

Laura Carrillo

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SUMMARY

Mechanical Engineer with 4+ years of experience designing, assembling, testing, and commissioning mechanical systems from initial concept to final deliverable under accelerated timelines.

PROFESSIONAL EXPERIENCE

Twelve, Senior Mechanical Prototyping Engineer

May 2022 - Present

- A key member of the prototyping team in charge of a novel electrochemical reactor used for SAF production.
 - Implemented quality control and established cleaning procedures for incoming parts.
 - Assisted with process development of component pre-assembly and reactor builds, validated design changes, and advised the stack architecture team on next-generation design improvements.
 - Developed a 'rework' process to replace low performing cells in reactors identified by electrochemical operation. This procedure extended the reactor lifetime by 100% and showed operational improvements of up to 120%.
 - Developed calculations for effects of different forces and stresses to help create an Excel-based 2D compression model for the reactor.
- Drove design and implementation of two revisions of the pre-operational testing systems (POTSy).
 - Engaged with electrochemistry and testing teams to define a list of requirements and release criteria for reactors. Determined equipment and facility needs from leak and electrical criteria.
 - Worked with consultants to troubleshoot, validate, and implement software and electrical designs and deliverables.
 - Performed Gage R+R to validate each system before writing an SOP, conducting a JHA, training, and releasing it to the operations team.
- Project Manager - Process Improvements, Early and Modular Testing
 - Contributed to and managed a cross-functional team of 15 engineers to drive a fixture design prototype, testing, iteration, and implementation with software support. This low-pressure leak tester checked subassemblies with 100% throughput of components going into a stack assembly, resulting in fewer rebuilds.

Diamond Foundry, R&D Engineer

October 2020 - April 2022

- Lead frontier hardware development team member in charge of designing, testing, and implementing reactor components and exploratory process development.
 - Tested new hardware for changes or improvements in reliability and performance as defined by KPIs.
 - Used Solidworks to design and test new nozzle geometries to change flow structures that opened process space by 20% and improved performance.
 - Worked with production planning and process development teams to implement hardware upgrades as a new generation of reactor both in the R&D facility and foundry.
 - Applied design of experiments (DOE) and data analysis to qualify hardware for reactor upgrades; this involved working with the R&D Process team to map out the new process space to meet annual KPIs.
- In charge of plasma and reactor characterization techniques for ultra-high vacuum (UHV) systems.
 - Implemented optical emission spectroscopy (OES) across the R&D facility as a plasma characterization tool. This system allowed us to gather information about plasma composition, monitor tool health and performance, and characterize differences from process changes and hardware upgrades.
 - Utilized virtual network analyzer (VNA) to measure loss and reflected power in R&D tools. This allowed us to create a baseline for tool health, reduce system design weaknesses, and point to factors affecting health and performance.
- Assisted automation and software teams with mechanical design and data analysis.
 - Designed and tested fixtures for different backend systems in Solidworks.
 - Used Python to improve plasma modeling software to identify instabilities and unexpected changes.
 - Redesigned UI/UX of internal production applications to improve the workflow efficiency of internal processes.

Southern States, LLC, Design Engineer Co-Op

August 2017 - December 2017

- Used SolidWorks to design and build unitized shipping containers for 128kV vertical circuit switch interrupters.
 - Used SolidWorks to redesign, prototype, and test shipping crates for 13 types of interrupters to increase company efficiency and safety.
 - Designed, performed FEA, prototyped, assembled, and tested 38kV line switch interrupters.
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SKILLS

Software: 3D CAD (SolidWorks, Fusion360), 2D CAD (AutoCAD), LabVIEW

Machining: 3D printing, lathe, drill press, bandsaw, laser cutter

Characterization Tools: Optical Emission Spectroscopy, Raman (UV-IR), Photoluminescence (PL)

EDUCATION

Georgia Institute of Technology, Atlanta, GA
Bachelor of Science in Mechanical Engineering

December 2019