ABSTRACT

Fire is one of the environmental threats that can damage humans and the surrounding environment. Initial information about the potential fire will greatly aid in fire prevention. Therefore, it takes a set of early warning fire detection and providing early information to act more quickly and precisely. Wireless Sensor Network (WSN) is one example of the proper method as a system device detection and early warning of fire. WSN also been widely used for medicine, the military, and industry.

In this thesis, made a prototype implementation of a fire suppression system. The fire suppression system using LM35 temperature sensor, gas sensor MQ-7 and microcontroller ATMega8535 as processing data from sensors. The sensor is used to retrieve data environment. Data environmental conditions such as temperature and CO gas concentration will be processed by the microcontroller and the data is sent using the XBee RF module and will be forwarded to the XBee RF module coordinator / server, which the data will be displayed on the GUI (User Interface Guide) on a PC (Personal Computer) using Visual C # 2010. Data received from the GUI will provide a warning or an alarm if there is a node that is not active or indications of a fire hazard.

Equipment fire detection system using WSN technology can be applied to a mesh topology using XBee RF module series 2. The results obtained for the design that system perfomance has a failure rate of 19%. The time needed to find an alternative route other nodes is 25 seconds and maximum range of the XBee series 2 in a confined space is 27 feet.

Keywords: *Wireless Sensor Network, Microcontroller*, LM35, MQ-7, LCD, *GUI*, Mesh Topology, Xbee *Series* 2