

ABSTRACT

The availability of effective and efficient temperature and humidity monitoring systems in the F&B industry in Germany is still limited, with many monitoring systems still being manual, time-consuming, labor-intensive, and vulnerable to human errors. Therefore, the needs of the F&B industry in Germany to meet strict hygiene standards have prompted the adoption of monitoring systems that can ensure that products and services comply with applicable standards. By developing an integrated QMS with automatic sensor technology, it is hoped that the hygiene monitoring challenges in the F&B industry in Germany can be addressed. This system monitors parameters such as temperature and humidity in real-time, and ensures that these parameters meet standards. The integration of automatic sensor technology provides a solution to maintaining strict standards in the F&B industry in Germany. The results of hygiene monitoring through an application integrating automatic sensor technology will be evaluated using statistical analysis to determine the accuracy and reliability of the developed system. Furthermore, information on the quality of products and services in the F&B industry in Germany will be collected and used in a comparative review. Therefore, a QMS-based monitoring system is developed utilizing the ESP8266 microcontroller, DHT22 temperature and humidity sensor, and 16x2 LCD for real-time visual output. From this research, it is expected to produce a tool that facilitates users in monitoring and recording temperature and humidity to comply with existing regulations. The device has been performing effectively in monitoring temperature and humidity, sending alerts when there are fluctuations to ensure that temperature and humidity remain below the determined thresholds. Additionally, this device increases efficiency by over 100% compared to manual recording.

Keywords: DHT22, ESP8266, IoT, LCD 16x2, QMS, Temperature and Humidity Monitoring System