

## ABSTRACT

Renewable energy is the energy derived from nature and can be produced continuously such as water energy as a micro hydropower plant. The development of a micro hydropower plant is to utilize the potential energy of water flow that has a certain head and discharge to be converted by turbines and generators into energy electricity that can be used in the development of Archimedes Single Screw Turbines. Archimedes Single Screw Turbine is a type of turbine that is capable of operating with low head 1-15 meter in river flow and irrigation. The purpose of this study is to design, make Turbine Archimedes Single Screw construction and conduct turbine testing and determine the performance of Archimedes Single Screw Turbine based on the effect of water flow discharge on rotation, torque, power, and optimum efficiency so that it can determine the right turbine design and performance well. The Archimedes screw turbine is being explored all around the world as one of the best candidates for efficient electricity generation at low head and low flow rate sites. But there is a lack of research in identifying the best screw configuration for achieving maximum output power and efficiency at such low head and low flow rate sites.