



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

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| Name(s) Jack Garza | Project Number J0310 |
| Project Title The Effect of Weight on Flywheel Performance | |
| <p style="text-align: center;">Abstract</p> <p>Objectives The purpose of this experiment was to find out which weight would make the flywheel spin the longest.</p> <p>Methods Timer, 3D printer, computer, camera, tachometer, various fishing weights, a flywheel. Spun up flywheel, cut power, place tachometer over spinning flywheel, recorded spin-down time, repeat 5 times with varying weights.</p> <p>Results The average spin-down times were 55.14 sec for the 2 oz flywheel, 45.83 sec for the 1.5 oz flywheel, 35.28 sec for the 1 oz flywheel, 24.43 sec for the 0.5 oz flywheel, and 15.44 sec for the flywheel without added weight. The heaviest flywheel spun for 39.7 seconds longer than the lightest flywheel.</p> <p>Conclusions The increasing spin-down times as a function of increasing flywheel masses do support my hypothesis that if the flywheel is heavier it will spin for a longer time. By increasing the mass of the flywheel at the edge of the flywheel, I increased its rotational inertia. This in turn increases the energy of the spinning flywheel and causes it to spin longer. Although I was limited by the size of the 3D printer, I was able to maximize the amount of energy with the spoke design.</p> | |
| Summary Statement I designed and 3D printed a flywheel that allowed me to test the effect of increasing flywheel mass on spin-down time. | |
| Help Received My Dad helped me set up the 3D printing and Steve Errea, a family friend, helped with the understanding of the application of flywheels. | |