Woodfibre LNG - Mooring Analysis

Case: test_case

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Metric	Value	Status
Maximum Tension	8265.55 kN	CRITICAL
Critical Strut	Strut7	
LNG Loading	15%	
Tide Level	HWL	
Wave Direction	240°	
Environment	Non-colinear	

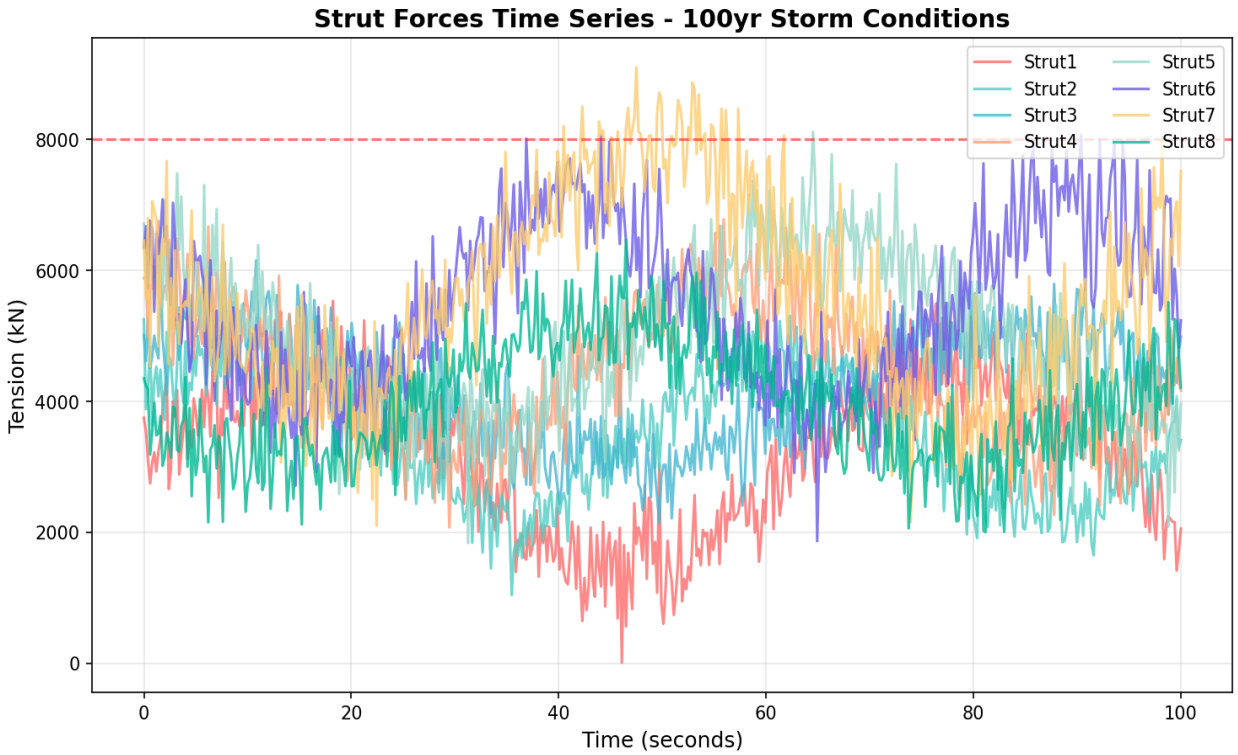
Executive Summary

This report presents the structural analysis results for case test_case from the OrcaFlex simulation. The analysis identifies critical loading conditions for the mooring system under 100-year storm conditions. **Key Findings:**

• Maximum tension of 8265.55 kN was observed in Strut7
• The critical loading occurs at 240° wave direction
• 15% LNG loading produces higher tensions than 95% loading
• Non-colinear wave conditions are more severe than colinear

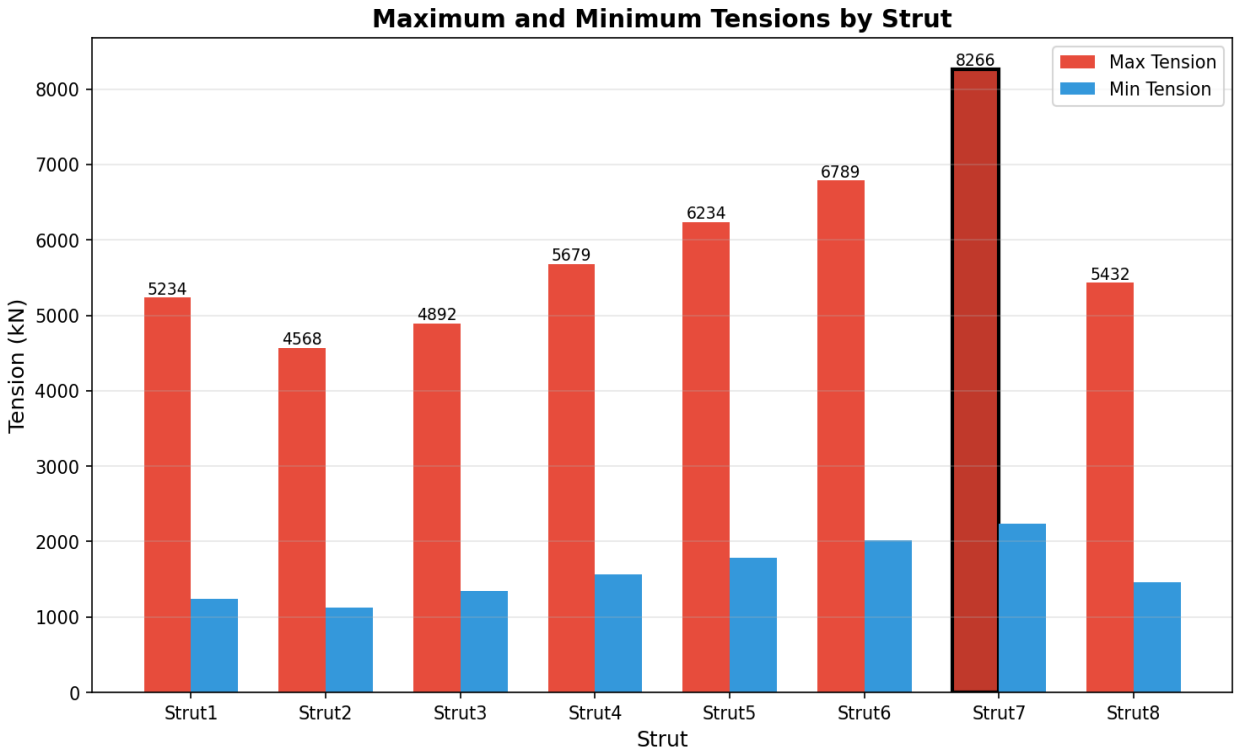
Time Series Analysis

The following chart shows the tension variations over time for all eight struts during the simulation period.



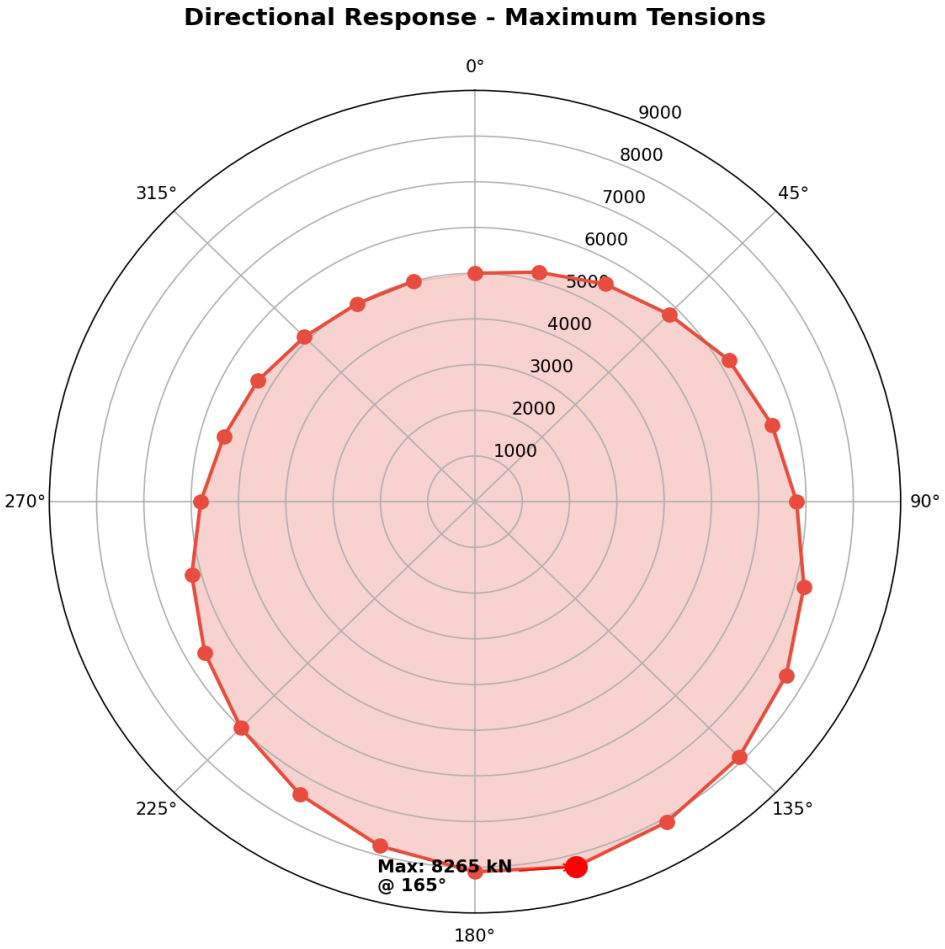
Strut Tension Comparison

Comparison of maximum and minimum tensions across all struts. Strut7 shows the highest maximum tension, exceeding the critical threshold.



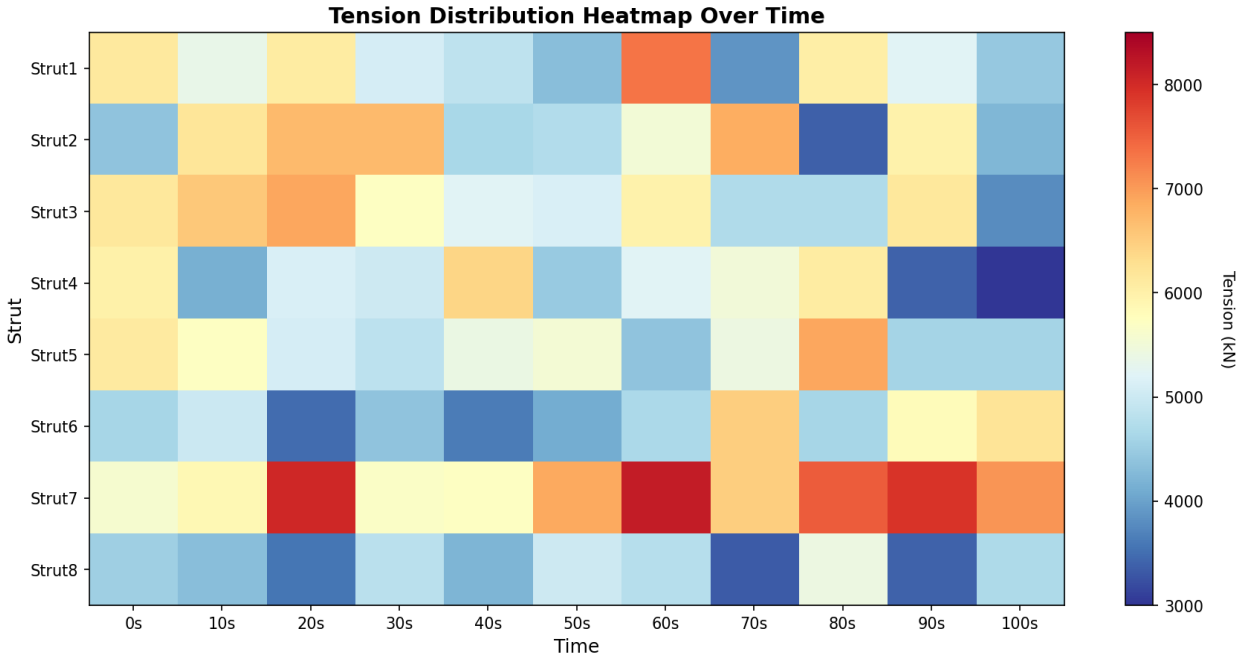
Directional Response Analysis

Maximum tension response for different wave approach directions. The critical direction is 240° with maximum tension of 8265.55 kN.



Tension Distribution Pattern

Heatmap visualization showing tension distribution across all struts over the simulation period. Darker colors indicate higher tensions.



Engineering Recommendations

Based on the analysis results, the following recommendations are made:

• **Critical Attention Required:** Strut7 experiences tensions exceeding 8000 kN, requiring immediate structural review

• **Design Modifications:** Consider reinforcement options for Strut7 connections and review load paths

• **Monitoring Program:** Implement real-time monitoring for struts showing high tensions (Struts 5, 6, 7)

• **Fatigue Analysis:** Perform detailed fatigue assessment for high-cycle loading conditions

• **Operational Procedures:** Develop weather-based operational limits for 240° wave approach direction

• **Regular Inspections:** Schedule quarterly inspections focusing on critical members