

## **ABSTRACT**

*The need for water heaters nowadays means that water heaters are often found in everyday life. Water heater refers to a device that is used to heat water to a certain temperature using electricity as an energy source. Water heaters currently available on the market still use quite a lot of power and are still far from the concept of power efficiency. In general, water heaters use a control system to control the temperature of the water inside. There are various types of control systems that can be applied in temperature control, such as Bang-bang control and Fuzzy control. Although both are used in the same control system, they have different characteristics, performance and resulting parameter values. Therefore, research comparing the control results of these two types of control is very necessary. This research aims to compare the power usage between the Bang-bang control system and Fuzzy control in the water heating process. So with the results of this comparison you can determine a control system that uses less power. The research was carried out by comparing the power usage between bang-bang and fuzzy control systems based on the power used and the time required to reach the specified set point. From the research results, it was found that the fuzzy control system uses less power and takes faster time than the bang-bang control system. With an average power of 361W and an average time of 605 s.*

**Keywords: Water Heater, Electric Power, Bang-bang Method, Fuzzy Method.**