


Heavy lifting at great heights



SOUL2000



We have said this before but how much lighter and more efficient can these heavy lift jack-up vessels get? PES brings you SOUL, the 4th generation of wind turbine installation vessels.

After successfully launching their revolutionary heavy lift jack-up vessel design, SOUL-partners, SeaOwls and Ulstein, continued their mission to develop the optimal range of heavy lift jack-up vessels that will enable the offshore wind industry to bring down the cost of renewable energy.

Different from the existing third generation fleet of wind turbine installation vessels (WTIVs), the SOUL heavy lift jack-up vessel design was conceived with the actual lifting operation from a stable-up platform, in mind. This design focus resulted in an unmatched heavy lift performance in terms of lifted load, reach and height for a jack-up vessel, when used for either afloat or firmly standing on its four legs.

Existing WTIVs are either 'ships with legs' or 'self-propelled jack-up barges' and both design concepts have their own strengths and weaknesses. Legged ships have limited payload and lifting capacities due to their heavy structures and narrow gaps between portside and starboard legs. Jack-up barges, with propulsion, have their own sailing and seakeeping challenges.

SOUL - the fourth generation of wind turbine installation vessels

The SOUL heavy lift jack-up vessel is a truly different design, combining all benefits from her predecessors without the associated operational compromises or shortfalls. It may be concluded that the heavy lift jack-up vessels of the SOUL-series add a fourth generation to the existing fleet of WTIVs.

The following five essential patented features distinguish every SOUL vessel from any other vessel:

- 1 the four legs of the up are placed in a diamond-shape pattern, with a large distance between bow, stern, portside and starboard leg
- 2 the vessel hull is shaped like a kite with a sharp bow and a broad transom
- 3 the primary load-bearing structure connects the starboard with the portside leg, and the bow leg with the stern leg in a cross-shape arrangement
- 4 the main crane is configured wrapped-around the stern leg with clear view on the centre of the vessel's main deck
- 5 the combination of structural arrangement and hull form allows for stepless scaling of vessel dimensions

As a principle, the combination of large leg spacing, with the cruciform primary structural beam arrangement, ensures all SOUL vessels will be the lightest structures to support the most demanding heavy lift operations. This will ensure a long economic life for the vessel, as it's always possible to add a bigger crane to



SOUL2000

handle any future, heavier and higher wind turbine components.

Other remarkable features of a SOUL jack-up vessel are the high workability for pinning the jack-up legs on site, the optimised deck logistics, a low fuel consumption thanks to undisturbed inflow to the thrusters, minimal seabed disturbance, robust and reliable jacking systems, high hook handling speeds, perfect balance without need for ballast water and a safe comfortable working environment on board the vessel.

SOUL8800 - the installation vessel for next generation wind turbines

The initial challenge of the SOUL partners was to come up with a heavy lift jack-up vessel that could transport and install 6 wind turbine generators (WTGs) of the next generation, 10-15MW, in a one week round-trip. The impressive flagship of the series is the SOUL8800, with an unrivalled payload capacity of 16,000t and a main crane capacity of 2,500t at 40m radius.

It is worth noting that the robust structural design of SOUL8800 allows for an extreme heavy lift operation of 5000t at 50m reach, which means it can install the ever-growing WTG components.

In the past months smaller sisters have been added to the SOUL-series of WTIVs. They are SOUL6300 and SOUL4500, all capable of handling the next generation WTGs. This range of dedicated heavy lift jack-up vessels for WTG installation, means that offshore contractors and project

developers are able to create and optimise their business models to produce wind farms over the coming decades.

The SOUL-series of heavy lift jack-up vessels is a joint development by SeaOwls BV and Ulstein Design and Solutions BV, both Rotterdam based companies and known for their innovative ideas and designs. The cooperation complements Ulstein's heavy lift construction vessel design experience with the profound jack-up design know-how and experience of SeaOwls' jack-up specialists.

SOUL supporting Huisman's foldable offshore crane

In the development of a lean and mean SOUL jack-up vessel for maintenance activities, it was a logical step for the SOUL partners to utilise Huisman's Foldable Offshore Crane.

This crane combines ample lifting capacity with unparalleled lifting heights using a foldable boom.

With the boom folded away and in storage for transit, the overhang of the boom over the bow of the vessel is significantly reduced, limiting the risk of damaging the boom when manoeuvring in port areas. Upending the folded crane boom can be performed with low internal loads, which gives opportunity to reduce the weight of crane house, pedestal and supporting structure of the jack-up vessel.

In addition to lifting height, boom clearance is a critical parameter in lifting operations at

high hook heights. The foldable offshore crane design has eliminated any potential clash with the boom structure, as the folding jib can be tilted down to allow for additional boom clearance. This way, the main crane block can easily reach over the nacelle housing to replace the generator in the heart of the nacelle.

SOUL2000 - the perfect solution for wind turbine maintenance

The application of Huisman's foldable offshore crane resulted in the SOUL2000 jack-up vessel for offshore wind O&M activities. With her modest hull dimensions of 80m x 50m x 6m, she is capable of supporting a foldable offshore crane, with a lifting capacity of 500t at 30m radius and 125m hook height, above the main deck. Strong enough to support a 1,500t payload, she can install or replace 2 sets of nacelles and blades on the 6-8MW WTGs.

SOUL2000 includes all the good things of her larger sisters, sharing a similar focus on superior heavy lift performance at low CAPEX.

Green light for SOUL

With the completion of the SOUL-series for WTG installation and the introduction of the SOUL2000 jack-up vessel for offshore wind maintenance activities, SeaOwls and Ulstein have turned all lights to green to secure the cost-efficient future for offshore wind energy.

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