# MECHANICAL DESIGN ENGINEER

Mechanical engineer with the heart of an inventor, a problem solver with the ability to design and build products. Experienced in bringing products from concept through production, with feedback from the customer and supplier throughout the process.

* 14 years of mechanical, structural, and fluid system design experience, working on large and complicated assemblies as well as the tiniest details, and defining designs with 2D drawings and 3D models.
* Experienced in working with internal and external suppliers, designing for production lines as well as custom products.
* Accustomed to working in teams of different disciplines, including manufacturing engineers, stress analysts and electrical systems designers, whose input is required to complete the job.

# EXPERIENCE

## KATERRA, Seattle, WA **2019-2020**

### Manufactured Assemblies Design Engineer

Designed building subcomponents to be built in a prefabrication factory and installed in the construction site. Integrated structural, electrical, plumbing and finish components for easy installation.

* Designed a bathroom kit system which optimizes use of factory and construction site labor, and minimizes logistics costs and construction site crane usage. Kit system contains all bathroom finish items ready to install as soon as building is weathered in. Modeled kit in SolidWorks providing complete BOM and drawing set, and allowing export of model into downstream software systems.
* Developed CAD models for cold formed steel wall panels using Catia 3DExperience. Automated generation of component models as required for individual walls, created drawing and model templates to simplify creation of manufacturing instructions, and completed prototype builds using this system. Used Catia scripting system (EKL) to automate generation of CNC code to allow integration of the software into factory workflow.
* Built prototypes of proposed manufactured assemblies to test part and assembly sizing. Prototypes were developed with standard construction industry tools and methods which have very poor tolerances, so designs were used to take this into account and allow proper adjustment and inspection to ensure proper fit every time.

## SAFRAN AEROSYSTEMS, Everett, WA **2015-2019**

### Design and Integration Engineer

Responsible for structural, mechanical, and fluid system designs; working on detail designs as well as integration of parts and assemblies into the aircraft with minimal interface information. Collaborated across multiple site in different countries, and coordinated extensively with customer representatives throughout design, testing, and production.

* Investigated root cause of a leaking valve. Took apart used valve to investigate the internals and retested to repeat the problem, and also did testing on a new valve to find the same problem.
* Developed design solutions to allow updating the 737 airstair to include new safety features and an extra step within the same envelope. From a high level work statement, investigated the extent of change required, and found solutions to various problems discovered during development and testing.
* Integrated 737 airstair design into the aircraft structure, and built a complete CATIA assembly and kinematic model to ensure proper fit and operation.
* Designed an aircraft galley fluid waste disposal system, producing designs for structural support of valves, a tank, sensors, and electrical components, all designed to fit into a small space in an aircraft galley.

## BOEING COMMERCIAL AIRPLANES, Everett, WA **2006 – 2012, 2014**

### Structural Design Engineer

Took ownership of part concepts and designs, collaboration with stress analysts, manufacturing engineering, suppliers, and other design groups. Worked on initial design through production on the 747-8 and 767 tanker, on the wing, tail, and body.

* Designed aluminum and composite parts, and assemblies large and small. Optimized parts for weight and cost without compromising on strength.
* Used a 3D printer to produce a test tool for the 747 wing panels, to ensure that the wing would be assembled without problems.
* Coordinated with Boeing and supplier production facilities from concept to production, to ensure parts are easy to manufacture and assemble, making visits as parts were being produced to ensure quality production.
* Integrated electrical wiring, mechanical systems and fluid systems into the structural design, working closely with members of other teams to provide the best design.
* Redesigned a critical structural member in the 747 wing, replacing an assembly with hundreds of parts with a single part, in order to reduce weight and assembly time.
* Corrected production problems looking through 35 years of drawings and seeing completed parts on the airplane in the factory.
* Performed preliminary analysis on parts to confirm optimum design for reduced weight.

## KVICHAK MARINE INDUSTRIES, Seattle, WA **2012 – 2014**

### Project Engineer

Developed structure and mechanical system designs for aluminum hulled boats. Worked from concept through production providing design and analysis.

* Completed concept, design, and finite element analysis to meet customer requirements. Worked in SolidWorks to model detail parts and assemblies.
* Designed the structure and fluid systems on a 75’ pilot boat.

# OTHER ACTIVITIES & SKILLS

* Experienced in SolidWorks (Certified SolidWorks Professional), CATIA V5, and AutoCAD.
* Design of sheet metal, extruded, machined plate, and composite parts, small and large assemblies. 3D and 2D assembly and detail part definition. Understanding of reasonable tolerances, and how to apply GD&T.
* Used machine tools and hand tools to build my own designs out of wood and metal. Built parts for a Formula SAE drivetrain, and my own kitchen cabinets.
* Proficient in Mandarin Chinese and Spanish.

# EDUCATION & STUDENT PROJECTS

## UNIVERSITY OF WASHINGTON

### Bachelor of Science in Mechanical Engineering, Cum Laude, June 2006

Courses: Materials and Structures, Mechanical Systems Analysis, Control Systems, Instrumentation, Fluids, CAD, Finite Element Analysis, Technical Writing.

Formula SAE project:

* Led drive train team, oversaw production of parts, and completed documents required for competition. Helped the team place 5th out of 122 teams in the competition.
* Used SolidWorks to model parts, apply finite element analysis, and create drawings.

Fuel cell capstone project:

* Researched the latest fuel cell technology and researched ways to reduce cost without excessive performance loss
* Designed and tested molded composite materials in flow field plates, instead of conventional machining.