Helix
ENERGY SOLUTIONS

Well Enhancer

DP3 well intervention vessel and DSV

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The Well Enhancer is the world's only LWIV vessel capable of conducting coiled-tubing intervention.

The UK registered *Well Enhancer* is a 132 m long custom designed, dynamically positioned well intervention and saturation diving vessel. Key features include a 150 Te multi-purpose tower (MPT) utilized for subsea/well operations and customized coiled-tubing spread located within a generous deck space area. The vessel also features kill pumps and a 100 Te main crane.

The *Well Enhancer* has been designed to minimize production downtime and provides cost effective well maintenance, production enhancement and well abandonment solutions. With 1,100 m^2 of main deck space, the vessel can also perform a range of well testing and production flow-back services.

The *Well Enhancer* is custom designed to dynamically positioned class 3 (DP3) specification. It features a purpose built Huisman Tower over a 7 m x 7 m moonpool and has a traveling block rated to 150 Te capacity in passive mode.

The *Well Enhancer*'s 18 man saturation diving spread is rated to 300 m and combined with the vessel's 1x workclass and 1x observation class ROVs, provides for full IRM and light construction services.

Experience

10 years of continuous North Sea and Africa operations in diver supported riserless intervention.

Innovation

The *Well Enhancer* is capable and experienced in deploying coiled tubing from a monohull.

Value

Unique capability to perform simultaneous DSV and LWI activities from a single asset.

Main characteristics

Vessel Name	Well Enhancer
Owner	Helix Energy Solutions Group
Charterer	Helix Energy Solutions Group
Builder	IHC Merwede
Design	IHC Type-22 design
Year Built	2009
IMO Number	9421996
DNV Class Notation	DNV, 1A1, Well Intervention Unit, SF,CONF-C(3), HELDK-SH, CRANE, DSV-SAT, EO, DYNPOS-AUTRO, DK(+)
Flag	United Kingdom [GB]

Dimensions

Length Overall	132 m (433 ft)
Length between perpendiculars	117.7m
Breadth Moulded	22 m (72 ft)
Depth Moulded	11 m (36 ft)
Design Draft	6.25 m
Scantling Draft	6.75 m
Displacement	13,885 Te
Gross Tonnage	9,383 Te
Speed	13 knots
Deadweight	7,950 tonnes

Accommodations

Accommodations	122
Cabins	18 x single person cabins 35 x two-person cabins 5 x Captain cabins 7 x Officer cabins

Vessel also features a galley and mess room, conference rooms and offices on various decks, Helideck reception area, heli-lounge, lounges, gym, hospital and sick bay

Cranage

Main Crane	100 Te
Operating Depth	600 m (1,969 ft)
Auxiliary Cranes	2 x 5 Te SWL
Effer Crane	15 Te SWL

Helideck

Rating	Sikorsky S-91, S-92,
Rules	Super Puma AS332L2 Compliant with CAP 437
Diameter	22.0m

HP pumps

2 x SPM 600 s

Moonpool

Dimensions	nominal 7m x 7m

Multi-purpose tower (MPT)

Lifting Capacity	150 Te
Active Heave Compensated	150 Te (nominal 100 Te)
Subsea Lubricator Winch	150 Te (nominal 100 Te)

4 guide line tensioners
2 pod line tensioners

Diving system

Depth Rating	300 m (984 ft)
Divers in Saturation	up to 18
Diving Bell	5.4 m^3 (191 ft^3)

Power & thrusters

Installed Power	4 x 3,000 kW, 2 x 1,500 kW
Fixed Propulsion	2 x 3,000 kW
Bow Tunnel Thruster	2 x 1,720 kW
Bow Thruster / Retractable	1 x 1,200 kW

Dynamic positioning system (DP)

Kongsberg SDP21 System interfaced to:	2 x Kongsberg K-POS-DP-21 1 x Kongsberg K-POS-DP-11 (back -up system)

IMO DP Class 3 & DYNPOS AUTRO

Deck

Deck Load	up to 10 Te per m (1 ton per ft^2)
Above Main Deck	1,100 m^2 (11,840 ft^2)
Bulk tanks	4 x 34.5m^3 bulk tanks suitable for various fluids including MEG, Base Oil, Brine, Hydrocarbon Returns, Fresh/Sea Water & Chemicals (caveat that chemicals must be checked for paint compatibility)
Under deck tank	9 – 202m^2 suitable for Brine, MEG, Fresh & Sea water
Stock tank	100bbl stock tank for hydrocarbon returns c/w degasser

Ability to pump diesel from vessel bunkers for use in well interventions.

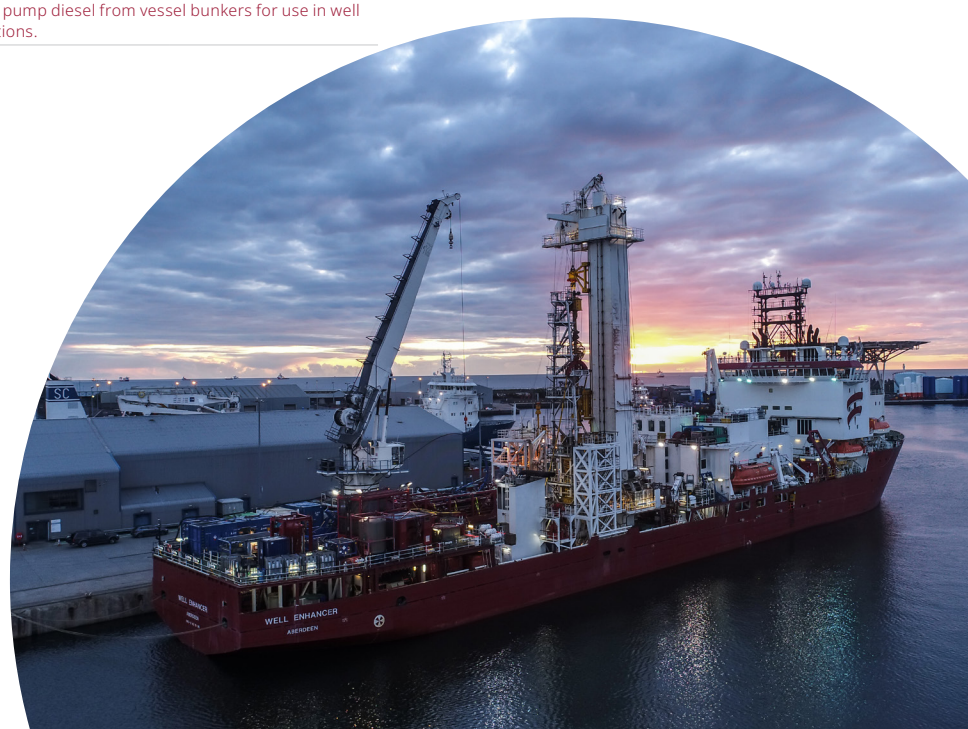
Subsea intervention lubricator (SIL)

The 7-3/8" Subsea Intervention Lubricator (SIL) deployed from the Well Enhancer enables efficient and cost effective riser and riserless intervention or abandonment solutions for all subsea wells. Well Ops 7-3/8" SIL is the next generation in the family of intervention systems.

More adaptable than the 5-1/8" and 7-1/16", the 7-3/8" SIL also interfaces to riser packages and in doing so, sets the standard for monohull based coiled-tubing well intervention solutions. Well Ops has unrivaled experience in the development of subsea intervention systems and the SIL's are designed with both ease of handling and operational efficiency in mind.

The 7-3/8" SIL is a single trip deployment system that gives access to both conventional and horizontal (large bore) trees, with the ability to perform safe and efficient riserless wireline and riser-based coiled-tubing operations from a monohull vessel. The 7-3/8" SIL features an electro-hydraulic control system which provides a high level of redundancy and excellent reliability. The control system is fully integrated and includes grease, HPU and the fluids for subsea tree controls. Access to the master control status mimic will be available from onshore.

- 7-3/8 in through bore at 10,000 psi WP
- Diverless system with wireline and coiled tubing capability
- Safety head details: 7-3/8 in Norsok D002 qualified 10 ksi single action with shear capability shearing 4.5 in perforating guns and tool string. (With proximity feed-back to master control station)
- Upper test valve and lower test valve: 7-3/8 in Norsok D002 10 ksi shearing gate valves fail safe hydraulic actuated. (with proximity feedback to master control station)
- Wire cutting ball valve integrated with latch (upper section) latch mandrel integrated with wire cutting ball valve 7-3/8 in 10 ksi Norsok D002.
- Supports up to 22m toolstring capability in wireline mode at 600m
- ROV manual override contingency for all wellbore functions
- High angle emergency disconnect package for riser operations
- DHSV closure delay system
- Twin kill / deco line capability
- Built in redundancy



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