

ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is little known in the community, WHO says COPD is the 4th leading cause of death in the world. This disease can cause chronic pain and death of individuals around the world every 10 seconds. Symptoms of COPD include increased respiratory frequency (RR) and decreased oxygen saturation (SpO₂) levels in the blood. The purpose of this study is to design a device that can monitor oxygen saturation in human blood in real time. The contribution in this study is a system that shows measurement data that is constantly updated in the form of SpO₂ values and graphs showing the stability of the SpO₂ values to time. To make this monitoring tool easier to use, a real-time monitoring tool has been made, equipped with data storage during the process of monitoring oxygen saturation in patients. The design of this tool uses a finger sensor to detect the level of oxygen saturation in the blood which has an analog output then is conditioned in the PSA (Analog Signal Conditioning) circuit. Then the PSA output will be processed in ATmega328P and sent via Bluetooth HC-05 to PC (Excel display). The measurement results obtained are the percentage of normal SpO₂ on each respondent do 5 measurements done wirelessly. This research can be implemented in patients with COPD so the patient's condition can continue to be monitored through values and graphs that are stored and displayed on a PC.

Keywords: *Respiratory Monitoring, COPD, Oxygen Saturation, Wireless, Real Time.*