Scott Lee, PE
Cadtools.com

Mechanical Engineer, PE

Certifications: California Registered Professional Engineer, Registration #M30613
Previously "Level 2 Mechanical" Certified Engineering Provider (CEP) for Pro/E

Summary of Mechanical Engineering Qualifications and Skill Set:

- Mechanical design and analysis of electronics, optics, drive systems and mechanisms for severe environments or instrument applications including space, aircraft and ground mobile
- Journeyman level SolidWorks design with part & assembly modeling, drawing, simulation, sheet metal and cable experience
- Expert level Pro/E design including surfacing, top-down design, sheet metal, ECAD/MCAD, User level for Pro/Mechanica analytical package
- Sheet metal, backplane, plastic part, PCB and other design areas for electronic packaging
- Tolerance analysis using GDT for design intent and 6 sigma statistical approach for HVM
- Thermal analysis, both macro/architectural level and detail for electronic packaging and other design considerations using hand calculations, Steinberg developed algorithms, self-coded C routines, ANSYS FEA, Pro/Mechanica and SolidWorks Simulation
- Structural design and analysis for severe shock and vibration environments; hand calculations, Excel, SolidWorks Simulation, PTC Mechanica and ANSYS
- Provide leadership and guidance to specialized Thermal and/or Structural analyst(s)
- System layout and detail design of Avionics, Servers and PC's; main board, chassis detail design, thermal and structural optimization. Including but not limited to main board area, interconnect considerations, I/O, front panel, and enclosure detail.
- Optimize use of materials, coatings and plating for performance, price and production
- Accurately bid/schedule design, analysis and development tasks; identify risk exposure areas
- Fluent in ASME-Y-14.5 and PDM/PLM requirements for an accurate documentation package
- Mechanical Engineering guidance for mechanical and circuit card designers
- Generate environmental test plans, supervise and participate in testing, produce test reports
- Support Manufacturing and a full range of vendors during development and production
- Determine optimum solution to production and material review board problems at all production levels

Computer Skills:
Languages in order of study: IBM 360 assembly, FORTRAN, Pascal, C, 8086 assembly, C++, C#, VB.NET. Main "compiler/IDE" tool presently Visual Studio 2015, also used for web site development with HTML, CSS, ASP.NET. Customize SolidWorks through API with C#. Use Microsoft Office & Project. Build my own workstations covering several generations, from 80286/287 to present Z97. Member of Intel design team generating server reference designs used industry wide for DP Xeon, 4-way Xeon and Itanium, both main boards and systems, from 2001 to 2011. Windows user/admin since NT v3.1 Beta, DOS before that back to IBM DOS 1.1. Other OS's include UNIX (SGI IRIX), and VAX/VMS. 10 month Air Force computer/electronics school included basic electronics, solid state electronics, digital logic and a final 4 month section on troubleshooting mainframes down to the gate.

Work History:

2016 Cadtools LLC

2014-2015 Kona Medical, Bellevue, WA. Contract Employee

- Cable design for large complex ultrasound technology based system.
- Mechanism re-design for reliability and DFM

2013-2014 Physio-Control, Redmond WA. Contract Employee

- Connector contact pattern statistical tolerance optimization for high repeatability using advanced 6 sigma methodologies for high criticality defibrillator electrodes.
- Re-design and assist with move of high criticality family of electrodes for open heart surgery application from one vendor to a team of vendors to optimize cost and quality.

2012 Microsoft Corp., Redmond WA.: Contract employee

- PC Board and cable/interconnect mechanical design. Perform PC board connector and component location optimization, detail design on critical PC board and high speed cable for Xbox 1 peripheral.
- Work with vendors on detail connector design to assure fit and function over a statistically significant production population size optimizing cost vs. yield
- Fixture design for test and validation procedures

2000-2011 Intel Corporation, DuPont, WA. Sr. Mechanical Engineer

- 2008 – 2011 Design reference systems for Dual Processor Xeon platforms. Board design (mechanical) for entire Xeon platform family and validation chassis for same. Mentor & train offshore engineering team in chassis design.
- 2006 – 2008 Designed reference systems for 4 way Xeon and Itanium platforms. Focus on chassis design with thermal and structural analysis, detail internal plastic parts and plastic assemblies for high force connector/cable test assembly
- 2004-2006 Designed reference systems for desktop systems; home entertainment PC acoustic optimization through fan speed control algorithms, heat pipe optimizations (guided a thermal team of contractors I was responsible for in this) and other thermal/acoustic optimizations. Low noise air mover R&D, other various desktop system mechanical development efforts both structural and thermal. Held training sessions for offshore engineering teams in chassis structural optimization and structural synergies with thermal teams. Plastic part design using highly advance surfacing for fan impellers and housings for low noise fan project; fan impeller (blade) geometry had to exactly match certain aerodynamic optimization driven shapes and not be approximations.
- 2001-2004 Designed reference systems for single and dual processor (Xeon) servers. Main board mechanical design, chassis structural optimization, thermal management including airflow considerations and details such as ducting; partnered in heat sink design, specification and development. Generated design collateral and presented same at forums such as Intel Tech Forum and Intel Design Forum (IDF).
- 2000-2001: Layout and detail design of dual processor Itanium server product main board area (all details aft of fan bay, chassis and board). Mechanical design on main board, chassis pan, riser mechanicals and other details in the electronics bay. Optimized airflow

vs. structural requirements to allow maximum airflow with sufficient structure. Released as OEM product.

1996-2000: Engineering Design Corp, Sierra Madre, CA. Sole Proprietor, Mechanical Engineer, PE.

- Design and develop movie studio light stand product for high loads & elevation
- Optical bench for low orbit imaging platform
- Structural analysis & report for International Space Station (ISS) flight critical environment monitor
- Brushless DC motor housing, both plastic and die cast versions, vehicle HVAC system
- Training classes for machine shop personnel in tolerance interpretation
- Consultation on GD&T issues
- Drive train for additional axis machining head
- Semiconductor (laser diode) manufacturing process tooling for fab, bake-in and test
- Intensive study in advanced Pro/E areas such as surfacing & top down design, leading to registration as a Level 2 mechanical certified engineering provider for PTC
- Passed mechanical PE exam on first pass; the exam is an extremely difficult endeavor with a 34% pass rate in my testing cycle

1987-1996: Loral EOS, Pasadena, CA. Sr. Mechanical Engineer.

- Opto-mechanical design on a wide range of reflector and window assemblies for external aircraft mounting and integration
- Ray trace optimization of reflector geometry for required dispersion pattern
- Electronic packaging for avionics digital control units, analog controls and high power modulators and power supplies; very high power densities and altitude operating requirements
- Systems thermal and lead electronic packaging responsibilities on dual rack spacelab experiment, manned orbital flight of a microgravity experiment
- Ground support and flight unit interconnect (cabling) design for Cassini mission, deep space multi-year Saturn mission, still operational

1979-1987: Various responsible positions as a Mechanical Design Engineer at Hughes Aircraft, Beckman Instruments, Datametrics, and Burroughs Corporation.

- Electronic packaging design on a wide range of ground mobile, aircraft and spacecraft applications, including but not limited to:
    - DC-DC converter thermal, structural and detail mechanical design for Hubble telescope power sub-system
    - Printer power supply (packaging, thermal) and paper drive (mechanism) design
    - Electronic packaging on an early spread spectrum communications system

1977-1979: Cal Poly Pomona, Full time student, Mechanical Engineering; B.S.M.E., June 1979.
1972-1977: U.S. Air Force, Mainframe and Network (WAN) Computer Systems Repair.

Education: B.S.M.E., Cal Poly Pomona, 1979.
A.A., Riverside City College, 1977. Attended full time while active duty Air Force.
Electronic Computer Systems Repair, Mainframe specialty, Keesler AFB, 1973