



A COMPARATIVE STUDY ON HYDROKINETIC TURBINE OF BLADE PROFILE

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PROJECT REPORT VERIFICATION

This report entitled "A COMPARATIVE STUDY ON HYDROKINETIC
TURBINE OF BLADE PROFILE" has been submitted and reviewed as to meet the
conditions and requirements of project writing.

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"We declare that this report is our own work except each piece that we have explained the source"

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ABSTRACT

The objective of this project to design a prototype of river turbine that can convert hydrokinetic energy to electric and to compare the outcome from 3 different types of blade profile. This turbine is design for river application which are using river flow stream to drive the turbine. It operate in a shallow river with the depth range from 1 meter to 1.5 meter. The turbine must be submerge to able it operate smoothly. By using this results, the highest reading of which type of blade profile by producing electricity are the most suitable to solve the problems. Blade with radius 105° shows the reading of the voltage while the first and second design show difficulties in functioning to rotate smoothly and reading the data. This studies shows the blade with radius 105° show potential and can be apply to the turbine to generate electricity. Factor such as stream velocity, water flow, blade and frame design and depth of the river is the main factor that will affect the efficiency of the blade in generate electricity. River turbine has a great future as an alternative way in generating electricity especially in off grid electricity location.

ABSTRAK

Objektif bagi kajian ini ialah untuk mereka cipta sebuah prototaip turbin sungai yang mampu untuk menukar tenaga hidrokinetik kepada tenaga elektrik dan untuk membandingkan 3 jenis bilah turbin. Turbin ini direka untuk aplikasi sungai yang menggunakan aliran sungai untuk menggerakkan turbin. Turbin ini beroperasi dalam sungai yang cetek sedalam 1 meter sehingga 1.5 meter sahaja. Ianya juga perlu ditenggelamkan agar turbin itu berfungsi dengan lancar. Keputusan bacaan yang tertinggi diantara bilah turbin yang dikaji merupakan bilah yang paling sesuai untuk digunakan sebagai turbin sungai. Bilah turbin yang mempunyai radius 105° menunjukkan bacaan voltan yang tertinggi manakala bilah yang pertama dan kedua menunjukkan kesukaran untuk berfungsi untuk berputar dengan lancar dan bacaan data. Kajian ini menunjukkan bahawa bilah turbin yang ketiga menunjukkan potensi yang baik dan dapat diaplikasikan keatas turbin untuk menghasilkan elektrik. Antara faktor seperti halaju aliran, aliran sungai, reka bentuk bilah dan turbin, dan kedalaman sungai tersebut merupakan faktor-faktor yang mempengaruhi efisiensi agar bilah tersebut menghasilkan elektrik. Turbin sungai mempunyai masa hadapan yang cerah untuk dijadikan sebagai cara alternatif dalam menghasilkan elektrik khususnya kepada kawasan pedalaman yang sukar memperolehi elektrik.

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