

AD-WISE (www.ad-wise.org) is an on-line system for Biogas Plants to optimise the Anaerobic Digestion process and maximise biogas production while maintaining process stability. As a partner in this EU Research for SMEs FP7 project, **MAC** extends its range of Greentech monitoring and control products.

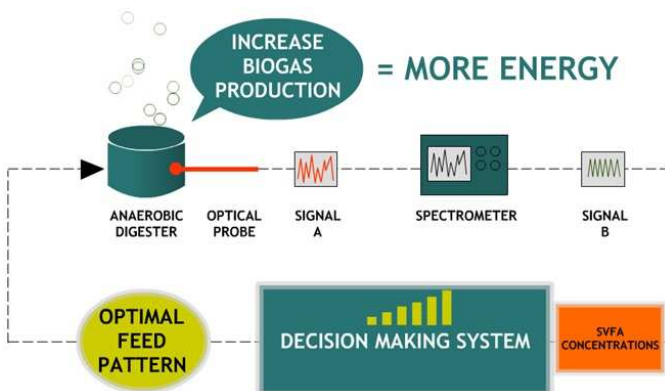


Use of the AD-WISE system could **increase the revenues of biogas plants by 10% to 20%**, by increasing production while eliminating process stops and reducing the need for external analysis of SVFA.

AD-WISE also ensures that biogas plants are **Highly Efficient**, as per the European **High Efficiency CHP Directive** (2004/8/EC). Under the Irish Government's 'Renewable Energy Feed in Tariff', which is the primary means through which electricity from renewable sources is supported in Ireland, the **REFIT3** Support Scheme specifies that Biomass plants must be certified as High Efficiency (HE) plants. The loss of this HE criteria results in loss of REFIT benefit for the period of time that the plant is deemed not to have met the HE criteria. In addition, to making AD plants more efficient, the AD-WISE system and real-time monitoring **mitigates these revenue risks**, by ensuring that an AD plant can verify their high efficiency at all times. Thus helping to ensure long term revenue stability that is so important in the financing of most renewable energy projects.



Anaerobic Digestion (AD) is a biological process that degrades organic matter to form biogas and a digestate. Biogas can be fired in combined heat and power (CHP) engines or purified and injected into the gas grid. The total primary energy produced from biogas in Europe was 10.9 million toe in 2010, and there is ever growing potential, since there is a huge amount of organic waste available.



Control and optimisation of AD plants is critical. AD plant operators usually have to drive the plant with the only information of pH and biogas composition. This often leads to a situation of underuse of the plant, if the operator prefers to drive the plant in a conservative way, or process malfunction, if the operator chooses to drive the plant near the load limit.

Of all parameters that control the process, the most reliable is the **Volatile Fatty Acids Profile (VFAP)** that consists of the single VFA concentration (acetate, propionate, butyrate, etc.). This parameter allows monitoring not only the process state but also predicting and avoiding process malfunction. This is not possible with other parameters (pH, biogas composition, etc.). With information of VFAP, AD plant operators can optimise their plant, increase biogas production and avoid process stops. The currently available technique to measure VFAP is gas chromatography (GC): an off-line measurement that needs specific equipment and trained specialists, and takes 1-2 weeks between the sampling and the results, making the measurement no longer valuable for process optimisation.



AD-WISE provides **real time VFAP measurements** and **integrates these in the control system of the AD plant to optimise the process** (maximise biogas production and waste processing, while maintaining process stability).

For more details contact: Dr. John J O'Flaherty, john@mac.ie, +353-61-334699 or +353-87-2351335.