ABSTRACT

All living creatures need air to breathe. The air has the following type of gas : Nitrogen (78%), Oxygen (20%), Argon (0.93%), Carbon dioxide (0.03%), Hydrogen, Methane, Helium, and Neon. Oxygen is a major component in the life of living creatures including humans. This composition is a normal state which support the human life. Because of human activities that are not environmentally friendly, the composition of the air quality decreases.The degradation of quality can be physical properties and chemical properties. Examples of changes in characteristic of the composition of nitrogen and oxygen will form Nitrogen Dioxide (NO_2).

If the NO_2 level is too high above the Air Pollution Standard Index, it will result in negative impacts, namely: the occurrence of acid rain (Global Warming), causing breathing difficulties for people with asthma, cough for the children and the elderly, reducing visibility with other respiratory problems, and can cause death. Therefore, the action for reducing the level of Nitrogen Dioxide must be taken with greening solution. In addition, the public needs to know the safe level of Nitrogen Dioxide which good for health.

In this final project, a device to detect the levels of Nitrogen Dioxide in the air was made to show the conditions at the time and output values in ppm of nitrogen and sounds an alarm if excessive levels of nitrogen dioxide. This system design used Nitrogen Dioxide sensors TGS2106 to detect Nitrogen Dioxide level, LM35 for temperature sensing, and ATMEGA microcontroller 8535 to process the output of the sensor. For the display method, LCD in combination with LED and alarm was used.

The design and realization of these devices can detect the levels of NO_2 in the air with a good accuracy with error detection 0.01 % which comparate of these devices and air quality monitoring stations.

Keywords : *AVR ATMEGA 8535, TGS 2106, LM 35, NO_2*