ABSTRACT

Extreme climate change and air pollution caused by dust, smoke, vehicle exhaust gases and industry can increase the chances of contracting various infectious diseases caused by viruses, especially respiratory infections. The aim of this study was to develop a pulmonary and inexpensive function measurement system, the spirometer, given the importance of monitoring respiratory rate as an indicator of the patient's lung health status.

The design of a portable spirometer with MPX5100DP pressure sensor has been carried out as a transducer. This design aims to determine lung volume, namely Forced Vital Capacity (FVC) and Forced Expired Volume in one second (FEV1) to detect the patient's lung health condition. The working principle of this tool is that blowing is done by the user on the venturimeter pipe that has been connected to the MPX5100DP pressure sensor which is then processed by the Arduino microcontroller, the processing results will be displayed on the LCD and SD card memory for storage.

The results of measurement data on respondents with a comparator spirometer calibrator then there is an error FVC 0.98% 5, FEV1 3.83% and FEVI / FVC 2.50% This value is still below the error tolerance limit of 5%.

Keywords: Lung volume, MPX5100DP sensor, Spirometer