Go with the Flow: Manipulating the Components of a Tesla Turbine in Order to Better Apply Them to Certain Situations

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My experiment was designed to determine if increasing the diameter of the exhaust ports in a Tesla Turbine correlates with the torque of that turbine, in order to optimize Tesla Turbines. I hypothesized that increasing the diameter of the exhaust ports would have a direct correlation to the torque of the turbine. I built the turbine housing out of plexiglass and a cross section of PVC pipe. Three turbines were constructed with varying diameter exhaust ports (9.525 mm, 6.35 mm, and 3.175 mm), an aluminum rod, hard drives, and nylon flat washers. Using a tachometer to record RPMs and an air compressor to power each turbine, I conducted two sets of 10 tests for each turbine, for a total of 30 tests in each set. I attached two zinc-plated steel tension springs to a nylon flat washer positioned around the shaft as resistance to test torque in the second set. I averaged the RPMs recorded for each turbine to determine if the different size exhaust ports had any relationship to the torque of the turbine. I determined that the turbine with the largest exhaust ports was proportionally less affected by the resistance than the other turbines This showed that Tesla turbines with larger exhaust ports run at higher speeds with higher torque. I also discovered that Tesla turbines with smaller exhaust ports run longer at slow speeds when the same resistance is applied. These results allow Tesla Turbines to be optimized for individual applications.