



If a fluid touches it,
We can test it



About us

System Integrity Screen Package

Our Vision

At Subsea Fluid Services our vision is:

“To become the leading global expert for everything related to the qualification and testing of subsea and topside hydraulic fluids and their suitability for use with key equipment and materials”

We can also add value to our client's existing qualification processes with sub-contract services & independent test reports.

In short:

**‘If a fluid touches it,
We can test it’**

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System Integrity

When considering a subsea hydraulic fluid for a new system (or when considering a fluid change on an existing system), Subsea Fluid Services is the only company in the world that can offer independent testing across all the key performance areas outlined below.

For a relatively small cost SFS can assist clients assess the likely performance of the fluid within a subsea system and root out potential performance issues before they occur. Our Silver and Gold Packages are designed to act as a buffer against failure and as an insurance policy and quality control measure towards ongoing system integrity.

Silver Package

DCV Testing

25,000 cycles @ 10k PSI or 10,000 cycles @ 20k PSI

Umbilical Hose Sections

Thermoplastic: 1m/60°C Cycle Testing (ISO 13628-5)

Steel Tube: 3m/70°C Soak Testing (ISO 13628-6) without additional Tensile testing

Corrosion & Elastomer Testing

3m/70°C testing to ISO 13628-6 (≤ 20 tests)

Tribology Testing

500lb/30 min Falex test and Four Ball Wear scar to international standards

Fluid Compatibility

Up to 4 chemicals tested to ISO 13628-6 on seawater, brines, production chemicals and other fluids

Consultation

20 hours assistance with selection of test materials and general performance advice as required

Gold Package

DCV Testing

50,000 cycles @ 10k PSI or 25,000 cycles @ 20k PSI

Umbilical Hose Sections

Thermoplastic: 3m/60°C Cycle Testing (ISO 13628-5)

Steel Tube: 3m/70°C Soak Testing (ISO 13628-6) with additional Tensile testing

Corrosion & Elastomer Testing

3m/70°C testing to ISO 13628-6 (≤ 40 tests)

Tribology Testing

Silver package + 4 ball weld load to international standards

Fluid Compatibility

Up to 6 chemicals tested to ISO 13628-6 on seawater, brines, production chemicals and other fluids

Consultation

40 hours assistance with selection of test materials and general performance advice as required

Company Profile

From our International Test Centre near Manchester UK, Subsea Fluid Services (SFS) provide a comprehensive range of hydraulic fluid and equipment testing services to the Offshore Oil and Gas Industry.

Our highly experienced engineering team can qualify water and oil based fluids on purpose built industry test rigs and our respected scientists (who are experienced formulation chemists), can offer customers a full chemical and mechanical analysis service via our state of the art laboratory facilities.

Our combined skills and knowledge are also available to our clients via our consultancy and training services which can be tailored according to customer need.



Umbilical Testing

We have a number of test rigs capable of testing thermoplastic umbilical hoses at a range of temperatures and pressures.

Our sophisticated software package allows us to run test cycle durations in accordance with ISO 13628-5 or customer specific requirements.

With advances in fluid technology and research into new materials, pressure cycling plays an important role in ensuring the fluid/material combination will meet service life demands.

Typical Testing

- Qualification testing in accordance with ISO 13628-5
- 40 °C and 70 °C programs
- 5000psi (345bar) cycling pressure
- Test durations typically 30 to 90 days with hose removals and testing every 30 days
- Optical microscope and SEM inspection of core surface
- Mechanical testing to assess changes in the tensile properties of hose components (core, braid, sheath)
- Fluid analysis to monitor changes eg. plasticiser levels
- Service life prediction
- Burst pressure

Rig Capabilities

- Short or long term pressure cycle testing
- Static pressure ageing
- Permeability testing
- Ambient to high temperature
- High DWP pressure test
- Continual monitoring
- Highly sophisticated software able to sample at 2,000 per second



Example of Qualification

Test methodology agreed, usually in line with ISO 13628-5:-

- Duration
- Temperature
- Number of Hoses
- Options for Control Hoses
- Special (bespoke) Requirements
- Compatibility Pre-test Requirements

If pre-test compatibility and trouble-shooting assessment is required, this will be conducted prior to the pressure-cycle test.

Terminated hoses and fluids are provided by client

Pressure Cycle Test

The test rig is set up and hoses are proof pressure tested.

Pressure and Temperature are then monitored throughout the test and recorded by lab-view.

This sophisticated software enables consistent recordings and complex calculations to be easily determined.









End of Pressure Test

At the end of the test it is established whether the test intervals were attained or halted due to premature burst.

Mechanical properties are calculated together with analysis of test materials and fluids using SEM and FTIR. Tensile testing enables us to measure key physical properties.

Service Life Prediction is carried out along with Burst Pressure and a comprehensive report is drafted including:-

- Test Methods
- Images
- Tensile Results
- Fluid Analysis
- Service Life Prediction
- Burst Pressure
- Conclusions

	Visual	Microscope	SEM
Control			
Aged			



DCV Testing

At Subsea Fluid Services we have a number of test rigs capable of testing up to 6 DCV's simultaneously at a range of temperatures and pressures.

Our DCV test rigs can be utilised in a number of different scenarios including fluid qualification testing, contaminated fluid testing, extreme environment testing, FAT, fluid changeovers, FEED work and a number of other applications including product development on new fluid or valve designs.

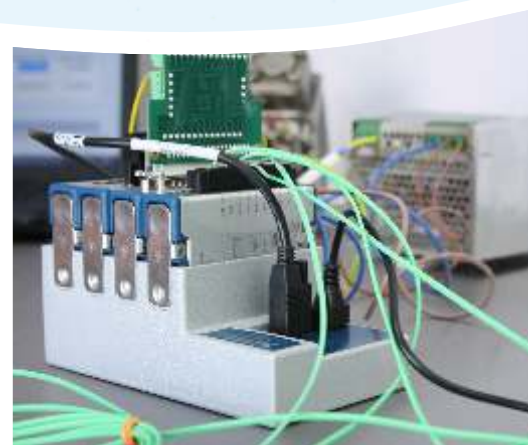
Furthermore, our sophisticated software package allows us to run test cycle durations to suit the exact needs of each customer.

DCV Typical Testing

- Long term hold open testing with valve closing trace
- FEED qualification programmes
- High cycle endurance testing
- Low cycle endurance testing with full suite of fluid analysis to highlight any issues
- Full OEM Factory Acceptance Testing (FAT) carried out during test to ensure valves remain within limits
- High and low temperature testing
- Contaminated fluid testing

Rig Capabilities

- Pressure up to 20,000psi (1380bar) pilot and control lines
- Highly sophisticated software able to sample at 2,000 per second
- Capacity of up to 6 valves per test rig
- Separate pilot and control lines
- Condition monitoring will periodically measure the fluid cleanliness



DHSV Testing

Our Down Hole Safety Valve test rig is capable of testing DHSV's at pressures of up to 20,000psi and temperatures of up to 250 °C.

The test rig was specifically designed and built to operate to any industry standard or test method and can be adjusted to conduct modified testing protocols as required.

This capability combined with our material compatibility test facilities allows a full qualification of DHSV's to be conducted under one roof.

DHSV Rig Capabilities

- Pressure up to 20,000psi (1380bar)
- Highly sophisticated software able to sample valve closing times at 2,000 times per second
- Extreme high temperatures possible. Highest control fluid qualification project to date (offshore industry) carried out at 250 °C (482 °F)
- Well pressure simulated by nitrogen
- Upgrades to allow higher pressures and temperatures in progress

DHSV Typical Testing

- 3 month project schedule
- Static hold open programme
- Cyclic testing including valve closing trace programme
- Full fluid analysis carried out
- Workshop facilities available for full valve assessment
- Balance room and full laboratory services available to all customers





Hydraulic Equipment Testing

ISO 13628-6 (2006) Annex C

Typical Testing

- Pump testing including Variable Displacement Piston, Vane and Gear pumps
- New fluid testing and qualification of water and oil based hydraulic fluids
- Contaminated system fluid testing
- High and low temperature testing available
- Full strip down and assessments - both before and after testing
- Filters
- Full tribology lab including Four Ball and Falex testing
- Full lab services and fluid analysis

Hydraulic Equipment

Our hydraulic test rig is capable of testing individual hydraulic components as well as hydraulic equipment used both onshore and offshore with your fluid of choice.

Equipment routinely tested includes pumps, proportional valves, hydraulic cylinders, winches and accumulators.

Testing is typically carried out to industry and equipment manufacturer's requirements and standards to ensure full compatibility of all components.

Equipment Tested

- Pumps
- Proportional Valves
- Hydraulic Cylinders
- Hydraulic Winches
- Accumulators



ISO 13628-6 Testing

Subsea Fluid Services offer complete evaluation of hydraulic fluids to ISO 13628-6 (2006) Annex C.

Our test laboratories have the necessary blend of equipment and industry specific skills required to subject a hydraulic fluid to each and every test in the ISO specification.

Our staff have many year's experience in the evaluation of hydraulic fluids to all aspects of ISO 13628-6 (2006) Annex C, offering a unique independent service to both operators, OEM's and fluid manufacturers.

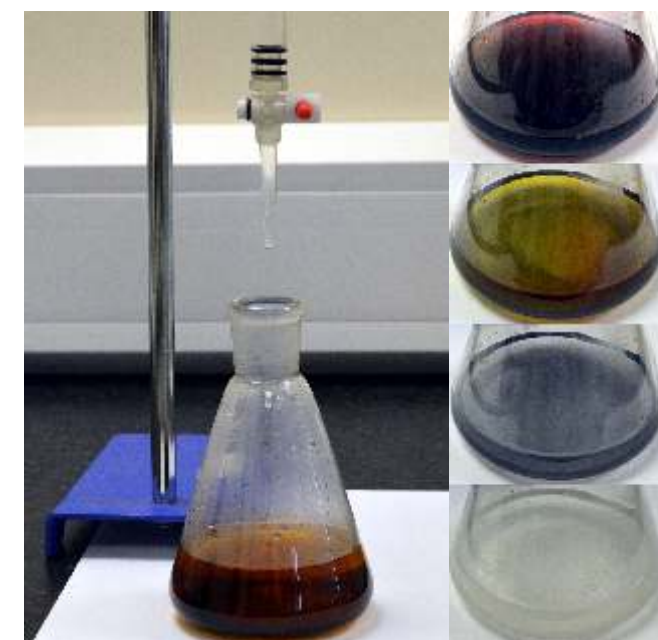
Testing Capabilities

- Testing to all sections of ISO 13628-6 (2006) Annex C
- Regular updates and full test report available on completion of final test (12 months)
- Large discount on individual test costs when conducting full suite
- Any section of ISO specification can be tested individually if customer only needs to test a specific area

Typical Testing

Full ISO 13628-6 Testing including:

- Thermal Stability – High temp.
- Thermal Stability – Low temp.
- Thermal Stability – High temp. in presence of seawater
- Seawater Compatibility
- Control Fluid Compatibility
- Completion Fluid Compatibility
- Compatibility with Miscellaneous Operational Fluids
- Metal Compatibility
- Elastomer Compatibility
- Thermoplastic Compatibility
- Filterability
- Fluid Lubricity and anti-wear





Laboratory Testing

Industries Served

Subsea Fluid Services offer extensive laboratory test services across a wide range of key industries including Oil & Gas, Nuclear, Aerospace, Chemical, Metallurgical, Renewable Energy, Environmental, Legal (Expert Witness), Textile, Automotive, Metal Working, Lubricant and Construction.

Our laboratory test services include a wide array of testing on metals, elastomers, coatings, chemical & fluid compatibility, lubrication/tribology & tensile testing.

Metallics Testing

We have a full suite of metallic materials testing to OEM and international standards. Our services include determination of corrosion resistance and system integrity performance across a wide range of temperatures and pressures.

Capabilities

- Corrosion testing on metals aged from -80 °C to >300 °C
- Macro- and microscopic analysis
- Chemical analysis
- Hydrogen Embrittlement / Stress Corrosion Cracking Testing
- Metal compatibility evaluations to OEM and international standards
- Material Compatibility Mapping and System Integrity Testing for new and aging assets

Non-Metallics Testing

Our Non-Metallics testing services include determination of changes in physical and tensile properties and system integrity performance across a wide range of temperatures and pressures.

Capabilities

- Testing of elastomers, plastics, thermoplastics, umbilicals and hoses
- Evaluation of physical and tensile properties and systems integrity performance
- Performance evaluation after aging from -80 °C to >300 °C
- Compatibility testing to OEM and international standards
- Restrained / open geometry tests



Tensile Testing

Subsea Fluid Services can offer a range of tensile testing to ISO and ASTM standards. Our services include plastics, rubber, fibre and metals testing to determine a range of tensile properties.

Capabilities

- 50 kN (11,250 lbf) capacity
- 0.005 to 500 mm/min test speed
- Accurate data acquisition by Bluehill 3 software
- Customize test methods and report templates to accommodate customer specific requirements
- Samples pre-conditioned prior to testing
- Tension and Compression testing available

Tribology Testing

We can offer a suite of tribology testing to determine the characteristics of lubricants. Our experienced staff use state of the art equipment including a Stanhope Seta Shell Four Ball testing rig, Falex Pin and Vee Test Machines.

Capabilities

- Evaluation of lubricant endurance, friction and wear life properties under standard loads
- Evaluation of weld load and load carrying capacity
- Evaluation of endurance and wear life as a function of applied load
- Performance evaluation as a function of aging temperature from -80 °C to >300 °C





Integrity Management



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Confidentiality

To achieve meaningful results from testing programs, clients routinely have to share sensitive information with us.

In addition, the risks associated with confidential test results and reports are increased when work involves third party fluids, materials or components.

SFS are keenly aware of the need for high levels of client confidentiality and all SFS staff are required to sign confidentiality agreements and undergo training in the value of client confidentiality.

Confidentiality agreements are also available as standard towards clients and individual projects including documentation relating to projects are stored under very strict controls using the guidelines of ISO 27001.



Health and Safety

An effective quality management system, minimisation of our environmental impact and strict health and safety controls are the cornerstones of SFS operations.

The structure following on from this philosophy allowed us to be accredited to ISO 9001:2008 within the first 6 months of trading.

Working with high pressures and temperatures present specific H&S dangers and all SFS personnel take a proactive ‘safety first’ approach.

Through being aware of potential risks at the planning stage and by using guidelines laid out by the HSE, OHSAS 18001 and other relevant industry bodies, SFS has been able to maintain a safe working environment across all its operational spheres with no lost time accidents in the company's history to date and we continue to strive towards maintaining this record both today and in the future.


Independence

Subsea Fluid Services is 100% committed to providing a truly independent service and to protecting the integrity of customer information and test data.

We understand that in many cases the work we do is of a sensitive nature and we employ a very robust confidentiality regime to ensure all information is protected, including the implementation of ‘Chinese Walls’ between SFS and other companies within the group.

Our integrity, experience and knowledge of the Offshore Industry is exemplary and helps to give clients confidence in the independence of work carried out at our International Test Centre in Manchester.





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