

ABSTRACT

The lungs are organ that human have for breathing which are included in one of the vital organs of humans. Respiratory rate in humans shows the health level of the lungs. To measure the respiratory rate in humans, one can use the Respiratory Inductive Plethysmography (RIP) method. This method makes use of the movement of the chest cavity and abdominal cavity to count when a person is breathing. One of the sensors that can be used to measure this movement is piezoelectric. This sensor will detect changes in pressure in the movement of the chest cavity and abdominal cavity due to breathing and then convert it into voltage. The pressure change is calculated for one minute to get a value for the respiratory rate. By using this method, writer made a respiratory rate measuring device designed to be wearable. In this study, testing was carried out on four participants with different Body Mass Index (BMI) at rest five times. It was found that this device was able to accurately detect the respiratory rate of participants with a BMI value <22 (error = 0%). Meanwhile, BMI > 22 has an error of 25.8% -37.5% due to the body shape that is not ideal which causes a crease in the stomach of the participant so that detection by the sensor is inaccurate.

Keyword : respiration rate, piezoelectric, RIP.