CASE STUDY

Engineering Design Services

Engineering Design & Drafting | CAE Services: CFD & FEA | Reverse Engineering
Rapid Prototyping | Product Design | Value Engineering
PLM Services | Technical Documentation

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The design of offshore structures is arguably one of the most complicated tasks for engineers. Apart from withstanding land-based loading conditions, offshore structures also have to withstand hydrodynamic interaction effects arising due to its placement in ocean environment. Additionally, the effect of wind loads also impacts the overall strength of the structure.

Hi-Tech assisted a leading offshore equipment manufacturer in developing the tower design, considering the effects of wind and hydrodynamic loads through computer aided analysis.

**Challenges:**
- Determining different hydrodynamic and wind loading conditions to evaluate structural integrity of the tower
- Evaluating the bracket and rail supports based on the stress results obtained for the complete tower

**Solution:**
A detailed three-dimensional (3-D) finite element (FE) computer model was constructed for Structural analysis of the tower system. The analysis was performed to determine structural integrity and performance characteristics of the tower system under different hydrodynamic and wind loading conditions. The results indicated that the structure is safe under the applied loading conditions with satisfactory Factor of Safety.

**Benefits:**
- Assessed the structure design under wind and hydrodynamic loading conditions
- Reduced the number of physical test trials required
- Identified critical stress regions in bolts and brackets

**About Hi-Tech**

Hi-Tech CFD is a division of Hi-Tech Outsourcing Services, a pioneer engineering outsourcing company, providing expert Computer Aided Engineering - CAE consulting services for engineering / product design analysis.

The primary services include Computational Fluid Dynamics (CFD), Finite Element Analysis (FEA), product design optimization and value engineering services for Automotive, Building / Construction, Process industry, Power Generation, Manufacturing & Heavy Engineering domains.
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