



The New Standard for the Repair and Strengthening of Offshore Assets



SPS provides:

- Speed - significantly faster than steel replacement
- Low risk - avoids removal of attached services
- Non-disruptive - vessels can remain in operation and on-station during repair with engineered 'no hot work' solutions
- Strength - high impact resistance, reduces fatigue stresses and arrests crack propagation

Intelligent Engineering's Sandwich Plate System (SPS) is a steel-elastomer-steel composite material that is a safe, fast, simple, proven and approved method of repair and strengthening that can be completed on-station, a float or in drydock.

The inherent characteristics of SPS deliver significant safety and operating benefits including high impact resistance, A60 fire insulation, blast and fragment protection and vibration damping.

Repair and Strengthening

The existing structure is used as one side of the composite and a new flat face plate is then fixed over the existing surface, leaving a void precisely the thickness of the core. The elastomer core is then injected on-site to form a renewed, fully composite structure, stronger and longer lasting than the original.

At IE we have been supplying innovative solutions to the maritime and offshore industries since 1996. We have an established track record in the repair, strengthening and construction of ships and offshore assets. To date more than 300 projects have been completed on a wide range of structures. SPS is approved by all major Classification Societies.



SPS - the existing worn/corroded plate and new top plate are bonded together with a solid elastomer core forming a fully composite structure.

Fully Supported Technical Solutions

IE will:

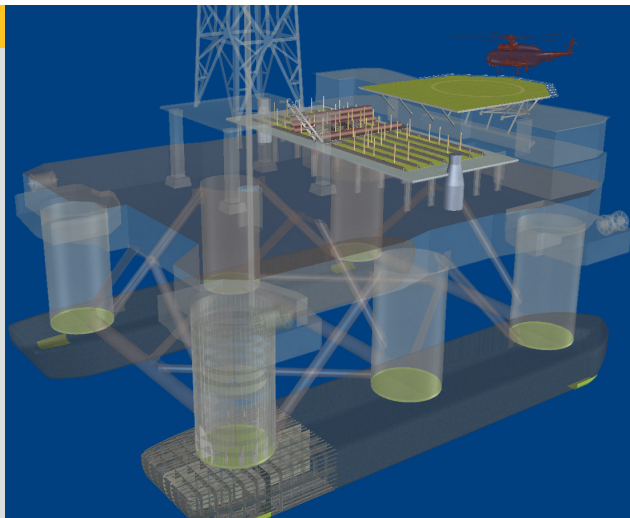
- Work with your technical and project management staff to optimise the benefits of SPS
- Provide a Classification Society approved design
- Complete the injection of the elastomer core to stringent QC standards
- Work under contract to the owner/operator for the design and injection only with the associated steelwork provided to IE's specification by the yard. Alternatively, IE can provide a turnkey package to include steelwork

IE has developed methods for reinstating steelwork in-situ whilst the vessel continues to operate, with no hot work solutions where necessary.





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Fixed and Floating Platforms

SPS is suitable for many applications on offshore assets, such as:

- Helideck strengthening to take heavier aircraft demanded by CAP 437 (steel and aluminium platforms)
- Rehabilitation and increased impact resistant pipe rack decks and drill floors
- Pontoon plating and column base rehabilitation
- Increased puncture resistance of pontoon plating in way of anchorages
- External joint and tubular member encasement to reinstate strength and extend fatigue life
- Increased blast, fire and fragment resistance for blast walls
- Mud tank strengthening

Offshore Supply Vessels

SPS can be used for:

- Deck reinstatement and strengthening
- Hull Ice Class upgrade



Deck reinstatement

SPS avoids complex 'crop and replace' above congested engine rooms and tanks and the need to remove under-deck services and insulation. Reinstated decks have significantly improved impact resistance with no need for sacrificial timber cladding. Such projects can be completed in days rather than weeks saving considerable time out of service.

FSOs and FPSOs

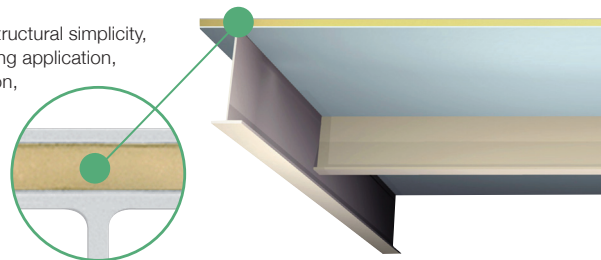
SPS is a safe, fast repair process that saves considerable time out of service. Some repairs can be undertaken without hot work, removing the need to de-gas tanks and enabling vessels to remain on-station with no interruption to production.

SPS can be used to provide:

- Bottom and side shell reinstatement above and below waterline
- Side shell impact protection
- Helideck strengthening and upgrade
- Fuel Oil tank protection
- Reinstatement of internal structure
- Laydown area impact protection
- Main deck reinstatement
- Ability to install stainless steel linings for enhanced oil recovery and chemical tanks

New Structures

SPS leads to structural simplicity, improved coating application, easier inspection, reduced maintenance and enhanced life-time performance.



As new panels SPS is constructed using thin steel face plates bonded by a solid elastomer core to form a stiff, lightweight panel. The elastomer core provides continuous support to the face plates, prevents local buckling and, in many cases, removes the need for secondary stiffeners.



Blast and fire proof escape tunnel

SPS has also been used in the construction of a Blast and Fire Proof Escape Tunnel which delivers:

- Protection from explosions and subsequent fire events
- Safe refuge and protected means of escape