

Tonsak Konsap

Final-Year Mechanical Engineer | Chulalongkorn University

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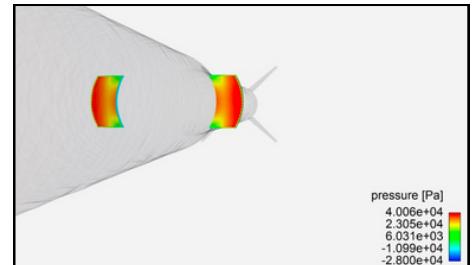
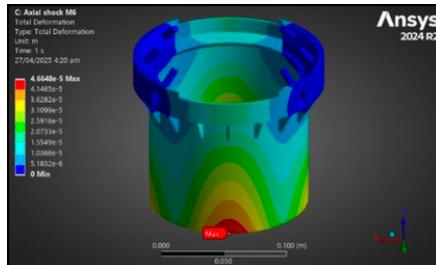
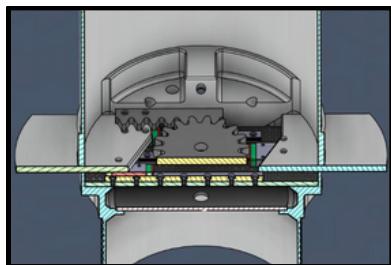
High-Power Sounding Rocket | CURSR-IV



Serve as a Head of Structural Rocket Engineer in Chulalongkorn University High Altitude Research Club (CUHAR), Awarded 3rd place trophy for the 30K COTS category in the International Rocket Engineering Competition (IREC) 2025.



Designed and manufactured both internal and external structural of the rocket structures, and optimizing for simplified assembly process.



- Researched and designed an airbrake mechanism driven by a gear and rack system using Autodesk Fusion 360.
- Conducted Finite Element Structural Analysis to assess stress and deformation at critical locations using ANSYS Static Structural.
- Performed computation fluid dynamics (CFD) analysis to evaluate the drag force on the airbrake vane during high-altitude flight using ANSYS Fluent.

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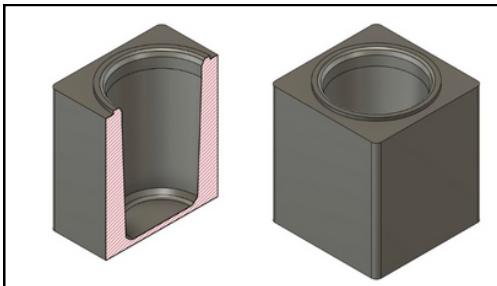
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- Designed and produced FDM 3D-printed molds for resin infusion composite parts such as tailcone and transition fairing.
- Manufactured composite parts through wet hand lay-up, mold forging, and resin infusion techniques.



- Experienced with the O-5500 solid rocket motor, including design, assembly, and structural analysis processes to achieve maximum efficiency.

- Assembled and integrated the complete rocket system (both internal and external) as part of a professional team.



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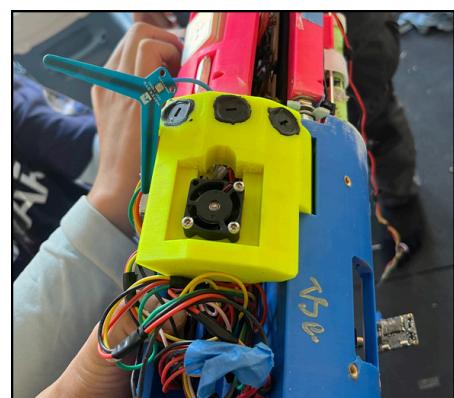
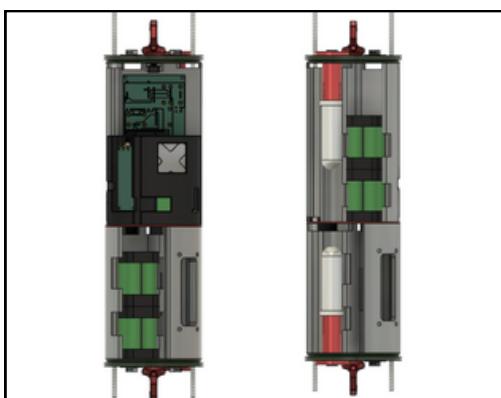
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High-Power Sounding Rocket | CURSR-III



Serve as a Structural Rocket Engineer in Chulalongkorn University High Altitude Research Club (CUHAR), completed the 30K COTS category in the Spaceport America Cup (SAC) 2024.



- Designed the avionics bays, aim to support and protect the crucial electronic flight components
- Designed the internal components, camera holders, jigs, and fabrication mold using Autodesk Fusion 360.
- Manufactured internal components and prototype testes with FDM 3D Printing using ABS plastic.
- Assisted with the design of an electronic cooling system and Turn-key mechanism for the avionics bay.

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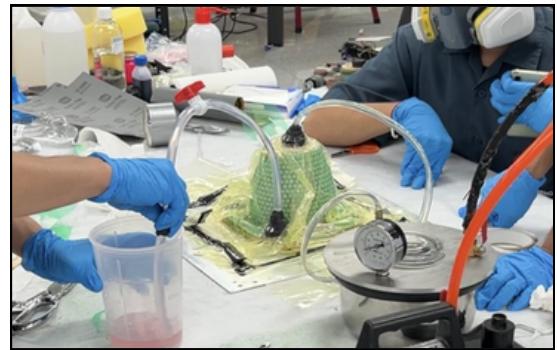
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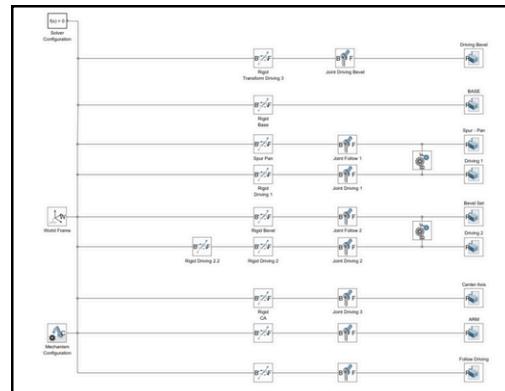
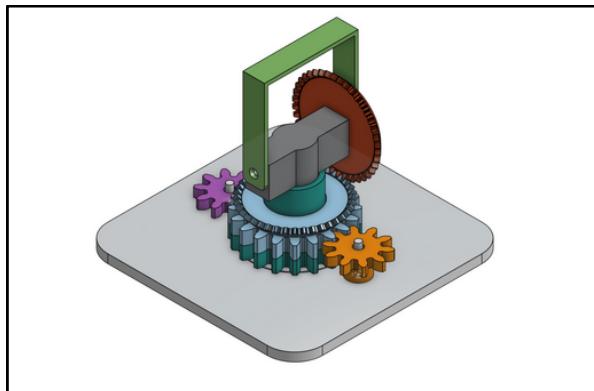
High-Powerd Sounding Rocket | CURSR-III



- Learned fundamental of Basic 3-axis CNC router, and manual milling machine.
 - Manufactured the rocket airframe using lathe machine, milling machine, band saw, and machine power tools.

- Assisted with composite team in the manufacture of composite components, which were aerodynamic parts (such as tailcones and camera shrouds) manufactured using compression molding, forging, and the resin infusion process.

2-DOF Thrust Vectoring Control



- Developed a 2-DOF thrust vector control mechanism using gear mechanisms and FDM 3D printing with ABS plastic

- Performed a MATLAB/Simulink analysis to analyze the motion of thrust vectoring using a pair of DC motors.

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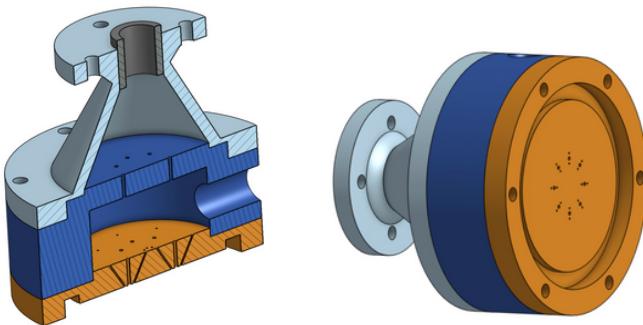
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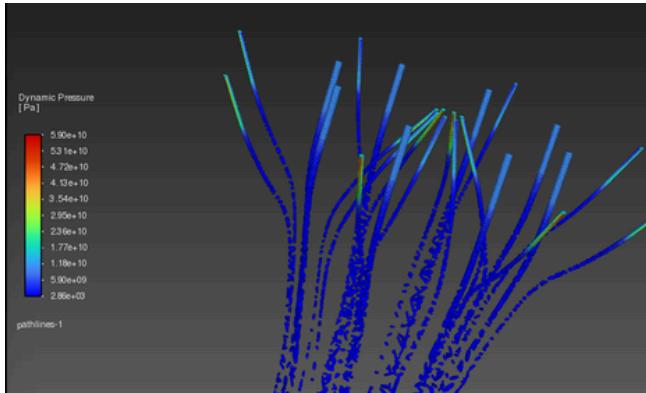
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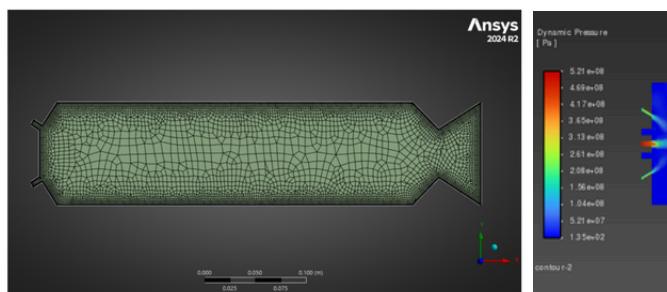
CFD Modeling and Design Optimization of a Triplet Impinging Injector for Enhanced Spray Combustion



- Conducted iterative optimization of impingement angle and orifice array of an F-O-F triplet impinging injector for maximum mixing efficiency using Python and MATLAB scripting, followed by CAD development in Onshape.



- Performed computational fluid dynamics (CFD) analysis to investigate the cold-flow characteristics of a triplet impinging injector.



- Generated an optimized mesh for the 2D combustion section, including the injector, chamber, and nozzle.
- Utilized CFD-based hot-fire simulations to analyze pressure distribution and mixing efficiency using ANSYS Fluent.