Are Tesla Turbines Worth it? A Deep Dive Into Tesla Turbines Viability in the Hydroelectric Industry

Masters, Mitchel (School: Lake Crystal Wellcome Memorial)

The purpose is to see if a Tesla Turbine can survive in the modern world as a source of small scale power generation, when compared to modern Pelton turbines. First I made the Tesla Turbine using CDs and washers making the distance between the blades exactly three millimeters. Then I found the total potential energy of the water at each of the possible flow rates and tested each of the Turbines five times at all speeds. The Tesla Turbine performed better than the Pelton Turbine at lower flow rates with the gap only widening between the two the lower the flow rate got. While at higher flow rates the Pelton Turbine performed better with a difference of about 3% above the Tesla Turbine. This research can be useful for producing micro-hydro turbines where laminar flow is common and where low water flow is commonplace.

Awards Won: