

**Project Instructor:**

David Willis, University of Massachusetts Lowell

**IAB Mentors:**

Neal Fine, Aquanis

**Student Researchers:**

Jessica Ferguson, Richard Horan, Michael Floss, Antonio Monteiro, Joshua Dollen, Corey Berube, David Church, and Robert Monteagudo, University of Massachusetts Lowell

This Capstone Design project examined different designs of Gurney flaps for wind turbine blades using computation fluid dynamics and wind tunnel experiments. Gurney Flaps have been demonstrated as a viable solution to increasing the efficiency of aircraft wings, race car spoilers and wind turbine blades. However, previous research has only examined the Gurney Flap height, length and installation location. This work examined different Gurney Flap shapes to determine increases in both efficiency and lift force. In much of the previous Gurney Flap research, a simple ninety-degree tab is used as the aerodynamic actuator; however, in this project different Gurney Flap profile shapes are examined, including convex and concave designs. Initial results indicate that convex curves yield improved aerodynamics efficiency and performance.

