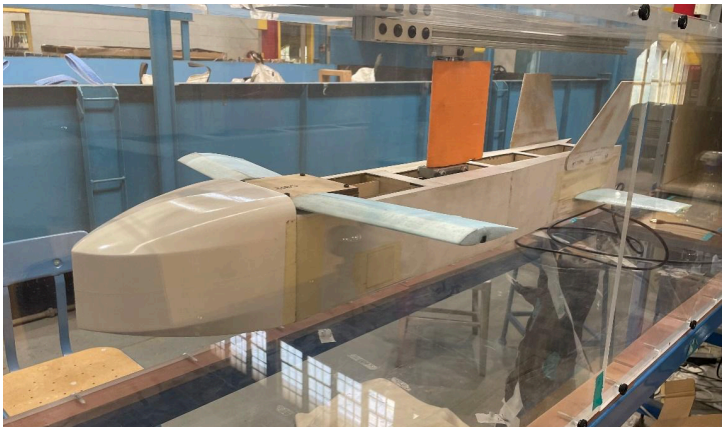
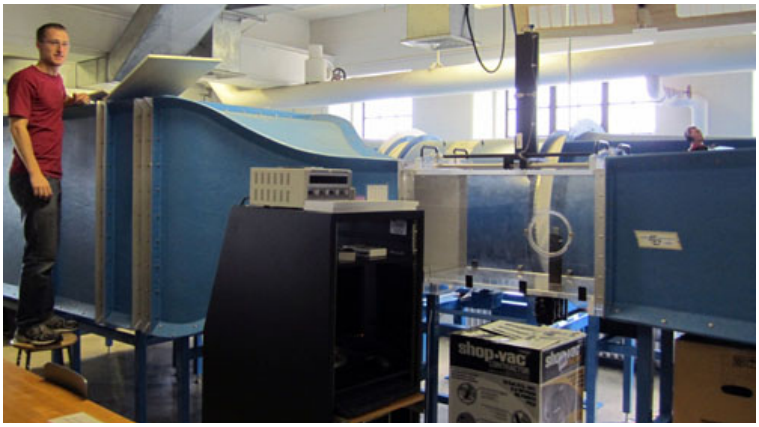
ABYLAIKHAN MUKHAMEJANOV

MECHANICAL ENGINEERING AT THE LEHIGH UNIVERSITY

abylaikhan.mukhamejanov@gmail.com
linkedin.com/in/abylaikhan-m/
+1 (484) 353-9865

WIND TUNNEL DRONE TESTING - AEROTARGETS INTERNATIONAL





What?

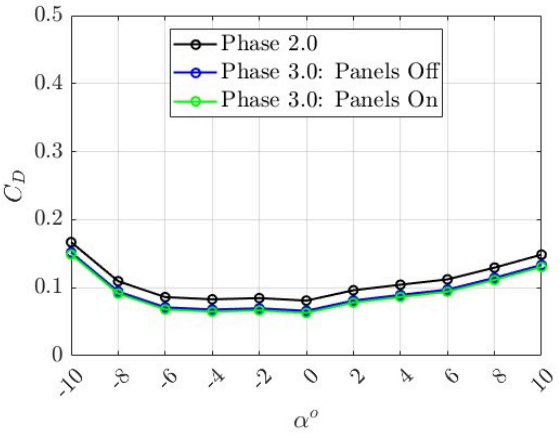
- **Scaled down a military-use drone** to perform **tests in a wind tunnel** to evaluate performance characteristics.
- Splited experiment into 3 phases focusing on (1) preliminary **aerodynamic stability** studies, (2) a scaled up model at a higher Re used for extensive drag tests with panels off and (3) with panels on.

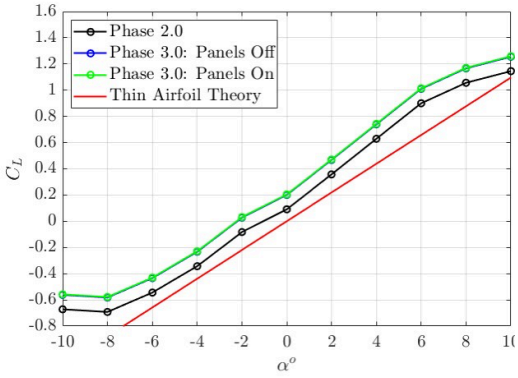
How?

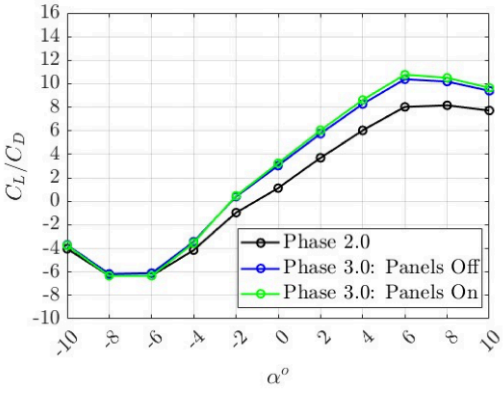
- **Build a 4-bar linkage structure** that allows change to all angles needed.
- Used **SolidWorks** to scale down and alter model for **compatibility** with force sensor / wind tunnel.
- Utilized an NI DAQ card and **MATLAB** to **acquire and process data.**

Results

- Phase 1 revealed that the model is **dynamically stable** in both pitch and roll motions around its CG and weakly stable in yaw.
- Phase 2 and 3 showed a **lower drag coefficient**, increasing its L/D ratio.
- Communicated with AeroTargets engineers to recommend fuselage design modifications, **achieving a 10% drag reduction.**







AEROTARGETS INTERNATIONAL