ABSTRACT

Gas is one of the four basic forms of material besides solid and liquid. Pure gases can be composed of atoms (e.g. inert gases such as neon), element molecules that are made up of one type of atom (e.g. oxygen), or compound molecules that are made up of a variety of atoms (e.g. carbon dioxide). One of the types of gas is LPG. LPG gas or often called Elpiji in Indonesian is a flammable mixture consisting of hydrocarbon gases, most often propane, butane, and propylene. LPG gas is mainly used for household needs such as cooking nowadays. The form of application of LPG gas for home cooking needs in Indonesia is in the form of cylinders with sizes ranging from 120 grams (portable gas) to 12kg which are distributed. The use of LPG gas has a risk of leakage which is harmful to users and the surrounding environment. LPG gas leaks can cause explosions, house fires, and toxicity due to inhaling large amounts of gas for too long.

This final project is one of the solutions that can prevent the things described above. This final project will develop an LPG gas leak detection device that uses the concept of IoT (Internet of Things). This device uses MQ-2 Gas Sensor to detect gas, a buzzer as notification alarm, and NodeMCU as a microcontroller connected to home Wi-Fi. The device will also be connected to the Android application by taking API data from the Blynk Cloud server which is also connected to the NodeMCU.

The test is done by spraying portable LPG gas cylinders at a certain distance. From the test results on the gas distance, the maximum effective distance of the sensor to detect a gas leak is 100 cm, with a device response time between 1 to 3 seconds. For the value of gas levels in units of ppm (parts per million) obtained in testing distances of 10 cm to 100 cm, it is on average 400 to 1024 (the maximum number of sensors), it can be concluded that the danger level of gas leaks is at 400 ppm. The application response time in capturing the amount of gas is approximately 1 second for each change in the amount of gas received.

This final project is expected to provide a sense of security for LPG gas users with access to notifications and monitoring whether there is a gas leak at home.

Keywords : Gas, LPG, leak, IoT, NodeMCU