



## PACIFIC ORCA: wind farm installation vessel

Shipbuilder: ... **Samsung Heavy Industries Co., Ltd. Geoe Shipyard, South Korea**  
 Vessel's name: ..... **Pacific Orca**  
 Hull No: ..... **1940**  
 Owner/operator: ..... **Swire Pacific Offshore Operations (Pte) Ltd., Singapore/Swire Blue Ocean A/S**  
 Country: ..... **Denmark**  
 Designer: ..... **Knud E. Hansen A/S**  
 Country: ..... **Denmark**  
 Model test establishment: ..... **Samsung Ship Model Basin, South Korea**  
 Flag: ..... **Limassol, Cyprus**  
 IMO numbers: ..... **9601326**

ON 27 July, 2012 Samsung Heavy Industries Co., Ltd Geoe Shipyard in South Korea delivered the first of two wind turbine installation vessels to Swire Pacific offshore Operations (Pte) Ltd, *Pacific Orca*. The second vessel, *Pacific Osprey*, was delivered 28 December 2012. This was the culmination of a contract that entered into force on 11 August, 2010. The two new vessels will be operated by the Danish daughter company Swire Blue Ocean A/S. *Pacific Orca* and *Pacific Osprey* have been designed especially for the installation of offshore wind turbines and for support in the offshore oil and gas sector. The 161m long and 49m wide vessels, which are the largest of their kind, are equipped with six 105m long truss type legs and an electric rack-and-pinion jacking system. The six-legged design was chosen for the greatest safety and reliability under the most extreme weather and sea conditions while being jacked 17m above the sea surface on up to 60m water depth. Should 60m water depth not be enough the legs are designed so that they can be lengthened by further 15m.

The forward legs are closer together than the midship and aft legs to refine the hull lines in way of the shoulders and with a relatively long bow the vessels are designed to make good speed even in higher sea states, where similar vessels with blunter bows would be stopped.

The vessels are equipped with a diesel electric propulsion plant that features a DP-2 dynamic positioning system with four Azipod thrusters aft and two tunnel thrusters and two retractable azimuth thrusters in the bow.

With a cargo deck area of 4,300m<sup>2</sup> and a jackable deadweight of not less than 8,400tonnes, the vessels offer great flexibility in the carriage and installation of offshore wind turbine foundations of all types and sizes, and they are also ideal for decommissioning oil rigs.

The deck is served by two cranes a 1,200tonne main crane, which works around the aft leg in a starboard direction for a 360deg unobstructed rotation, and a 50tonne auxiliary crane, which is fitted on a cantilever on the jacking frame of the midship leg which also works in the starboard direction and has a rotation of 300deg. A knuckle-boom crane for loads up to 4tonnes and man-riding can be easily moved between two foundations; one forward and one aft of the main crane.

The accommodation block forward holds 111 single cabins all with en-suite bathrooms as well as the necessary crew facilities as messes and day rooms, offices and conference rooms etc. A helicopter landing deck for medium size helicopters is fitted above and forward of the accommodation block.

With their superior capacity and flexibility these new vessels are an important and timely innovation for the industry as it moves into deeper waters and more challenging operations.

### TECHNICAL PARTICULARS

Length oa	
Hull excl. helicopter deck: .....	161.3m
Incl. helicopter deck: .....	164.9m
Length bp: .....	155.6m
Breadth, moulded: .....	49.0m
Depth to main deck, moulded: .....	10.4m
Draught, moulded	
Design: .....	5.5m
Max. summer: .....	6.0m
Air draught at design draught: .....	99.5m
Gross tonnage: .....	14,000gt
Lightweight: .....	24,390tonnes
Deadweight	
At design draught: .....	9,890dwt
At max. summer draught: .....	13,155dwt
For jacking: .....	8,400dwt
Block co-efficient: .....	0.78
Service speed: .....	13.0knots
Classification society and notations: .....	GL 100 A5 Offshore Support Vessel Self-elevating Unit WTIS EP Heli SPS (except SRTp)
Tank capacities	
Marine gas oil: .....	4,285m <sup>3</sup>
Lube oil: .....	44m <sup>3</sup>
Fresh water – potable: .....	1,533m <sup>3</sup>
Water ballast: .....	11,905m <sup>3</sup>
Cargo deck	
Deck area: .....	4,300m <sup>2</sup>

Uniformly distributed load	
Aft & amidships: .....	21tonnes/m <sup>2</sup>
Forward: .....	15tonnes/m <sup>2</sup>
Grid system of strong points: .....	Mesh 1.4 x 1.4m
Max strong point loads aft: .....	250tonnes downwards / 200tonnes upwards
Automatic anti-heeling system:	
Pump capacity: .....	2,000m <sup>3</sup> per hour
Change of trim moment: .....	82,600tm per hour
Diesel generator sets	
Number of generator sets: .....	8
Engine make/type: .....	MAN L27/38
Type of fuel: .....	Marine gas oil
Output: .....	720rpm
Alternator make/type: .....	ABB AMG 0710LS10 LSE
Rated electrical power: .....	3024kW
Bow tunnel thrusters	
Number of thrusters: .....	2
Make/type/capacity: .....	Brunvoll FU100LTC2750, 2.2 MW
Bow retractable azimuth thrusters	
Number of thrusters: .....	2
Make/type/capacity: .....	Brunvoll AR100LNA2600, 2.2 MW
Stern thrusters	
Number of thrusters: .....	4
Make/type/capacity: .....	ABB Compact Azipod, 3.4 MW
Dynamic positioning system	
Type: .....	DP-2
Legs and spud cans	
Number of legs: .....	6
Type: .....	3-chorded truss type w. split-pipe-chords
Length: .....	105m (may be lengthened by 15m)
Max. leg protrusion below BL: .....	80m
Chord distance: .....	9.7m
Rack thickness: .....	6inch
Spud can area: .....	95.4m <sup>2</sup>
Jacking system	
Design and make: .....	BLM
Type: .....	High-speed electrical rack-and-pinion
Jacking units: .....	6 double-pinion D110 units per chord
Jacking speed:	
Raising / lowering legs: .....	2.4 m/min
Raising / lowering hull: .....	1.2 m/min
Operational conditions for jacking	
Wind speed: .....	20m/s
Significant wave height: .....	2.5m (subject to actual conditions onsite)
Main crane	
Make: .....	NOV Amclyde
Type: .....	Rope luffing "work-around-leg"
Main hoists: .....	2 x 600t side by side for 1200t 31m in tandem
Max. load-radius: .....	91m
Aux hoist: .....	500tonnes 50m
Max. load-radius: .....	107m
Whip hoist: .....	50tonnes 112m, approved for man-riding
Tuggers: .....	7 x 5tonnes SWL
Max operational wind speed: .....	20m/s
Auxiliary crane	
Make: .....	NOV Amclyde
Type: .....	Hydraulic
Main hoist: .....	35tonnes 6.5 to 30m
Aux hoist: .....	25tonnes 6.5 to 40m, approved for man-riding
Knuckle-boom crane	
Make: .....	NOV Amclyde
Type: .....	Hydraulic with telescopic jib
Hoist: .....	2tonnes 25m, 4tonnes 14m
Man-riding radius: .....	30m by operating telescopic jib
Mooring equipment	
Make/type: RRM Electric MW 250F / CU 87 U3 / MW250F	
Helicopter landing deck	
D-diameter: .....	22m
Load-bearing capacity: .....	12.8tonnes
Life boats	
Number and capacity: .....	2 x 60persons
Make/type: .....	Norsafe JYN 80 with LH-140 davits
Integrated bridge control system	
Make: .....	Samsung Automation SSAS-Master
Complement	
Number of cabins: .....	111 with en-suite bathrooms
Fire detection system	
Make/type: .....	Tyco T2000
Fire extinguishing system	
Engine room: .....	Unitor 50-CO <sub>2</sub> HP system
Waste disposal plants	
Galley waste handling system: .....	USON Marine
Incinerator: .....	Hyundai – Atlas / Maxi NG150SL WS
Sewage plant: .....	Omnipure / 5528
Contract date: .....	11 August 2010
Delivery date: .....	27 July 2012



