Michael Fundaro

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Highly personable engineer looking to advance my career and support my growing family. 10+ years experience with gas turbine structures.

Willing to relocate to: El Paso, TX
Authorized to work in the US for any employer

Work Experience

Senior Structural Engineer

MTU Aero Engines North America-Rocky Hill, CT
January 2017 to Present

Projects Include:

• GENx Turbine Center Frame Concession - Supported FMEA of out-of-tolerance fairing castings. Built a complex bolted-joint model including line-to-surface contact with large initial interference.(ABAQUS, LCF, 1D crack prop., Python)

• GENx Turbine Center Frame Repair - Calculated the impact of reduced wall thickness due to accelerated oxidation in the field. Used LCF and crack propagation results to set new limits on an existing blend repair. (ABAQUS, LCF, 1D crack prop., 3D crack prop.)

• GE Gas Power Midshaft and Turbine Rotor Redesign - 7HA.02 Gas Turbine. Built and owned the 3D bolted joint submodel, updated it as geometry and thermal inputs changed through numerous iterations, and ultimately provided final LCF, Creep, and HCF results. (ANSYS/APDL, Perl, VBA)

• PW1100G Compressor Airfoil Stress Testing - Set up an on-site strain gauge monitoring plan to support MTU Munich colleagues who couldn't come to the U.S. due to COVID-19.

• PW1000G Turbine Rotor Repairs - Analysed structural impact of proposed surface blend repairs, hole re-sizing, and snap-surface restoration repairs mostly for PW1500G and PW1100G Low Pressure Turbine Rotors. Wrote Engineering Authorizations for each repair. (ABAQUS, hand-calcs)

• Undisclosed Customer - High Pressure Compressor LCF and Fracture lifing (ANSYS/APDL, Python, ABAQUS)

• Pratt & Whitney Operational Engine Repairs - Responsible for analyzing impact of proposed repairs, then writing technical approval documents to authorize the addition to the applicable engine manual. (Abaqus, Technical Writing, Crack Propagation)

• Undisclosed Customer - High Pressure Compressor fatigue and fracture analysis - Responsible for analyzing the feasibility of repurposed compressor disks. Automated thermal mapping and model setup (ANSYS/APDL, Abaqus & Python) to analyze 56 different mission combinations.

• PW1100G-JM High Pressure Compressor Redesign - Lead structural analyst for a rotating secondary flow component. Redesign solves an HCF issue, analysis shows that Goodman consumption is cut in half. Authored comprehensive structural analysis memos for each design iteration (ANSYS/APDL, Technical Writing)

• PW1200G Low Pressure Compressor Redesign - Rotor LCF and Fracture lifing, Airfoil HCF re-tuning (ANSYS/APDL, NX)

• Undisclosed Customer - Low Pressure Turbine balance weights assessment. (Hand Calcs)

• Undisclosed Customer - High Pressure Compressor LCF and Fracture lifing (MARC/Mentat, Python)

• PW1100G/PW1500G Low Pressure Turbine Redesign - 3D FEA model setup & pre-processing. (Hypermesh, NX, Abaqus)

• PWPS Turbine Exhaust Temperature Probe - Harmonic analysis of redesigned probe (Hand Calcs)

Responsibilities Include:

• Analyzing compressor and turbine rotors and reporting LCF life, damage tolerance levels, and overall strength margins to stakeholders.

• Automating tasks with Python wherever applicable.

• Teaching new team members ANSYS best practices and use of job related APDL scripts

• Managing available analytics resources (rotational engineers & outsourced labor

Structural Analyst

QuEST Global Engineering-East Hartford, CT

September 2015 to January 2017

Projects Include:

• PW1500G High Pressure Compressor Blend Repair Limits - Rotor LCF and Fracture lifing to determine allowable blend depth and aspect ratio. Published limits in the PW1500G Engine Manual (ANSYS/APDL, MS Excel, Technical Writing)

• PW1500G HPC and LPT snap diameter plasma coat repairs - Modeled snap diameter turning operation into FEA model and conducted LCF and Fracture life assessment of repaired hardware. (ANSYS/APDL, Technical Writing)

• PW1500G Low Shaft snap diameter plasma coat repair - Built a 3D submodel to determine the effects of a snap diameter turning operation in close proximity to a clocking hole in the low pressure shaft. (ANSYS/APDL, Technical Writing)

Project Engineer

QuEST Global Engineering-East Hartford, CT

June 2013 to September 2015

Projects Include:

• PW1500G External Bracket Redesign for Cost Savings - Worked with designers and suppliers to change bracket design from sheet metal to injection molded plastic. (Supplier interface, Preliminary Design Reviews)

• Nacelle & Engine Integration Design Standard Work Overhaul - worked directly with chief engineers to document existing BOM structure practices, identify weak spots, and improve the process. (Process improvement, story-boarding, technical writing)

• FT4000 Industrial Compressor blade re-sourcing - coordinated efforts between new blade manufacturer and PW quality team to certify the supplier. (Scheduling, Punch List)

• PW1100G Fan Hub & Fan Shaft redesign - Ran technical team meetings, kept minutes, maintained schedule. (Gantt Chart, Action Item tracking)

• PW4000 Fan Cowl Latch Redesign - Interfaced with supplier to move redesign through P&W BOM update workflow. (Supplier interface, Design Reviews)

Team Leader

RPI Formula SAE-Troy, NY

May 2012 to May 2013

Took on the role of lead project engineer responsible for timely development, construction and testing of RPI's Formula SAE racecar.

- Recovered ~2 month gap in chassis build schedule by "outsourcing" the welding to a local vocational school.
- Coordinated full scale wind tunnel testing with Calspan in Buffalo, NY. Arranged for time in Calspan's sub-sonic wind tunnel, wrote and executed test plan, planned travel for 5 to/from Buffalo.

Team Member

RPI Formula SAE-Troy, NY

August 2011 to May 2013

Took on various roles, both technical and non-technical.

• Redesigned and fabricated motor oil pickup. Cut weight in half while maintaining required oil pressure.

• Designed and fabricated the "push-pull" bar for moving the car around the paddock. Used my experience pushing sleds at football practice to design a more ergonomic product.

• Designed "The Stig" Stencil for tagging/canvassing around campus during recruiting efforts. Had a part in growing the team from 10 to roughly 40 members.

• Fabricated suspension A-arms. Cut steel tubes to length, bent and ground ends to fit bearing seat, prepped for welding.

• Hybrid steel-composite chassis fabrication. Using Solidworks, aligned cuts and folds in carbon sandwich panels. Executed said cuts and folds before bonding to steel chassis.

• Carbon fiber seat fabrication. Constructed fiberglass mold, and made a carbon-fiber bucket seat that weighed 17oz.

Education

Bachelor's in Aeronautical Engineering

Rensselaer Polytechnic Institute - Troy, NY

August 2009 to May 2013

High school or equivalent

Waldwick High School - Waldwick, NJ

September 2005 to June 2009

Skills

- FEA (5 years)
- ANSYS/APDL (5 years)
- Hyperworks (Hypermesh/Hyperview) (3 years)
- NX11
- Python
- VBA
- Word
- CAD
- Microsoft Office
- Linux
- SolidWorks (2 years)
- Technical Writing (5 years)
- Photo editing
- Video editing
- Oil Painting (10+ years)

Languages

- Spanish - Beginner

Additional Information

Volunteering experience includes:

• SHRED Foundation, Windham NY. (Winter 2017) Volunteered to teach youth how to snowboard.

• Junior Achievement, Rocky Hill, CT (Spring 2018) Volunteered to teach a local 5th-grade class about the fundamental roles of entrepreneurs in the US economy.