



PROPELLER TEST STAND

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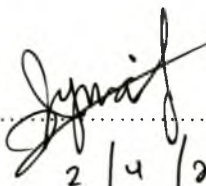
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“We declared that this thesis is the result of our own work except the ideas and summaries which we have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree.”

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ABSTRACT

One of importance parameters that determine the performance of an aircraft is the characteristic of the propulsion system. In designing an aircraft that uses propellers as the propulsive device, the availability of characteristics such as thrust coefficient, power coefficient and efficiency, which changes with advance ratio, are important to the designer so that accurate decision can be made.

Previous student have design the propeller test stand that can be used in the wind tunnel to get the propeller characteristics. We continue this project starting with calibrating the thrust and torque measurement plates and then testing in the wind-tunnel for three different types of propellers. However, when we began testing the propeller in the wind-tunnel using the propeller test stand, the data logger malfunctioned.

Our advisor suggested that we have to reduce our scope of the testing to static condition. To accomplish this objective a new test stand was successfully designed and fabricated using facilities available in the Faculty of Mechanical Engineering's Workshop. The test stand was designed for Super Stock Type-R electric motor. The maximum rotational speed of the electric motor is 7000 rpm.

From the results data and the graph plotted, it shows that the thrust force is increase when the rotational speed of propeller is increase and the diameter of the propeller become larger.

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