Hydrolysis - the Turbo for Every Biogas Plant

Upgrading existing biogas plants

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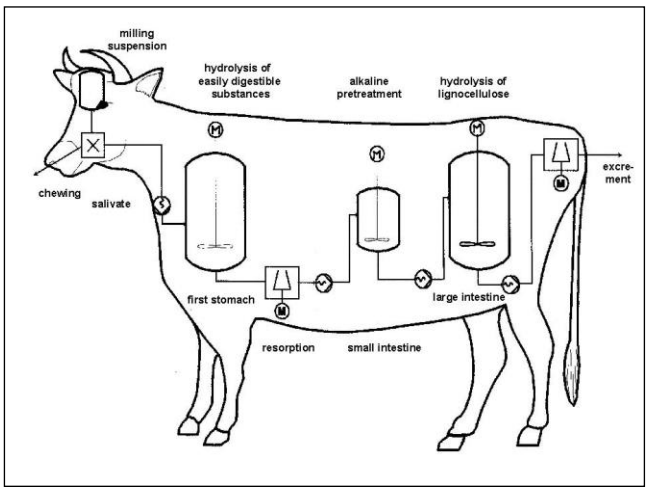
From over 20 years' experience of working with biogas technology, we've learned that a complex biogas production process works at its best if we let nature work at its optimum.

If you want to achieve a maximum degradation and utilization of the supplied biomass in simple (one-phase) systems, then you need extremely long residence times; or much better, you could simulate natural processes and divide the crucial degradation steps with different conditions to optimize the process into a two-phase biogas plant. Let us simply imitate the cow or other ruminant……



The feed is first grounded, and mixed with saliva by chewing into a processable cud.

Subsequently in the rumen, the easily degradable substances (proteins, fats and carbohydrates) are hydrolyzed and enzymatically split by bacteria and fungi (amino acids, fatty acids sugars).

In recalcitrant lignocellulosic rich substrates, hemicellulose and cellulose can be converted into shorter sugars (oligosaccharides as xylose and cellobiose composed by glucose). These fatty acids, amino acids and oligosaccharides are absorbed into the rumen wall and intestines, used by the body as energy and nutrients.

In the past, it was thought that building a biogas plant with a separate hydrolysis had no sense because it resulted in expensive constructions. However, the eyes of many biogas plant owners were opened after seeing the great biogas potential from up to half of the fresh substrates that flowed out from simple, low efficiency, biogas plants. Nowadays, some biogas plants have integrated hydrolysis stages, but still they often follow lazy and cheap recommendations, without getting the real benefits of a correctly managed hydrolysis tank. A real and well managed hydrolysis phase will help to solve typical efficiency problems seen in many simple biogas plants.

<u>Advantages of a two-phase biogas plant with upstream hydrolysis:</u>

- More biogas can be produced from the same raw material.
- Thus, less amount of raw material is needed to produce the same (biogas) output
- Better biogas quality, up to 70% methane (CH_4)
- As a result, higher efficiency of the CHP engine.
- Better overall efficiency of the biogas plant.
- Better degradation brings a valuable fertilizer ready to be used on the fields without greenhouse gases emission.
- Well degraded substrate does not produce unpleasant odors.
- Short amortization times due to significant raw material savings and more efficiency.

The conversion of a simple biogas plant into a two-phase high-performance biogas plant is relatively straightforward. We can help you to plan and design such optimizations specifically for your plant.

INNOVAS Innovative Energie- und Umwelttechnik

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