

ABSTRACT

Precise temperature is very needed in some sectors. One of it is in the production of biogas. According to a research, the most suitable temperature for biogas formation process is at 35 °C, which is higher than room temperature, and therefore a heating process is required. One of the method that could be used to regulate the temperature inside a biodigester is by continuously flowing hot fluids into the tube's blanket. It means that the flowing fluid's temperature has an important role in that process. Thus, it makes designing a system that could control the temperature of the fluid necessary. In this study, the author designed a temperature control system to be applied to a fluid in the form of water. The control system is designed using Pulse Width Modulation (PWM) method. This method plays a role to regulate the amount of power supplied to the heater, so that it meets the requirements to heat the fluids to a predetermined temperature (set point). Result obtained from this study shows that this temperature control system which uses PWM method has succeeded on giving a significant effect to the temperature change. This system is able to keep the temperature within the desired range of the set point, in this case 40 °C and 50 °C. The error value, or the difference between set point and actual temperature that is obtained was relatively small, namely 0,45 °C and 0,24 °C.

Keywords: temperature control, hot fluids, pulse width modulation.