

# EKAM MANN

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## EDUCATION

### The University of British Columbia

*Bachelor of Applied Science in Mechanical Engineering*

- 3.8 GPA | Dean's List | RCAF Foundation Scholar

Vancouver, BC

*Expected May 2029*

## EXPERIENCE

### Petra Engineers and Consultants Ltd.

*Mechanical Design Engineering Intern*

Calgary, AB

*May 2026 – August 2026*

- Validated pipe sizing, bills of materials, equipment lists, and valve lists against AutoCAD isometric drawings, resolving discrepancies prior to procurement and preventing material waste.
- Reviewed engineering drawing packages across 4 projects against ASME B31.8, CSA Z662, and ASME B16.5 through discipline reviews with senior engineers, redlining comments that were incorporated into issued revisions.
- Designed a valve specification table for a regulator station that standardizes pressure and temperature data to prevent manual-entry errors, choosing a fixed catalogue over a live link for stability against source-file changes.
- Consolidated equipment indexes from 9 oil and gas project files into one master workbook organized by equipment type, replacing a slower cross-file lookup.

### UBC Solar

*Aeroshell Designer*

Vancouver, BC

*September 2025 – Present*

- Reduced aeroshell drag coefficient 37.5% (Cd 0.176 to 0.110), through iterative geometry redesign validated with steady RANS CFD simulations.
- Authored fully toleranced GD&T drawings per ASME Y14.5 for 4 aeroshell parts released for fabrication, by defining datum schemes and feature control frames to control fitment between mating components in SolidWorks.
- Accelerated onboarding of 12 team members, by developing 4 standardized process documents and 2 training videos on composite layup and thermoforming.

## ENGINEERING PROJECTS

### Polycarbonate Windshield: Design, Thermoforming, and Failure Analysis | UBC Solar

- Reduced windshield manufacturing cost by 85% (\$2,000 to \$300) by replacing machined polycarbonate with vacuum thermoforming and designing a production-ready waterjet-cut forming jig for industrial oven processing.
- Designed and optimized a CFRP mounting interface to improve canopy-to-aeroshell fitment, eliminating bondline stress concentrations under peak thermal loading through FEA-driven analysis and design iteration.
- Evaluated and selected a polycarbonate-to-CFRP joining solution by comparing adhesive systems for thermal expansion compatibility, structural performance, and long-term serviceability.

### Vortex Generator Research: NACA 2412 Stall Characteristics | Grant-Funded Independent Research

- Improved stall angle of a NACA 2412 airfoil by 76%, by designing and wind tunnel testing 14 vortex generator configurations.
- Enabled all experimental runs for under \$50, by designing and building a wind tunnel from scratch.

### Autonomous Underwater Claw | Course Project

- Automated grip, lift-confirmation, and retry without operator input, by implementing a four-state control machine in C/C++ on Arduino driving a 180° servo from ultrasonic feedback sampled at 50 ms with non-blocking timing.
- Reduced material waste 20% pre-build, by simulating interference envelopes in SolidWorks and fabricating sheet-metal parts to  $\pm 2$  mm across 12 joints.

## TECHNICAL SKILLS

**CAD and Simulation:** SolidWorks (Surfacing, FEA), AutoCAD, ANSYS CFD

**Design and Analysis:** GD&T (ASME Y14.5), Tolerance Analysis, DFM/DFA, FMEA, Management of Change (MOC)

**Manufacturing:** CNC Machining, Manual Lathe and Mill, Waterjet Cutting, Vacuum Thermoforming, Composite Layup, FDM 3D Printing

**Programming and Controls:** MATLAB, Python, Arduino (C/C++), MS Excel

**Codes and Standards:** ASME B31.8, ASME B16.5, CSA Z662, ASME Y14.5