# Kevin Rae (EIT)

kevinrae001@gmail.com | (236) 978-5817

## Skills

**CAD/Design:** SolidWorks, Creo, AutoCAD, GD&T, DFM/DFA, SolidWorks PDM
**Prototyping:** 3D printing, CNC, welding/fabricating, soldering, microcontrollers
**Analysis:** MATLAB, Simulink, FEA, CFD
**Programming**: C++, C, C#, Python

## Experience

**Contract Mechatronics Engineer,** Self Employed – Vancouver, BC Jun 2025 – Present

- Delivered mechanical designs, documentation, and prototypes for client projects (3D assemblies, drawings, BOMs, PFDs, P&IDs, source code, scopes of work)

**Research & Development Engineer,** Ascent Systems Technologies – Vancouver, BC Sep 2021 – May 2025

- Led the mechanical design of a $1.4M station that uses drones, cameras, and sensors to monitor remote airstrips
- Developed the mechanics of a machine that uses solar energy and waste heat to warm water and air for the Canadian military at remote locations, winning three rounds of a defense competition and a $1.5M prize
- Designed a heat exchanger system to deliver 4,500 L/day of potable water at 60°C, meeting client requirements
- Designed a custom telescoping mast that can extend to twice its original height, supports a 1.8 kW solar panel array in winds up to 80 km/h and can rotate and tilt to track the sun
- Modeled complex mechanisms in SolidWorks and produced engineering drawings for 300+ parts and assemblies
- Verified safety factors under expected loads, sized members and fasteners, and validated strength and stiffness using FEA and engineering calculations
- Programmed an ESP32 using C and C++ for pump and motor control and sensor data acquisition, developed C++ data analysis tools and built a C# HMI

**Mechanical Engineering Intern,** BC Research – Vancouver, BC Jan 2020 – Aug 2020

- Designed a 100 L general-purpose vacuum distillation unit for separation and solvent recovery
- Designed the kettle, condenser, column, jacket, and the assembly to ASME BPVC standards
- Designed a testing apparatus to assess the blood penetration of N95 masks for Vancouver Coastal Health
- Designed and built a hydraulic compression system which feeds 20 kg of foam per minute into a reactor

**Mechanical Engineering Intern,** Dometic, Marine Division – Richmond, BC Sep 2018 – Dec 2018

- Designed a custom cylinder-pin wrench using Creo that was manufactured in the hundreds for production use
- Diagnosed and repaired a boat simulator that allowed engineers to assess steering products in-house
- Developed and executed durability tests on steering helms that led to product design improvements

**Mechanical Engineering Intern,** BD Diesel Performance – Abbotsford, BC May 2018 – Aug 2018

- Designed and built a flow bench for testing and improving turbochargers and manifolds, using SolidWorks Flow Simulation (CFD) to develop an accurate flow bench
- Designed precision fixtures for a rotor balancing machine that enabled balancing of transmission components to within 0.001” total indicated runout, using GD&T to control tolerance stack-up
- Created casting and machining drawings of turbochargers, manifolds, and exhaust assemblies for production

## Education

**The University of British Columbia**– BASc in Mechanical Engineering, Mechatronics Option May 2021
Graduated with Distinction