

ANALYSIS OF ANAEROBIC DIGESTION PROCESS FOR BIOGAS PRODUCTION USING ASPEN PLUS



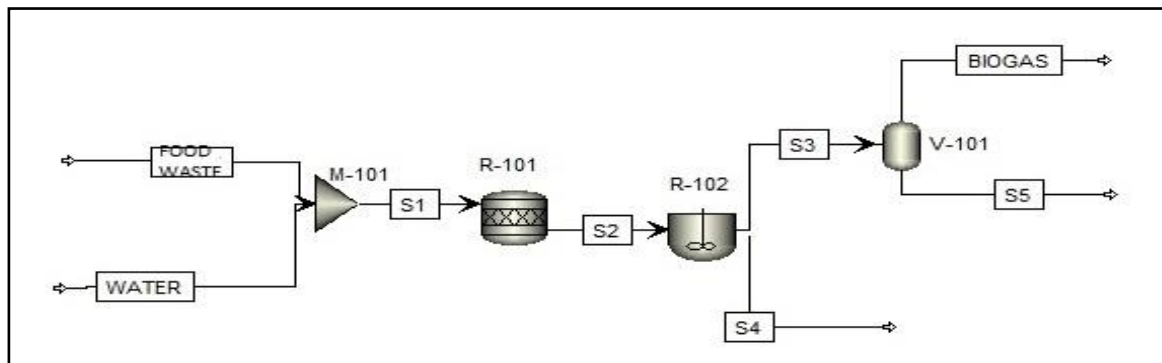
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Background Study

- Municipal solid waste (MSW) is solid waste comprising all household waste and non-hazardous waste (food waste 60%, paper 21%, plastic 12%, glass 5% and others 2%).
- Anaerobic digestion (AD) is the series of biological process where microorganism break down biodegradable materials without having the oxygen to produce biogas.
- Food waste contribute more moisture, suitable for Anaerobic Digestion process (H. Ma et al., 2009).

Anaerobic Digestion Model in Aspen Plus

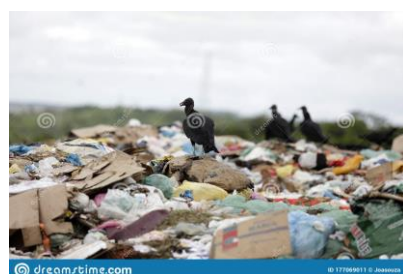


Inventiveness

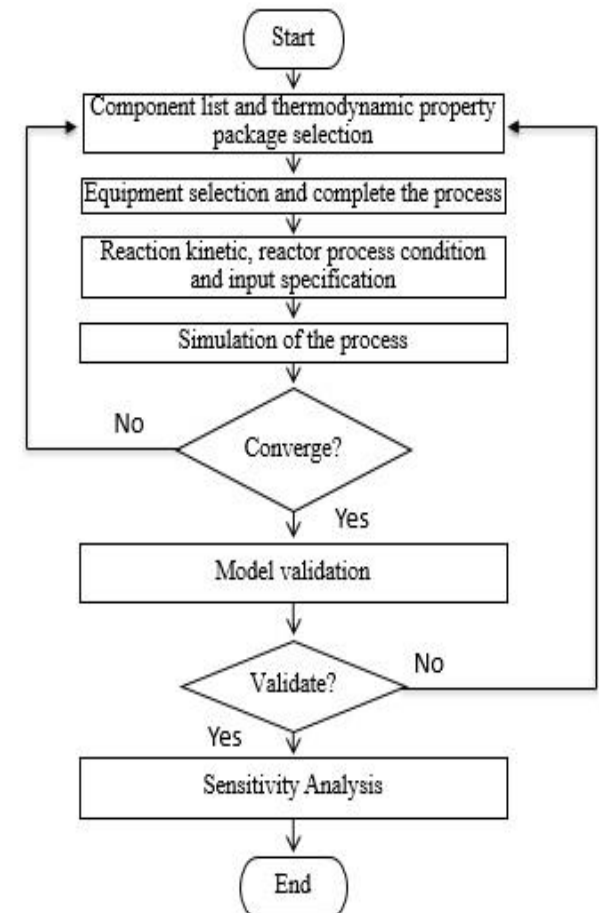


- Production of biogas at 55C and 15 days of hydraulic retention time

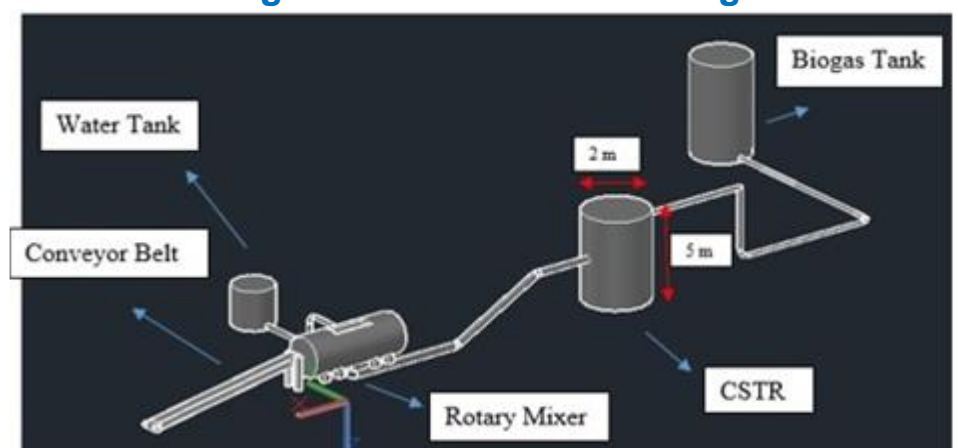
Environmental Impact



Methodology



Biogas Plant in Autocad Design



Benefits

- Biogas generate heat and produce electricity through gas engines.
- The electricity then routed to the transformer and supply to the TNB grid.

Industrial Partner



Publication

1. Harun, Noorlisa, Hassan, Z., Zainol, N., Ibrahim, W. H. W., & Hashim, H. (2019). Anaerobic Digestion Process of Food Waste for Biogas Production: A Simulation Approach. *Chemical Engineering and Technology*, 42(9), 1834–1839. <https://doi.org/10.1002/ceat.201800637>