Evan Boyd BASc (Mechanical Engineering)

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Profile

A mechanical engineer with experience in designing pressure vessels, reading and writing technical reports, drafting, and estimating project costs

Evan enjoys seeking new challenges and opportunities to learn, and develop skills. As a mechanical engineer, with a passion for solving complex problems, and finding innovative solutions, Evan's primary interest has been in fluid mechanics. Evan's knowledge-set has been expanding while working as a Mechanical Designer in the filtration industry. In this role Evan has gained experience with analysing technical requirements to design, and estimate custom filter housings. While in university, Evan applied mechanical engineering expertise by joining some of the competitive engineering teams, rocketry and hyperloop.

Work Experience

Mechanical Designer / Estimator • Fil-Trek

Designed custom pressure vessels to house commercial filters and strainers
May 2022 - Present

- Setup a system to routinely get updated pricing from suppliers that was easier for Fil-Trek and the suppliers, reducing the time customers waited to receive quotes
- Developed products to be more cost effective and easier to manufacture
- Managed the production of filter housings from creating the drawings, purchasing materials, and overseeing the manufacturing process
- Created excel spreadsheets for engineers to quickly calculate component thicknesses, and weld size

Ski Instructor

November 2020 - Present • Chicopee Ski Resort
2014/2015 Season, 2015/2016 Season • Whistler Blackcomb

- Approached lessons with a client-focused attitude
- Led sessions to improve the skiing and teaching skills of other instructors

Electrical Test Technician • RWDI

Prepared and tested physical simulations in boundary layer wind-tunnels
March 2021 - November 2021

- Performed wind tunnel tests for building sciences, solar farms, bridges, pedestrian level wind studies, air quality, and sport aerodynamics
- Precisely set-up and calibrated the instrumentation used in the tests
- Diagnosed and fixed various technical issues
- Interacted with project managers, coordinators, and engineers to ensure project objectives and deadlines were met

Skills

- ASME Section VIII Division 1
- ASME B31.1 and B31.3
- Compress 8310
- CATIA V5
- SolidWorks
- Matlab, and Simulink
- Microsoft Office
- Excellent understanding of the principles of solid and fluid mechanics, heat transfer, and materials
- Enjoys working independently and collaboratively
- Strong analytical thinking, negotiating and problem-solving skills

Volunteer Experience

Technical Lead • University of Windsor Hyperloop Team 2020

A high-speed pod which travels through a low pressure tube with little air resistance

September 2019 - August 2020

- Supported a team of over 30 mechanical and electrical engineering students to design a pod with an optimised mass-to-power ratio, while meeting critical design milestones
- Reduced manufacturing costs by 50%, by manufacturing components in-house
- Orchestrated a work setting which valued communication between business and various engineering teams, accomplished by having bi-monthly meetings with the respective team leaders
- Organised tutorial sessions to introduce and familiarise team members with the simulation software (ANSYS) used throughout the design of the Hyperloop pod

Mentor • University of Windsor Rocketry Team 2020

September 2019 - August 2020

- Shared rocket designing and manufacturing expertise with members of the 2020 rocketry team
- Consulted on the design specifications and control systems for the air brakes
    - The air brakes were designed to control the coefficient of drag while approaching a target apogee (peak altitude) of 30,000 ft
    - Since, the rocket had no additional thrust after the launch, the control systems were designed using a feedback loop which allowed the target drag coefficient to become less conservative as the rocket approached the target apogee
    - Placement of the air brakes were analysed in order to minimise fluctuations to the centre of pressure, thereby, ensuring 100% rocket stability

Recovery Lead • University of Windsor Rocketry Team 2019
Placed 5th (out of 37 teams) in the Intercollegiate Rocket Engineering Competition (IREC)
September 2018 - August 2019

- Redesigned the parachute's deployment device to operate using black powder at the low pressure experienced at 30,000 ft *(High altitude parachute deployment systems traditionally operate using pressurised carbon dioxide, instead of black powder, which is used below 15,000 ft)*
    - The use of black powder reduced the weight of the parachute deployment device by 75%
    - Manufactured at no cost, in-house, with donated material
    - Assembly designed on CATIA V5 (Computer-Aided Design software)
    - Constructed and tested a prototype
        - The prototype parachute deployment device detonated in a custom PVC vacuum chamber to simulate the conditions expected during flight operations, multiple trials ensured complete black powder combustion at low pressure
        - Performed quality assurance checks to ensure sufficient structural integrity during flight operations
        - Developed simple specifications for easy reproduction
- Composed technical documentation for professors and competition judges
- Launched to a speed of 1.7 mach and reached an apogee of 26,500 ft
- Accurately modelled the rocket's descent velocity using Simulink (a graphical programming platform) by inputting the rockets specifications
    - Analysed data from the rocket's flight computer to confirm the descent velocity

Education

University of Windsor, Windsor, Ontario • Graduated October 2020
Bachelor of Applied Science, Mechanical Engineering (Honours)