EXPERIMENTAL STUDY OF THRUST PERFORMANCE FOR ONE-SINGLE STAGE SOLID ROCKET PROPELLANT

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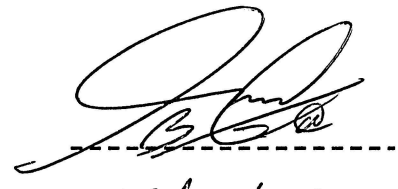
"I declare that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

Signed : 

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ABSTRACT

This project is more on the development and testing of a small rocket engine with its propellant. A rocket propellant can be categorized into three types that is solid, liquid and hybrid propellant. The types of propellant are differ due to its material, mixture and application. This project focuses on design and fabricates a low cost rocket engine by using solid propellants. It consumes safer chemical substances compared to conventional rocket engines. The ingredient of this solid propellant consists of Potassium Nitrate (KNO_3) as its oxidizer and Epoxy ($C_{15}H_{28}O_7$) as its organic fuel. The main advantage to develop and construct this project is because of the low cost and availability of overall raw materials. This rocket engine ignites easily with a black powder igniter. The main objective of this project is to design, fabricate and testing a solid rocket propellant. Then, the thrust performance of solid rocket propellant based on different dimensions can be determined. In this experiment, the thrust has been measured using Data Acquisition System software. Lastly, the result obtained has been compared with theoretical calculations before discussions were made.

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