Colin Wilson

Mechanical Engineer

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Mechanical Engineer with expertise in structural design and analysis, and design for manufacturing. 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 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.

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- Investigated the root cause of failed aircraft waste valves, disassembling failed samples to determine the cause of failure, and testing to confirm the solution.
- 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 critical structural parts and assemblies on 747-8 and 767, using CATIA V5.
- Coordinated with production facilities from concept to production.
- Worked across groups and disciplines to manage design completion and define interfaces.
- Developed design solutions to factory production problems.

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)
- Dedicated to working toward the clean energy transition.