



## Colorado Science and Engineering Fair

## 2025 Individual Project Abstract Form

**Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.**

Title of Project: Engineering a Homemade Wind Tunnel to Test Airfoil Designs

Finalist's Name: Connor Knight

School and City: East High School, Pueblo

Sponsor's Name: Sharon Knight

Category: Engineering

Division: Senior (grades 9 - 12)

Abstract (250 words or less):

The purpose of this project was to create a wind tunnel that would be able to test for the differences in lift and drag between different airfoil designs. My problem statement was that I need a wind tunnel that will accurately measure lift and drag for airfoils that I create because I want to learn how to design more efficient airplanes.

I had four engineering requirements for this project. First, the wind tunnel needed to have a high enough CFM (Cubic Feet Per Minute) to produce measurable results. Next, the airfoil needed to be stable, not spinning, when the wind tunnel was active. Then, the airfoil designs needed to fit securely to the tunnel's sensors to be accurately read. Finally, a computer software program needed to be capable of measuring the output of the sensors.

My final wind tunnel design met all four requirements and accurately measured five airfoil designs for 30 seconds each. I know that this wind tunnel works because I could precisely and measurably see differences between the different airfoil designs.

These findings lead me to believe that in the future I can use this wind tunnel to test wing designs. After college, I want to be an Aerospace engineer, so this wind tunnel will help me learn more about the field and design more efficient planes.

*I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.*

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**