



Job Description

Job Title: Structural Analysis Staff Engineer

FLSA: Exempt

Department: Engineering

Date: 8/2022

Position Overview:

Provides senior stress analysis engineering support for projects – typically new product development and ongoing product support. Will often serve as the lead stress analysis engineer on development projects providing technical support to the Lead Project Engineer and Program Manager. Provides technical support in other functional areas as required. Mentors and coaches more junior engineers in the company. Develops both linear and nonlinear ANSYS finite element analysis (FEA) models to conduct stress analysis in support of new product and component development. Validates the FEA models. Accomplishes hand calculations as required. Assesses and communicates the results of stress analyses to internal and external customers. Provides guidance on the best approach to conducting static and dynamic load testing in support of related model validation as well as product qualification. Helps evaluate the potential and practicality of products in development. Supports proposal development activities such as providing analysis labor and analysis model validation test cost estimates. Relies on experience and sound judgment to plan and accomplish goals. General design creativity and direction is expected. Self-directed with positive attitude toward helping the entire program team succeed to include helping colleagues across functional boundaries, as required. Strong written and verbal communication is required within Safe and with the external customer. Good situational awareness skill and ability to provide the appropriate response(s) are a must. Can-do attitude is a must.

Educational Requirements:

Bachelor's degree in mechanical engineering plus 8 years of experience accomplishing finite element analyses (linear and nonlinear) of complicated mechanical mechanisms using software and accomplishing stress calculations by hand or equivalent education and experience. An advanced engineering degree is preferred.

Essential Job Functions:

- Support new product design and development efforts by accomplishing structural loads and dynamics analyses of complicated mechanical mechanisms.
- Provide analytical support for assessing the impact of contemplated product design engineering changes on the structural integrity of the system/components.
- Prepare and conduct structural analysis sections for preliminary, critical, and interim technical design reviews.
- Explain results calculated by FEA software and using hand calculations.
- Perform stress analyses/evaluations using constitutive equations, numerical and finite element methods, and empirical methods.



- Evaluate the results of detailed stress analyses and use them to inform the design of components and systems.
- Prepare and process engineering change notices per internal procedures.
- Support a variety of product development, validation, and qualification testing.
- Write stress analysis sections of statements of work for subcontractors and support/supervise/critique their work.
- Validate FEA models.
- Validate material properties used in analyses.
- Write test plans, test procedures, and test reports to support/anchor FEA models.
- Setup and perform a variety of static and dynamic component and system tests.
- Prepare detailed structural analysis reports for customer approval.
- Write progress, compliance, technical and other similar reports.
- Other job functions and duties as assigned by management.

Job Requirements:

- Fully functional in the application of best practices of mechanical engineering and related structural loads and dynamics modeling and analysis.
- Capable of correctly applying and interpreting geometric dimensioning and tolerancing (GD&T) principles.
- Expert knowledge of mechanical mechanism assembly, subassembly, and component-level stress analysis to include linear and nonlinear FEA modeling and results assessment.
- Fully capable of efficiently and successfully modeling complex mechanical structures and mechanisms using ANSYS engineering simulation/FEA software and SolidWorks® Premium Simulation.
- Knowledge of, and experience with, solid modeling using SolidWorks® or a related package.
- Ability to modify models in SolidWorks® and export to ANSYS to facilitate structural analysis modeling.
- Strong familiarity with aerospace materials.
- Familiarity with metallic and composite manufacturing methods and limitations.
- Capable of performing structural weight optimization.
- Functional with Microsoft Office Word and Excel and possess a working knowledge of Microsoft Project.
- Support subcontractors performing structural and other related analyses on designs.
- Work in a self-directed manner as a member of a product development team.
- Strong attention to detail, degree of care, and critical thinking skills.
- Complete assigned program deliverables on schedule and within assigned budget.
- Accomplish assigned program deliverables completely and accurately.
- Accept ownership of assigned tasks and follow through with accurate and thorough status communication.
- Continually demonstrate excellent teamwork.
- Excellent situational awareness skills and abilities.
- Capable of estimating labor and materials costs for product and technology development projects.



- Demonstrated outstanding verbal and written communication skills with internal team members and external customers.

Physical Requirements:

The employee is required to talk, see and hear. The employee is required to sit for extended periods of time and use their hands and fingers, and computer keyboard. The employee is occasionally required to stand, walk, and reach with arms and hands. Vision abilities required by this job include close vision. Some light lifting, up to 25 lbs, is required.