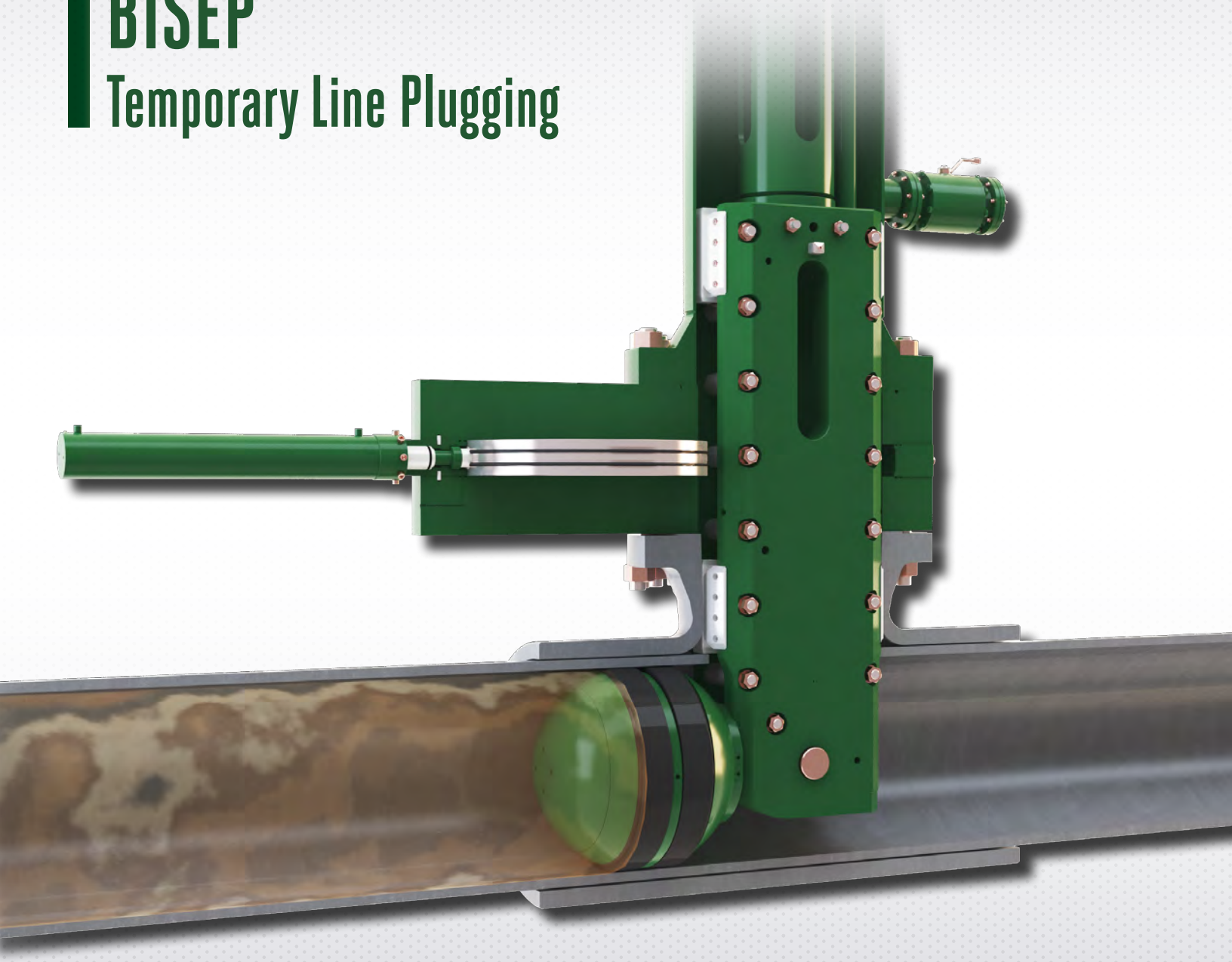
STATS GROUP

Managing Pressure, Minimizing Risk

BISEP®

Temporary Line Plugging



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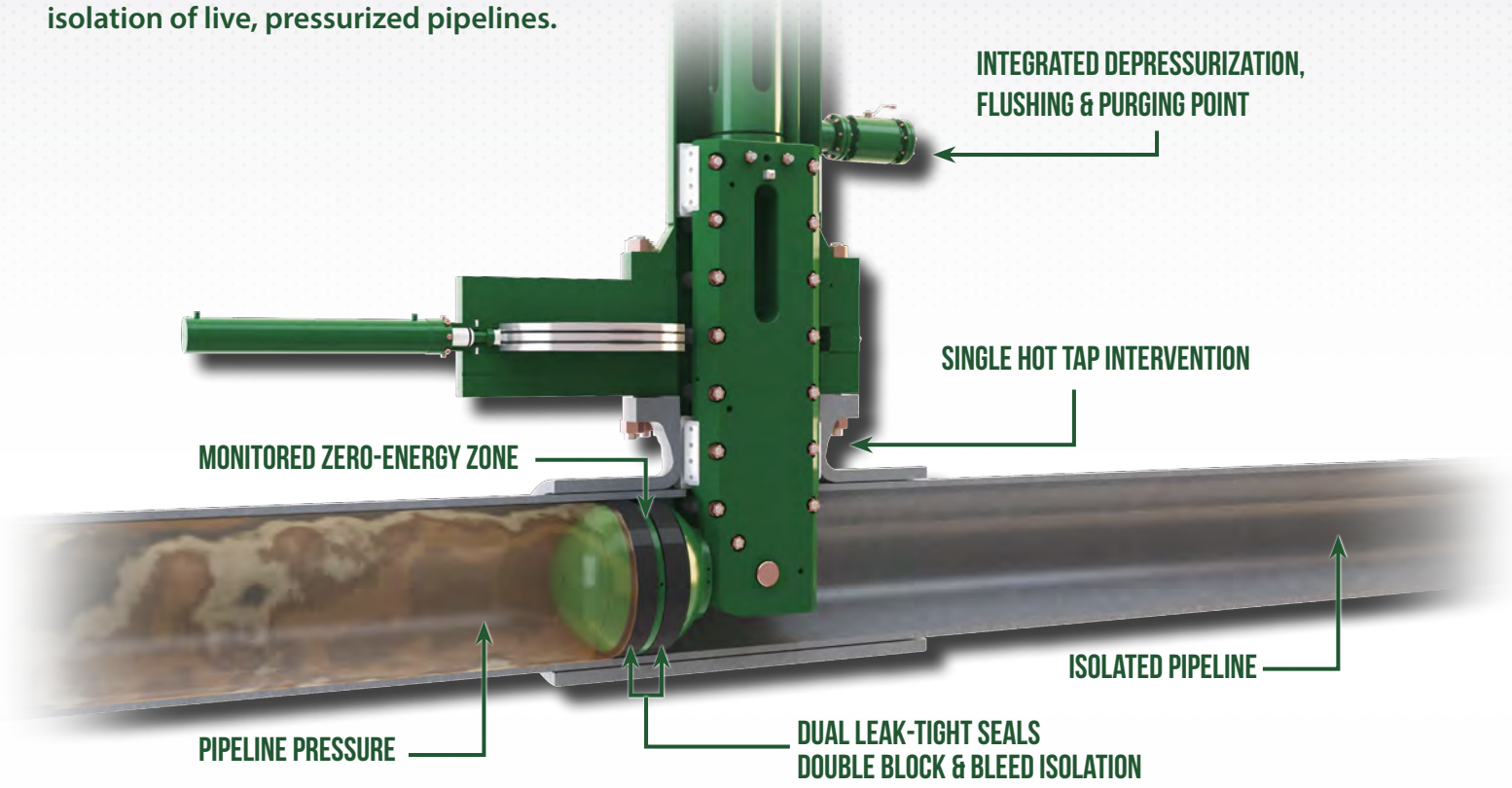
BISEP®
Temporary Line Plugging

STATS BISEP® offers pipeline operators an industry leading technology solution for temporary line plugging. Achieved using patented and DNV GL Type Approved technology, the BISEP provides a fail-safe double block and bleed isolation deployed through a single full bore hot tap intervention, without the need for additional hot tapped bleed or vent ports. The BISEP offers significant safety advantages over traditional line stop technologies, with the hydraulically activated dual seals providing leak-tight isolation of live, pressurized pipelines.



This high integrity isolation is provided by a spherical dual seal plug which is hydraulically deployed into the pipeline from a pressure competent launcher, through a dual seal isolation valve. The seals are hydraulically compressed resulting in radial expansion against the pipe bore. During isolation barrier proving, each seal is independently tested with full pipeline pressure in the direction of the expected pressure differential, proving both seals of the double block isolation are leak-tight. Following successful seal proving, the vented annulus void is then closed and monitored confirming isolation integrity throughout the isolation period.

The line pressure acting against the BISEP pressure head offers a fail-safe feature by providing actuation independent of the hydraulic system. The ejection load resistance is provided by the BISEP deployment head.

Multiple BISEPs can be used to provide mid-line isolation of pipeline sections and the introduction of a bypass line allows sectional isolation to take place without the need to shut down the entire system or affect product flow.

Reinstatement Pressure Testing

The BISEP is designed to resist back pressure and therefore can also be used as a test boundary for pipeline reinstatement testing. Uniquely the BISEP is designed to take 50% of its design pressure in the reverse direction. This allows a pressure 50% higher than the isolated pipeline pressure to be applied to the reinstated pipework as a pressure test, prior to removing the BISEP.

STATS also supply welded and mechanical split tee fittings for hot tap and BISEP applications along with its patented dual seal slab valves and hot tapping services. To allow the BISEP and valve to be recovered fittings can be supplied with a completion plug and blind flange to isolate the branch off-take.

Operator Benefits

- Fully verified double block and bleed isolation through a single hot tap intervention
- Leak-tight isolation dramatically increases safety over traditional line stop technologies
- Isolation remains stable and leak-tight even with significant fluctuating pipeline pressures
- Single hot tap intervention significantly reduces timescales and costs and also allows installation on short sections of pipework.
- Full compliance with oil and gas industry standard double block and bleed requirements
- Minimal production disruption on interconnected pipeline networks during valve repairs / tie-ins

DNV GL Type Approval

The BISEP is fully certified by DNV GL to verify the design criteria satisfies the requirements for Pipeline Isolation Plugs to provide dual seal and isolation in accordance with Offshore Standards: DNVGL-OS-F101 (Submarine Pipeline Systems) and recommended Practices: DNVGL-RP-F113 (Subsea Pipeline Repair) and code compliant with: ASME BPVC Section VIII, Division 2.

10" BISEP® Cl600, Process Plant, Australia

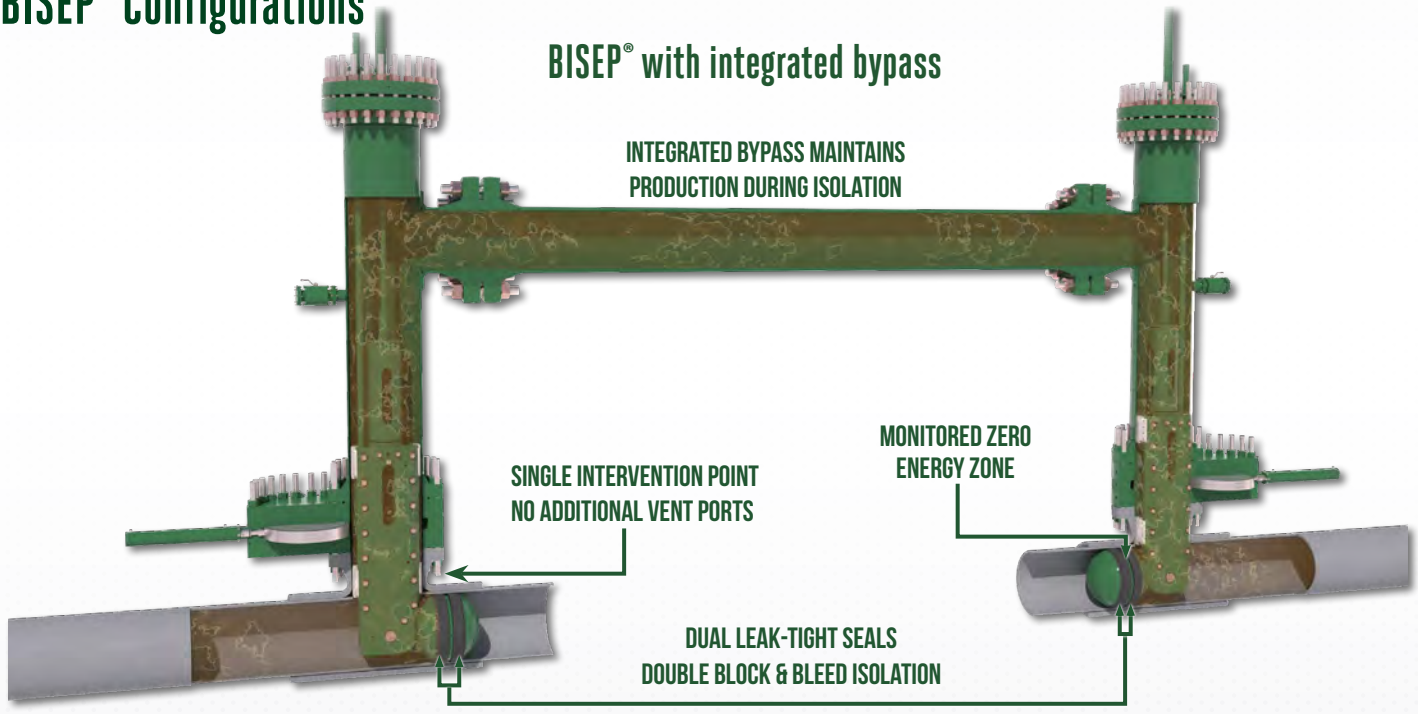
Main Applications

- Pipeline / launcher valve installation or replacement
- Pipeline / riser repair, replacement or decommissioning
- Pipeline / pipework re-routing
- Mid-line repair of pipeline defects
- Isolate pressure vessels
- Water or gas injection line isolation
- Isolation of pipeline end manifolds, pipeline end terminals for repair, upgrade or replacement

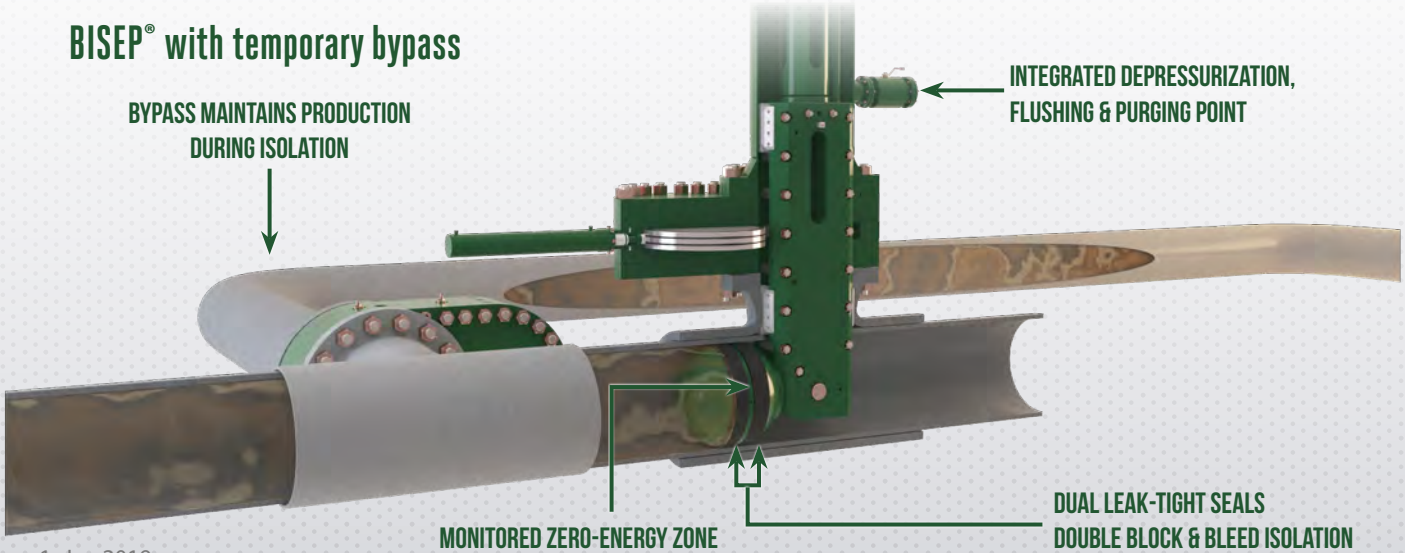
- ONSHORE
- OFFSHORE
- SUBSEA
- TOPSIDES
- PROCESS PLANT
- OIL
- GAS
- WATER
- STEAM

BISEP® Configurations

BISEP® with integrated bypass



BISEP® with temporary bypass



BISEP® Key Features

- Monitored dual seal annulus void proves seal integrity before and during intervention work
- Isolation integrity continuously monitored through annulus void, hydraulic set circuit and body vents
- Seal annulus void provides a Zero-Energy Zone (minimal volume x pressure)
- Design provides axial restraint through bearing on dual clevis plates (no single point failure)
- Dual compression seals provide higher integrity isolation than traditional cup seals
- Hydraulically activated seals can be manipulated to improve performance when sealing in pipes with issues such as ovality and internal surface irregularities; ie weld seams, corrosion, erosion
- No additional pipeline hot taps required for bleed or vent ports
- Self-Energization of seals maintains isolation integrity independent of hydraulic control circuit
- Ability to accommodate reinstatement pressure test against the rear of the plugging head
- BISEP isolation installed upstream of fitting, maintaining fitting in safe zone during workscope
- BISEP launcher ported to facilitate venting, purging and flushing of isolated section
- Can be deployed through a conventional equal tee, clamp or branch
- Design allows for deployment into flow conditions (Engineering Assessment Required)
- Hydraulic rotation of the plugging head enables BISEP deployment into pipes in any orientation. In addition to horizontal and vertical pipes the BISEP can also operate in pipes inclined from the horizonal making it more versatile than traditional line stop systems.

Specification:

Size range: 3"– 54" lines* Pressure range: up to 2220 psi, available in ANSI Class 600 and 900 ratings

Maximum operating temperature: 212˚F, minimum operating temperature: -4˚F

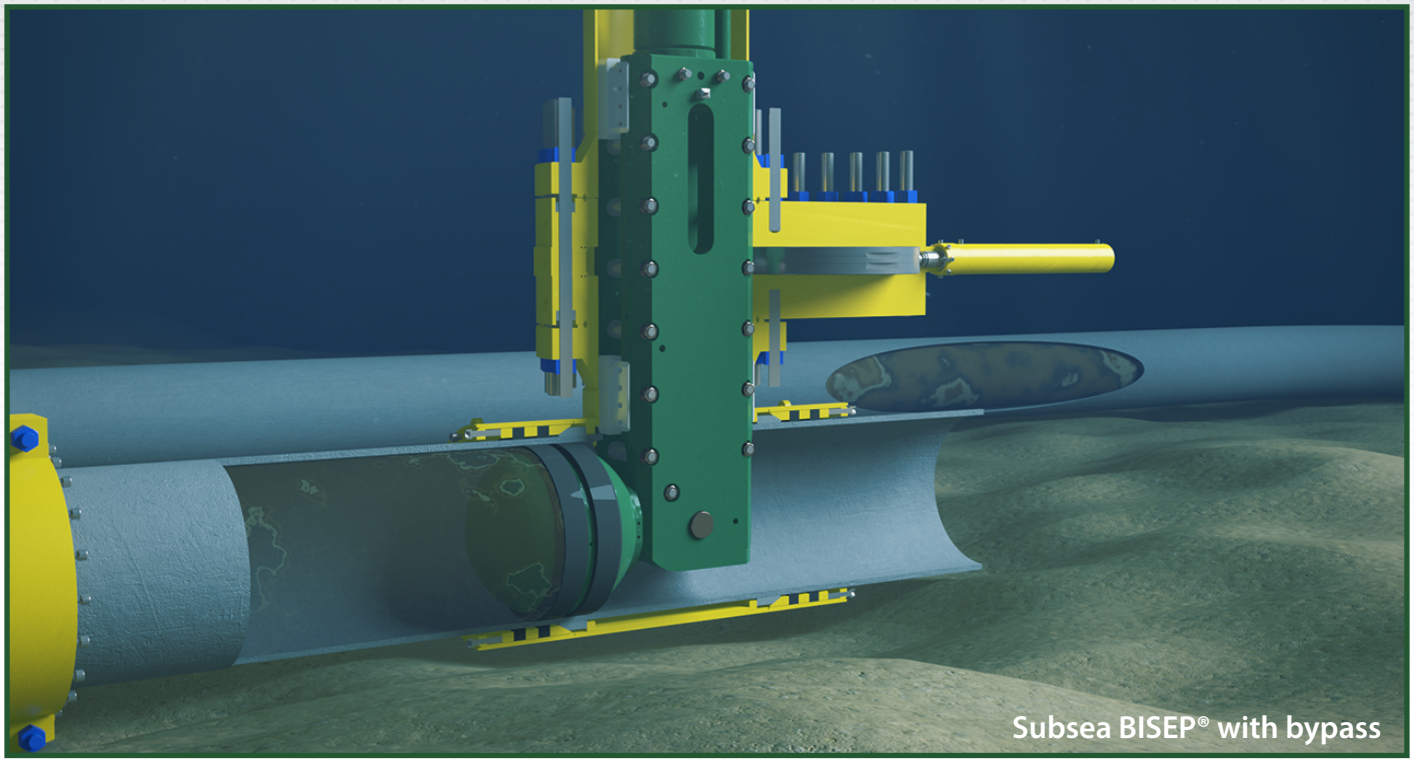
Other pressure and temperature combinations available by request

*For sizes 2" and below see STATS BI-STOP™ range

30" BISEP® Cl900 with bypass, USA

Subsea Isolations with the BISEP®

Temporary Line Plugging

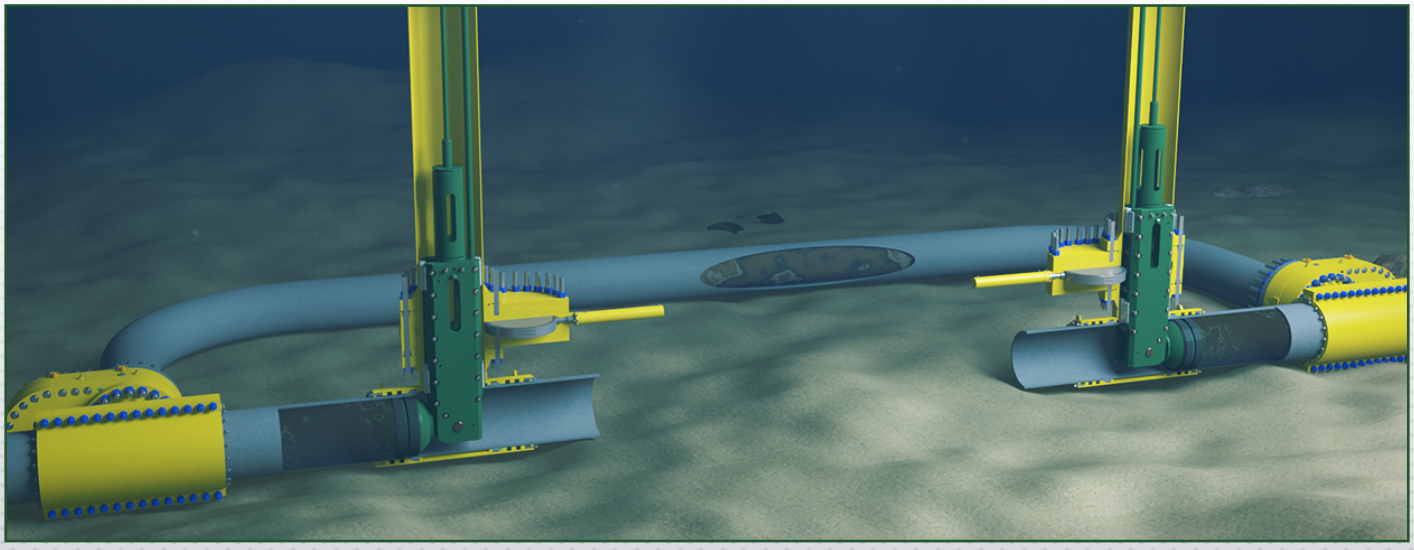


Subsea BISEP® with bypass

The BISEP when deployed subsea provides the highest level of hot tap installed pipeline isolation in the industry. Complying with all relevant subsea isolation guidelines, the BISEP ensures safe worksite conditions for divers from breaking containment to reinstatement.

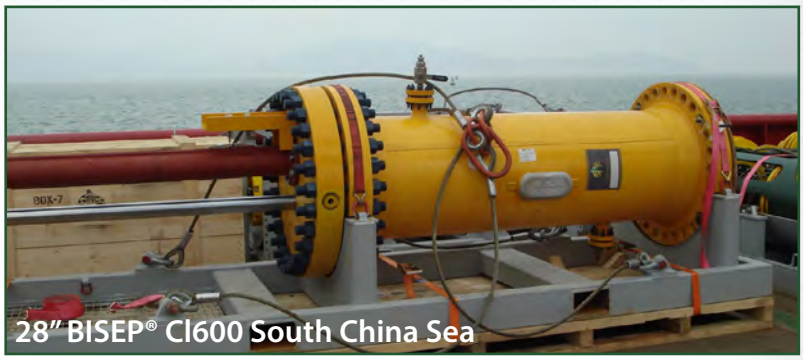
The BISEP is the only hot tap installed double block isolation tool that satisfies the design criteria for DNV GL Type Approval for Pipeline Isolation Plugs. The design criteria satisfies the requirements for Pipeline Isolation Plugs to provide dual seal and isolation in accordance with Offshore Standards: DNVGL-OS-F101 (Submarine Pipeline Systems) and recommended Practices: DNVGL-RP-F113 (Subsea Pipeline Repair) and is code compliant with: ASME BPVC Section VIII, Division 2.

The use of the BISEP provides a high integrity, temporary subsea isolation that offers operators significant benefits by avoiding the need to decommission and then recommission the entire subsea infrastructure.



Main Subsea Applications

- Sectional replacement / pipeline repair
- Pipeline tie-in operations
- Pipeline re-routing
- Dead leg removal
- Pipeline abandonment and decommissioning
- Isolation of subsea manifolds or skids for repair or replacement



28" BISEP® Cl600 South China Sea

BISEP® Key Features for Subsea Activities

- Double block and bleed isolation compliant with subsea industry isolation best practice. (DNVGL-RP-F113 Pipeline Subsea Repair – recommended practice)
- Monitored dual seal annulus void proves seal integrity before and during intervention work
- Isolation integrity continuously monitored through annulus void, hydraulic set circuit and body vents
- Seal annulus void provides a Zero-Energy Zone (minimal volume x pressure)
- In bad weather, enhanced actuation system allows long-term disconnection from support vessel
- Isolation remains stable and leak-tight even with significantly fluctuating pipeline pressures
- The BISEP design ensures diver safety in the event of negative and positive pipeline differential pressures
- Ability to accommodate reinstatement pressure test against the rear of the plugging head

8" BISEP® Cl600, Gulf of Thailand

14" BISEP® Cl600, East China Sea

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