



Temporary Pipeline Isolation Systems.

Bercoms' personnel have extensive experience in the field of pipeline isolation systems. The Isolation Tools presented enable the inspection and maintenance routines to be safely performed on pipelines at operating pressure.

Bercoms provide the complete isolation service, which incorporates the following activities:

- project specific design of the isolation plug and installation tooling
- project management and operating procedures
- supply of all isolation and pigging equipment
- offshore technicians to perform the pipeline isolation process.
- issue of isolation certificate
- project close out report

Typically the isolation tool, particularly the pigging arrangement, will be of a project specific nature as it will cater for pipeline geometry as well as the pressure holding requirement. (downstream / upstream or both).

However the principle of the Isolation Plug itself remains the same for all modules in that the following system is always provided:

- double block and bleed system for pressure verification and operational monitoring.
- self energizing seals and collet assembly.
- combined spring and hydraulic release system.
- pipeline pressure over ride system or hydraulic system dump facility which remove hydraulic pressure and releases the plug.

Prior to the installation a thorough Factory Acceptance Test (FAT) of the equipment will be performed on a simulated test rig. The test is performed in accordance with an approved Test Procedure.

This is critical to demonstrate the suitability of the equipment prior to offshore operations commencing to avoid any unnecessary delays. The test rig will incorporate a sample of all critical features (eg: a sample bend, large branch connections etc) to confirm the capability of the plug to be pigged through the project pipeline into the isolation position.

Temporary Pipeline Isolation systems to provide a 100% isolation of a live pipeline, allowing on-line maintenance or Tie-ins.



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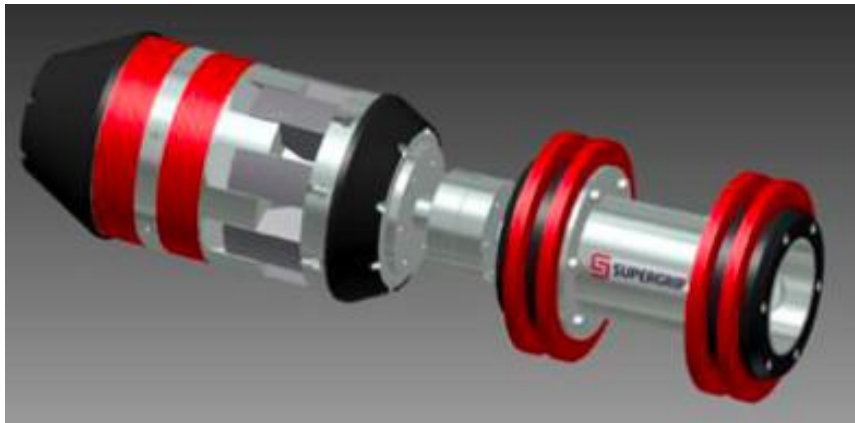


Typical Isolation piggyback plug.

Temporary Isolation systems provide:

- “ Double-Block-Bleed” facility.
- Downstream pressure monitoring.
- Seal verification testing.

Temporary Isolation systems can be pigged into position using tethered tools or tetherless tool using through wall communication systems.



Installation & activation methodology

The Isolation Plug is pigged into position the seals and collet assembly are hydraulically activated from an internal cylinder within the body of the Plug. Once the collet assembly is in contact with the pipe wall, the plug body will compress the dual seal elements radially expanding them until they reach the pipe wall. The outer surfaces of the collets are serrated to enable the slip 'teeth' to effectively grip or bite into the surface of the pipeline inner wall.

The activated system is designed to self energize with the differential pressure applied across the Plug. This ensures that the sealing integrity of the Plug is independent of the control system. I.e: a failure of the hydraulic system would not lead to a failure of the sealing integrity. This guarantees that the Plug can be recovered in the event of an activation system failure.

However in the unlikely event of a failure of the hydraulic system the Isolation Plug



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activation system is designed to release when the differential pressure is equalized across the Plug. The Plug is fitted with both hydraulic and a failsafe release system to provide 100% contingency.

All Isolation Plugs are fitted with a dual seal arrangement to provide a double block and bleed facility.