

**OFFSPRING  
INTERNATIONAL  
LIMITED**

**Mooring and Offloading Systems**

# Offspring International

Offspring International (OIL) specialises in equipment for mooring, offloading and control systems to optimise terminal operations both offshore and quayside. We offer a fully integrated supply of equipment for SPM and CBM buoy mooring, hoses, breakaway couplings, PLEM control, together with a comprehensive terminal monitoring and management system. Using experience and expertise gained over 25 years, OIL is able to support other mooring applications including renewables, chain ferries, port operations, aquaculture etc.

Offspring International is a dedicated team of mooring professionals, bringing together over 150 years experience in the design, supply and deployment of offshore mooring systems. We are an active member of the Oil Companies International Marine Forum (OCIMF), contributing our knowledge and experience to Single Point Mooring best practice.



## Mooring, Offloading and Terminal Management

Offspring International combines in-depth technical and practical experience with industry leading mooring systems and products. As the exclusive worldwide agent for SPM hawser products and accessories from Lankhorst Euronete Portugal, OIL offers a full range of Single Point Mooring products manufactured and supplied in strict accordance with the OCIMF 2000 "Guidelines for the Purchasing and Testing of SPM Hawsers".

Using the latest computer aided design technology, OIL is able to produce "As Built" drawings and fully documented manuals for any mooring system to accompany the QA and/or independent inspection authority certification.

Through international agent agreements with leading hose manufacturer Manuli and emergency disconnect systems specialist MIB Italiana, Offspring supplies a range of Manuli floating marine and submarine offloading hoses and the innovative MIBreak and Flip Flap marine breakaway couplings. In addition, Offspring International is exclusive worldwide agent for Paladon Systems, a valve actuator and control system specialist providing PLEM control systems for CALM Buoys, CBM's and FPSO's including the Autonomous Shutdown Valve (ASV). The innovative ASV utilises pipeline pressure to provide the energy to operate the subsea valves.

OIL is also primary agent for Techflow Marine's Quay Reel® flexible loading and unloading system. The Quay Reel® system offers significant improvements over conventional port and terminal fluid transfer systems resulting in reduced loading times, reduced demurrage, smaller footprint, and increased safety and reliability.

In keeping with tanker loading Best Practice, Offspring International, working in partnership with Offshore Ops, offers industry leading software and technologies for better managing mooring and offloading operations. The compact modular system offers a range of terminal management, environmental and equipment monitoring devices, seamlessly integrated into a single, secure software package.

In addition, the software enables improved efficiency in terminal management by allowing comprehensive monitoring and control over consignment scheduling, asset management and policy and procedural adherence.

Offspring International values long-term, customer relationships and so a commitment to excellence in customer service is one of our key strengths. We go beyond the normal, high level of pre-sales technical advice and project management expected when delivering mooring systems on-time and within budget, to include post-installation reviews and through life operator support.

## Mooring Systems – Experience and Know-How

Offshore mooring systems are subject to increasingly demanding operating environments. The design of the mooring system and the integrity of its components are critical to ensuring optimum in-service performance, longevity and operational safety.

OIL offers a comprehensive service for CALM buoy and conventional buoy mooring systems, from provision of the entire offtake system, to replacement of mooring hawsers, hoses, pressure surge protection and associated hardware. Our approach is based on experience of providing offloading systems across the globe; we take a systematic approach to assessing the offshore environment, hawser and hose design, testing, and installation conditions.



### Hawser and Rope – Innovation, Higher Performance

Offspring International, working with Lankhorst Euronete Portugal, has been instrumental in driving up rope performance standards in SPM applications. Through innovative technical solutions and a commitment to customer service, the company has led the development of integral hawser flotation technology and new, higher performing offshore ropes.



### Industry Leading – rope development, manufacture, test and rigging facility

Lankhorst Euronete Portugal has a dedicated rope production facility for the design, production, rigging and testing of deepwater mooring ropes and single point mooring hawsers at Viana do Castelo, on the coast about 80km north of Porto, Portugal.

The factory covers some 3,600m<sup>2</sup> production facilities together with 2,400m<sup>2</sup> storage area. In addition to state-of-the-art rope production machinery, the factory includes a large SPM makeup and storage area. With access to Lankhorst Euronete Portugal's industry leading test machine, OIL is able to develop new SPM ropes, and qualify prototype ropes in accordance with international standards and customer specifications.

# SPM Buoy / Tandem Mooring and Offloading Systems

**01 HAWSER**  
Lankhorst Ropes SPM Hawser in accordance with OCIMF 2000 guidelines

**02 CALM BUOY BRIDLE**  
Secure and reliable hawser connection

**03 FLOATING HOSE**  
GMPHOM 2009 compliant Manuli single and double carcass hoses

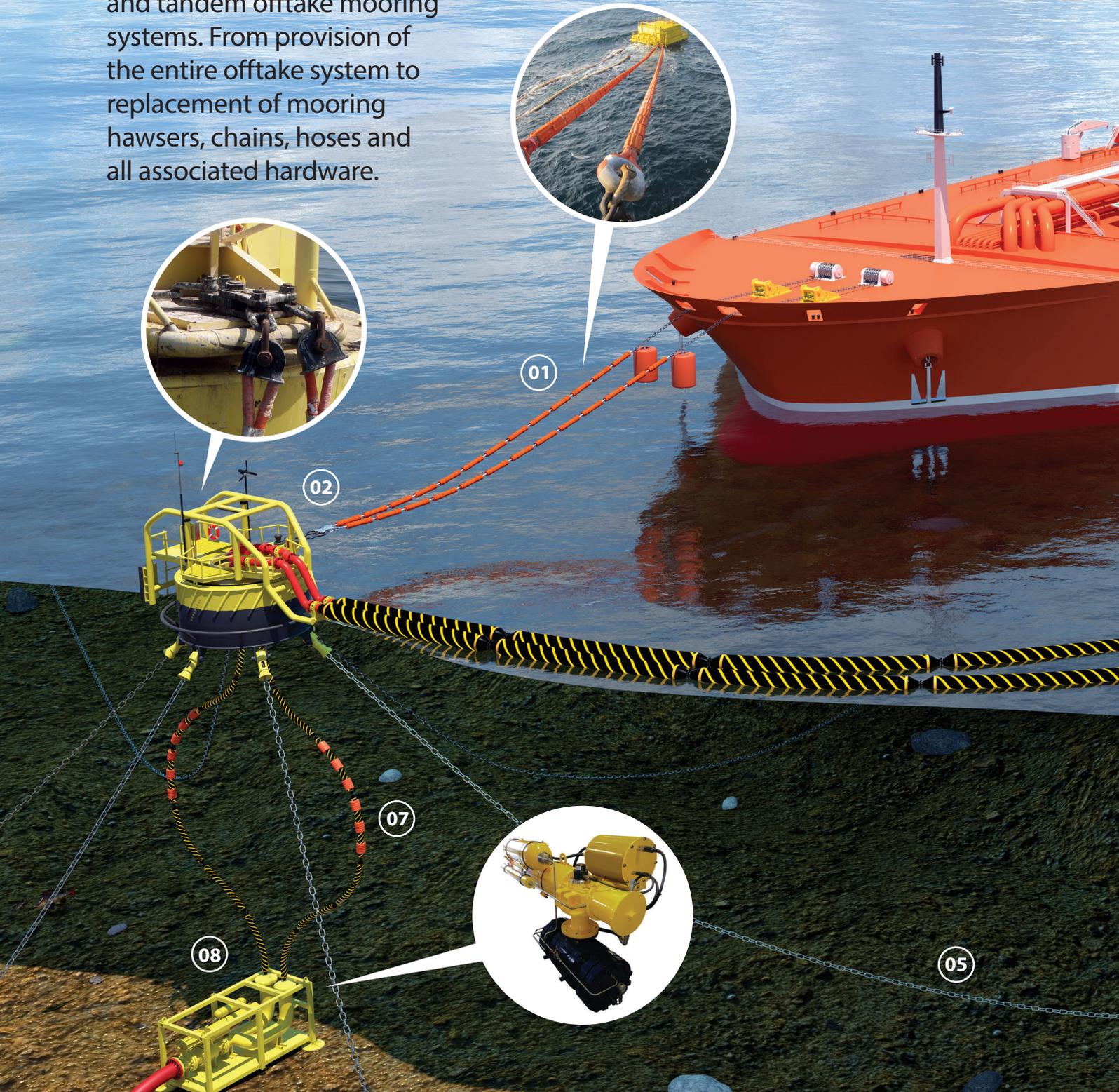
**04 MIBREAK**  
Rapid response MIBreak breakaway coupling

**05 ANCHOR CHAIN**  
Catenary anchor mooring chains in all material grades

**06 ANCHOR**  
Anchor holds the CALM securely

**07 UNDER BUOY HOSE**  
GMPHOM 2009 compliant Manuli single and double carcass hoses

OIL offers a range of bespoke packages for both single point and tandem offtake mooring systems. From provision of the entire offtake system to replacement of mooring hawsers, chains, hoses and all associated hardware.



## 08 PLEM CONTROL SYSTEMS

OIL offers a range of proven conventional control systems for Pipeline End Manifold, in addition to Paladon Systems' Autonomous Shutdown Valve, providing fully autonomous and fail-safe control

## 09 TANDEM MOORING

Tandem offtake mooring hawser

## 10 MANIFOLD PRESSURE TRANSDUCER

Manifold Pressure monitoring with Surge Protection for the CALM mooring and/or tandem mooring

## OFFSHORE OPS' VESSEL MONITORING SYSTEM

## 11 INTEGRATED TERMINAL MANAGEMENT

This compact modular system offers a range of terminal management, environmental and equipment monitoring devices, seamlessly integrated into a single, secure software package.

The tanker is the primary point for monitoring and control of the buoy, however, data can be monitored from multiple locations using a secure internet connection. The system monitors the heading of the tanker in addition to its GPS position and that of the buoy, mooring line tension and manifold pressure.

Offshore Ops' Vessel Mooring System (VMS) is monitored on portable equipment taken on board the tanker for final approach. Once moored, tanker excursion and tanker manifold pressure are monitored in real time, together with all SPM and environmental data.



# Single Point Mooring – bespoke supply

OIL's range of bespoke packages for single point and tandem offtake mooring systems includes:



## Mooring Hawsers

Compliant with OCIMF 2000 Guidelines including chafe chains, pick-up and messenger ropes, support buoys, hawser shackles, associated fittings and load monitoring equipment.



## PLEM Control Systems

Paladon Systems offer a range of proven conventional control systems for Pipeline End Manifold in addition to the innovative Autonomous Shutdown Valve. The Autonomous Shutdown Valve (ASV) offers fully autonomous and fail-safe control of PLEM valves. Designed for CALM buoy and CBM systems, the ASV automatically isolates pipeline risers on termination of fluid transfer operations, or the in the event of a linebreak condition.

Unlike manually operated PLEM valves, the ASV is able to perform in all weather and does not require support services including dive teams and associated support vessels. The Autonomous Shutdown Valve is completely self-contained and includes the PLEM valve itself, a spring-return actuator and control system.



## Floating & Submarine hoses

OIL offers a comprehensive range of OCIMF GMPHOM 2009 compliant hoses from Manuli Hydraulics - Oil & Marine Division. These include Manuli single and double carcass floating marine and submarine hoses, dock hoses and long length conduit hoses.

Manuli hoses are designed and manufactured to OCIMF GMPHOM 2009 guidelines and ISO 9001 industrial standards, with hose performance certified by ABS (American Bureau of Shipping). OIL also offers a range of ancillary items enabling the safe installation and operation of offloading hoses including pressure monitoring equipment and navigational aids alerting vessels to the presence of floating hoses.

01



02



## Marine Breakaway Couplings

The Flip Flap and MIBreak breakaway couplings for offloading hoses are designed to minimize the effect of tanker breakout and internal pressure surge events by automatically activating when a pre-set axial load or internal pressure is exceeded.

01 MIBreak

MIBreak's rapid response, petal valve design sets the benchmark for minimal oil leakage and pressure surge protection, yet is easy to reset on-site after activation, allowing terminal operations to quickly resume. Seamlessly integrated within the flexible hose string, a full-bore design ensures uninterrupted flow and zero pressure loss.

02 Flip Flap

The Flip Flap disc valve design minimises pressure losses while the valve is open and ensures 100% leak-free shut-off once closed, protecting the flexible hose string and other equipment during fluid transfer operations.

# OCIMF compliance across all systems

All OIL SPM systems and products offer outstanding operational performance, reliability and safety. Additionally OIL follows the latest OCIMF guidelines and recommendations for our mooring systems.

- ▶ OCIMF 2000 “Guidelines for the Purchasing & Testing of SPM Hawsers”
- ▶ OCIMF 2007 “Recommendations for Equipment Employed in the Bow Mooring of Conventional Tankers at Single Point Moorings”
- ▶ OCIMF 2015 “Single Point Mooring Maintenance and Operations Guide”



## Conventional Buoy Moorings

In addition to SPM systems, OIL is able to supply Conventional Buoy Mooring systems providing effective mooring for tankers 5,000 to 50,000 DWT and larger at shallow water terminals.

Comprising supply and installation of mooring buoys, pipeline end manifold (PLEM), offloading hoses, and telemetry and control, OIL provides full engineering design and specification of the CBM including mooring system, buoys, PLEM and hose interface.



## Navigational Moorings – High performance, secure moorings

Offspring International supplies a range of high performance, chain moorings for synthetic and steel navigational buoys. Designed for a wide variety of environments both inshore and offshore, the mooring system includes sinker, pendant chain, swivel piece, bridle chains and shackles, as required.

The mooring system is well proven – OIL has been supplying navigational moorings since 1991. Over this time we’ve provided mooring systems for buoys used for long-term navigation aids, as well as hazard warning systems, windfarms, ports and harbours, LNG facilities and offshore platforms.

VESSEL	
HEADING:	54°
SPEED:	0 KNOTS
TO BUOY	
DISTANCE:	64 M
BEARING:	49° (NE)
<a href="#">RESET MAP ZOOM</a> <a href="#">PLAYBACK</a>	

## Offshore Ops – Integrated Terminal Management

Offshore Ops’ fully OCIMF SMOG 2015 compliant Integrated Terminal Management System has been systematically developed over 12 years to provide ‘live’ data on a wide range of operational and environmental factors. It offers effective operations management, significantly reducing risk and enhancing mooring and offloading safety and performance.

The compact modular system, suitable for SPM and CBM, provides data which can be monitored from multiple locations using a secure internet connection, as well as automatic SMS alarm notifications to selected key personnel. Receiving ‘live’ data from the buoy and portable vessel monitoring system ensures informed decisions can be made and implemented immediately. Historical data can be used to monitor performance over time and maximise offloading system availability by using predictive wear analysis and planned maintenance to extend service life.



For more information on Offspring International  
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