

Colin Wilson

Mechanical Engineer

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Mechanical Engineer with expertise in structural design and analysis, and design for manufacture and assembly (DFMA). Master's Degree in Mechanical Engineering with a thesis focused on finite element analysis of nanomaterials with both numerical and laboratory research work. I aim to use my research, design, and analysis backgrounds to develop the next generation of sustainable technologies.

EDUCATION

MASTER OF SCIENCE IN MECHANICAL ENGINEERING

Sep 2020 – Mar 2023

University of Washington, Seattle, WA

Thesis: Large Strain Finite Element Analysis of Spinodal Shell Structures

- Created finite element analysis (FEA) models in Abaqus to replicate experimental results, helping to study fundamental material behaviors.
- Developed Python scripts for FEA postprocessing, to quantify structural behavior, stress distribution, and damage localization.
- Used MATLAB to generate FEA shell meshes of complex nano-architected materials.
- Studied nanomaterial behavior in harsh environments using dynamic and thermal FEA.

Courses and Projects:

- Courses: Renewable Energy, Battery and Solar Cell Manufacturing, FEA, Elasticity, Composite Design and Analysis, Nanocomposites and Biocomposites.
- Research projects: Self-assembly and 3D printing of lithium-ion battery electrodes. Manufacturing and material properties of fungus and bacterial cellulose-based biocomposites.

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

Sep 2002 – Jun 2006

University of Washington, Seattle, WA

- Projects: Formula SAE drivetrain design, Fuel cell manufacturing capstone.

WORK EXPERIENCE

DISCRETE LATTICE INDUSTRIES, Seattle, WA

Jun – Sep 2021

Mechanical Engineer

- Conducted trade studies on the use of an injection molded composite lattice structure in wind turbine blades.
- Performed FEA in Ansys and hand stress analysis to determine blade deflection and optimal structural parameters of a lattice-based wind turbine blade.
- Developed Python and MATLAB scripts for structural calculations and Ansys postprocessing.
- Used NuMAD for 3D modeling of the wind turbine blade and OpenFAST to conduct aerodynamic simulations.

KATERRA, Seattle, WA

Mar 2019 – Jun 2020

Manufactured Assemblies Design Engineer

- Developed bathroom kits for residential buildings, to support factory assembly and cost reductions. Used SolidWorks to provide 3D models, BOMs and drawings.
- Built bath kit prototypes to test functionality, strength, and manufacturability.
- Used Catia 3DExperience scripting to automatically generate CAD models, drawings, and CNC files for factory-built, mass-produced wall panels.

SAFRAN AEROSYSTEMS, Everett, WA

Apr 2015 – Mar 2019

Design and Integration Engineer

- Led design work on the 737 Airstair, developing design solutions within difficult constraints, and conducting prototyping and testing of the design to support on-time delivery.

- Conducted root cause analysis of failed aircraft waste valves using tolerance analysis and disassembly of failed parts, worked with the supplier to make changes, and developed test plans to validate the revised design.
- Designed an aircraft galley drain system integrating structure, sensors, and plumbing.

BOEING COMMERCIAL AIRPLANES, Everett, WA*Sep 2006 – Nov 2012, Sep – Dec 2014***Structural Design Engineer**

- Designed structural parts and assemblies on 747-8 and 767, using CATIA V5 to define 3D models and 2D drawings.
- Coordinated with production facilities and suppliers, applying DFMA from concept to production.
- Worked with cross-functional teams to manage design completion and define interfaces.
- Developed design solutions to factory production problems, using a ticketing system workflow.

KVICHAK MARINE INDUSTRIES, Seattle, WA*Nov 2012 – Jan 2014***Project Engineer**

- Developed structure and systems designs for aluminum hulled boats, for use in extreme environments.
- Worked from concept to production, providing designs and drawings in Solidworks.

SKILLS AND INTERESTS

- Finite element analysis (Abaqus, Ansys)
- Composite design and stress analysis
- Python, MATLAB
- Validation test design
- Mandarin Chinese professional working proficiency
- Mechanical design and CAD modeling (Solidworks, CATIA), GD&T
- Dedicated to working toward the clean energy transition