DESIGN AND CONSTRUCTION OF AN IOT-BASED FIRE RISK MONITORING SYSTEM IN MOTORCYCLE WORKSHOP WITH REAL-TIME NOTIFICATION

(Case Study: Al Huda Bumiayu Vocational School)

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ABSTRACT

The development of Internet of Things (IoT) technology has opened up opportunities for improving security systems, particularly in fire risk mitigation. Motorcycle repair shops have a high potential for fire due to the use of flammable materials such as gasoline, oil, and sparks from welding activities. This research aims to design and build an IoT-based fire risk monitoring system with real-time notifications using an MQ-3 sensor to detect gasoline vapors and an infrared flame sensor to detect the presence of fire. This system is designed using an ESP32 microcontroller that integrates various sensors with the ThingSpeak platform for real-time data monitoring and Telegram for instant notifications to users. Furthermore, the system is equipped with a blower to reduce high concentrations of gasoline vapors as a preventative measure against fires. Test results show that the system can detect the presence of fire and gasoline vapors with high accuracy and provide early warnings. The implementation of this system is expected to improve safety in motorcycle repair shops and can serve as a reference for the development of more sophisticated fire detection systems in the future.

Keywords*: IoT, Fire, MQ3 Sensor, Flame Sensor, Real-time Notification, ThingSpeak.*