ABSTRACT

As the development of the world and control technology, the stability of a system becomes a very important factor both in industry and households. Water temperature controller is a tool that we often find in everyday life as well as in industrial world. Therefore in this thesis, author makes a water temperature controller that controlled by a microcontroller so it can produce the water temperature according to what the user wants.

To make a water temperature controller system, the system must be able to detect the water temperature that in this thesis used a sensor. The value of the desired temperature inputed by the user via interface through a computer. Push buttons and LCD also installed to this tool that can be used to provide the PID parameters value and displays the PWM value and set point value. The PI control method also implemented to this system to make this system works optimally.

Based on the test results and analysis of the tool, the parameter values Kp and Ki that are appropriate for the system to work optimally is Kp = 17.79 and Ki =0.02333 with rise time = 287 seconds, settling time = 921 seconds, and overshoot = 3.789%.

Keywords : Arduino Uno , Water Heater, PI Control , Interface