

ABSTRACT

Fire is a disaster that often occurs in office areas, housing, industrial areas, and forests. The process of fire occurrence is usually influenced by several factors such as weather temperature, damage to electrical installations, and burning materials which can affect how fast or slow the process of fire occurs. From the occurrence of the fire disaster, the development of a fire detection system based on the Arduino Mega 2560 microcontroller was carried out which was used in every office area and others. Based on these problems, researchers made a prototype of a microcontroller-based fire detection system by implementing fuzzy mamdani logic on the KY-026 sensor, DHT11 sensor, and MQ-2 sensor as input sensors in the fire detection system. KY-026 sensor works to detect the presence of a flame. The test results in the form of reading the smallest value for the three sensors can be carried out well with the smallest value, namely a fire value of 996, a smoke value of 75, and a temperature of 29.80°C. The implementation of mamdani fuzzy logic carried out on the system can provide output in the form of early warning and automatic fire extinguishers to overcome and prevent larger fires.

fires.*Keywords:* Arduino Mega 2560, Fuzzy Mamdani, DHT11 sensor, KY-026 sensor, MQ-2 sensor, Fire Detection System.