Peter Ascoli

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About

I am a multidisciplinary engineer with roots in mechanical engineering and machine design, as well as experience in controls, mechatronics, and systems engineering. I am always looking to grow and find it exciting to learn new skills. I am a creative and methodical problem-solver and I take pride in being able to effectively communicate my ideas to all audiences. 5+ years of industry experience, 10+ years of engineering experience.

Experience

Natel Energy, Alameda, CA, USA

Senior Mechanical Engineer: August 2021 – Present, *Mechanical Engineer: September 2018 – July 2021*

- A multidisciplinary role involving the "concept to reality" design and successful delivery of turbine components, controllers, and auxiliary systems for Restoration Hydro Turbine (RHT) installations
- Major items delivered as part of my mechanical engineering focus on structural and machine design:
  - Natel's first MW-scale RHT propellor production part – a composite construction of the novel fish-safe geometry realized through rigorous structural design and supplier development
  - Led structures development for design for manufacturing of axial-bulb style turbines and delivered the major weldment fabrications for the first European sale of the RHT
  - Numerous static, fatigue, pressure, and hydraulic performance testers designed, built, and commissioned to validate turbine components, assemblies, and auxiliary systems
- Major contributions in the areas of controls and systems engineering:
  - Hydraulic actuation system and position controller for the guidevanes on the first MW-scale RHT
  - Controller programming and test-based validation of all active auxiliary systems for the first European sale of the RHT – climate control and actuation on submersed units
  - The complete electrical design and control system for a hydraulic test loop including wiring, data viewing and control interfaces, sensors, motor control, and data acquisition
  - Creation of system flow charts, requirements generation, and verification tracking
- Other key contributions and responsibilities include:
  - Developed tools for quickly generating cost-effective, multi-turbine plant configurations
  - Creating technical reports & presentations for compliance, audits, grant reviews, and customers
  - Troubleshooting and resolving controller bugs in active RHT installations
  - Defining and evolving the best practices and tools used by the engineering team, particularly in the areas of CAD modeling, FEA, GD&T, integration testing, system interfaces, and requirements
  - Mentoring engineers through their projects and providing trainings on new tools and processes

Space Exploration Technologies (SpaceX) Hawthorn, CA, USA

Dragon Structures Engineer: August 2017 – August 2018

- "Cradle to grave" responsibility for primary and secondary interior structures, which were successfully delivered to and flown on Dragon 2 [Crew Dragon]. Key responsibilities included:
  - Designed mass and stiffness-driven metallic and composite components, frequently holding cross-team design reviews to drive towards solutions and validate system requirements

    - Developed an analysis methodology to sweep through thousands of load cases in FEA to identify the drivers and create a design space for component iteration
    - Statically tested flight hardware and wrote certification reports qualifying hardware for flight according to rigorous SpaceX and NASA standards
    - Managed the build and readiness of interior mock-up for Crew-Ops training exercises
- Production responsibility for all Dragon 1 trunk composites, which were successfully delivered to and flown on ISS resupply missions. Key responsibilities included:
    - Reviewing static testing data, approving structures for flight, and validating testing requirements based on flight data
    - Quickly resolved production-halting issues through specifying additional testing or inspections, organizing repairs, and conducting detailed structural analysis to address concerns

Laboratory for Manufacturing and Productivity at MIT, Cambridge, MA, USA
Graduate Research Assistant: September 2015 - September 2017

- Investigated process variations in seamless tool manufacturing for continuous microcontact printing
- Modeled thick film lithographic exposure of tool molds to define the manufacturing process window
- Programmed a raster-scan lithography setup to create photoresist molds, on which to centrifugally cast PDMS, to create seamless cylindrical stamps with micron-scale features
- Created microscope tools that integrated into the manufacturing setup to inspect features and identify which process steps, and machine parameters were key contributors to feature variation.

Education

Massachusetts Institute of Technology, Cambridge, MA, USA
Master of Science in Mechanical Engineering, 2017

The Cooper Union for the Advancement of Science and Art, New York, NY, USA
Bachelor of Engineering, Mechanical Engineering, 2015

Skills

Mechanical Engineering: Machine design, 3D modeling, finite element analysis, datum flow chain management, GD&T, drawings, design for fatigue (metallics, weldments, composites), joint design (bolted, bonded, welded), design for manufacturing (metallics, weldments, composites), fabrication and assembly experience, conducting design reviews, report writing, and technical presentations

Project Management: Technical requirements development, supply chain development, supplier management, systems engineering, timeline management and task delegation

Controls Engineering: Development and maintenance of PLC code, version control, sensor selections, actuator selection and programming, electrical and software debugging, VFD and motor/generator control over fieldbus, and controller tuning

Fabrication: Manual and CNC 3-axis milling, manual lathe, water jet, laser cutting, 3D printing, most hand and benchtop tools, and composite layups

Software: Siemens NX & Team Center, NX Nastran, Beckhoff TwinCAT, GIT, Grafana, Microsoft Office, and Google Workspace. Familiarity, but limited use in recent years: Autodesk Inventor / Fusion, SolidWorks, AutoCAD, FEMAP, ANSYS, HSMWorks, MATLAB, Python, LaTeX, LabVIEW, and Adobe Creative Suite.