Logan Alexander

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WORK EXPERIENCE

Mechanical Engineer, EUV Product Development at Lam Research – *a top semiconductor equipment company*
May 2021 – Present

- Worked collaboratively to develop and test company-wide **ASME Y14.5 GD&T guidelines**.

Compact Wafer Cooling and Treatment Station

- Increased throughput by 50% through design of **patent-pending additively manufactured pedestal**.
- Improved deposition non-uniformity by 40% using **CFD to guide parametric chamber design in NX**.
- Ensured **vacuum seal between dissimilar materials through tolerance analysis** at various temperatures.
- Packaged a dual channel TCU, switching manifold, and vaporizer and within compact enclosure.
- Validated process throughput with **Flow Network Modeling (liquid and gas) using MacroFlow software**.
- **Assembled and leak checked precision gas delivery subsystems** prior to manufacturing handoff.
- Documented assembly and **coordinated with suppliers to outsource subsystems to save 30%** on manufacturing.
- **Machine design and testing of 150lb hoist** for assembly within crowded fab environment.

Capacitively Coupled In-Situ Plasma Retrofit Kits

- Led in-situ plasma program from **concept to high-volume manufacturing**, decreasing cost of ownership by 25%.
- Designed and tested corrosion resistant ultraclean gas delivery manifolds.
- Developed **serviceable and safe electronics enclosures for RF components**, adhering to UL and SEMI standards.
- Cut field service time using **NX CAD software** to design tailored retrofit kits (1000+ parts) for each tool configuration.
- **Design of Experiments (DOE) for exotic chamber materials/coatings** to ensure install base uptime requirements.
- Optimized chamber geometry for plasma cleans with **multi-physics simulation**.
- Used manufacturing methods like diffusion bonding, additive, friction stir, e-beam welding, EDM, and machining.
- Automated parts tracking for thousands of components to ensure timely delivery of alpha and beta units.
- Conducted failure analysis of corroded parts using **Energy-dispersive X-ray spectroscopy**.

Mechanical Engineer, PECVD Sustaining at Lam Research – *a top semiconductor equipment company*
December 2019 – May 2021

- Saved $2.7M in warranty expenses by **engineering a corrosion resistant pendulum valve** for tungsten deposition.
- Fixed chamber cooling issues for $200 using **fluid dynamics and heat transfer equations** to optimize tool cooling.
- **Extended remote plasma clean (RPC) manifold lifespan by 30%** through use of corrosion resistant aluminum alloys.
- **Reduced showerhead failure rate by 25%** with swaged baffle design and enhanced high-temp coolant tube bonding.
- Pioneered a **test-driven statistical framework** to ensure precise part cleanliness with minimal sample sizes.

Product Design Engineer, Rightline Equipment – *a startup specializing in high quality lift-truck attachments*
May 2018 – December 2019

- **Developed 100% galvanized rotating hold-down clamp** with 5000 lb. capacity for use in the food handling industry.
- Streamlined the standard bale clamp arm with **innovative laminated welding** to reduce cost by an average of 40%.
- Eliminated 15% excess weight of handler arm with **beam-bending fatigue calculations** for 10k cycle lifetime.
- Simplified hydraulic circuit for rotators, eliminating 10+ components, through **5-axis machined hydraulic manifold**.
- Utilized **hydraulic linkage design** for industrial fork clamps, rotators, stabilizers, and material handling devices.
- Completed over 500 **Finite Element Analyses in Creo Simulate** to increase reliability and validate design integrity.

EDUCATION

Washington State University, BS, Mechanical Engineering – Cum Laude
May 2019

SKILLS

- CAD - CREO, NX, Fusion 360, GD&T, FMEA, COMSOL, FEA, Design for X (manufacturing, cost, assembly, etc..), O-ring gland design, thermal systems, high vacuum systems, high pressure systems, 5-axis machining, Diffusion bonding, welding, fluid delivery, gas delivery, coatings, material selection, project management, systems engineering, design reviews, additive manufacturing, costing, LEAN design, tolerance analysis, project scoping, Computational Fluid Dynamics (CFD), Mechanical Systems Design, Machine design, Materials Science, Manufacturing Processes, Prototyping, Problem Solving, Data Analysis, Tolerance Analysis, Project Planning, Cross-Functional Collaboration, Risk Management, Technical Writing, Presentation Skills, Team Leadership, Simulation Software, Programming Languages, Project Management Tools, Quality Assurance, Regulatory Compliance, Continuous Improvement.