

**Colm Molder** EIT, B. Eng Mechanical, M. Eng in Naval Architecture Student

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## Education

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### University of British Columbia

Sep 2025 - Present

Master of Engineering in Naval Architecture and Marine Engineering

### University of Victoria

Sep 2019 - Apr 2024

Bachelor of Engineering in Mechanical Engineering

## Technical Competencies

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**Computer Aided Design** SolidWorks, Fusion 360, Siemens NX, Creo Parametric, AutoCAD, Rhino

**Simulation** Orca3D, NX FEA and CFD, ProteusDS, Ansys Fluent

**Machining** MasterCAM, Vericut, Design for manufacturing – mill, lathe, injection molding

**Programming** Python, MATLAB, Excel Scripts and Macros

## Technical Work Experience

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### Inventu Research - Flash Park, Enclosure and Prototyping Specialist

May 2025 - Present

Led the mechanical design for a IP67 and IK10 rated parking space monitor enclosure for mass production.

- Designed several injection molded design options to eliminate the need for side action cores while still allowing for specific instrument placement saving 50% on mould development costs.
- Incorporated custom gaskets, sealants, and acoustically transparent membranes to ensure IP67 level resistance.
- Developed and tested ultrasonic amplifying horns constructed into the geometry saving \$60 on components per enclosure.
- Standardized tolerances to ISO 2768 and performed tolerance stack up analysis to ensure components fit.
- Collaborated with international manufacturers to save 70% on mould development costs.

### Dometic Marine Canada, Mechanical Engineering Co-Op

Jan 2023 - Apr 2023

Contributed to machining cell layout, fixture design, and automation improvements.

- Designed and sourced replacement CNC fixture components as part of preventative maintenance, preventing up to 2 weeks of critical machine downtime.
- Engineered and tested a prototype automated part flipper that improved part quality and eliminated 45 minutes of manual work daily.
- Developed a lean manufacturing shop floor redesign in AutoCAD/3D factory utilities that optimized workflows and informed machine movement and power requirement plans.
- Facilitated setup and process optimization of an automated centerless grinding machine freeing up ~4 hours of operator time daily compared to the previous manual system.

### Ocean Networks Canada, Mechanical Engineering Co-Op

May 2022 - Aug 2022

Performed design, validation, and assembly of ocean floor observatories.

- Planned mounting, deployment, and cable routing for a pan-tilt camera on a Wally Crawler ROV using stability analysis, documented in a technical report that was awarded "Demonstration of High-Level Engineering Skills and Enterprise" by the Vancouver Island Engineering Society.
- Engineered a platform with a fiberglass base, performing bending and buoyancy analysis to ensure rigidity without costly metal reinforcement, while optimizing for stability and ease of ROV deployment.
- Designed and 3D printed a custom ROV cutting tool that severed failed burn wire release mechanisms, enabling successful retrieval of Smart Ocean platforms.

## **Inventu Research - Ergonomyx Technologies, Mechanical Engineering Co-Op** *Sep 2021 – Dec 2021*

Worked in rapid prototyping, production, and documentation of workplace fitness products.

- Designed and printed a prototype enclosure for Ergonomyx's latest product showcased at CES 2022.
- Created and documented standardized production and QC workflows, streamlining assembly and reducing variability in Ergonomyx's manufacturing process.
- Implemented an autonomous inventory control spreadsheet, ensuring component availability and eliminating manual re-count time.

## **Speers Construction – Ahtaapq Hydro Project, Junior Project Coordinator** *Jan 2021 – Apr 2021*

Led quality control for an award-winning energy project that replaced diesel power in a remote community.

- Inspected and documented rebar placement, concrete pours, excavation, backfill, CLT erection, and penstock installation ensuring adherence to engineering specifications and drawings.
- Authored compaction method specifications and calibrated density testing procedures, improving material quality control and ensuring structural integrity in remote-site conditions.
- Tested and optimized cement-treated backfill mix and placement techniques, reducing installation risk and enhancing long-term durability of hydro infrastructure.

## **Technical Projects**

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### **UBC Capstone Project – Canadian Coast Guard (CCG) Future Coastal Patrol Vessel**

- This ongoing project collaborates with the CCG to replace their current Hero Class patrol vessels.
- I will be leading the hull development with an emphasis on stability and optimizing seakeeping ability through an active stabilization feature to be verified through simulation.

### **UVic Submarine Racing Club, Mechanical Team Lead**

- Led the mechanical design, assembly, and testing of internal systems for a human-powered submarine, contributing to a Top Speed Award at the 2022 International Submarine Race.
- Directed composite fiberglass construction of a new hull form for the 2023 competition, coordinating design, fabrication, and systems integration efforts.

### **UVic Capstone Project – Automated Rod Paint Stripper, Mechanical Lead**

- Performed mechanical design and fabrication of an automated machine to remove powder-coat overspray from part hanging rods, ensuring proper part electrical grounding for high-quality coating.
- Delivered a fully functional prototype that eliminated up to 2 hours of daily manual labor while improving coating consistency and production efficiency.

### **Wave-Jet Self-righting RC Boat, Personal Project**

- Developed a self-righting RC boat through iterative design and stability analysis, creating a robust 3D-printed hull optimized for rough ocean wave conditions.
- Engineered a custom water-jet propulsion system with a fully designed impeller and steering linkage.

### **Buoy Survivability Simulation, School Project**

- Determined a 100-year storm sea state through a Python developed probabilistic model using wind, wave, and current data.
- Determined a moorings survivability using ProteusDS and performing stress and fatigue analysis on mooring elements.