

Abstract

This research has the goal to create a predictive model biogas production in batch type reactor. Simulation anaerobic digestion glucose as the primary substrate with an initial concentration 500 mgCOD/l, and simulations will be conducted for 120 hours. In this study also aims to determine the concentration microorganisms involved in the process anaerobic digestion, and will do some analysis such as comparison the metana produced in simulations and experiments, the effect the number iterations the time needed to do the menjalankan program, the ratio glucose and microorganisms used the simulation the amount metana that would be generated. To predict the amount biogas production, there is a commonly used model is Anaerobic Digestion Model No. 1 (ADM1). ADM1 developed by the International Water Association (IWA) in 2002. In order to obtain a model that has high accuracy will use a numerical method that is Hamming Predictor-Corrector. After the simulation is done anaerobic digestion, metana generated at 417.48 mgCOD/l. Then microorganisms glucose experiencing maximum growth when compared with other microorganisms in the amount 77 mgCOD/l. The initial concentration glucose substrate and the concentration microorganisms used in the simulation process greatly affect the amount metana produced. But for the initial concentration microbes more than 30 mgCOD/l, tend to produce metana constant.

Keywords: ADM1, batch-type reactor, Hamming predictor-corrector method