES/000477

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

Project cofinanced by European Union through LIFE programme: LIFE+12 ENV/ES/000477

Total budget: 2,948,698 € (EU contribution: 50%)

Duration: 01/10/2013 – 31/12/2016

Partners:

ainia centro tecnológico

IMECAL

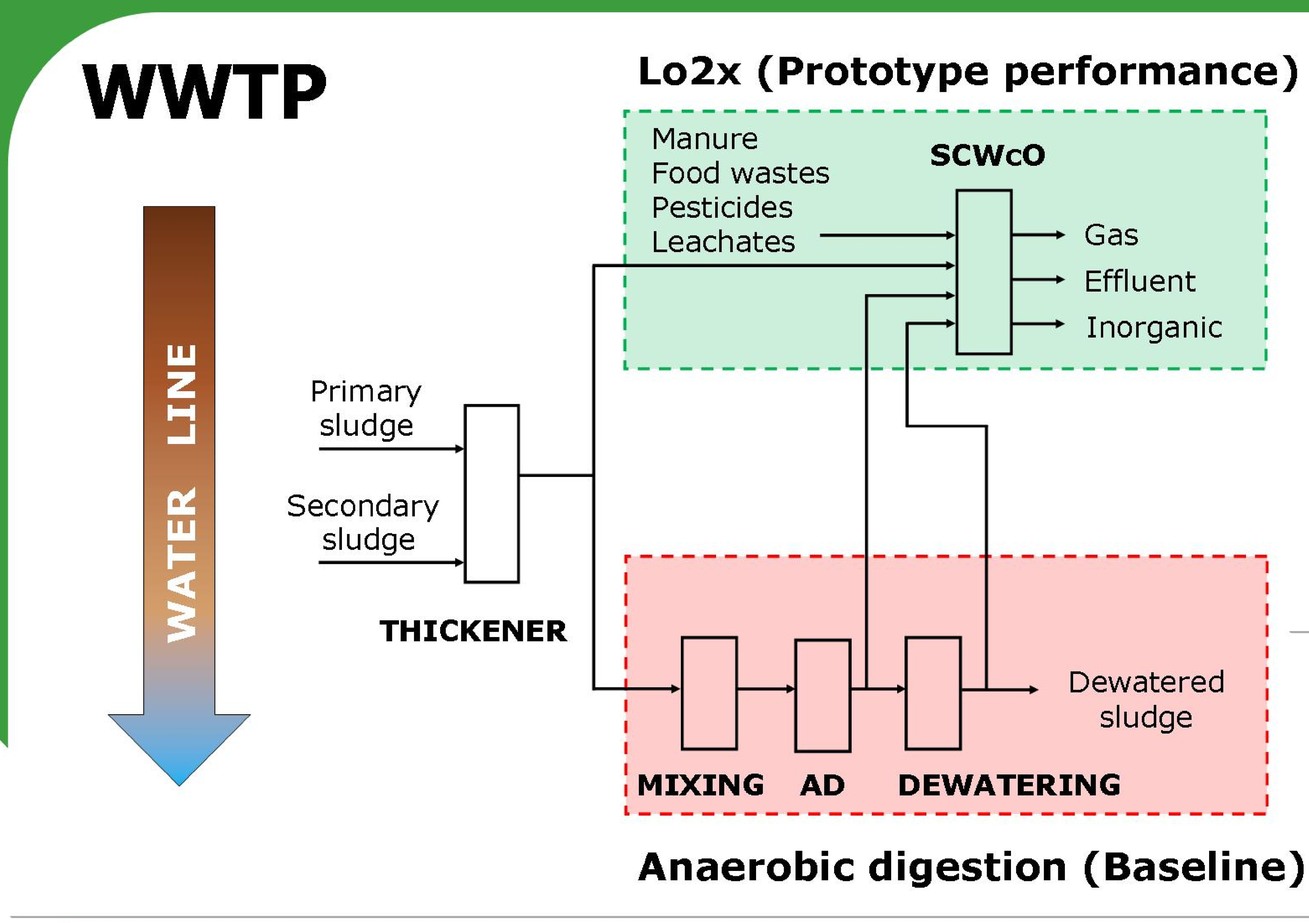
IVEM

SCFI

urbaser

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).



Indicators

- Energy
- Nitrates
- Phosphates
- Final waste quantity & quality
- Cost

OBJECTIVES

1. **Design and construction of a prototype**. Treatment capacity of demonstration plant: up to 1 tonne of dry matter per day.
2. **Determination of operating conditions and mix ratios for best process yield and energy balance**. Regarding the achievement of climate neutral wastewater systems and an energy improvement for 2020.
3. **Determination of operating conditions to optimize phosphorous recovery from wastes**. Contributing to the objectives of the Resource Efficiency Roadmap (Wastewater Treatment Plants WWTP as resource factories).
4. **Determination of reduction on the final amount of waste generated in a WWTP and better quality for safe disposal**. Regarding objectives of Waste Directive.
5. **Determination of economic balance linking environment, innovation and socio-economic growth**.

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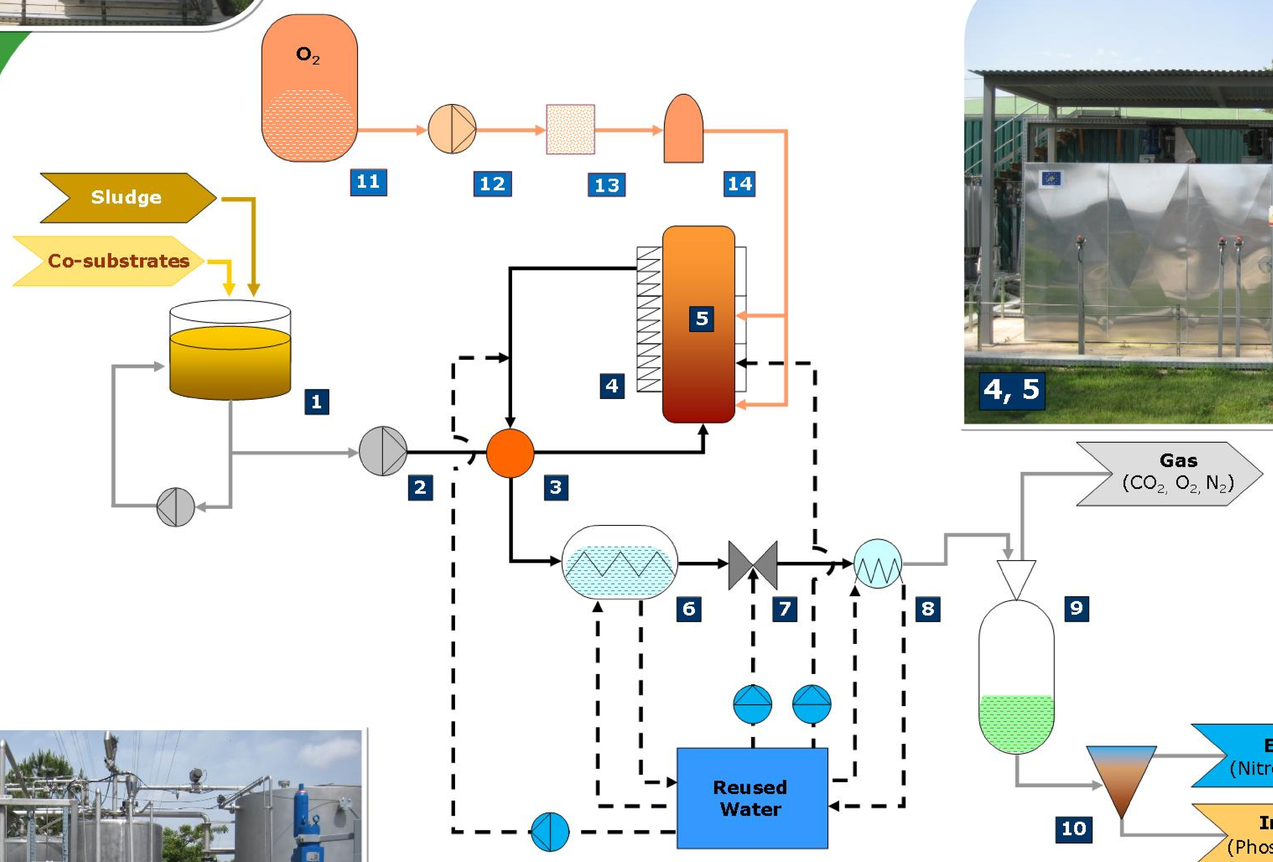
THE SCWcO TECHNOLOGY

The technology is based on the particular properties of water at temperature and pressure conditions beyond its critical point (t >374ºC and p >217.7atm). In supercritical water the oxidation reaction is able to reach an organic matter removal efficiency near 100 %, oxidizing any organic compound to simple molecules, mainly water (H_2O), carbon dioxide (CO_2) and nitrogen (N_2).



1	Feed tank	8	Low pressure cooler
2	High pressure pump	9	Gas-liquid separator
3	Heat exchanger	10	Downstream module
4	Electric heater	11	Oxygen tank
5	Reactor	12	Oxygen pump
6	High pressure cooler	13	Oxygen evaporator
7	Pressure reduction system	14	Oxygen buffer tank

Untreated sludge | Treated sludge | Treated + Filtered sludge

SCWcO

EXPECTED RESULTS

- 100% elimination of pesticides and ammonia.
- 100 % phosphorous recovery.
- Positive energy balance (net production).
- 90% reduction of sewage sludge leaving the WWTP.
- > 10 % reduction in sludge cost treatment.

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