

ABSTRACT

Medical device technology is developing very rapidly along with the development of information technology (Ministry of Health, 2015). The government also continues to encourage the development of the medical device industry to spur national competitiveness (Ministry of Industry, 2015). Currently, as many as 65 domestic producers have been able to produce medical devices, one of which is capable of producing wheelchairs (Ministry of Industry, 2015). A wheelchair is one of the medical devices used to help patients who have problems walking, especially to help people with disabilities and elderly people who are not strong enough to walk.

For this reason, it is designed to implement a dc motor controller on an automatic wheelchair with the aim of making it easier for users to move freely without anyone pushing from behind. In order to be able to move in all directions, a dc motor is needed as a driver and to control the speed of a dc motor using an H-Bridge motor driver and a joystick to control the movement of the wheelchair.

The results of testing the implementation of a dc motor controller on a wheelchair that the wheelchair can already move according to the input direction, the user is difficult to control the wheelchair if the wheelchair speed is too slow. Based on the calculation data, the PWM 40 has the slowest speed of 0.31 m/s while the PWM 120 has the fastest speed of 0.83 m/s. It can be concluded that the wheelchair speed is influenced by the higher the PWM value, the faster the speed obtained. And based on the results of user load testing, a 40kg load has a travel time of 12.60s while a 70 load has a travel time of 45.01s. It can be concluded that the heavier the user's load, the slower the wheelchair travel time.

Keywords: Arduino, PWM, Motor DC, Wheel Chair