Logan Alexander - Mechanical Engineer

loganpalexander@gmail.com ❖ (360) 261-0147 ❖ San Francisco, CA

Passionate about sustainable technology and reducing CO2 emissions.

WORK EXPERIENCE

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

- Spearheaded the development and rigorous testing of comprehensive company-wide **ASME Y14.5 GD&T guidelines**, resulting in a standardized approach that elevated design accuracy.
- Utilized a **design review system** biased towards action throughout the Engineering Validation Testing (EVT), Design Validation Testing (DVT), and Production Validation Testing (PVT) phases of complex engineering projects to ensure product performance met requirements.
- **Managed complex part manufacturing processes across the supply chain**, including supplier onboarding, training, and onsite visits to ensure alignment with quality and delivery requirements.

Technical Lead - Compact Wafer Cooling and Treatment Station

- Engineered a **patent-pending** pedestal utilizing additive manufacturing techniques, resulting in a 50% boost in system throughput through significant improvements to thermal uniformity and overall production capabilities.
- Implemented systematic assessments measuring dimensional tolerances under **extreme heat variations**, resulting in decreased failure rates from atmospheric exposure by an average of 15% across subsequent production batches.
- **Designed and packaged a dual-channel temperature control unit** with an integrated switching manifold and vaporizer into a compact enclosure; leveraged automation and equipment design principles to enhance process control and achieve higher chip yields through optimized design strategies tailored for efficiency.
- **Assembled and leak checked precision gas delivery subsystems** prior to manufacturing hand-off.
- Documented assembly and **coordinated with suppliers to outsource subsystems to save 30%** on manufacturing.

Technical Lead - Capacitively Coupled In-Situ Plasma Retrofit Kits

- Developed **serviceable and safe electronics enclosures for RF components**, adhering to UL and SEMI standards.
- **Design of Experiments (DOE) for exotic chamber materials/coatings** to ensure install base part lifetime requirements.
- Optimized chamber geometry through advanced **multi-physics simulations**, resulting in a 40% reduction in cleaning cycle time, improving overall equipment efficiency and meeting stringent uptime requirements for production tools.
- Employed advanced manufacturing techniques such as **diffusion bonding, additive processes, and e-beam welding** to enhance contact thermal conductivity between assembled components.

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

- **Saved $2.7M in warranty expenses** by conducting root cause analysis and engineering a corrosion-resistant pendulum valve for tungsten deposition.
- **Identified and resolved a critical cooling system failure**, for only $200 in repair costs, and prevented significant production downtime.
- Established a **test-driven statistical framework** that ensured optimal part cleanliness while reducing sample sizes by 40%, leading to more efficient testing protocols and improved product reliability in manufacturing processes.

Product Design Engineer, Rightline Equipment: *a startup specializing in high quality forklift attachments*
May 2018 – December 2019

- Crafted **intricate designs for more than 100 specialized components within the rotary lift assembly** aimed at boosting resilience against environmental factors; facilitated seamless operations even under challenging circumstances encountered daily on-site.
- 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 **using FEA and fatigue analysis** for 10k cycle lifetime.
- Simplified hydraulic circuit for rotators, eliminating 10+ components, through **5-axis machined hydraulic manifold**.
- Engineered **linkage mechanisms for industrial fork clamps** and material handling devices, enhancing operational efficiency by reducing component fatigue through precise stress calculations over 10k cycles of usage.

EDUCATION

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

SKILLS

Design & Analysis
- CAD: PTC Creo, NX, Fusion 360
- GD&T (ASME Y14.5)
- Finite Element Analysis (FEA): COMSOL
- Computational Fluid Dynamics (CFD): COMSOL
- Failure Mode and Effects Analysis (FMEA)
- DfX: Design for Manufacturing, Cost, and Assembly
- LEAN Design

Thermal, Fluid, and Mechanical Systems
- Thermal Systems
- Fluid and Gas Delivery
- High Vacuum
- High Pressure
- Coatings and Material Selection
- Machine Design

Electronics
- PCB Design
- Circuit Analysis
- PCB Integration
- Electronics Prototyping
- Wire Harness design and CAD routing
- Automation Components: Actuators, Sensors, Motors