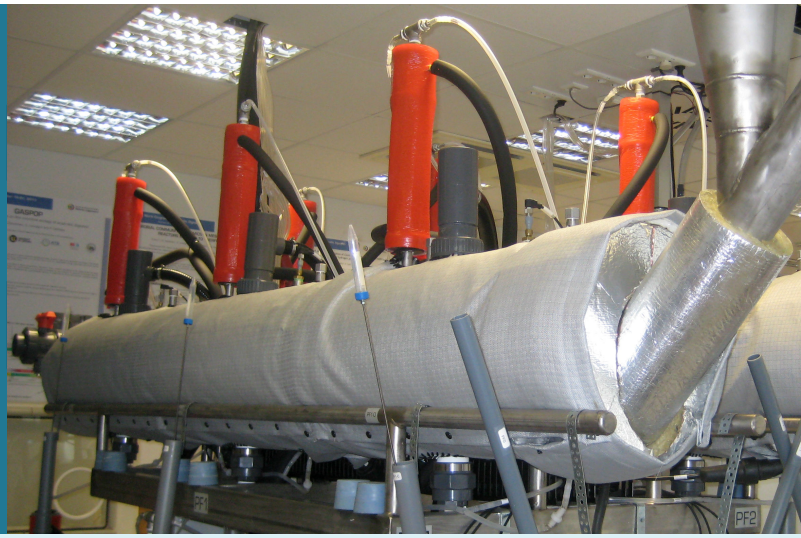
PROJECT FACTSHEET

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GASPOP

Improving the efficiency of the anaerobic digestion process through better understanding of the microbes involved



Inspiration

Anaerobic digestion (AD) is a key process towards a sustainable agriculture in terms of energy and nutrient resources. It is a major contributor to circular economy. Improving the efficiency of the anaerobic digestion process is said to be dependent on two major research topics: an in-depth understanding of the structure and dynamics of the microbial communities/populations involved in the process and the development of on-line monitoring tools to better predict process dysfunction occurring because of inadequate organic loading rate. Although a great deal of research on the basic metabolism in different types of anaerobic reactors has been carried out, little is known about the microbes responsible for the anaerobic digestion processes. Only a few of the Eubacteria and Archaea species have so far been isolated and characterised. The dynamics and interactions between Eubacteria and Archaea are currently considered as key subjects of research towards the improvement of the AD process.

Innovation

The GASPOP project aims to better understand the ecology and diversity/dynamics of the microbial communities involved in the AD process when exposed to shifts in the operational parameters, to compare the influence of the reactor type and the temperature, and to evaluate the consequences of the reactor type on the process efficiency when submitted to increasing organic loading rates. Additionally, while monitoring the metabolism of the reactors and the biogas production and quality, an integrated “omics” study is being conducted to extract and quantitate metabolites and key enzymes.

Impact

Knowledge on the ecology of AD and on the dynamics of the microbial populations and their structure could provide valuable information on unexplained and unpredictable failures or malfunctions of the AD process, while the “omics” study could pave the way towards the production of biological and molecular markers and probes aiming at the rapid diagnostic of the process status.

Partners

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