

***Evaluation of Rotating Speed Performance on Undershot Waterwheel Prototype  
With Modified Pulley Generator***

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**ABSTRACT**

*One source of energy that is easily available and relatively inexpensive is water. The potential for hydropower that can be used as a renewable energy source in Indonesia is 94.3 GW. Where water stores potential energy (when water falls) and kinetic energy (when water flows). Power obtained from running water is called hydropower, energy derived from water can be utilized in the form of electrical and mechanical energy. With this potential, it is necessary to create supporting tools to take advantage of the presence of water, therefore an evaluation of the development of the undershot water wheel prototype is carried out so that performance is maximized. This research was conducted at the Energy and Mechanical Workshop, Jember State Polytechnic from April to June 2023 with the method of replacing several components that were evaluated, there were 2 data treatments, namely without load and with load whose data would be compared with the results of previous research data. The results of this study produced data on the undershot water wheel prototype which had been modified using no-load treatment with variations in large opening valve activities getting high scores in data collection for the water discharge value of 0.744125326, 705.9 Rpm water wheel rotation, generator rotation 3,500 Rpm , and a rated voltage of 218 V. Meanwhile, the treatment with a load produced the highest value for the water wheel rotation of 598.2 Rpm, generator rotation of 2,146 Rpm, AC voltage value of 222 V, 0.1 A for current, frequency of 53 Hz, power of 22.2 W, and the discharge remains the same.*

*Keywords : Waterwheel, Performance Evaluation, Pulley*