**ABSTRACT**

Gas sensor system usually using Quartz Crystal Microbalance (QCM) or Taguchi Gas Sensor (TGS) for detecting any gas in the air. This gas sensor system needs low humidity air, because high humidity can interfere the result of the sensor. The purpose of using silica gel in gas sensor system is to lower humidity in the air. Silica gel has blue color at first and slowly become to red. Red silica gel cannot absorb water vapor anymore and must be dried in temperature between 120°C to 150°C until it changed to blue again. Design of this silica gel dryer in gas sensor system is very usefull because user of gas sensor system will not check condition of silica gel anymore. The system will automatically recycle red silica gel so it can be used again. This system using color sensor TCS3200 for detecting red intensity of silica gel. For detecting temperature in the dryer system pt-1000 temperature sensor is used. The output of this two sensor is used as feedback in PID control system to control temperature of the heater. Data acquisition and process is calculated in PIC16F877A microcontroller and displayed in the LCD. The result of this design showing that silica gel has been successfully recycled. In several test, the ability of silica gel to absorb humidity is back to normal which can be down to 12%.

Keyword: Color Sensor TCS3200, PIC Microcontroller, Silica gel.
#Halaman ini sengaja dikosongkan#