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INVESTIGATION OF THE TECHNICAL AND ECONOMIC VIABILITY OF THE INSTALLATION OF WATER TURBINE AT OTAMIRI

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ABSTRACT

This study is on the valuation of the practicability of gravitational water vortex power plant (GWVPP) installation to produce electricity using the low head Otamiri river passing through FUTO. Simulation using six different diameter of water discharge orifice in a 0.3m3 prototype vortex basin shows that drain outlet diameter of between 40 to 45mm which is 13 to 15 percent of the entire prototype vortex basin yielded the highest velocity water vortex stream. Also, the choice of low weight, high strength and corrosion resistant polytetrafluoroethylene (PTFE) blade materials enabled high torque of the turbine blades. This velocity and improved blade force together with the low river head andflowrate enabled the (GWVPP) water turbine to achieve the needed rpm to generate significant amount of electricity

KEYWORDS: *Gravitational Water Vortex Power Plant, Vortex Basin, Polytetrafluoroethylene*