ABSTRACT

Bioethanol G2 is an alternative energy source developed in Indonesia today. In the production process there are several processes, namely pretreatment, hydrolysis, fermentation and distillation. To support a production process basically needed a monitoring and control, because many processes and parameters that must be monitored and controlled continuously. In the process of distillation of the first stage of flow rate is one of the important parameters in determining the purity level of bioethanol G2. One of the control systems widely used in the process industry is Proportional Integral Derivative (PID) control. This control can be reduced to P Proportional (P), Proportional Integral (PI) and Proportional Derivative (PD) control. The purpose of the controller is to improve a system performance and the type of control is influenced by each parameter to be used. So in this study will be designed monitoring and control system for flow rate in the first stage distillation based pid. In this research, pid parameter value has been generated with Ziegler-Nichols method -1. Based on the simulation obtained system response and the best performance is the type of PI controller with the parameter value Kp= 3.87 and Ki= 0.09675. The parameter returns a settling time= 3.55 seconds, rise time= 3.34, error= 0 and overshoot of 1.004%. To monitor the flow rate has been designed flow rate monitoring system in the first stage distillation process using Cimon software. From the results of the design and simulation obtained graphs of system response when input values and stored in data logging.

Keywords : Bioethanol G2, distillation, control, flow rate, monitoring, PID