

Nicholas Dakin, EIT

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Professional Summary

Mechanical EIT with 4 years of experience designing components, test hardware, and mechanical systems for a variety of applications. Leads projects from design through delivery, coordinating with clients, vendors, and external teams. Combines first-principles thinking, hands-on electromechanical integration, and software development.

Skills

Design & Analysis	SolidWorks, Creo, Fusion 360, AutoCAD, GD&T, FEA, CFD, P&IDs, FMEA, root-cause analysis
Test & Integration	Instrumentation, DAQ, 3D metrology, test tooling, CNC machining, 3D printing
Software	Python, C++, MATLAB/Simulink, Qt 6, NumPy, CMake, TypeScript/JavaScript
Languages	English, French

Experience

Mechanical Engineering-in-Training – *Jenmar Concepts*, Langley, BC Feb 2025 – Present

- Developed a temperature-compensated hydrogen cascade fueling system for autonomous underwater vehicles
- Designed a counterflow heat exchanger with custom manifolds, sealing interfaces, and CNC-machined parts
- Performed risk assessments and designed system controls covering I/O, sequencing, and fail-safe states
- Produced P&IDs, isometrics, fabrication drawings, and equipment specifications for controlled IFC releases

Mechanical Engineer Co-op – *Noram Engineering*, Vancouver, BC May 2023 – Aug 2023

- Consolidated two pressure vessels into one manufacturable design for an electrolysis test skid
- Verified structural integrity through hoop stress, beam bending, and adhesive-joint analyses

Product Design Co-op – *ContainerWest Manufacturing*, Richmond, BC Sept 2022 – Apr 2023

- Designed modular buildings in SolidWorks and produced GD&T drawings for in-house fabrication
- Integrated electrical, plumbing, and HVAC systems and carried builds through inspection and delivery

Junior Engineer Co-op – *AVL Fuel Cell*, Burnaby, BC Sept 2020 – Aug 2021

- Designed test tooling in PTC Creo and fabricated components using CNC machining and 3D printing
- Characterized GDLs through thermal conductivity and stress-strain testing to support material selection
- Diagnosed fuel cell defects through performance evaluations, inspections, leak testing, and root-cause analysis
- Reconstructed seal surfaces from laser line scans to analyze tolerances and manufacturing defects

Projects

Fuel-Cell Distribution Mapping Board – *AVL Fuel Cell*

- Redesigned instrumentation mounts from machined Delrin to SLS nylon for efficient batch printing
- Integrated and commissioned DAQ modules, soldered signal wiring, tested connections, and calibrated RTDs

MiniCAD – *Personal Project*

- Built a parametric CAD app in C++ with Qt, an OpenCASCADE geometric kernel, and custom 3D tessellation
- Developed a geometric constraint solver using damped Gauss-Newton for nonlinear relations

3-DOF Spherical Wrist – *Personal Project*

- Derived and implemented forward, inverse, and velocity kinematics for a custom 3-DOF wrist in Python
- Analyzed end-effector motion and singularities using DH transforms and a geometric Jacobian

Education

University of British Columbia – *BASc in Mechanical Engineering* May 2024

- Supermileage: built 1:5-scale prototypes and adapted airflow visualization methods for rapid design evaluation