

BIOGAS AS AN ENERGY SOURCE

Will the energy of the future come from happy cows?

Various studies assume that natural gas consumption in future will comprise up to 10% biogas (biologically produced methane). Measurement of the flow rate will be indispensable, regardless of whether the gas is combusted directly in a combined heating and power plant or whether it is piped into a major natural gas supply network.



There is an ever increasing awareness of the causes and effects of the widely discussed phenomenon of climate change. This is why the German government, for some years now, has been defining environment-policy and energy-policy guidelines within the framework of legislation to promote production and utilisation of energy sources such as biogas and thus make production and utilisation of such energy sources economical. Ever scarcer fossil fuels and the worldwide rise in demand for electrical power and heat are leading to a rise in prices and a battle for existing resources. Consequently, utilisation of biogas not only offers major opportunities ecologically but also makes a contribution towards safeguarding socio-economic welfare in the longer term.

What is biogas?

Biogas is a product of the decomposition process involving micro-organisms converting organic substances biologically under anaerobic conditions. In many cases, post-harvest (crop) residue and excrement from cattle breeding are used for the process. However, what is called RRM are now used to a steadily increasing extent. RRM are Renewable Raw Materials such as maize silage that is cultivated and harvested solely for the purpose of biogas production. Methane and carbon dioxide are the two main products of the anaerobic biogas process, whereby the former is a flammable gas that can be used to produce energy.

Impact on the environment

Combustion of fossil fuels, such as natural gas, crude oil and coal, that has risen tremendously is causing an increase in CO₂ concentration in the atmosphere. Methane also plays an important role as a greenhouse gas. The process of production of fossil fuels results in the escape of large quantities of methane, uncombusted, into the atmosphere. These emissions are increased by processes of decomposition from landfills, manure pits and cesspits. By contrast, use of biogas is carbon-neutral since the corresponding CO₂ is dissipated in the natural carbon dioxide cycle and is used up again by plants. Consequently, it does not make any contribution to the net increase in CO₂ concentration.

Use today and in the future

Currently, the following applications for use of biogas can be encountered to an increasing degree:

- Electrical power generation: biomass is converted to biogas either locally, on the premises of the producer, or centrally in a communal plant, and combusted directly in a combined heating and power plant. The electrical power produced is fed into the electricity grid and its value is refunded. The heat produced is used locally.
- Piping into the gas network: biogas is produced, conditioned (cleaned, pressure-boosted and analysed) centrally and piped into an existing natural gas supply network. The value of the gas piped in is refunded.
- In addition, there will be further fields of application of biogas for energy production in future, such as electrical power and process steam generation in fuel cells, biogas to replace natural gas and biogas as a fuel for cars, trucks, buses and agricultural vehicles.

Guaranteeing optimum utilisation of biogas necessitates guaranteed, efficient control of biogas plants. Reliable metering facilities to determine the amount of biogas produced and consumed are essential for this.

Our solutions

Elster-Instromet offers well suited measurement solutions for this environment-friendly process.

- We will soon offer an adapted turbine gas meter for the sector of biogas combustion locally at the place of production. It will allow for factors such as increased contamination share in the gas and aggressive constituents. This biogas meter (BGM) has been optimised in particular in respect of material resistance and lubrication. Likewise, experience gained from many years of use of individual customised solutions has been incorporated in the development.
- The TRZ2 and SM-RI turbine gas meters and the rotary gas meters of the RVG and IRM Series, successfully deployed in a wide variety of applications, can be used in the sector of piping into the gas supply network. The units that are approved for fiscal measurement are already used worldwide in transfer stations.

So when you are next on a farm and no longer smell the "sweet scent" of a cowshed, just think that this "sweet scent" may also possibly be heating your cosy living room or powering the hob that heats your milk.

Thorsten Höning t.hoening@elster-instromet.com