Kathan Sanghvi

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

Summary

I'm an award-winning mechanical engineer with experience spanning renewable energy, utility infrastructure, product design, and manufacturing. I bring a hands-on approach, with strengths in project coordination, technical documentation, and data-driven cost modeling. I thrive on solving complex problems through thoughtful design, cross-functional collaboration, and well-researched, practical engineering solutions.

Education

Bachelor of Engineering – Mechanical | University of Victoria, BC **Sep 2020 – Apr 2025**

- Specializations: Energy Systems | Thermo-fluids/Aerodynamics
- 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, PV Elite, MATLAB, Ansys, EES
Computer-Aided Manufacturing	: Mastercam, Vericut
Engineering Analysis	: FEA, CFD, Geometry Optimization, Sensitivity Analysis
Technical Drawings & Diagrams	: GD&T, Process Flow Diagrams, P&IDs
Shop Tools	: CNC Mills, Manual Mills, Lathes, Laser Cutters, 3D Printers
Programming Language	: C, C++, G-Code, APT, R
Microsoft Office	: Excel, Access, Word, PowerPoint, Teams, SharePoint

Work Experience

Solar Panel Efficiency Research & Design Co-op | Victoria, BC May – Aug 2024

Mentored by: Dr. Andrew Rowe, Acting Director, Institute for Integrated Energy Systems

- Designed an autonomous solar panel cooling and cleaning system to reduce soiling and overheating losses in residential installations, improving energy yield and demonstrating technical and economic feasibility.
- Built a detailed SolidWorks model to validate system installation on a two-story house, using multiple design iterations to optimize flow paths, minimize pump load, and reduce water and energy waste.
- Engineered Excel and MATLAB models to predict panel surface temperatures, quantify system power requirements, and forecast annual savings, delivering clear cost-benefit insights to guide design decisions.

Design Assistant Co-op | ZE Power Engineering | Richmond, BC May – Aug 2023

- Developed comprehensive project documentation including proposals, budgets, tender documents, bid evaluations, technical specifications, and reports to ensure consistency and clarity across deliverables.
- Prepared work orders and construction packages for a variety of BC Hydro projects, maintaining accuracy and seamless coordination using SAP, Excel, Access, and other Microsoft 365 tools.
- Coordinated with municipalities and private stakeholders to secure project permits and approvals, representing the design team in external discussions and helping navigate regulatory requirements.

Design Assistant Co-op | ZE Power Engineering | Richmond, BC Jan – Aug 2022

- Executed design revisions on overhead and underground utility drawings using BC Hydro's proprietary 2D CADD software, ensuring compliance with stringent standards and industry codes.
- Consolidated drawings, specifications, and supporting documents into field-ready job folders, coordinating with cross-functional teams to ensure alignment with site requirements and safety protocols.
- Conducted on-site evaluations across British Columbia, applying first principles to identify structural and environmental limitations and relaying practical design recommendations to the project team.

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Student Team Experience

Member | University of Victoria Formula Hybrid Club | Victoria, BC — Jan 2024 – Present

Formula Hybrid + Electric 2024 – 2nd Place

- Manufactured 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.

Projects

Recirculating Water Bath | Capstone Project — Sep 2024 – Apr 2025

Recipient of the Marianne Black Award for Best Engineering Design

- Developed a precision recirculating water bath with ±0.1°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.

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.

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.

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., Richmond, BC — Jan – Apr 2024

Design Assistant (Remote, PT) | ZE Power Engineering Inc., Richmond, BC — Sep – Dec 2022

Associate (PT) | Hudson's Bay, Victoria, BC — May – Aug 2022

Sales Associate (PT) | 7-Eleven, Victoria, BC — Sep – Dec 2021