

Mechanics Of Marine Risers Using COMSOL® As Numerical Tools

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Abstract

The activities of oil exploration has moved from shallow waters to deep waters. This trend has also led to the need for more lengths of marine risers being used. Thus, the water depth increase will also mean that more load considerations will be carried out on the offshore structure and the platform as a whole. Marine risers looked at from the aspect of both the static loads and the dynamic loads. The TDP (Touch Down Point) is a very delicate area in the riser and the hang-off point are also been carefully analysed both analytically and numerically. A state-of-the-art review of marine risers and brief history are also looked at. The modelling of the marine riser using COMSOL® for the simulation was also added with other numerical results. The boundary condition is carefully chosen for the analysis of the marine riser behaviour. Also considered is the marine riser in an ocean environment, using hydrodynamic parameters. The fundamental mechanics equations for marine risers are looked at in this study and lastly the simulation results from COMSOL® show good fluid-structure interaction.

Figures used in the abstract

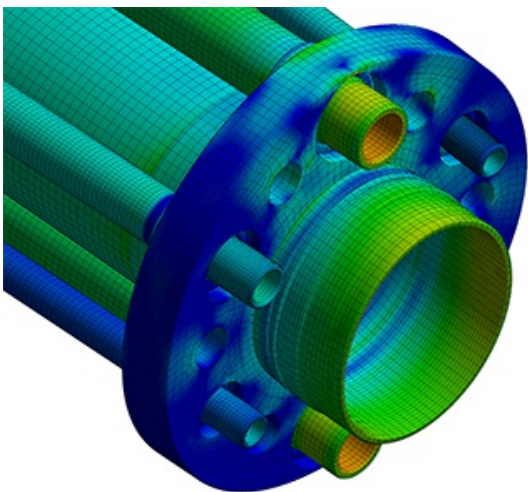


Figure 1 : Marine riser mechanics