ABSTRACT

The Covid-19 pandemic is an infectious disease that has spread widely in the world. Starting from the city of Wuhan, precisely in China, this new type of virus has spread to various parts of the world causing the emergence of coronavirus disease 2019 or also known as COVID-19. Of course, this condition should not be taken lightly and left alone. This corona virus attacks the respiratory system and can infect anyone, be it babies, children, adults, and the elderly. The virus is transmitted through direct contact with droplets of sputum from an infected person (through coughing and sneezing), and by touching surfaces that are contaminated with the virus. Humans infected with this virus will experience shortness of breath or respiratory failure which can cause death. There are breathing aids in the form of a ventilator, currently circulating ventilators use the ambu bag type. The disadvantage of the current ventilator is that it still does not use intelligent control methods, so the need for air supply and airflow given to patients is not appropriate.

Therefore, this final project is designed to design a discrete PID (proportional, Integral, Derivative) blower type ventilator with mathematical modeling. This mathematical modeling is to represent and explain the systems that exist in mathematical statements. The design of this tool is done by making the realization of mathematical modeling. The value obtained will be processed using the Matlab application with discrete discrete PID control, so that it will produce the same output as the set point value.

In this final project, the mathematical modeling design is carried out using the Matlab application as an application to determine the value obtained, the blower as an air or oxygen driver. The input obtained from the blower speed will be processed using matlab, so that it can be displayed via graphic images. In the end, this final project produces a control design according to the technical specifications of the medical data.

Keywords*: Covid-19, ventilator, PID Discrete, Blower.*