ABSTRACT

Damage to the oxygen regulator can cause the distribution of oxygen to the patient's body to be obstructed thereby endangering patient safety. The purpose and contribution of this research are to design a tool for monitoring the volume of oxygen that is equipped with the detection of regulator damage and is equipped with a central system and data storage to make it easier for users to document. For regulator damage to be identified quickly, a safety regulator system is created. The way these module works uses a flow sensor to detect the velocity of oxygen flow compared to a level sensor in the form of a photodiode and infrared. Furthermore, the value comparison between the level sensor and the flow sensor is used to detect damage to the regulator. The testing of this tool is done by comparing the reading of the flow sensor value with standard measuring instruments. From the measurement results of the 1Lpm level sensor error 1.8%, the 2Lpm level sensor error 2.8%, the 4Lpm level sensor error 2.7%, the 6Lpm level sensor error 3.1%, the 8Lpm level sensor error 3.6%, and the 10Lpm level sensor error 5.4%. Based on the test results, the flow sensor has the highest error of 5.4%. The results showed that the tool is feasible to use, because in the "Decree of the Minister of Health Number 118 of 2014 concerning Compendium of Medical Devices" the allowable deviation value in the flowmeter's accuracy is ± 10%. The results of this study can be implemented in an oxygen regulator device for patient safety due to regulator damage.

Keywords: Oxygen Regulator, Safety, Flow Sensor, Level Sensor