Integrity Management – Flexible Pipes
Safe and cost efficient operation of flexible pipes

4Subsea provides dedicated high-level expertise helping our clients achieve reliable and efficient operation of flexible pipelines. Our goal is to enable full service life with acceptable risk management strategies, and safe and cost effective operation without any incidents or shutdown.

4Subsea offers products, services, and software related to flexible pipes, umbilicals, and ancillaries used for subsea operations. The FlexCare™ Integrity Management service contains Annulus Vent Gas Monitoring (AMOS™), Portable Annulus Tester (PAT™), Riser Repair Clamp (EPIC™), FlexTrack™, FlexIns™, and Untethered Pipe Inspection Tool (UPIT™).

KEY DELIVERABLES
• Advanced Integrity Management strategies and support
• A comprehensive, cost effective service package
• Both offshore and onshore services
• Concept to end-of-life range of service
• Digitised solution with online Integrity Management portal
4Subsea is a Norwegian technology company specialised in production riser systems and subsea well systems. We deliver solutions to maintain production from subsea oil and gas fields, enabling cost reduction and increased service life of existing installations. We also provide our specialist services within offshore wind turbines and wave power systems.

4Subsea combines expert knowledge and practical experience with software and instrumentation to optimise operation of production risers and subsea wells, aiming to be in the forefront of digitising the oil and gas industry.

The company was established in 2007, and clients include all the major oil and gas operators as well as the large suppliers of subsea equipment. 4Subsea has offices in Oslo, Bergen, Kristiansand, and Trondheim.

4Subsea - Share ideas, move forward

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**Integrity Management**
From concept level through end-of-life we provide on- and offshore services related to assessing system failure drivers and modes, associated risk level assessment and developing integrity management strategies. Furthermore, 4Subsea provides continuous integrity management support, including ITR activities, to monitor the current condition of the flexibles. An online Integrity Management portal ensures that updated information and system status are always available for the client.

**Condition Monitoring**
- Establishment of integrity and monitoring programs
- Evaluation of operational data
- Annulus vent gas monitoring
- Advanced PA11 ageing evaluation
- Life extension
- Failure mode investigation
- Risk assessment

**Research and Development**
- Failure investigation of flexible pipes
- Handbook on flexible pipes
- Joint industry projects
  - Polyamide in flexibles
  - Corrosion monitoring

**Offshore Work**
- Annulus volume testing
- Leak detection
- Outer sheath repair
- Re-establishment of annulus vent (topside and subsea)
- Project specific repair and monitoring solutions

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