

PLAGASMIC

PlaGasMic FP7-315604-AGRO-SME



Who are we...



UK Health
and Environment
Research Institute

A Pera Technology company





Pig manure production

Source separated pig manure		Pig slurry	Deep pig litter
Solid	Liquid		
14151	8845	148590	5307

*Figures in 1,000 tonnes per year

European countries produce an estimate of 180 million tonnes of manure per year.

The majority of it is non separated pig slurry (150 million tonnes/year).




The problem and the solution

European SMEs operating in livestock farming (>2.21million) are under increasing pressure from supermarket purchasing powers, legislation, biofuel crops (as they compete with the livestock farmers for land) and environmental issues, which has resulted in substantially reduced profits for the community. In 2010, the average income for a farmer dropped by 27% compared to its value in 2003

Locally based biogas production (**anaerobic digestion** of livestock manure) is a focal technology in the future because it aims at better recycling nutrients while at the same time it has other benefits, such as production of renewable energy.*

A number of **knowledge gaps** require that additional research is carried out.*

*Technical Report No. V to the European Commission, Directorate-General Environment concerning Manure Processing Activities in Europe - Project reference: ENV.B.1/ETU/2010/0007



Current practice on Anaerobic Digestion of pig slurry

- CO-DIGESTION: Extra source of carbon usually required (food waste, cow slurry, glycerol)
Commonly adding plant waste found in the vicinity of the pig farm, e.g. rapeseed stalks.
- Relatively low production of methane on pig slurry (typically 40-60%)
- C to N ratio makes AD not viable


If livestock manure is co-digested with more than 50% other biomass, then the resulting digestate is considered as waste that cannot be used as fertiliser on the fields.*

*Technical Report No. V to the European Commission, Directorate-General Environment concerning Manure Processing Activities in Europe - Project reference: ENV.B.1/ETU/2010/0007



What PLAGASMIC offers:

- **Microwave pretreatment** of the slurry which improves the AD performance.
- MONO-DIGESTION: only pig slurry is digested.
- Improvement of methane yield: up to 80% methane produced from pig slurry after treatment.



What stage are we in: we have had successful results using small AD reactors at laboratory scale.

Future developments: current partners of PLAGASMIC will continue the collaboration to develop a larger scale reactor and prove the reliability of the process at large real-life scale.

Link to website:

<http://www.ljmu.ac.uk/BLT/BEST/RFM/PlaGasMic/index.htm>

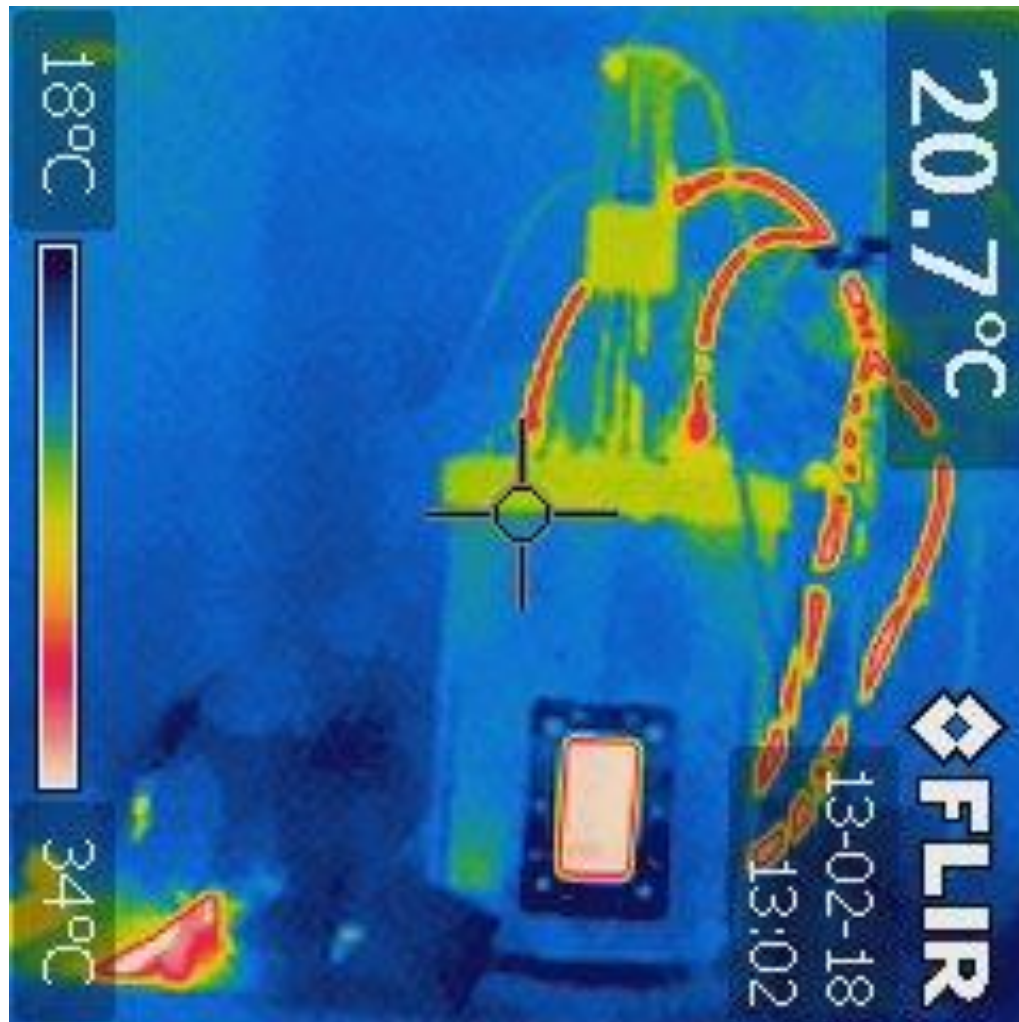


10 L Microwave plasma reactors with and without pig manure

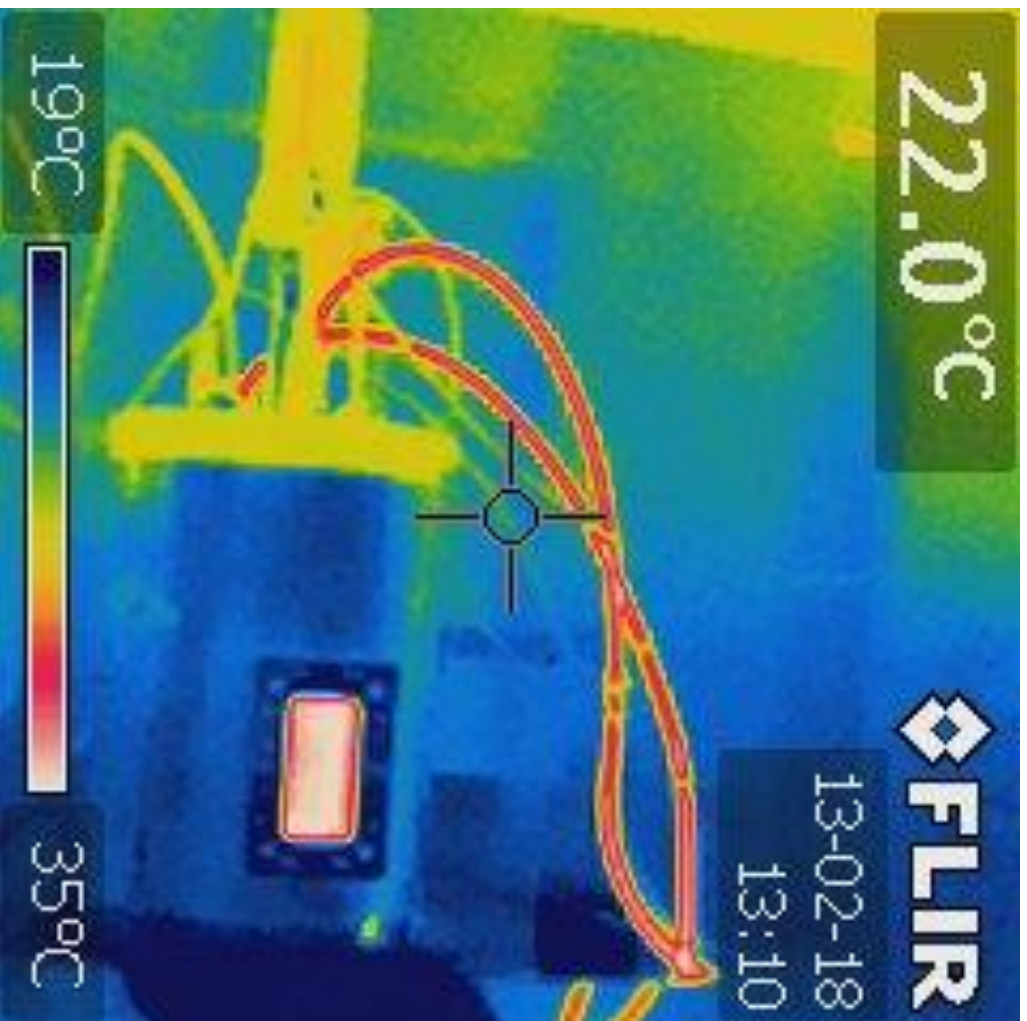


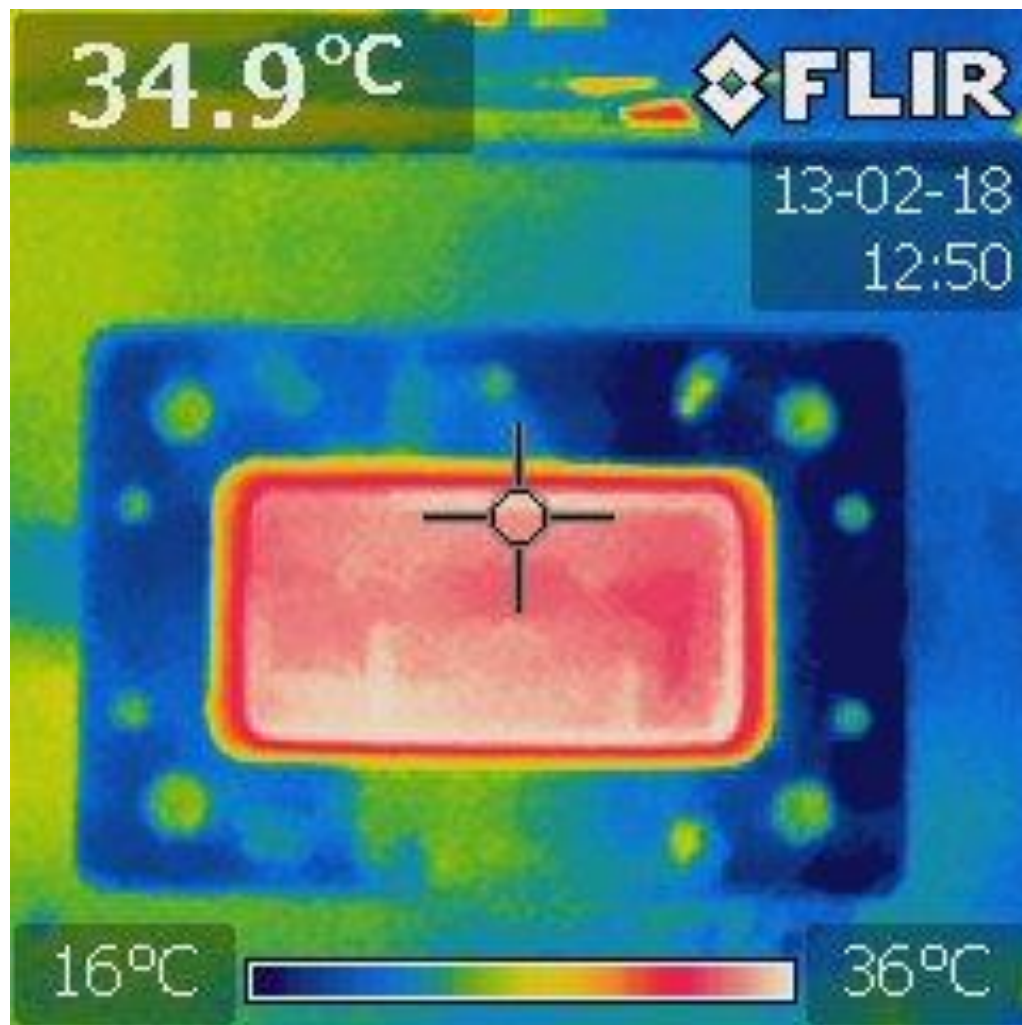


Complete system with microwave source, automation
and control of parameters



Temperature monitoring in real time using IFR sensitive camera correlated with real time non invasive sensors





Close up look at the temperature in the microwave reactor

Project team in Acondagua



Ashleigh Farm Waste



Project partners discussing the new plants for Ashleigh Farms



Microwave plasma reactors modular at 10L each



Microwave plasma for pig slurries solid treatment

