Zhiyi Foo

San Jose, CA | (408) 412-1141 | foozhiyi@gmail.com | linkedin.com/in/zhiyifoo | zhiyifoo.com

PROFESSIONAL EXPERIENCE

Senior Mechanical Engineer | Illumina
November 2023 – Present

DNA analysis instruments

- Designed custom sheet metal chassis and optimized thermals for a high-performance compute module, enabling transition from supplier to in-house manufacturing to save $10k/unit and achieved 96% first pass yield during production ramp.
- Resolved user experience issues with instrument keyboard tray by redesigning the push latch mechanism using DoE and tolerance analysis, improving activation success rate by 32% and cutting assembly time by 9%.
- Led the complete contract manufacturer production line transfer from U.S. to Asia, directed logistics of all capital equipment, tooling, and fixtures. Developed and executed IQ/OQ/PQ validation plan, saving $6 million in production costs.
- Eliminated motion stall in an electro-mechanical assembly via FMEA that identified excessive friction from tight gear mesh; implemented new OQC test, firmware update, and revised motor PWM limit to save $200k/yr in replacement costs.
- Cut rework time by 75 mins/unit and customer complaints by 16% by redesigning the instrument doors and hinge mechanism to correct a gap variance issue caused by injection-molded panel deformation.
- Saved $3,000/unit and 3-week lead time by simplifying supply chain and switching to cheaper paint for injection molded parts. Led mechanical & chemical testing of new paint, qualified new supplier, and coordinated manufacturing cut-in.
- Reduced injection molded panel warp by 16% by redesigning supplier's paint fixture to minimize stress during thermal cycles in curing phase and implemented new visual OQC test and specifications.
- Redesigned protective packaging as a single-piece foam solution, validating performance via custom-built test fixture and vibration analysis to reduce assembly time by 41% and shipping damage by 18%.
- Resolved core thermal engine issue by implementing new supplier test protocols and improved first pass yield by 10%.
- Reduced instrument LED panel color/brightness variation by 13% by developing a manufacturing Python calibration script.

Mechanical Design Engineer | View
January 2022 – November 2023

Smart electrochromic windows

- Led full lifecycle mechanical design of die cast aluminum enclosure for new controller PCBA; improved thermal efficiency by 23% from previous generation using integrated heat sink design and achieved IP56 rating for water/dust protection.
- Designed and fabricated precision fixture to automate resin dispensing process for controller's water/dust seal; programmed the XY gantry motion path, dispensing pressure, and volume to reduce resin waste by 16% and assembly time by 31%.
- Designed custom stamped aluminum EMI shield and reduced PCBA radiated emissions by 28% to achieve FCC commercial and residential certification and avoided board-level modifications.
- Designed NEMA type 1 sheet metal housing for new control panel to enclose PCBA, power supplies, and networking hardware; optimized component layout and reduced physical volume by 67% and weight by 57%.
- Dissipated ~180W of thermal load within control panel housing and reduced PCBA hotspot temperature by 16°C by designing a compact forced-convection fan assembly made of formed sheet-metal bracket.
- Launched a new smart sliding window product line by achieving power transfer via a conductive roller and pad mechanism design validated for 50k cycles, enabling deployment at a 200 multi-unit residential building.
- Redesigned an injection-molded housing to eliminate sink marks, warpage, and out of spec holes, increasing supplier yield by 14% through optimized wall thickness, rib placement, and GD&T controls.

Mechanical Designer | Dürr Universal
May 2021 – December 2021

Custom industrial acoustic and emissions systems

- Designed gas turbine's air filtration wastewater piping layout and reduced material costs by 15% by optimizing routing and minimizing complex fittings while achieving target cooling and filtration efficiency.
- Redesigned catalytic reduction system by integrating new components into existing AutoCAD drawings, improved system efficiency by 10% and ensured compliance with updated EPA emissions standards.
- Designed 6 new sheet metal components for industrial gas turbine noise silencers and improved acoustic dampening by 11% and reduced material costs by 10%.

SKILLS, LANGUAGES & INTERESTS

Software: SolidWorks, PTC Creo, Siemens NX, OnShape, AutoCAD, Python, MATLAB, LabView
Technical: DFM/DFA, GD&T, NPI, Injection Molding, Die Casting, Sheet Metal, CNC Machining, dFMEA, pFMEA, FEA
Languages: English, Chinese, Malay
Interests: Videography, Soccer, DJ

EDUCATION

University of Wisconsin - Madison
Graduated: May 2021

Bachelor of Science in Mechanical Engineering