

ABSTRACT

A pandemic is generally classified as a first epidemic, such as the spread of Coronavirus Disease 2019 (COVID-19) that exceeds the capacity of the epidemic. COVID-19 causes disturbances in human internal organs. The organs that are attacked by this Coronavirus are a group of organs and tissues that allow humans to breathe. Aids that can overcome these problems are ventilators that function to provide additional air or oxygen to the lungs of patients who have respiratory problems, currently circulating ventilators are Ambubag with bags to pump oxygen and pipes/valves that cover the nose and mouth. Ventilators are relatively expensive and have a high level of accuracy and the possibility of small errors by considering the feasibility of the ventilator to be used for patients with these disorders.

In this final project, a design realization of the PID (Proportional, Integral, Derivative) discrete blower type ventilator based on a microcontroller is made. Making is done with the realization of hardware and software. The input is given as a blower speed controller, on the ventilator using a discrete PID control as a controller using the specified sensor. The data obtained and then processed through Arduino with discrete PID control will produce the same output as the set point value and produce a good and fast system response and produce a small error probability.

In this final project, hardware realization is carried out using microcontroller, blower as oxygen and air activator in order to get additional oxygen and air assistance, pressure difference sensor and Hamilton flow sensor to get the pressure and volume values in the lungs and the process can displayed on the liquid crystal display. The potentiometer is useful as a regulator of the set point value and the buzzer will function to provide information when an error occurs. Making software realization designs using the Arduino programming language.

Keyword: *Blower, Coronavirus, PID Discrete, Ventilator.*