Fiona Mackenzie

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SKILLS

CAD & 3D Modeling: Proficient in SolidWorks for design, FEA and simulation.
– Applied in *Torsional Stiffness Improvements on 4x Rowing Hulls* project.
Computational Fluid Dynamics (CFD): Experienced with ANSYS Fluent for fluid flow simulations.
– Used in *Leaning Tower of Pisa Wind Load Analysis* project.
Mechanical Testing: Hands-on experience with test setups and instrumentation; comfortable using tools and performing structured tests.
– Conducted vibration testing and carbon fibre material testing in *Torsional Stiffness Improvements on 4x Rowing Hulls* project.
Microsoft Excel: Proficient in data organization and analysis using formulas and charts.
MATLAB: Skilled in numerical analysis and automating engineering calculations.
Communication & Team Collaboration: Experienced in cross-functional teamwork, technical discussions, and sharing design feedback in collaborative settings.
Problem Solving & Process Thinking: Strong analytical skills with a structured approach to diagnosing problems and developing solutions.

EDUCATION

Western University, London Ontario **September 2021 – June 2025**

Bachelor of Science in Mechanical and Materials Engineering (BEng.)

Relevant Coursework: Fluid Mechanics, Thermodynamics, Heat Transfer, Materials, Mechanical design, Engineering Mathematics, Finite Element Analysis (FEA), Electrical Engineering, and Reverse Engineering.

PROJECTS

Tortional Stiffness Improvements on 4x Rowing Hulls **2025**

- Redesigning structural elements in SolidWorks to improve stiffness-to-weight ratios.
- Conducting FEA simulations for finding deformation under torsional and lateral loads.
- Performing physical vibration testing to determine weak points along the hull.

- Running three-point bending tests on various composite materials to evaluate mechanical properties and suitability for marine applications.

Leaning Tower of Pisa – Advanced CAE Computational Heat and Fluid Flow **2024**

- Analysing air flow around the Pisa Tower, using Ansys Fluent simulations.
- Setting up geometry of domain, determining mesh properties and size, and performing simulations.

Green Hydrogen for Transportation - Research Project **2022**

- Exploring the future of green hydrogen vehicles (hydrogen fuel cells).
- Researched green hydrogen as a sustainable alternative fuel for transportation.
- Analyzed zero-emission production via renewable-powered electrolysis.
- Evaluated challenges in onboard storage and vehicle integration.

EXPERIENCE

Linde Canada Inc., Mississauga Ontario **May - August 2022**

Mechanical Engineering Summer Student Co-op, Customer Service Department

- Reviewed and updated cryogenic equipment asset information in the Enterprise Asset Management system (EAM).
- Reviewed and verified Canadian Registration Numbers (CRN) for pressure retaining components listed on Linde standard drawings; obtaining copies of applicable statutory declarations from vendors as required.
- Identified gaps/opportunities between the existing Linde standard maintenance program for cryogenic systems and industry best practice.
- All tank information organized using Microsoft Excel.

Urban Life Solutions, Mount Albert **May - August 2024**

- Landscaping, property planning and design.
- Environmental and safety implications.
- Operating motorized tools (Trimmer, Blower, Mowers, etc.).

CERTIFICATES

- SolidWorks Additive Manufacturing Associate – 2024
- SolidWorks Surfacing Professional – 2024
- SolidWorks Simulation Associate – 2024
- SolidWorks CAD Design Associate (CSWA) – 2022