

COMPARATIVE ANALYSIS OF ARCHIMEDES SPIRAL LIAM F1 TURBINE POWER IN WIND POWER PLANTS AND MICRO HYDRO POWER PLANTS

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ABSTRACT

Nowadays, there are many developments of power plants that have very minimal side effects on the environment, the development of renewable energy plays a very important role in this regard. Recently, there has been the development of a new model of wind turbine, namely the Archimedes spiral liam F1 turbine, but research on this turbine has not been too much, therefore this study discusses the development of the Archimedes spiral liam F1 turbine model by comparing the Archimedes spiral liam F1 turbine in wind media and water media. In the study conducted comparing the use of the Archimedes spiral liam F1 turbine in wind media and water media, the results obtained in this study were that using the Archimedes spiral liam F1 turbine in wind media was more efficient than in water media. Testing the Archimedes spiral liam F1 turbine in wind media using a gear ratio comparison and without using a gear ratio comparison, it can be concluded that the results using a gear ratio comparison are better than without using a gear ratio, with a wind speed of 4.9 m/s producing 0.010428 W of power in conditions without a gear ratio and 0.0705483 W in conditions with a gear ratio of 1: 3. Testing of the Archimedes spiral liam F1 turbine in water media can only be done at a maximum speed of 1.3 m/s because at that speed the turbine is unstable and vibrates. At a water speed of 1.3 m/s it has not produced electricity either using a gear ratio comparison or not using a gear ratio comparison. The results of the comparison of testing the Archimedes spiral liam F1 turbine in wind and water media show that the results of use in wind media are better than in water media. Because in this Archimedes spiral liam F1 turbine, the density of water is denser than the density of wind, the Archimedes spiral liam F1 turbine model also affects the flow rate in water media.

Keywords: *Archimedes Spiral Liam F1 Turbine, Archimedes Screw Turbine, Water Media, Wind Media*