Senior Structural Engineer

Role Overview

MasterCraft is seeking a Structural Engineer responsible for detailed structural analysis and validation of marine structures using finite element methods. This role focuses on developing high-fidelity models, defining realistic marine load cases, and correlating analytical predictions to physical test data.
The position works closely with design engineering, development, and manufacturing teams to support design decisions, resolve structural issues, and establish confidence in analytical results used to guide production designs.

Key Responsibilities

Structural Analysis & FEA

- Develop, execute, and interpret finite element models using Siemens Simcenter (NX Nastran / Simcenter 3D) and FEMAP
- Perform structural analysis of marine systems including:
    - Hulls, decks, stringer systems, bulkheads, and transoms
    - Towers, hardtops, seating structures, and accessory mounts
- Conduct static, fatigue, modal, vibration, and transient analyses to support design decisions
- Conduct structural first principle analysis to verify FEA results

Marine Load Cases & Durability

- Define and apply realistic marine load cases such as:
    - Hydrostatic and wave-induced loads
    - Slamming and impact events
    - Engine, propulsion, towing, trailering, and lifting loads
- Evaluate durability and fatigue life under normal and extreme operating conditions

Correlation & Validation

- Correlate analytical predictions with physical testing, instrumentation data, along with field usage and warranty feedback
- Support test planning, instrumentation strategies, and model refinement based on test results

Design Collaboration & Optimization

- Partner with design engineers to influence structural architecture early in development
- Support design reviews with clear, data-driven recommendations
- Define improved analysis methods

Documentation & Communication

- Produce concise analysis reports documenting assumptions, methods, results, and conclusions
- Communicate complex structural behavior in practical, actionable terms to cross-functional teams

Required Qualifications

- Bachelor's degree in Mechanical Engineering, Aerospace Engineering, Naval Architecture, or related field
- 3+ years of analysis experience in marine, automotive, aerospace, or similar industries
- Hands-on experience with:
    - Siemens Simcenter / NX Nastran
    - Strong understanding of structural mechanics and finite element fundamentals
- Experience correlating analysis results with physical test data

Preferred Qualifications

- Familiarity with ISO 12215 standard
- Experience with fiberglass and composite boat construction
- Familiarity with sandwich panel structures, bonded joints, and laminate design
- Exposure to strain measurement and test instrumentation