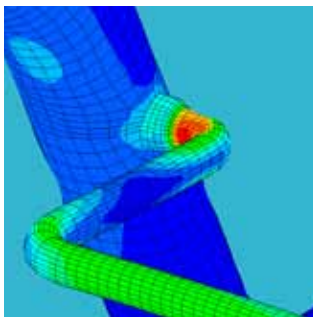
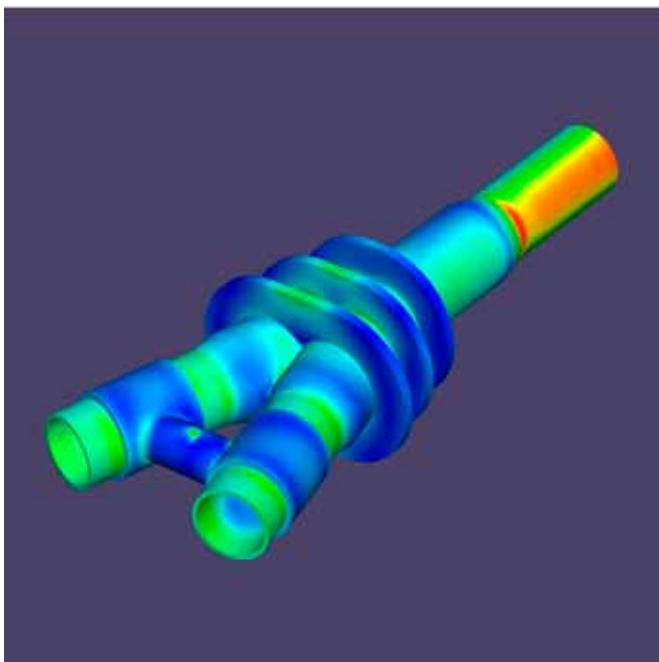


# Finite element analysis

## Capability statement



Below: Stress in a wye piece



Finite element analysis (FEA) is a numerical technique for finding approximate solutions of partial differential and integral equations. These equations model the behaviour of complex components or systems for any engineering application.

### The FEA team at Jee

At Jee, we combine our subsea and pipeline engineering expertise with frequent use of FEA to solve a wide range of engineering problems for our clients. Areas where we have used FEA include: buckling; lay curve analysis; spoolpiece expansion; pipe-in-pipe insulation; creep; spans; riser analysis; acoustic analysis and more.

Jee understands that FEA packages are purely tools and must be coupled with an understanding of what is being modelled and the likely behaviour.

Our FEA team is headed by a NAFEMS registered analyst. We have decades of FEA experience which makes Jee the preferred choice for subsea pipeline finite element analysis.

### The right tools for the job

Jee uses Abaqus to simulate systems and components as it delivers a complete and flexible solution. Benefits of the Abaqus suite include:

- ✦ Wide material modelling capability and ability for customisation
- ✦ Good collection of multi-physics capabilities for multiple field coupling (e.g. combining structural and thermal)
- ✦ Prior history effects capture (e.g. manufacturing process on product performance)

We have a rigorous quality checking system and we are proud to be certified by Lloyd's Register QA to ISO9001 for "Provision of pipeline engineering services to the oil and gas industry" since 1995.

### Proven track record

- ✦ Pipeline Engineering 2008 – Bend restrictor design
- ✦ Balmoral Offshore Engineering 2008 – Bend restrictor design verification
- ✦ BP 2007 – CATS remediation
- ✦ Oceaneering Multiflex 2006 – Thermal finite element analysis of a trenched umbilical
- ✦ BP 2006 – Finite element analysis of mechanical connectors

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Jee was asked to perform FEA on a complex assembly of components. The service offered surpassed expectation and is fully recommended.

Karl Dawson, Engineering Manager, Pipeline Engineering Solutions

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### List of related services

- ✦ Computational fluid dynamics (CFD)
- ✦ Mechanical connectors
- ✦ Span vibration monitoring and assessment
- ✦ Trenching and non-trenching
- ✦ Joint industry projects (JIPs)
- ✦ Pigging
- ✦ Standards and codes
- ✦ Product development
- ✦ Fishing interaction
- ✦ Riser analysis
- ✦ Decommissioning

### For more information

To find out how Jee can help manage and implement your engineering projects, please call us on +44 (0) 1732 371 371 or email [info@jee.co.uk](mailto:info@jee.co.uk).



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