Andrew Alexander

Industrious Pulsed Power & Mechanical Engineer

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I'm a high-voltage electromechanical engineer with 7+ years of experience, consistently delivering quality-centric results. I seamlessly integrate software and hardware for user-friendly systems that people rely on.

Rapid prototyping of mechanically complex and high-voltage systems, a specialty.

Work History

Pulsed Power/ Electromechanical Engineer

Pacific Fusion, Fremont CA *November 2024 - Oct 2025*

- Designed & analyzed our high-precision triggering initiator with 2ns jitter, 10-90% 10ns risetime, involving novel 100kV energy storage & solid-state switching techniques, calculation of inductance & capacitance, system characterization using Ansys Maxwell & CASTLE, calculated mechanical design to resist earthquakes as well
- Designed from scratch a custom low-capacitance field-distortion trigger switch
- Built electronics procedures and infrastructure from the ground up for company-wide usage in multiple locations

Pulsed Power/Electromechanical Engineer

Zap Energy, Seattle WA *February 2024 - Nov 2024*

- Designed 6 different high-speed, high-voltage power electronics projects, with the goal of reliability and robustness while near very high emission sources.
- Developed revision-control processes from scratch for the R&D team, this solved unknown PCBs making their way into active experiments while also consolidating design docs in one place, saving the team weeks of troubleshooting time.
- Administered 3D Printing and PCB fabrication for the entire company, PCB prototyping time went from 1 week per revision down to less than a day per revision.
- Built a mobile several-hundred kilovolt tester, this allowed us to QA cables and components before installation, saving the company almost a million dollars in wasted contractor time/effort.

Pulsed Power/Electronics Engineer

TAE Technologies, Orange County, CA *May 2018 - January 2024*

- Owned the design/development of more than 180 different electronics projects which combined custom high-voltage components with digital logic in a high-speed, high-EMI environment resulting in quality circuits at low cost.
- Administered Altium for the entire company, finally consolidating all electronics design documentation in one place (along with Jira), resulting in secure, easily accessible revision control for the various systems on our 300ft long nuclear fusion reactor.
- Solely responsible for our custom Xilinx FPGA-based Data Acquisition systems, low per-channel costs led to savings of millions for TAE.

Engineering Inspector

City of New York, New York, NY *June 2016 - April 2018*

- Conducted over 50 field inspections and detailed design calculations to ensure the accuracy of dimensions and project data, resulting in 95% compliance with industry standards and enhancing overall project quality.

Websites & Portfolios

https://portfolio.atomspring.com

https://linkedin.com/in/atomspring

Certifications

- California-licensed EIT
- Certified Solidworks Associate

Skills

- Solidworks & Creo
- Altium Designer
- Power electronics
- Embedded systems
- Analog electronics design
- COMSOL Multiphysics FEA
- LTSpice
- Python
- C, C++
- Arduino
- CNC & Manual milling and turning
- 3D Printing, Laser Cutting/Engraving

Education

B.Sc. Mechanical Engineering

City University of New York, NY

Languages

- Fluent English
- Fluent Spanish

Projects

2023 - Pulsed Hipotter

2021 - 13GHz Microwave VCO

2020 - 450cc motorcycle restoration

2013 - DIY Arc Welder