

Atefeh Zarei

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Vancouver, BC

HIGHLIGHTS OF QUALIFICATIONS

- **Mechanical Designer** (MAsC, UBC) with hands-on **HVAC** and **mechanical systems** experience; strong thermo-fluids foundation and practical problem-solving.
- Experienced in HVAC design projects: contributed **load estimates**, **equipment selection** support, duct/pipe layout drafts, cost estimation for mechanical components, and AutoCAD drawings.
- **Data engineering & analysis**: developed **MATLAB scripts** to process large multi-instrument datasets
- Experienced in design, development, and troubleshooting of mechanical instrumentation and experimental setups.
- Project coordination on **complex field campaigns** (vessel-based): schedule planning, on-site setup, troubleshooting **under time pressure**, and **cross-disciplinary collaboration**.

SKILLS

- **Mechanical Design and Analysis**: HVAC, plumbing & fire protection from schematic to construction—load calculations, duct/pipe sizing, equipment selection, controls, and cross-discipline coordination (incl. GD&T/P&IDs)
- **Programming**: MATLAB, Python
- **Software Application**: AutoCAD, SolidWorks, LabVIEW; basic CFD/heat-transfer (ANSYS Fluent/COMSOL); foundation of IESVE/HAP; strong Excel/Word/PowerPoint.
- **General**: Technical Reports and Standards, Project Management, Supplier Design Review, Equipment Selection, Cost Estimation, Communication skills, Teamwork

EDUCATION

University of British Columbia, Vancouver, BC, Canada | 09/2023 – current

- Master Of Applied Science, Mechanic Engineering
- **MAsC Thesis subject**: Impact of fuel type on the physical and optical properties of the particulate emissions from a diesel engine | Supervisor: Prof. Steven Rogak

Isfahan University of Technology, Isfahan, Iran | 09/2016 - 06/2021

- Bachelor of Applied Science, Mechanical Engineering
- **BASc Thesis subject**: Vehicle emission simulation implementing GT-Suite software during cold start in New European Driving Cycle (NEDC) | Supervisor: Dr. Iman Chitsaz

WORK EXPERIENCE

Research Assistant, University of British Columbia, Vancouver, BC, Canada | 09/2023- current

- Designed and built a mobile exhaust-sampling setup for a marine diesel vessel in motion; **optimized system** to minimize losses and ensure safe operation.
- Configured and ran a multi-instrument suite: executed calibrations, QA/QC checks, and troubleshooting
- **Automated large-dataset processing** in MATLAB, and authored SOPs, quick-start guides, and README flowcharts control for repeatability and auditability of data
- Delivered **weekly progress updates** to supervisors; **collaborated across mechanical / chemical / atmospheric**

teams and external partners to resolve design and logistics constraints.

Mechanical Engineer, [Electro Mohareke Parsian \(EMP\)](#), Isfahan, Iran | 06/2021 – 06/2022

- Sized and selection of hydraulic/pneumatic parts (pumps, valves, cylinders, motors, filters, accumulators) based on the customer requests

PROJECTS

HVAC/Plumbing/Fire Protection Design of Residential Building | [Show project](#)

- Utilized **Carrier HAP** software for **load calculations** and **energy performance** analysis to design optimized HVAC systems and selected **right-sized HVAC equipment** for a **5-story residence**.
- Drafted detailed **ducting and piping layouts** using **AutoCAD**: HVAC floor plans with **FCU locations**, diffuser/grille tags & **CFM callouts**, **duct/pipe sizing**, control zones, and **equipment room layout**.
- Performed **mechanical component sizing** for construction projects, ensuring compliance with building codes.
- Designed domestic cold/hot water systems (storage, recirculation, pumps) plus sanitary and rainwater drainage.
- Engineered life-safety systems: sprinkler layout and pump selection, plus parking exhaust/ventilation.
- Course: **Air Conditioning System Design**

HVAC/R Design of Multi-Zone industrial refrigeration | [Show project](#)

- Calculated room-by-room **refrigeration loads** (walls, infiltration, product, and miscellaneous) for fruit stores, meat rooms (sub-zero), a pre-cool room, and a tunnel freezer, using local Bandar Abbas climate data.
- Selected system architecture and **refrigerant** (R-404A); separated above-zero and sub-zero circuits and sized **compressors, evaporators, condensers, and TXVs** with manufacturer tools.
- Laid out **evaporator placement and airflow paths**; defined temperature/RH setpoints and door/traffic practices to limit frost and infiltration.
- **Produced P&IDs**, equipment schedules, and piping plans; specified valve stations, insulation, and controls for safe, efficient operation.
- Course: **Freezing & Cooling System Design**

HVAC/Plumbing Design of Aquatics Facility (Swimming Pool, Jacuzzi & Saunas) | [Show project](#)

- Completed **hydraulic/thermal sizing** for pool, jacuzzi, and dry/steam saunas (bather load, turnover, evaporation, and heat gain/loss).
- Selected **circulation/nozzle pumps, sand filters, heat exchangers, boilers/burner**, and open expansion tanks; applied N+1 redundancy and vendor catalog checks.
- Calculated **pipe friction and total dynamic head**; set parallel pump configurations and control/valving details for recirculation and heating loops.
- Produced coordinated **AutoCAD schematics** and equipment schedules; prepared **BOM** and commissioning notes.
- Course: **Water distribution system**

Certificates

AUTOCAD | 06/2021

- 115 Hours of Vocational Training in Iran Technical and Vocational Training Organization, Isfahan, Iran.

Estimator of Installations HVAC System in Administrative and Residential Buildings | 06/2020 | [Certificate](#)

- 164 Hours of Vocational Training in Iran Technical and Vocational Training Organization, Isfahan, Iran.