

Kathan Sanghvi

(250) 883-1210 | Victoria, BC | kathansanghvi5@gmail.com | [LinkedIn](#) | [Engineering Portfolio](#)

Education

Bachelor of Engineering – Mechanical | University of Victoria, BC

Sep 2020 – Apr 2025

Specializations: Energy Systems | Thermo-fluids/Aerodynamics

GPA: 7.33/9.00

Awards: Marianne Black Award for Best Design – UVic Capstone 2025 | International IB Scholarship

Technical Competencies

Computer-Aided Design	: SolidWorks, Siemens NX, AutoCAD
Simulation & Analysis Software	: eQUEST, MATLAB, PV Elite, Ansys, EES
Computer-Aided Manufacturing	: Mastercam, Vericut
Engineering Analysis	: FEA, CFD, Geometry Optimization, Sensitivity Analysis
Programming Language	: C, C++, G-Code, APT, R
Shop Tools	: CNC Mills, Manual Mills, Lathes, Laser Cutters, 3D Printers
Microsoft Office	: Excel, Access, Word, PowerPoint, Teams, SharePoint
Mechanical Aptitude	: HVAC, Energy Conversion & Storage, Heat Transfer
Additional Skills & Experiences	: Data Modelling, Cost & Data Analysis, Technical Research

Work Experience

Entrepreneurial Co-op

May – Aug 2024

Autonomous Residential Solar Panel Cleaning and Cooling Solution

Victoria, BC

Mentored by: [Dr. Andrew Rowe](#), Acting Director, [Institute for Integrated Energy Systems](#)

- Designed an autonomous solar panel cleaning and cooling solution for residential use to reduce soiling and overheating losses, thereby improving system efficiency and shortening payback periods.
- Projected long-term economic and energy impacts by analyzing annual household energy use and quantifying savings from investing in a solar panel efficiency system.
- Engineered sophisticated Excel and MATLAB models to drive precise calculations of solar panel surface temperatures, pump power requirements, and heat dissipation needs.
- Created a detailed SolidWorks model of the solution applied to a standard 2-story house, integrating custom CAD designs with off-the-shelf parts.
- Optimized valve and pipe sizing through detailed engineering calculations, ensuring efficient flow rates while minimizing material costs and pump power consumption.

Design Assistant Co-op

Jan – Aug 2022, May – Aug 2023

ZE Power Engineering Inc.

Richmond, BC

- Developed and compiled comprehensive project documentation, including proposals, budgets, work plans, technical specifications, tender documents, bid evaluations, technical reports, and calculations.
- Produced and analyzed engineering drawings for underground and overhead utility systems, ensuring compliance with stringent safety and industry standards.
- Prepared work orders and construction packages for a variety of BC Hydro projects, maintaining accuracy and seamless coordination through the use of Excel, Access, and Word.
- Conducted on-site evaluations across Vancouver Island, applying engineering principles to analyze environmental and structural constraints, providing detailed design recommendations.
- Liaised with local governments and private stakeholders across British Columbia to secure necessary approvals and permits for design team.

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Student Team Experience

General Member

Jan 2024 – Present

University of Victoria Formula Hybrid Club

Victoria, BC

Formula Hybrid + Electric 2024 – 2nd Place

- Manufacturing rear wing components by cutting foam cores, carbon infusing elements, fabricating end plates, and 3D printing wing inserts for efficient chassis integration.
- Designed and refined the clutch system for the vehicle using SolidWorks, ensuring optimal structural integrity at high speeds while enabling a safe driver evacuation within 5 seconds.
- Machined custom fixtures and replacement parts for salvaged components, utilizing a manual mill and other shop tools with precision to ensure safe vehicle performance under high speeds and g-forces.
- Documented the design, manufacturing, and assembly processes, clearly explaining the rationale behind each decision to enhance the team's presentation and maximize points at the annual competition.

Projects

Re-circulating Water Bath | Capstone Project

Sep 2024 – Apr 2025

- Developed a precision recirculating water bath with $\pm 0.1^{\circ}\text{C}$ tolerance for biomedical material testing, featuring variable heating, PI control, and a user-focused stainless-steel design.
- Conducted CFD analysis to optimize flow rate, pipe dimensions, and inlet/outlet geometry, achieving uniform thermal distribution and minimizing temperature gradients during prolonged operation.
- Gained hands-on experience in sheet metal work, plumbing, sensor integration, and control systems by fabricating 80-90% of components in-house, meeting stringent design constraints with limited resources.

Energy Efficient Building Design | HVAC

Jan – Apr 2025

- Engineered HVAC systems by sizing ducts, diffusers, fans, and coils, integrating psychrometric and infiltration data with robust building envelope strategies to optimize thermal performance.
- Utilized eQUEST for comprehensive energy modeling, refining mechanical layouts and incorporating sustainability measures to reduce heating and cooling loads effectively.

Design of Heat Transfer Coefficient Test Rig | Accent Refrigeration Systems Ltd.

Jan – Apr 2025

- Designed a fully instrumented test rig for Accent Refrigeration to evaluate copper coil heat exchangers, integrating a 1 HP pump, 40 kW heater, and real-time flow, pressure, and temperature monitoring.
- Delivered comprehensive documentation, including P&ID schematics, equipment sizing charts, and CAD models, complemented by detailed testing guidelines to ensure consistent conditions.

Volunteer Experience

Notetaker | [Centre for Accessible Learning](#), University of Victoria, BC

Sep 2024 – Apr 2025

Instructor & Lunch Server | [Sneh Foundation](#), Vadodara, Gujarat, India

Jul 2018 – Jan 2020

Additional Work Experience

Sales Associate (PT) | Cascadia Liquor Royal Bay, Victoria, BC

Jun 2024 – Present

Design Assistant (Remote PT) | ZE Power Engineering Inc., BC

Sep – Dec 2022, Jan – Apr 2024

Associate (PT) | Hudson's Bay, Victoria, BC

May – Aug 2022

Sales Associate (PT) | 7-Eleven, Victoria, BC

Sep – Dec 2021