

Abstract

At this final project research about the simulation modeling of biogas production in batch reactors using Adams-Moulton-Bashforth predictor corrector. This research was conducted as to determine the influence of Anaerobic Digestion Model 1 (ADM 1) to changes in the microorganisms to the break the biodegradable components in the biogas production process. The research process was conducted with the various stages that determined the reaction kinetics model and then do drop in a mathematical model and then complete the matemetika models with numerical methods Adams-Moulton- Bashforth predictor corrector and finally to interpreted the results of the calculations. In this research the main substrate in the production of biogas is a glucose substrate which has a value of the initial concentration of 500 gCODm^{-3} and a biogas production carried out for 106 hours. In this research the results of the simulation analysis of all the kinetic and stoichiometric parameters, product, substrate (the product of the substrate) values show a high sensitivity to virtually all the components. The concentration of methane is the most sensitive among five components. And while acetate and glucose has high sensitivity, propionate and butyrate showed relatively low sensitivity. It was found that the sensitivity of the components most dependent on the number of processes associated with them. For example, glucose is the main substrate and the absorption process is controlled by the concentration of sugar only. Modeling results methane content of biogas production on this research trend has increased in value until it reaches the concentration $417,49258 \text{ mgCOD/L}$ and the concentration of microbes is the largest of the production of microbial concentration of glucose reached $77,16572 \text{ mgCOD/L}$

Keyword: *Biogas, Anaerobic Digestion Model 1 (ADM 1), Adams Bashforth Moulton Prediktor Korrektor Method*