

Pipeline Repair Systems



subsea
innovation



6" NS PIPELINE REPAIR CLAMP
LIGHT WEIGHT INSTALLATION T...
Serial No SN-950-3291

TOOL
PANEL

HOT
STAB

GROUT
PORT

TEST
PORT

TEST
PORT

GROUT
PORT



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innovation

Pipeline Repair Systems

Subsea Innovation is a world leader in the supply of split sleeve pipeline repair equipment with over 20 systems supplied to major operators around the world since 2000. With a successful track record of operating in the most demanding environments, Subsea Innovation repair clamps provide a field proven solution for sealing subsea pipelines using split sleeve technology.

Four variations of clamps and connectors are available -

- Temporary Pipeline Repair Clamps
- Pipeline Repair Clamps
- Structural Pipeline Repair Clamps
- Mechanical Connectors

With total control of the manufacturing process

Subsea Innovation is able to design and develop repair systems specifically tailored to individual client projects. Once the assembly is completed and tested, Subsea Innovation provides full offshore installation support.

Client Benefits Include -

- Elimination of the need for costly pipeline shutdowns
- Ability to install structural repair clamps when the integrity of the pipeline has been compromised
- All pipeline repair clamps are designed to accept standard API pipe tolerances on ovality





Temporary Pipeline Repair Clamps

Temporary repair clamps are provided on very short delivery timescales where long term repair clamps are not immediately available.

Whilst a project specific, long term repair clamp is being designed and manufactured, a short term alternative can be installed which can contain any minor pin hole leaks at reduced operating pressures.

The temporary repair clamp can be installed by either divers or a remotely operated vehicle (ROV). This particular design of clamp was first successfully installed off the coast of Libya in 2008.

The clamp comprises a high integrity fabricated housing complete with an integral inflatable pad that is located over the defect and activated.

The clamp can be opened and closed by either diver or ROV. Subsea Innovation can also supply the activation equipment on a hire basis.

Pipe Dimensions

4" NS to 42" NS

Pressure Range

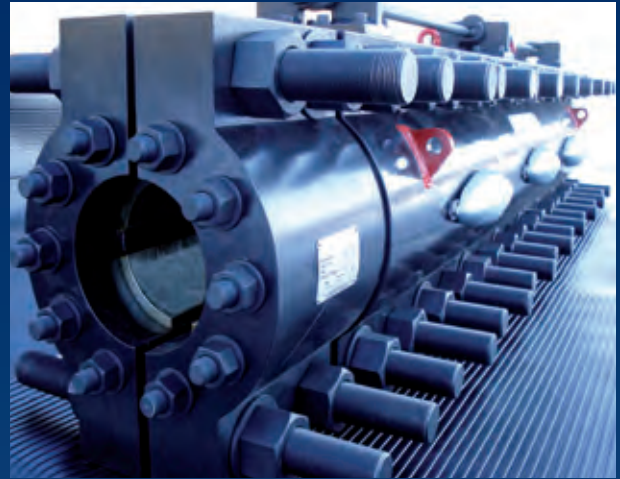
0 - 600 bar.g

Cathodic Protection

Galvalum III anodes sufficient for 25-yr design life

Coating

Generally coated to Norsok M501 system number 7 or to suit clients specification



Structural Pipeline Repair Clamps

The Tekgrip® pipeline repair clamp is available for either diver installed or remote ROV installed applications.

Steel locking collets provide reinforcement to the pipeline by transferring axial loads from the pipeline into the body of the clamp. This gives added structural integrity and removes longitudinal stresses from the damaged section of pipeline.

The pipeline repair clamp can be fitted with dual seals to allow a seal verification test to be performed prior to leaving the workplace. Clamps can be supplied with optional grouting ports.

Design Codes

DNV OS-F101 2007: submarine pipeline systems
DNV-RP-F113: subsea pipeline repair pipe

Dimensions

1/2" NS to 42" NS

Pressure Range

0 - 600 bar.g

Cathodic Protection

Galvalum III anodes sufficient for 25-yr design life

Coating

Generally coated to Norsok M501 system number 7 or to suit client specification

Long Term Storage

Nitrogen filled storage containers available



Pipeline Repair Clamps

The Tekclamp® ROV installed clamps are field proven having been successfully installed on a number of subsea pipelines. The pipeline repair clamp is supplied with a remote hydraulic installation tool which is recovered following subsea installation and can be reused on a range of clamp sizes.

The pipeline repair clamp comprises of machined half shells which house radial and longitudinal seals. The sealing configuration incorporates the unique Subsea Innovation anti-extrusion system. The system can be activated remotely by either diver, ROV or installed topside.

There are two alternative activation methods:

Tektight® Tensioner System

The Subsea Innovation patented tensioner system has been specifically developed for remote applications. The tensioners are operated hydraulically by ROV via integral hotstabs. The system incorporates a unique mechanical locking system to allow hydraulic removal.

Tektight® ROV Torque Tensioner

This system operates on a traditional torquing method with Subsea Innovation's unique bolt integration system and includes two ROV friendly activation tools. The first tool provides fast acting bolt tensioning. The second tool enables high torque application.

The pipeline repair clamp can be fitted with dual seals to allow a seal verification test to be performed prior to leaving the workplace. Clamps can be supplied with optional grouting ports.

Design Codes

DNV OS-F101 2007: submarine pipeline systems
DNV-RP-F113: subsea pipeline repair

Pipe Dimensions

1/2" NS to 42" NS

Pressure Range

0 - 600 bar.g

Cathodic Protection

Galvalum III anodes sufficient for 25-yr design life

Coating

Generally coated to Norsok M501 system number 7 or to suit clients specification

Long Term Storage

Nitrogen filled storage containers available



Mechanical Connectors

The Tekgrip® flanged connector can be diver or ROV installed and used for permanent subsea applications.

The connector is easily installed and can be attached to a subsea pipeline in-situ without the need for expensive hyperbaric welding. The connector can also be released, recovered to the surface, and reinstalled without having to cut the pipeline.

The connector is fitted with high integrity locking collets capable of withstanding full end cap line pressure. Each connector is fitted with dual seals to allow a seal verification test to be performed prior to leaving the workplace. Clamps can be supplied with optional grouting ports.

The elastomeric seals are manufactured by Subsea Innovation and are tested for applications with operating temperatures between -40°C to +180°C using elastomeric seals. Higher temperatures can be accommodated using graphite seals.

The seals and locking collets are activated independently which allows adjustment of the sealing pressure without affecting the clamping force. The seals are mounted inboard of the locking collets which prevent contact with the pipeline medium. Connectors can be supplied to suit pipelines up to 36" NS in diameter and up to a pressure rating of ANSI 2500.

All design work is performed in-house by our team of engineers using Autodesk Inventor. Each connector design is certified by an independent third party authority.

Each Tekgrip® connector is subjected to a full pressure test to ANSI specification witnessed by the third party certifying authority.

Technical Specification

- Compliant with API 6H
- Connectors designed in accordance with ASME Pressure Vessel Code, Section VIII, Division 2
- NACE MR-017
- ASME/ANSI B16.5 & B16.47

Project and Risk Management

As a leading supplier of equipment and services to the international offshore energy and subsea sectors, Subsea Innovation is committed to providing systems which comply with highest levels of quality management standards.

Management system standard: BS-EN-ISO 9001:2008

Accredited by Det Norske Veritas

Certificate number: 09840-2006-AQ-LDN-UKAS

Subsea Innovation Project Management is carried to the international standard of DNV ISO 9001.

A fully dedicated project leader manages the design and manufacture of each project from initial acceptance through to final system deployment. Generally the process requires a biweekly sign off with Subsea Innovation providing relevant electronic reports.

Project schedule charts are supported by master documentation and an ongoing activity register which relate to the initial activity schedule as described in the accepted proposal.

Subsea Innovation systems perform in some of the most challenging engineering environments in the world where component failure can be catastrophic.

Our dedication to ensuring the implementation of quality procedures at every stage of the design, build and installation process is clearly demonstrated by the ongoing performance of our systems in the field.





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