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Optimization of Tesla Turbine using Computational Fluid Dynamics approach

Abstract

A Tesla turbine is developed in order to utilize the potential energy within household water supply and convert to electricity energy without significant head loss. Pressure within the water supply having higher potential energy compared to the energy needed to reach the reservoir tank. This extra potential energy can be utilized and convert to useful energy before it being waste after reach reservoir tank. The development of Tesla turbine is carried out to determine disc size, disk gap and number of disc base on theoretical calculation of Tesla turbine. Optimization is done by using Computational Fluid Dynamics (CFD) software package. Actual performance analysis for prototype based on RPM and torque also conducted. After the optimization, we observed that the Tesla turbine design yields torque of 0.0330N.m with an efficiency of 10.7%.

Keywords — Tesla Turbine, green energy, energy convertion, Computational Fluid Dynamics