

Jeffrey King

Junior Division Engineering

Wing Designs: Who's At The Top?

The purpose of this project was to find the most efficient wing design. I hypothesized that if swept wings, wings with winglets, and normal wings are compared, then wings with winglets will be most efficient. This is because they are made to take advantage of the wingtip vortices, one of the main causes of drag. The experiment involved testing 3 scale wings in a wind tunnel. For each wing, I set up the wing, turned the scale on and zeroed it, turned on the wind tunnel, recorded the data, and turned off and undid everything. The data collected did support the original hypothesis. I found that wings w/ winglets have the most efficiency with 2.3 grams of lift and 0.7 grams of drag. The swept wings generated 0.6 grams of lift and 0.5 grams of drag. The control wing had 1.5 grams of lift and 0.3 grams of drag. These findings lead me to believe that winglets are the best choice for low speeds. However, no conclusions can be drawn for higher speeds.