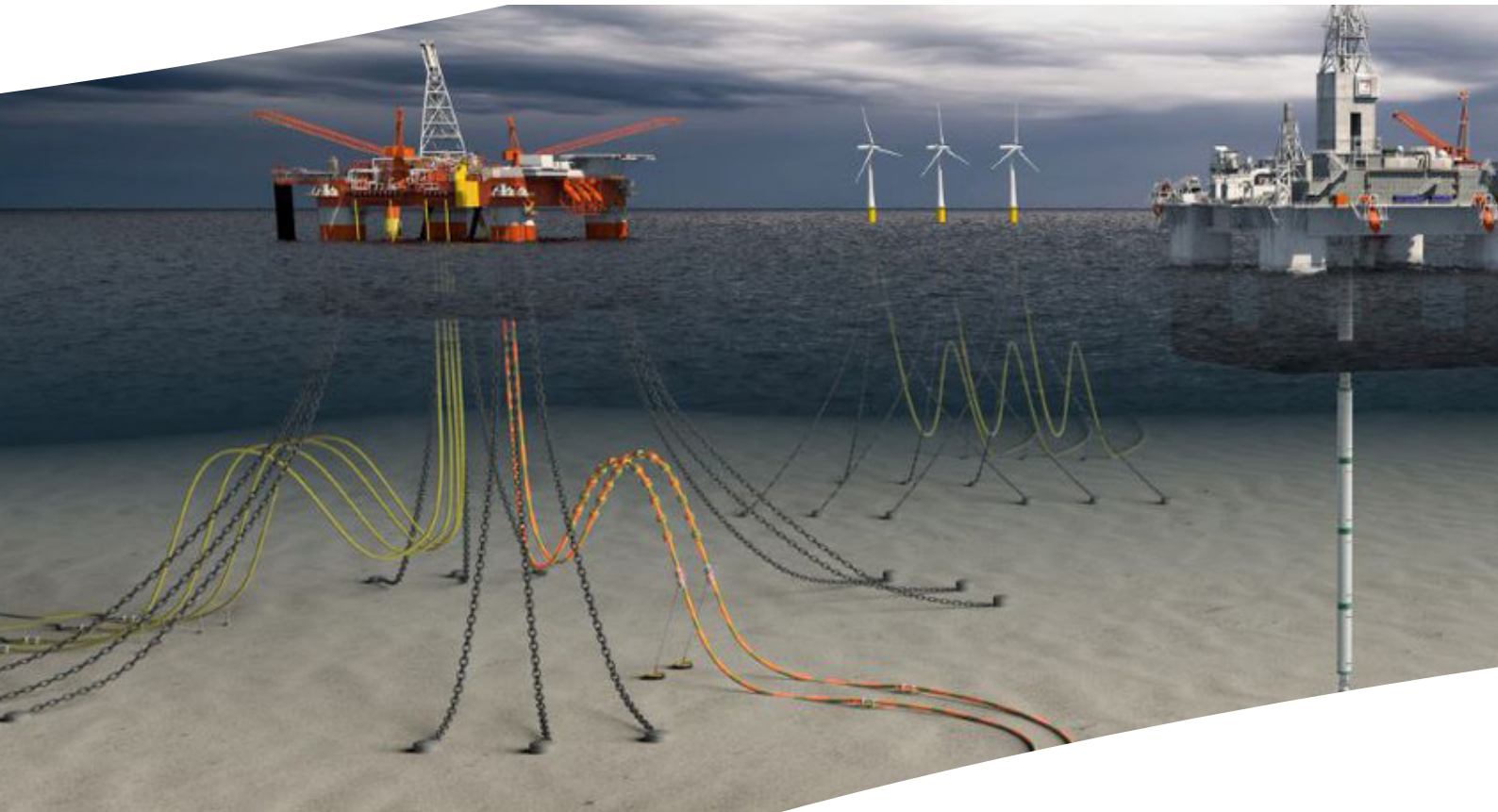


# Flexible Pipe Engineering

*Your expert partner for advanced subsea engineering*

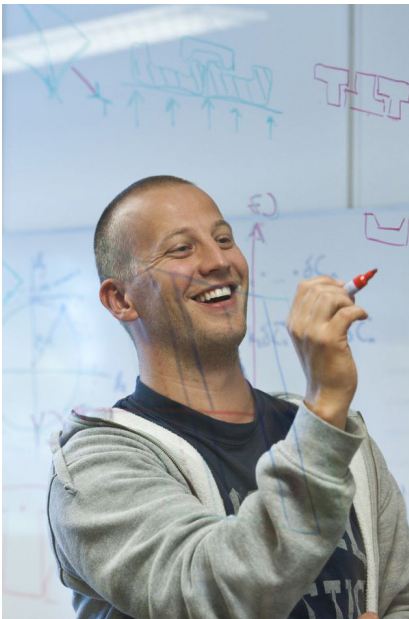


*4Subsea has the knowledge and tools to perform the most challenging engineering tasks. Moreover, we continuously strive to simplify complexity and to develop optimal, tailor-made solutions together with our clients. We aim to be the leading global provider of independent services on flexible pipes.*

4Subsea offers a wide range of engineering services related to risers and flowlines, umbilicals and power cables. We cover all life cycle phases, starting with technology development and conceptual design through FEED and detailed design, procurement, construction, installation, operation, and decommissioning.

## KEY DELIVERABLES

- A comprehensive, cost-effective service package ensuring
- safe operations of subsea systems and reduced life-cycle cost
- Advanced system analysis of riser systems, umbilicals, and cables
- Cross section analysis of riser systems and umbilicals
- Fully coupled response analysis of risers and mooring systems
- Concept and FEED studies
- Brownfield studies and service life assessments
- Lifetime extension assessments
- Seabed stability and upheaval buckling analysis



## Advanced Engineering Services

4Subsea has the capability and available tools to provide the complete range of engineering and analyses for flexible pipe systems. We offer the unique combination of advanced analyses using state-of-the-art tools with hands-on knowledge and experience, allowing us to simplify complex challenges and find efficient solutions.

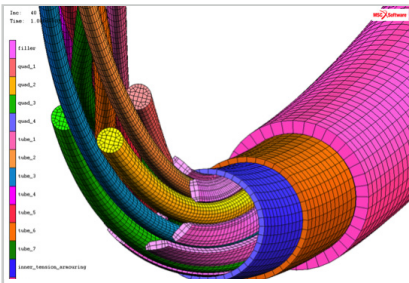
We use our tools and competence to provide expert advice within integrity management projects, e.g. establishing a full inspection, testing and monitoring plan for flexible pipes, umbilicals, and subsea assets.

## Key Deliverables

- Advisory services - using our unique system understanding to work with our clients to find the best solutions
- Technology development and qualification
- Advanced global and local flexible pipe and umbilical analyses
- Research and Development projects towards integrity assessment

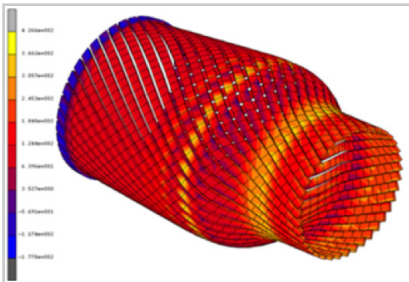
## System Engineering

- Global analysis of riser, umbilical, and cable systems
- Concept and FEED studies
- Brownfield studies and reanalysis assessments
- Service life assessments and fatigue analysis
- Installation and lifting analysis
- Tie-In and In-place
- Upheaval buckling analysis
- Subsea routing



## Local Analysis

- Flexible riser and umbilical local analysis including:
  - Impact
  - Over bending
  - Buckling
  - Carcass collapse
  - Bore blockage
  - Thermal induced axial load
- Flexible pipe diffusion analysis



4Subsea is a leading provider of technology and services that help operators optimise energy production from subsea oil & gas fields and offshore wind farms. We combine domain expertise with data analytics and digital services to maximise lifetime of assets, reduce operational cost and optimise future projects through data-driven design.

The company was established in 2007 and clients include the major energy operators as well as the large suppliers of subsea equipment. 4Subsea is headquartered in Asker, Norway with additional offices in Bergen, Kristiansand, Stavanger, Rio de Janeiro, and Aberdeen. 4Subsea is a company in the Subsea 7 Group. More info at [www.4subsea.com](http://www.4subsea.com).

**4Subsea - Share ideas, move forward**

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