ABSTRACT

The high-temperature incinerator using LPG gas as the ignition source often encounters issues when the gas cylinder temperature cools down below the gas boiling point, preventing it from vaporizing to produce gas. Therefore, a control system is required to maintain the gas cylinder temperature stable and prevent it from dropping. This is achieved by placing the gas cylinder in a bucket filled with water. The water temperature is then controlled using a heater programmed via an ESP8266 microcontroller, with temperature readings taken using the DS18B20 sensor. The sensor and heater are placed in the bucket along with the gas cylinder and water. This control system is also connected to a web server to display real-time graphs and overall performance graphs. The testing results indicate that the control system operates according to the provided set points. The system testing was conducted through two peak passes, with a maximum overshoot on the first peak pass for temperature 1 at 10.83% and temperature 2 at 15.85%. The second peak pass showed a maximum overshoot for temperature 1 at 11.90% and temperature 2 at 20.58%. The first rise time for temperature 1 occurred at 820 seconds, and the second rise time at 3090 seconds. For temperature 2, the first rise time occurred at 770 seconds, and the second rise time at 3370 seconds.

Keywords : *incinerator, DS18B20, heater, web server*