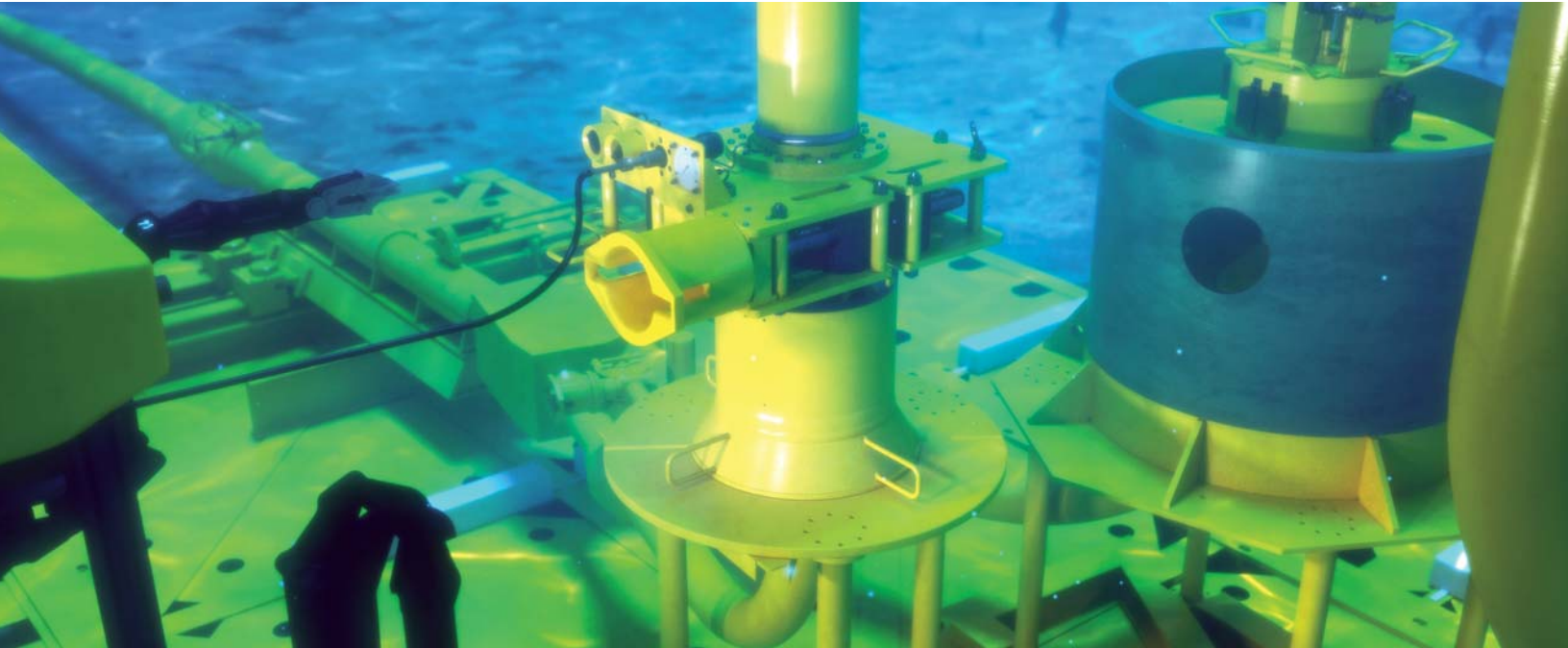




SUBSEA PIPELINE TECHNOLOGY

Multi-Segment Clamp



Deepwater Clamp Connector for Subsea Pipelines

Quick Installation of Jumpers, Flowlines and Tiebacks

Oil States Industries has been a proven leader for over four decades serving the needs of the deepwater pipeline markets. Designing and manufacturing reputable brands such as HydroTech, Big Inch and Quality Connector Systems, our experience and knowledge runs deep.

To address industry needs for cost efficiency and reliability, while reducing weight and installation time, Oil States has designed a connector with a solid history of performance.

The Oil States Multi-Segment Clamp is a robust, clamp-style connector for deepwater applications. The clamp is designed for quick, easy installation of jumpers, tiebacks and flowlines via ROV interface.

The clamp includes a soft-land system for the jumper to ensure proper mating of the hubs and reduce risk associated with hard landings. The ROV uses a standard class torque bucket to mate the hubs and compress the metal seal. Visual indicators show when the clamp segments are set.

An annulus test can be run via hot stab interface to verify proper sealing of the connection. Reducing ROV functions to one simple panel reduces movement, saving time and money when on bottom. Once pressure is verified via panel gauge, the connection is complete.

Quick Installation of Jumpers, Flowlines and Tiebacks

Should a seal change be necessary; it can be completed on bottom via ROV without pulling the jumper to the surface. Simply, depressure the connection and run the soft-land system to open the seal pocket.

The ROV will insert a special seal tool into the seal pocket. Stroking the soft-land system closed will push the old seal into the top capture mechanism of the tool and deposit the new seal into the hub pocket in one simple operation. Open the soft-land to remove the tool. The clamping procedure can be run again to ensure proper sealing and verification via the annulus test.

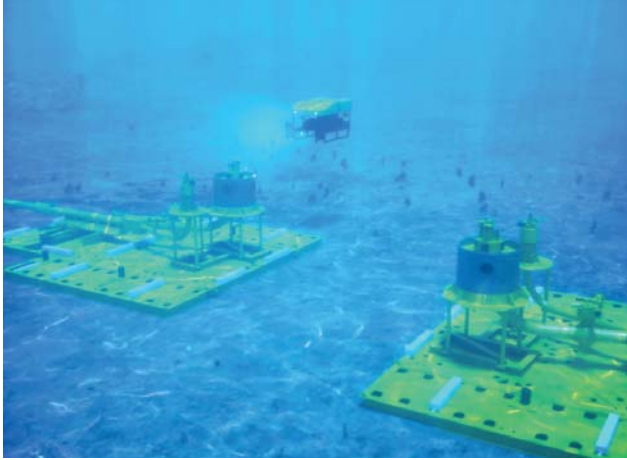
All ROV operations can be carried out via working class ROV, standard torque bucket and work basket method. This reduces bottom time and allows for multiple connections to be made during a single operation.



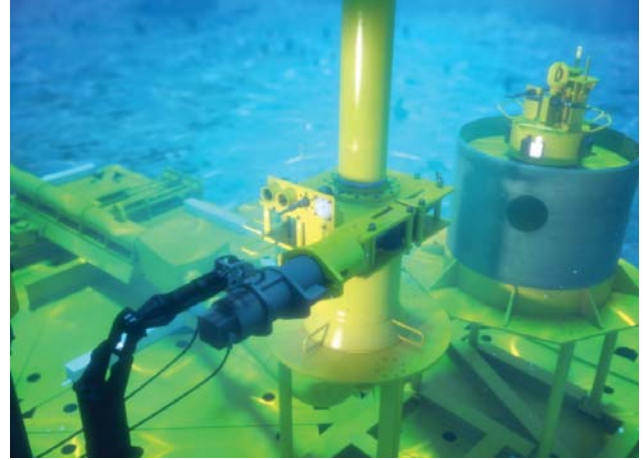


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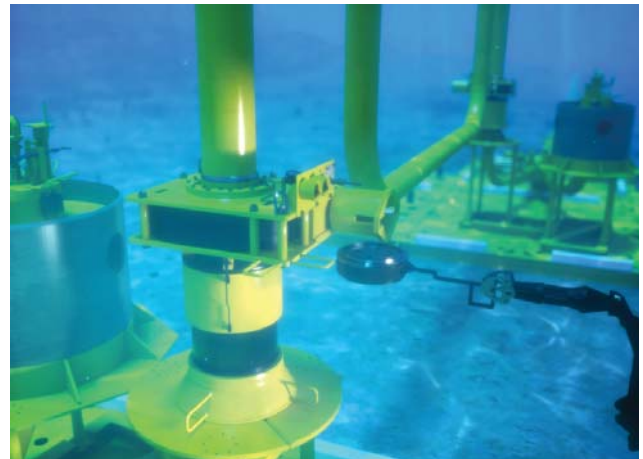
With the base structures already on bottom, metrology is taken from hub to hub. To decrease on bottom installation time, the jumper is fabricated with the Multi-Segmented Clamp Connectors already in place.



The ROV uses a standard torque bucket for final clamping of the connection. This compresses the metal seal between the hubs. An annulus test is performed via the interface panel where pressure can be verified to client specifications. The process is then repeated on the next connection.



The ROV will guide the jumper into place and set each clamp independently. After initial landing, the ROV will run the soft-land system to firmly mate the two hubs. The soft-land system is the preferred method to reduce risk of damage from hard landings.



To Change Seal without Pulling the Jumper - Simply open the soft-land system to expose the seal pocket. Insert the seal tool with new seal. Stroking the soft-land system will capture the old seal and deposit the new seal in one motion. Open the system, remove the tool and run the clamping procedure to finalize the connection.



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