ABSTRACT

According to data taken from the DKI Jakarta Regional Disaster Management Agency, fires occur every year. In 2019 there were fires which caused many losses ranging from materials which reached ± 65 billion Rupiah and victims of ± 13,211 people who were affected such as minor injuries, serious injuries or death. So we need early detection of fire that can make actions and decisions quickly in the fire extinguisher system. But in reality the detection system that has been widely used by the community is only limited to an alarm and can be heard when the house electors are at home. Therefore, the Internet of Things is one alternative that is able to provide intelligent systems for those needs.

In this research, a prototype of building fire detection was made using Arduino mega 2560 with DHT-11, MQ-2 sensors, flame sensor and buzzer as alarms. Sensor data will be processed using Arduino Mega 2560 through fuzzy logic. Fuzzy logic is used to determine the right conditions in a building whether it is dangerous or not, which later the buzzer will sound according to the results of fuzzy output. Then the sensor data along with the fuzzy value will be forwarded to the thingspeak database for monitoring.

From the results of system testing, it is known that the tool can be connected to the thingspeak database and the reading on the database is going well. The DHT-11 sensor found an average error of 1.18% for temperature and 2.04% for humidity. While the flame sensor, the distance to the object of fire can affect the wavelength captured. In the prototype test it is also known that the greater the input of the sensor will produce the higher and more dangerous fuzzy value output. In the fuzzy logic algorithm, the accuracy is 99.995%. For the average value of the tool delay to the thingspeak database was 41,249 ms and for the average throughput value was 14,732 Kbps.

Key Words : *Fire, IoT, Arduino Mega 2560, DHT-11, MQ-2, Flame sensor, Fuzzy Logic*