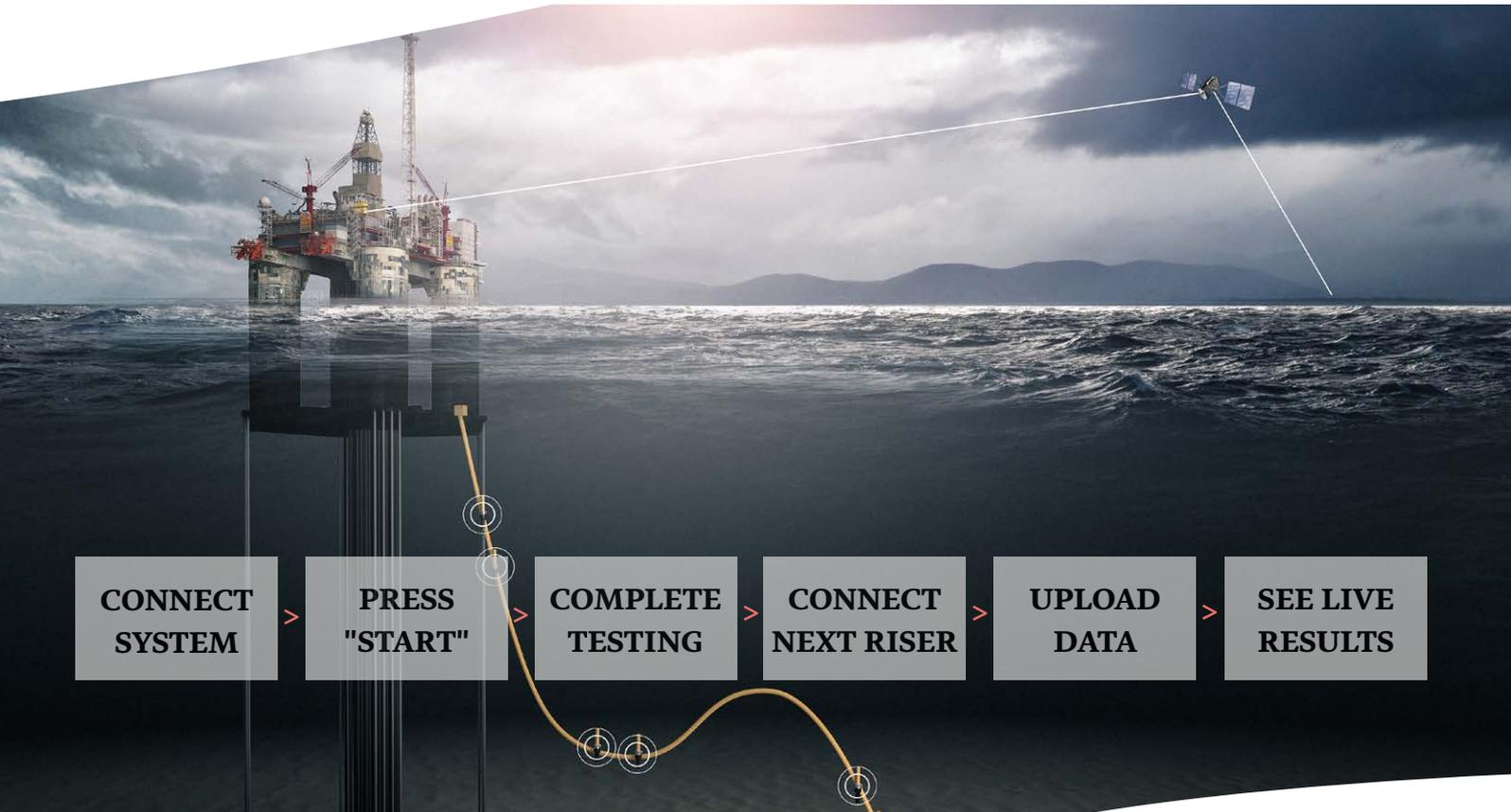


# Portable Annulus Tester - PAT™

*Automated and cost effective riser annulus testing*



CONNECT  
SYSTEM



PRESS  
"START"



COMPLETE  
TESTING



CONNECT  
NEXT RISER



UPLOAD  
DATA



SEE LIVE  
RESULTS

*The Portable Annulus Tester PAT™ is an “Engineer-in-a-box” solution that removes the requirement for mobilising dedicated third-party personnel offshore. The patent pending system is the first in the world to completely automate and digitise flexible riser annulus testing.*

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 BENEFITS

- Operators avoid mobilising third-party personnel offshore
- Enables significant cost reduction compared to traditional annulus test methods
- Measures key asset integrity parameters
- Results are digitised and presented immediately during testing
- Provides high degree of flexibility when planning test campaigns
- Uses standardised algorithm of data interpretation to ensure consistent results and history of integrity assessments
- Streamlines logistics with small, portable unit
- Includes 24/7 4Subsea expert advice service



## PAT™ Portable Annulus Tester

Most oil companies operating flexible risers carry out annulus testing on an annual basis to ensure the integrity of the risers, and to detect anomalies early. The objectives of such tests are to verify the flexible riser outer sheath integrity and the functionality of the ventilation system. With the patent pending Portable Annulus Tester PAT™ we have eliminated the need to send two technicians or engineers offshore by helicopter to perform the tests.

The hand-carried test unit performs complete annulus tests, and algorithms are enabling the operator to take immediate action if anomalies are detected. The system presents results on the FlexTrack™ digital platform, accessible to both onshore and offshore personnel. Click [here](#) to watch a demo video.

### Features

- Automated annulus free volume testing
- Detects outer sheath breaches
- Detects blocked vent ports
- Detects liquid filling in annulus
- Hardware and software fail-safe mechanisms
- Touchscreen interface
- Pre-programmed tests of site-specific risers
- On-site test configuration/modification possibilities
- Touch screen display with live test progress and results
- Easy download of measured data to FlexTrack™
- Portable, easy-to-use device

### Specifications

- Dimensions: 624 x 490 x 302 mm
- Weight: 28 kg
- Power: 100 - 240V AC
- Power consumption: < 250 W
- Operating pressure range: -1 - 3 barg
- Design pressure: 20 barg
- Mechanical relief pressure: 3.5 barg
- Environmental protection rating: IP 65
- Ambient temperature range:  $-10^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$
- Process medium temperature:  $-10 \dots +80^{\circ}\text{C}$
- Free volume measurement accuracy:  $\pm 10\%$
- Flow measurement accuracy:  $\pm 10\%$
- Component EX classification:  II 3G, Ex d e nA IIC T4 Gc



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 and Kristiansand in Norway and Rio de Janeiro in Brazil.

### 4Subsea - Share ideas, move forward

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