



**TO ANALYZE THE POWER OUTPUT OF A FREE FLOWING WATER TURBINE**

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## **ABSTRACT**

Malaysia as a developing country is reported to perform well in economy and industrialization. As the same time, the usage of energy is increasing year by year. In the year 1995, the total demand of energy was 22,164 ktoe and it increased to 25,558 ktoe by 1998. the main sources of energy are crude oil and petroleum products, which are depletable energy resources. Although Malaysia currently produces adequate oil for local consumption, but in the run, the country needs to develop its renewable energy resources in order to ensure the sustainability of energy supply.

One of the renewable energy sources is hydropower. In this thesis, we are concentrating on a small scale power generation, which offers the prospect of long term sustainable energy. A free flowing water turbine, which we has been analysed, extracts energy from the free flowing water into electrical energy. It is applicable for low demand of electricity, such as in rural areas or for small industries.

To analyze the power output of the turbine, we had made a test run at Hulu Yam, Batu Caves, Selangor. From the test we found Higher power output can be generated with the higher velocity of river water, which means the blades rotations per minute increase. To increase river velocity, casing is used to converge the water through the turbine, therefore the blades will

rotates at higher rate. However, there will be no power output produce when there is no velocity of the river occurs.

Furthermore, we also found that the Free Flowing Water Turbine is applicable in Malaysia, especially in the rural areas, where there are low electricity demands. But for the economical potential, Free Flowing Water Turbine seems to have some attraction. Only micro-hydropower is cheaper, but cannot be considered as its require a dam, while the Free Flowing Water Turbine does not.

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