

# Tension, Torsion, and Crush Test Machine

Full-scale testing system for critical products and connection hardware

Oceaneering is equipped with the expertise and machinery to complete combined tension and torsion balance at our in-house laboratories located in Rosyth, Scotland and Niteroi, Brazil.

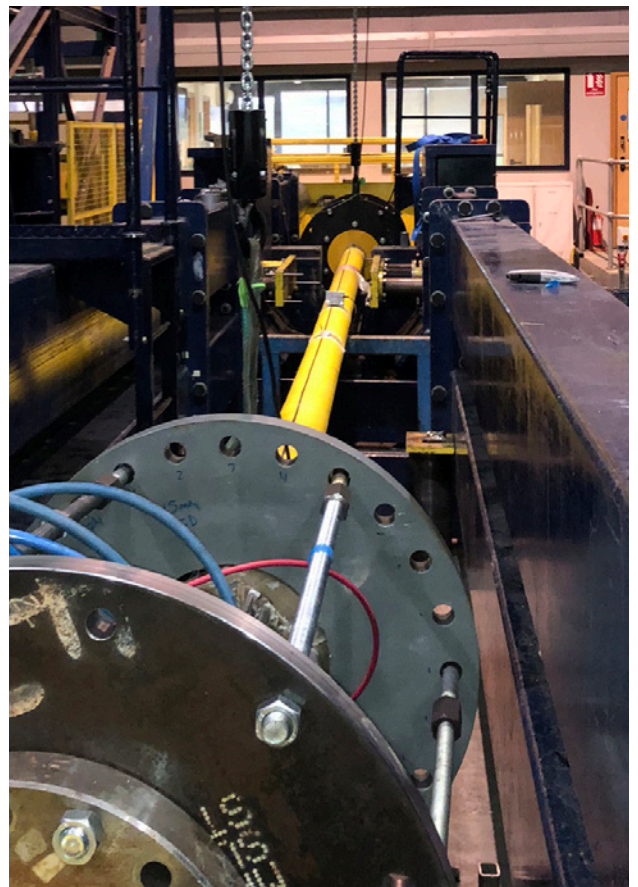
Our rigs are suitable for testing of umbilicals, flexible flowlines, or other high strength products and their associated termination hardware.

## FEATURES

**Maximum sample length: 40 ft / 12 m**

**Static tensile load maximum: 10,000 kN**

**Torsional swivel angle: 360 degrees**



# Tension, Torsion, and Crush Test Machine

Our machinery is capable of performing combined tension, torsion, and/or external crush tests on the following products, inclusive of end terminations:

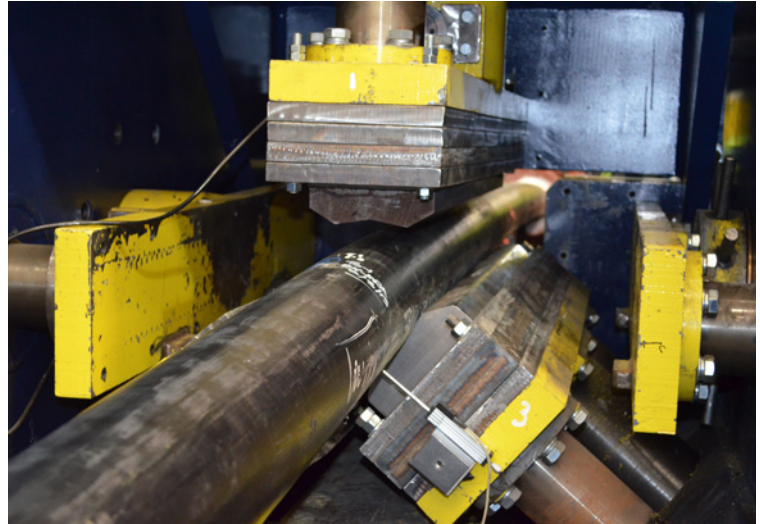
- » Umbilicals
- » Flexible pipes
- » Composite pipes
- » Power cables

## Test configurations

- » Tensile performance testing up to ultimate tensile strength (UTS) on products and end terminations
- » Torsion vs tension characterization
- » Friction testing with tensioner pads
- » Axial and rotational stiffness
- » Crush testing with tensioner pads

## Advantages of completing testing

- » Advancement of overall knowledge and understanding of products
- » Verification of compliance with industry standards



	Rosyth, Scotland	Niteroi, Brazil
Applied loads	Tension, torsion, crush, internal pressure (independently controlled)	Tension, torsion, crush, internal pressure (independently controlled)
Maximum tensile load (static)	10,000 kN	10,000 kN
Maximum tensile load (dynamic)	10,000 kN	2,500 kN
Axial displacement range	40 in / 1000 mm	40 in / 1000 mm
Allowable rotation	1 end infinite rotation (can be configured as locked, free rotation, or externally applied torque)	1 end infinite rotation (can be configured as locked, free rotation, or externally applied torque)
Maximum sample length (length between connections)	40 ft / 12 m	38.4 ft / 11.7 m
Crush load	100 tonnes (2, 3, or 4 pad set up) 48 in / 1230 mm maximum crush pad length	1,500 kN maximum 1.5 MN/m per pad (2, 3, or 4 pad set up)
Machine / test sample interface	Flange	Flange
Control system	Computerized system for machine control and datalogging of sample instrumentation	Computerized system for machine control and datalogging of sample instrumentation
Sensors	Integrated displacement and tensile load monitoring. Datalogging facilities available for monitoring of additional sensors such as torsional rotation, sample diameter and ovality, thermocouples, and strain gauges, if required.	Integrated displacement and tensile load monitoring. Datalogging facilities available for monitoring of additional sensors such as torsional rotation, sample diameter and ovality, thermocouples, and strain gauges, if required.
Calibration	UKAS accredited calibration	Accredited calibration Brazil
Results	Electronic test report	Electronic test report

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