



RISER & DRILLING SYSTEMS

Merlin™ Marine Drilling Riser

Introduction

Oil States Industries is a world leader in the design and manufacture of advanced connection systems for offshore applications. Our connectors provide fast makeup and high performance, ideal for risers, SCRs, TLPs, tethers, conductors, casing, new and replacement caissons, HP risers, pipelines and jacket piles. Oil States is a proven provider of riser components for deep water, production, drilling and completion risers. We also offer comprehensive riser system design services for completion, drilling, subsea and surface equipment to complement our field-proven connector technologies.

Connector Design

The Merlin™ connector has been designed and manufactured to meet a range of static, dynamic, fatigue and pressure loads. A two-part connector with no moving parts, Merlin™ is an elegant & economical solution for fast tubular makeup, with no requirement for bolts and dogs. The Merlin™ is a preloaded connector that uses a series of non-helical teeth; its geometry is designed on Poka-Yoke principals which ensures the connector cannot be mis-made.

Being non-helical, the connector cannot back-off whilst in service. With a hands-free make & break spider, the connector has been designed to safely run 10 to 12 joints per hour.

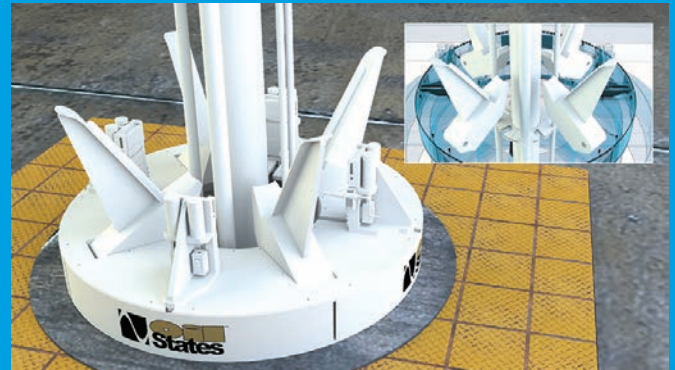
Field Proven

Since 1981, over 400,000 Merlin™ Connectors have been manufactured. The connector is both prolific and field proven across a number of applications. Many Merlin™ systems are currently in service around the globe and have been used on HP risers, completion risers, LNG risers, caisson systems and drilling risers. Merlin™ is the connector of choice wherever a reliable robust fast make-up service is required.

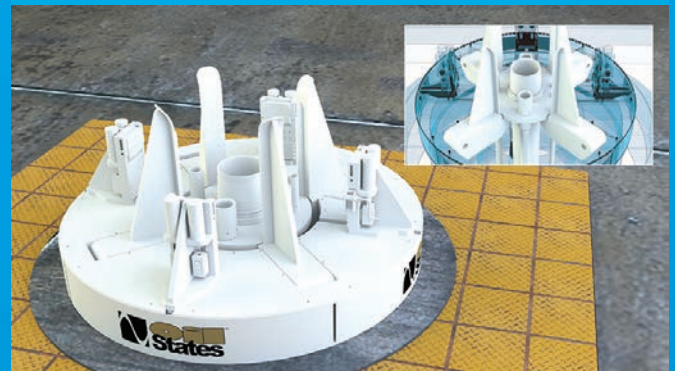
Riser Design

Oil States can supply the Ø19.25" ID x 1.0" WT and Ø19.25" ID x 1.125" WT joints to suit the Merlin™ Marine Drilling Riser system (MMDR). All joints are grade X80 (80ksi NACE compliant material) and can be supplied with Thermal Spray Aluminium (TSA) coating.

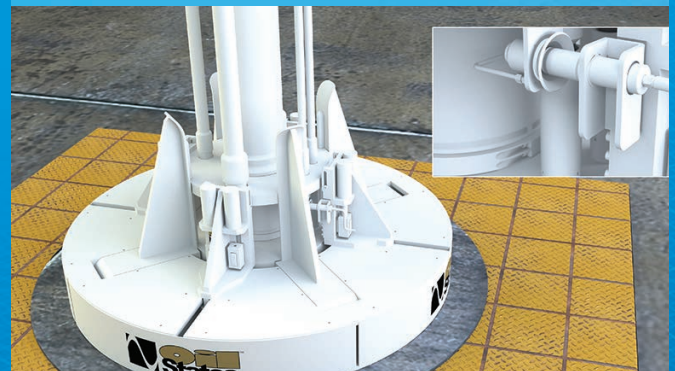
TSA coating offers up to 30 years corrosion protection, or the standard three-part epoxy coating.



Running of MMDR



Land off



Riser Make-up





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The MMDR system can be upgraded by using high yield materials for the main riser barrel, choke, kill and booster lines. This option can yield up to 20% reduction in overall riser joint weight (dry). By reducing the weight of the riser string, the total number of buoyancy modules and system uplift requirement is reduced. Further reduced system weight may also lead to superstructure economies.

The riser system is designed and tested to comply with:

- API 16C – Choke and Kill Equipment
- API 16F – Specification for Marine Drilling Riser Equipment
- API RP 16Q – Design, Selection, Operation and Maintenance of Marine Riser Systems
- API 16R – Specification for Marine Drilling Riser Couplings
- NACE MR0175
- ABS CDS
- DNVGL OS E101 Drill 'N'

Load Sharing

Oil States offers a unique load sharing option that improves load sharing performance during temperature cycling of the riser barrel and aux lines. Load sharing allows an engineered reduction of the main barrel wall thickness and therefore weight reduction of the riser joint and the full system.

Telescopic Joint

The Oil States Telescopic Joint is supplied complete with our twin element Hydro-mechanical Packer System and includes packer element wear indicators, which provide a 3-stage indication of the element's wear condition. This wear indication helps to plan the replacement of the TJ sealing element at a time that suits the drilling programme.

Oil States' pull-in bridle hands-free gooseneck system offers cost effective robust hands-free stabbing of Aux lines. Removing man riding op's improves safety, removes operator fatigue and increases the weather window for aux line stab and retrieve.

Automated Spider

For increased safety and high performance, Oil States offers an automated spider.

The system is controlled from the tool pushers' cabin, therefore removing personnel from the red zone and reducing risk of injury. The spider ensures that the joints are correctly aligned prior to stabbing therefore reducing the potential for aux line damage. Once the joint has been made, the clamp reverse pushes with pre-set load confirming the joint is correctly made-up. Automation of the spider allows a run / pull speed of ten to twelve joints per hour.

Accessories

Oil States offers a range of anti-hang-up solutions and hands-free MUX clamps.

MMDR System Features

- Preloaded connection
- 1.5 to 4.5 million lbs tension rating options
- Suitable for 20Ksi C&K lines
- Non-helical tooth profile
- Non-rotational make & break
- Cannot back-off
- Load sharing
- High yield low weight options
- Safe automated hands-free make & break
- Gimballed or non-gimballed auto-spider options
- No dogs required
- No bolts or threaded inserts required

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