DEVELOPMENT MONITORING AND PID CONTROL OF AN ENVIRONMENTAL TESTING CHAMBER USING NODE RED

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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The market potential for testing machines for environmental conditions in Indonesia is very large, from the food industry, the cosmetic industry, the pharmaceutical industry, etc. These industries in their product development often experience problems in testing environmental condition test machines, because almost 100% are imported products and there are no locally made environmental conditions testing machines. This condition resulted in the author and the team taking the initiative to try to develop a test machine control system for environmental conditions that controls temperature and monitoring humidity, air pressure and CO gas in an environment as the main parameters in food testing. The test machine is designed using Raspberry pi zero w as a control device, and Node Red as an application for display control and monitoring that can be accessed remotely. The research conducted resulted in an environmental test machine that controls temperature using the PID method with an error rate of 0.375% with a value of Kp = 2.73, Ki = 0.1 and Kd = 1. with the concept of IoT control and monitoring chamber can be done remotely using the Node Red Software.

Keywords: Environtment Test Chamber, PID, Node Red, Monitoring, DHT22

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DEDICATION

I dedicate this work for my beloved husband and beautiful daughters who constantly encourage and inspire me, patiently wait as well as give the best prayers for my struggle.

Allah is the One Who created seven heavens ˹in layers˺, and likewise for the earth. The ˹divine˺ command descends between them so you may know that Allah is Most Capable of everything and that Allah certainly encompasses all things in ˹His˺ knowledge. (Q.S. At-Talaq : 12)

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The author realizes that this thesis is still far from perfect, so the writer is open to constructive criticism and suggestions. Hopefully this thesis can be useful for Swiss German University students in general and Mechanical Engineering (Mechatonics) students in particular.

Tangerang, January 2021

Suhartinah

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