

***DESIGN OF SAVONIUS WATER TURBINE COMBINATION OF NACA
0012 HYDROFOIL USING DEFLECTOR***

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ABSTRACT

Energy demand in Indonesia is currently still dominated by energy based on fossil fuels. The use of fossil energy sources causes environmental damage and the numbers are dwindling. PLTPH is a solution for producing electrical energy needs, especially in areas that are not yet reached by electricity. This study aims to provide an effort to meet electricity needs and to determine the effect of adding Naca hydrofoil 0012 on the performance of the resulting savonius turbine. This research was conducted on August 25, 2020 at Umbulrejo Hamlet, Sumbermujur Village, Candipuro District, Lumajang Regency, East Java by utilizing irrigation flows. The research method used is an experimental method by making turbines based on potency. The results of the turbine manufacture are then tested for turbine performance. The results showed the effect of the addition of value on the performance of the resulting turbine, the addition of value caused the maximum water flow to hit the turbine blade which increased the turbine rotation, voltage, torque, frequency and power produced. The best research results were found in the addition of Naca hydrofoil 0012. The test results used a 120 watt HE lamp load with a voltage of 127.7 volts, a current of 0.27 ampere and a torque of 206 rpm. The resulting turbine performance has an efficiency of 44% of the potential power of 154 watts.

Keywords: *Energy, Naca hydrofoil, Savonius, Performance.*