



Mathematical modeling of a Biodigester

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Why biogas?

Fun Facts

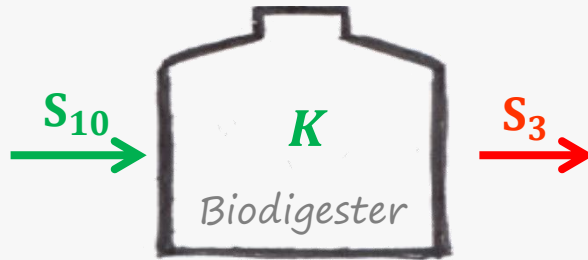
- Biogas is the third fastest growing renewable energy source in the world, following photovoltaic solar and wind power.
 - 17,500+ biogas installations were installed in Europe end of 2016, along with 500+ biomethane units.
- The European electricity from biogas production amounted to more than 65 TWh in 2017, the equivalent of the yearly electricity consumption in Austria.
 - The scaling up of renewable gas could save up to € 138 billion by 2050 in the EU.
- Electricity production from biogas can reach GHG savings of 240% compared to EU fossil fuels.

Source: European Biogas Association



Modelling Anaerobic Digestion (AD)

AD has been treated as a black box system and optimization based on experience or trial and error methods. Experiments of AD processes are expensive and time consuming.



$$S_3 = S_{10} [1 - e^{-Kt} (1 + Kt)]$$



Objective: Development and validation of a mathematical model capable of describing the different phases of the anaerobic digestion process of organic matter in order to estimate the specific methane production S_3 .