Control and automation of anaerobic digestion plants based on real-time measurement of VFA profile: the AD-WISE project

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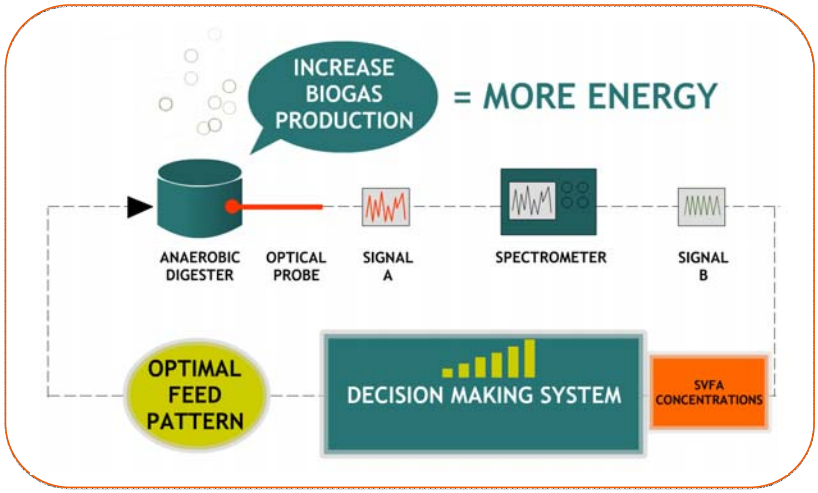
Objectives and approach

The recently funded AD-WISE project aims **to develop a new control system based on feed regulation for biogas plants**. By:

a) developing an innovative and **automated optical system to measure individual volatile fatty acids on-line**, which will be integrated with other sensors already installed in every biogas plant (methane concentration, pH or temperature);
b) assessing the **effect of different feeding schemes on SVFA** concentration; and
c) developing **control software** to process sensors' information and, according to these data and other parameters already measured in the biogas plant, modify operating conditions (feeding scheme) according to the model, in order to avoid acidification.



Two-phase anaerobic digestion pilot plant at AINIA to validate the prototype at pilot scale

Project partners

Companies:
- Granja San Ramón (Spain),
- Interspectrum (Estonia).
- The National Microelectronics Applications Centre (Ireland)

Research centres:
- AINIA as project coordinator (Spain).
- Fraunhofer – Institute for Photonic Microsystems (Germany)

www.ad-wise.org


Biogas plant of Granja San Ramón (Spain) where the prototype will be validated at industrial scale against continuous GC measurements.

Technological progress

The technical and technological gaps covered by the project will be:

1) cost reduction of the chemical analysis currently externalized by biogas plants;
2) immediate availability of results instead of turnaround time of 1-2 weeks;
3) better process control due to integration of measurement results in the control loops of the plant.

Results by end of 2014

Presented at

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Main references

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