

NEW TECHNOLOGIES FOR IMPROVED VESSEL EFFICIENCY

- What are emerging design solutions that affect vessel owners?
- Shallow water construction vessels suitable for gulf waters
- Evaluating lower CAPEX investments that can improve OPEX savings
- Design Conversions

Offshore Vessel Connect Middle East, 26-27 September, Dubai

By Gunnar Haug, Managing Director - Ulstein Asia Pte Ltd

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TURNING VISIONS INTO REALITY

ULSTEIN GROUP – HQ & SHIPYARD



DESIGN & SYSTEM PACKAGES



SHIPBUILDING



EQUIPMENT PRODUCTION



CO-INVESTMENTS

CHALLENGES

- Subsea vessel market dominated by high-cost, deep water vessels
- Market demands for shallow draft, cost efficient vessels supporting Cable laying, Offshore construction, Shallow water installation, Dive support, Rock installation, Salvage etc.
- How to improve operational flexibility to adapt to supply/demand changes
- CAPEX/OPEX considerations

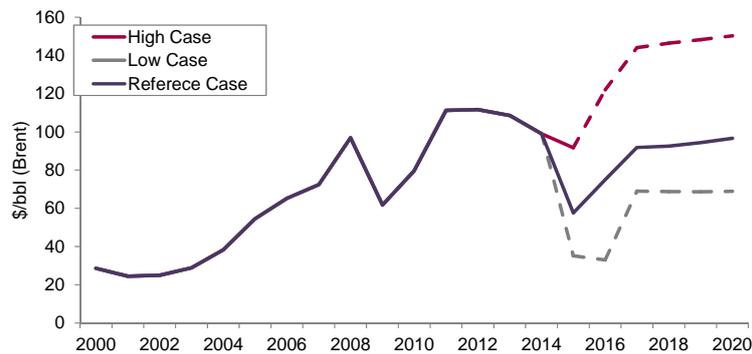


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MARKET DEVELOPMENTS

OIL PRICE UNSTABLE



Brent Price Outlook

The Oil Story | Floors and Rebounds

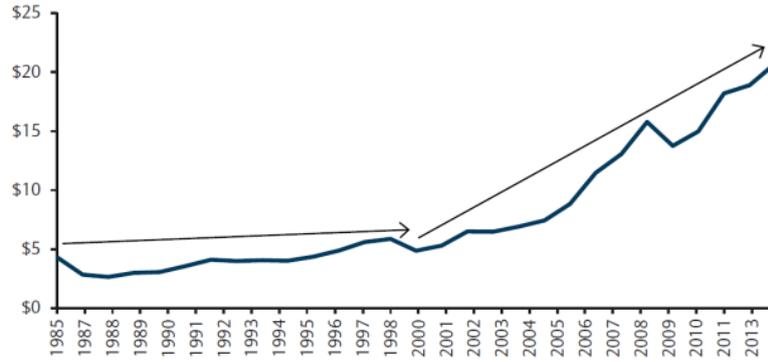
Douglas - Westwood

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MARKET DEVELOPMENTS

INDUSTRY COST RISING



Source: IEA, Barclays Research

Rising Industry Costs | Unsustainable

Douglas - Westwood

COLD STACKING

- Around 1,000 OSVs in layup in toughest market for 30 years
- 140-150 high value OSVs laid up only in the North Sea
- 50% utilization or less



HIGH VALUE VESSELS FOR DEEP WATERS

- ▶ Subsea 7 currently has 34 vessels in the fleet, with 27 of them active and a total of seven stacked
- ▶ Additional four vessels under construction



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BUSINESS CASES CONSTRUCTION VESSELS



Functions	ULSTEIN S182	ULSTEIN HX102
Mission equipment	400 ton crane	900 ton crane
Station keeping	Good	Excellent
Motion performance	Limited (benign areas)	Excellent (North Sea)
Mobility	9 knots	13 knots
Payload	2000 m ² 9000 ton	3000 m ² 17000 ton
People on board	240 (4P cabins)	240 (2P cabins)
Cost estimate (excl. ME*)	45 \$M	125 \$M

* ME = Mission Equipment

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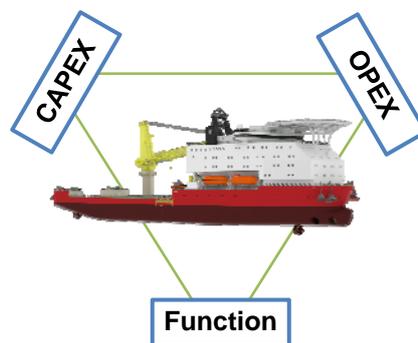
BUSINESS CASE - LOW CAPEX CSV

- ▶ Modern alternative to accommodation/work barges, at competitive CAPEX and OPEX
- ▶ Self-propelled, providing quick and economic mobilization
- ▶ Excellent DP capability (can be customized to client specific requirements)
- ▶ Supporting wide range of oil and gas lifecycle phases including offshore oil field production, construction, structure maintenance and general operations assistance



DESIGN TARGETS CONSTRUCTION SUPPORT VESSEL

minimizing
cost

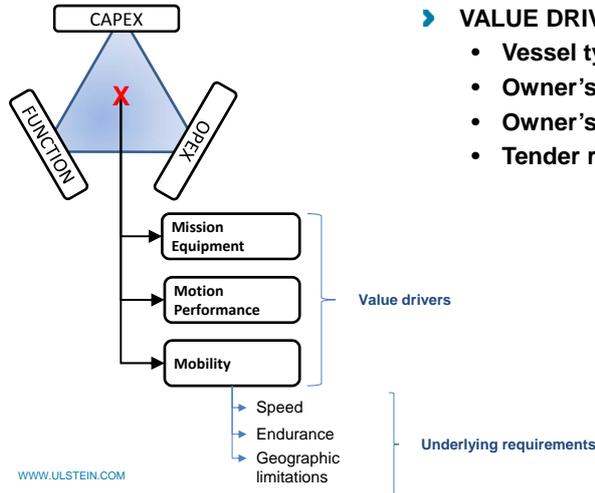


competitive
day rate

efficient platform for multiple
offshore operations

ULSTEIN DESIGN PROCESS

VALUE DRIVERS



- ▶ VALUE DRIVERS depend on:
- Vessel type
 - Owner's operational experience
 - Owner's preferences
 - Tender requirements

MUST-HAVES VERSUS NICE-TO-HAVES

- ▶ Crew comfort
- ▶ Speed
- ▶ Class notations



OPERATIONAL FUNCTIONS

CONSTRUCTION SUPPORT VESSEL

- ▶ Main markets and functions
 - Accommodation/Maintenance
 - Decommissioning
 - Hook-up
 - Shallow water construction

- ▶ Alternative markets
 - Salvage operations



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ULSTEIN S194

MAIN PARTICULARS

- | | | | |
|---------------------|-------------------|-----------------|------------------------|
| ▶ L_{oa} | : 129.0 m | ▶ Complement | : 500 persons |
| ▶ L_{pp} | : 121.4 m | ▶ Deck area | : 2,300 m ² |
| ▶ $B_{moulded}$ | : 36.4 m | ▶ Deck strength | : 15 t/m ² |
| ▶ $D_{moulded}$ | : 8.9 m | ▶ Main crane | : 600 mt @ 25 m |
| ▶ T_{max} | : 6.5 m | ▶ ERN* | : 99.99.97.95 |
| ▶ T_{design} | : 5.0 m | | |
| ▶ T_{min} (in DP) | : 3.9 m | | |
| ▶ $V_{service}$ | : ca 12 knots | | |
| ▶ Main generators | : 2 x 4,320 kW | | |
| | : 2 x 2,880 kW | | |
| ▶ Positioning | : DP3 | | |
| | : 8-point mooring | | |



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ULSTEIN S194

CONSTRUCTION SUPPORT VESSEL

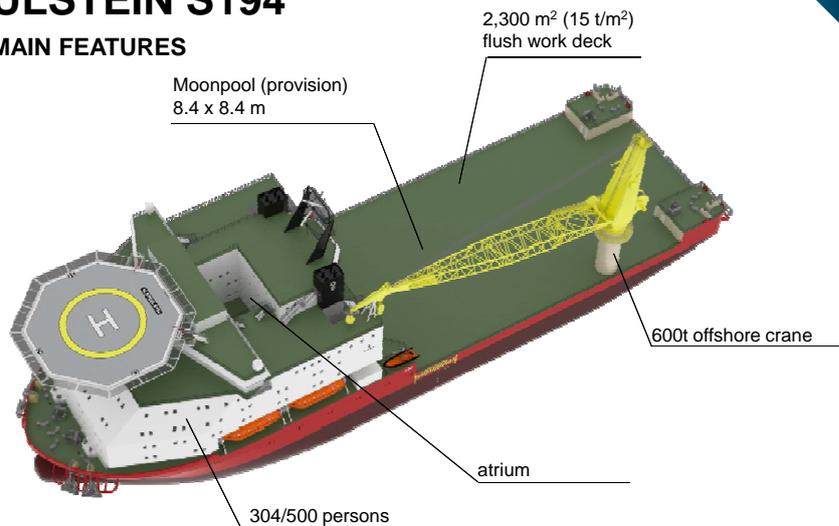
- Large flush work deck for multiple functions
- Large accommodation (304/500 POB)
- Atrium to increase daylight cabins
- Excellent station keeping (DP & anchors)
- DP3 capability developed for 36 knots wind
- Shallow water DP capability (draft of ca 3.9 m)
- Largest version in ULSTEIN shallow draft CSV series (ULSTEIN S182/S190/S194 designs)



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ULSTEIN S194

MAIN FEATURES



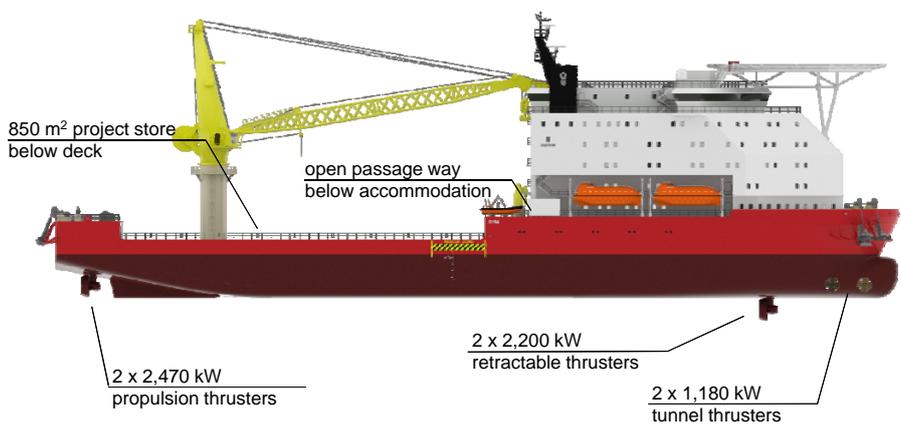
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ULSTEIN S194

MAIN FEATURES

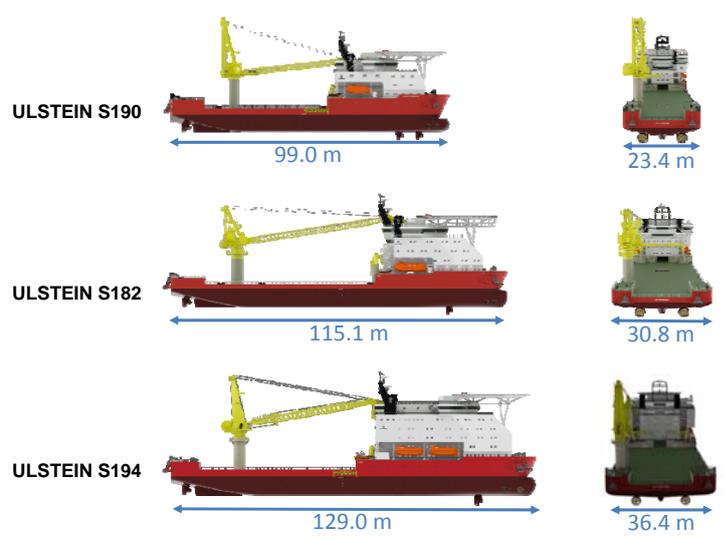


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SHALLOW DRAFT CSV RANGE



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ULSTEIN CSV

COMPARISON GENERAL DATA



	S190	S182	S194	
Draught (max)	6.0	6.4	6.5	m
Draught (min in DP)	3.5	4.5	3.9	m
Speed (service)	11	9	12.0	kn
Complement	90-120	140-240	304-500	persons
Positioning	DP2	DP2/DP3	DP3	
	4-point mooring	4-point mooring	8-point mooring	
Deck area	1,200	2,000	2,300	m ²
Deck strength	10	15	15	t/m ²
Project store	500	850	850	m ²
Main crane (max optional)	300t @ 16m	400t @ 17m	600t @ 25m	

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ULSTEIN CSV

COMPARISON THRUSTERS AND POWER



	S190	S182	S194	
Propulsion thrusters	2 x 1,280	2 x 1,500	2 x 2,470	kW
Forward azim. thruster	2 x 880	2 x 1,000	2 x 2,200	kW
Fwd tunnel thrusters	2 x 750	2 x 750	2 x 1,180	kW
Total thruster output	5,820	6,500	11,700	kW
Installed power	7,300	10,200	14,400	kW



RESULTS

NEW SERIES CAPEX & OPEX FRIENDLY SUPPORT UNITS DOING THE JOB



Series of construction support vessels 90 POB / 240 POB / 500 POB



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1000 t / 350 POB heavy lift vessel design

ULSTEIN HX103



ULSTEIN HX104

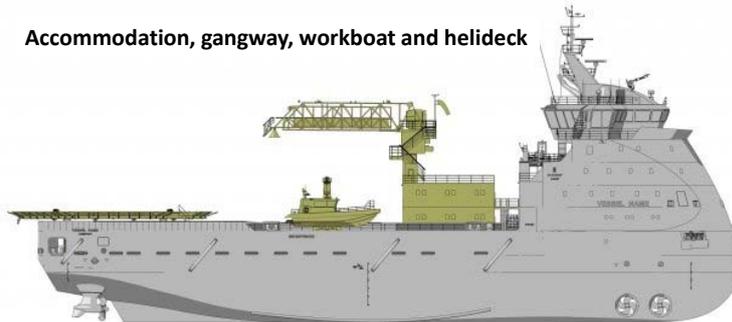
2000t /500 POB heavy lift vessel design

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DESIGN CONVERSIONS



Accommodation, gangway, workboat and helideck



We offer off-the-shelf and customised conversions of our existing ship designs. We can cover the whole process from initial idea to turn key solution.

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DESIGN CONVERSIONS

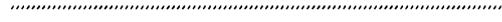


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NEW! ULSTEIN LX109 CABLE LAYER



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