

ABSTRACT

Tea is a drink that is often consumed by people because of its easy preparation. The tea processing process includes withering, cooling, rolling, initial drying, semi-drying, and final drying. The final drying process using a Ball Tea machine takes 8-15 hours with an ideal temperature range of 100-130°C and the product has a water content of 5-6%. With a long drying process, temperature monitoring is needed to ensure the temperature of the Ball Tea machine is stable and ideal. Currently, temperature monitoring is done manually with using an analog thermometer. This causes work to be less efficient and it is too late to find out which machine is having problems. To overcome this problem, this research was carried out to create a multinode sensor temperature monitoring system based on the Internet of Things (IoT). This system uses a temperature sensor with a measurement range of -50°C to 400°C. Apart from that, there are websites and mobile apps for real-time remote monitoring. This system provides Ball Tea machine temperature information in the form of numbers and graphs on websites and mobile apps. Apart from that, there are login, dashboard, sensor and profile features. Another feature that can help with early warning is notifications on websites and mobile apps when the temperature is outside the ideal range. System implementation and testing was carried out on a spray drying machine which has similar functions to the Ball Tea machine. Testing is carried out to determine the performance of communication between devices as well as the performance of websites and mobile apps. Communication between devices is connected with WSN. WSN testing is carried out by conducting Quality of Service (QoS) analysis. The results of the QoS Index with 2 conditions, namely Line of Sight and non-Line of Sight, obtained a value of 3 with satisfactory information. Testing the performance of websites and mobile apps is by distributing questionnaires to users. The results obtained were that users on average gave good responses. However, the performance of using websites and mobile apps can be influenced by the user's device.

Keywords: ball tea, internet, of things, monitoring, tea