

# ENGINEERING UMBILICAL SOLUTIONS

**Oceaneering Umbilical Solutions (OUS)** continues to successfully leverage engineering knowledge and experience in the development of one of the world's leading subsea umbilical and cable connectivity solutions.

## Our Expertise

OUS has one of the longest track records within the subsea industry. Our subsea engineering team consists of more than 80 specialists that provide a full range of industry specific engineering needs.

OUS has delivered solutions to every region within the world's subsea market. We are structured to take full advantage of a centralized knowledge base of engineering expertise without sacrificing localized levels of engineering-tailored execution.

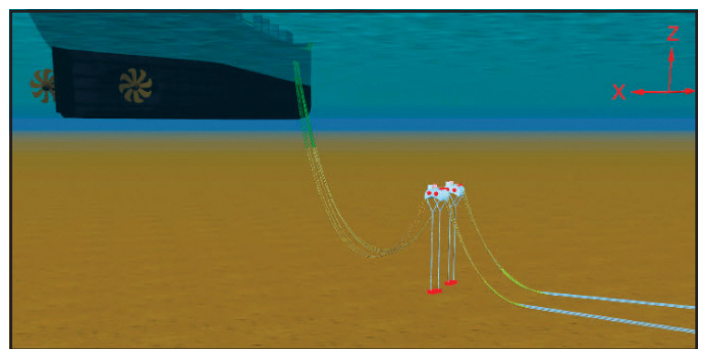
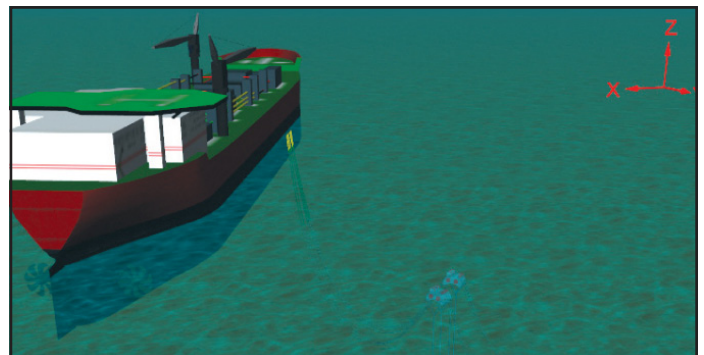
## Our Services

**Front End Engineering Design Services** – investigate potential solutions and conduct preliminary analysis to develop design concepts.

**Concept Design Development** – engineering services will refine design concepts and conduct risk profiling to allow cost estimating, planning and procurement strategies to be developed for investment decision making.

**Detailed Design** – plans go through a rigorous engineering process based on proven methodologies and sound practices to deliver 'best in class' implementation plans.

**Execution Engineering** – local engineering project teams collaborate with project management and other key functions to deliver to exact client specifications.



**Analysis Services** – working across the whole design life-cycle using advanced tools and methodologies to simulate and predict performance of solutions in the intended environment.

**Test and Reliability Services** – modern state of the art equipment and processes validate materials and structures to the limits of service.



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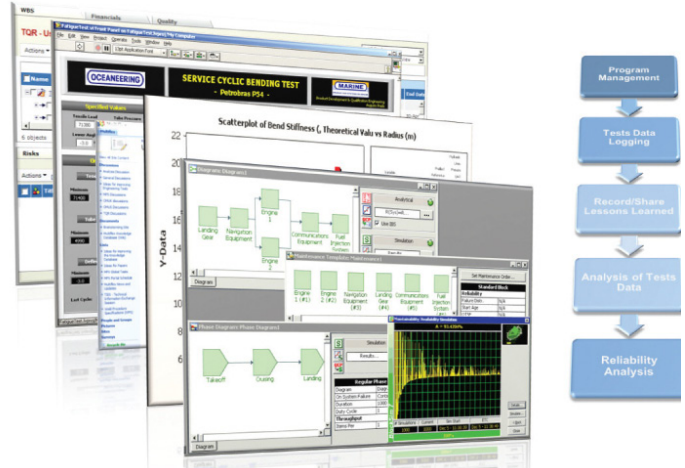
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“Very impressed with your engineering progress, structure and direction; you have listened and responded.” ~ Client quote

## Oceaneering delivering solutions

A solid track record of delivering solutions to challenging requirements, often unprecedented in the subsea industry, by applying engineering best practices, coupled with innovation and persistence.

- Gas and Water blocked LV cable solutions qualified and installed yielding less than 1% migration compared to standard cable design
- Designed, qualified and installed load bearing IWOCS umbilicals, for deep water Tree-On-Wire application
- Led the development and application of HCR hose for deep water application and integrated with DPR umbilicals



## Oceaneering investing in technology

As operating environments become more severe – setting new challenges for subsea operations – we continue to invest in new technology, tools and applications to ensure we remain an industry leader in providing safe, reliable and robust solutions.

- Deep water and long offset cable gas/water mitigation and hydrogen permeation solutions
- Intelligent umbilical solutions for self-monitoring for temperature and strain
- New materials and processes for very high pressure and duty cycle hose applications
- Large bore steel tube umbilical applications
- High cycle IWOCS solutions for heavy duty applications
- AC & DC power cables for the offshore renewable energy market

