Lars Osborne

Mechanical Engineer

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LarsOsborne.com

Summary

Degreed mechanical engineer with minor in electrical engineering. Experience with spacecraft and spacecraft component design, analysis, and test including structure, pressure vessels, avionics, and propulsion.
US citizen with ability to qualify for security clearance.

Skills

CAD:
Solidworks, Creo 2.0, CATIA V5, Inventor

PDM:
Solidworks PDM, Windchill, Keysight

Analysis:
Solidworks, ANSYS, Matlab

DFM:
CNC Mill/Lathe, sheet metal, tubing, weldments, 3D printing polymers and metal.

Hands-On Skills:
Milling, turning, tube bending, tube flaring, cryogenic plumbing, epoxy bonding, part and weld inspection, clean room operations, spacecraft integration.

Industry Standards:
ASME Y14.5 GD&T, ISO9001/AS9100

Microsoft:
Excel, Project, Visio, OneNote, PowerPoint, Word, SharePoint.

Collaboration Software:
Confluence, Jira, Slack

Education

B.S. Mechanical Engineering 2012
Minor Electrical Engineering
Montana State University, Bozeman
GPA: 3.06 / 4.0

Hobbies

3-D printing, hiking, camping, snowboarding, astronomy, amateur rocket engines, VR video games, mentoring young people in engineering

Work Experience

2016-2019 **Tethers Unlimited** — Bothell, WA

Lead Design Engineer of HYDROS Propulsion system: A water-electrolysis rocket engine for small spacecraft. Worked full product lifecycle to deliver 4 units of 2 different HYDROS models with flight heritage expected in 2019. Performed design, analysis, and test of spacecraft radios.

Designed: Pressure vessels, structures, rocket engines, cabling, fluid systems, avionics chassis, and radio chassis with integrated waveguides.

Analysis: Pressure vessels, structural vibration, tolerances, bolted joints, avionics thermal analysis, and multi-orbit spacecraft thermal analysis.

Test: Vibration, hydrostatic, thermal cycle, vacuum, and shock.

Investigation: Led troubleshooting efforts, discovered root cause, and implemented corrective actions into valve failures.

Process: Created company-wide workflow and release process for mechanical designs. Administered product data management system for mechanical design documentation and trained users.

Proposals: Authored 6 proposals to NASA and DoD to support development of next generation propulsion systems based on HYDROS and new products.

Leadership: Provided technical leadership to 3 junior engineers working on HYDROS, approving technical work and teaching industry standards.

2014-2016 **Spaceflight** — Seattle, WA

Developed 50 kg imaging satellite and multi-satellite rideshare vehicle. Focused on resolving production issues as well as developing and executing component and subsystem tests.

Testing: Designed and wrote procedures, designed and assembled custom test hardware, executed tests, and evaluated data for propulsion leak detection, thermal cycle, vibration, shock, vacuum bakeout, and fastener testing.

Production: Inspected parts and assemblies, solved manufacturing issues through vendor management, documentation improvement, and design changes. Repaired vacuum chambers and managed clean room.

Problem Solving: Repaired a systemic propulsion leak from manufacturing flaw in pressure vessel via custom fitting. Discovered and resolved fastener galling problem before integration with no impact to schedule.

2013-2014 **Electroimpact** — Mukilteo, WA

Developed high precision mobile robot that drilled holes and inserted fasteners to join fuselage on automated aircraft assembly line. Performed requirements definition, design, modeling, analysis, drawing, contract manufacturing, inspection, assembly, integration, and test on robot subsystems. Created pneumatically powered guidance system and interlock to safely position a 14-ton robot system within 2 inches of $50M aircraft.

Selected Internships

2012 **Honeybee Robotics** — Pasadena, CA

Conceptualized, designed, analyzed, assembled, and tested prototype Mars drill. Oversaw manufacturing and managed schedule. Performed testing of Curiosity Mars Rover drill bit in Mars-simulating vacuum chamber. Developed concept and analyzed performance of ISRU water extraction system.

2011 **NASA Robotics Academy** — Ames Research Center, CA

Created requirements document for a lunar rover from mission goals and flowed requirements to subsystems.

2010 **NASA Robotics Academy** — Marshall Spaceflight Center, AL

Developed conceptual robotic system for orbital debris cleanup. Integrated electronics into mobility platform and developed tracking system hardware.

2009 **NASA Jet Propulsion Laboratory** — Pasadena, CA

Planned, developed, and executed software tests on computer simulations and hardware models for analytical instruments on Curiosity Mars Rover.

2007-2009 **Montana State University Space Laboratory** — Bozeman, MT

Designed, analyzed, and procured components for CubeSat attitude control system. Performed FEA analysis of structure. Mission success in 2012.