

*Presentation  
for  
Shareholders*

*September 2011*



# Marine Resources Must Improve

- Installation vessels
  - Limited Operability
  - Not cost effective when retained in field for routine access tasks
- Access vessels
  - Increasingly wind farms are further from safe havens - transfer vessels have to return to port each day - limited time on site
  - Weather dependent - adverse conditions = high risk of serious injury/fatality, low accessibility



# Description of Vessel Concept

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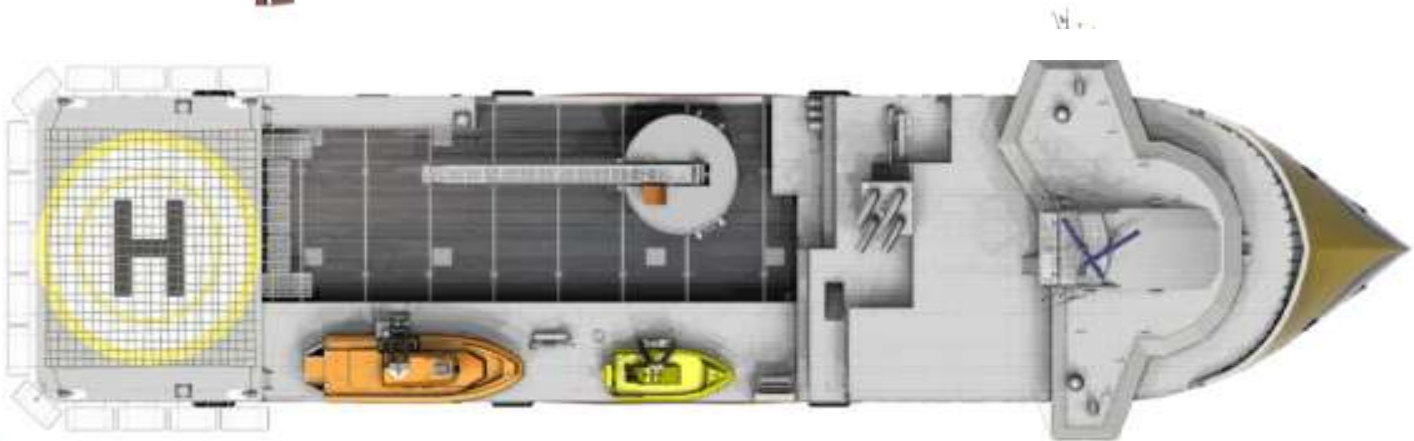
- State-of-the-art marine assets for installation, commissioning and operations & maintenance
- Integration of proven leading technologies
- Access, accommodation and work functions co-located
- Multi-purpose vessels reduce fleet numbers
- Purpose designed and built for support throughout the windfarm lifecycle
- 24/7 long term deployment in field
- Cycle time minimised for safe efficient working at multiple sites

# Support & Operations Vessel - Description

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- High Performance – Multi-reference DP 2
- Capable of operations in up to 4m Hs
- Unique sea-kindly hull and roll suppression system offer stable platform
- Ampelmann motion compensating gangway
- Multiple access systems including daughtercraft, helideck
- Very high quality accommodation for high staff morale and retention
- Equipped for windfarm commissioning, maintenance and repair
- Capable of operating on-site for extended periods, 24/7 operations possible

# Support & Operations Vessel – 76m



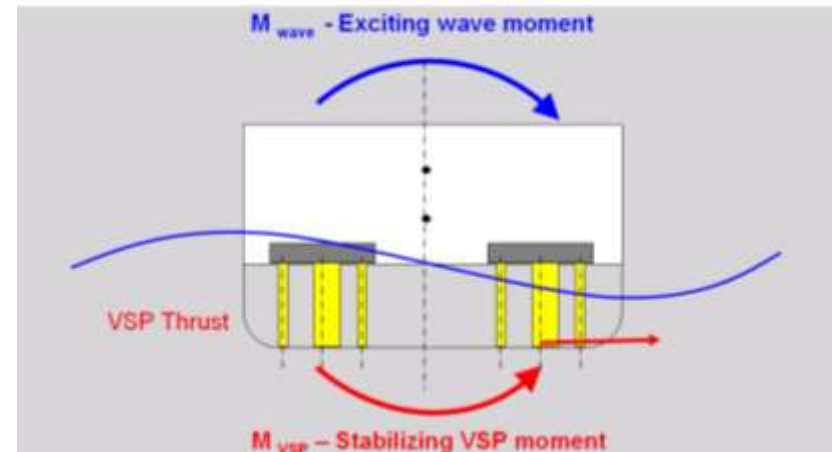
# Support & Operations Vessel – 76m



# Voith Propulsion System



## Voith Roll Stabilization Hydrostatic Moments and Forces



- Voith Schneider Propellers
  - Exceptional Dynamic Positioning
  - Roll stabilisation
  - Reduces slamming at stern
  - Lower fuel consumption
  - Low scour



**Performance of the  
Voith Roll Stabilization  
on board PSV Edda Fram**

# SeaEnergy Walk to Work™

- Safe access in up to 4m Hs
- Optimised shift patterns
- No retrofit required on structures
- Improved HSE and operational briefing



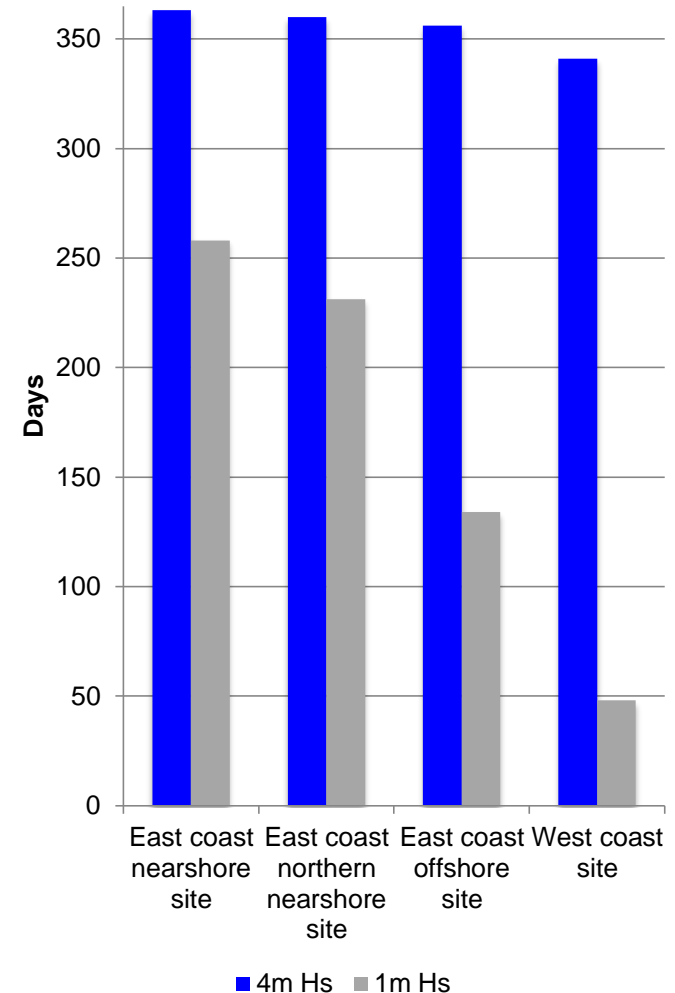


# Review of Wave Data

- Data from Blackstones, Tyne/Tees, Firth of Forth and Blakeney wave buoys
  - West coast site
  - East coast offshore site
  - East coast nearshore sites (N & S)

System availability based on wave height only					
Operable days per year - six hour weather window					
	Significant wave height	East coast nearshore site	East coast northern nearshore site	East coast offshore site	West coast site
Workboat	1m Hs	258	231	134	48
	1.5m Hs	323	306	234	111
SeaEnergy	3.5m Hs	362	357	349	321
	4m Hs	363	360	356	341

- Likely to overestimate availability as no consideration taken of daylight hours, winds, currents or distance from shore



# Quantitative Analysis - Model

<b>Comparative model: O&amp;M mode Blakeney Wavebuoy</b>			
All costs in GBP			
	<b>Workboat</b>	<b>SeaEnergy system</b>	<b>Source/comments</b>
<b>Inputs</b>			
Daily rate	£1,500	£25,000	Public domain data, SeaEnergy indicative dayrate
Fuel cost/day	£1,000	£5,333	\$1000/t, 1.5 t/d workboat, 8t/d SeaEnergy
Standby fuel cost/day	£0	£2,667	SeaEnergy estimate
Total day rate per vessel	£2,500	£30,333	
Number of vessels	5	1	Assumption
Technicians per vessel	12	30	Assumption
Technician daily rate (for 12 hr day)	£960	£1,200	Assumption
Technicians per job	2	2	Assumption
Technician productive hours per day	8	12	SeaEnergy estimate (nonproductive time lost in travel)
System availability	<b>70.7%</b>	<b>99.5%</b>	6 hours weather window: 1m Hs (workboat), 4m Hs (SeaEnergy)
<b>Outputs</b>			
System available days/year	258	363	Based on system availability
Total cost per vessel per year	£25,051,500	£24,206,333	
Total productive manhours/year	123,840	130,680	
<b>Total cost per productive manhour excluding lost time</b>	<b>£202.29</b>	<b>£185.23</b>	Cost per manhour excluding value of lost production
<u>Value of lost production</u>			
Value per day (£)	£12,000	£12,000	Typical value of 1 day lost production from 5MW turbine at capacity factor of 70% (70% justified as lost time occurs during Carbon Trust Offshore Wind Accelerator bid documents suggest
Typical turbines out per day	5	5	10% of turbines out at any time
<b>Total cost per productive manhour including lost time</b>	<b>£254.13</b>	<b>£186.15</b>	Cost per manhour including value of lost production

# Additional Capability

- Pile cleaning, grouting, rope access
- Laboratory – oil analysis etc
- Oil change and fuel supply
- Control room
- Project site office
- Personnel tracking
- Work packs, correct tools and materials
- Materials & spares storage
- Materials management
- Maintenance records
- Breakdown response
- Emergency management and response
- Production and maintenance management



# O & M Phase - Benefits

Key benefits include:

- Cost per technician hour is less than workboats
- Reliable access optimises planning
- Improved materials management
- Increased turbine uptime
- Improved staff retention
- Reduced staffing costs
- Improved staff safety
- Low environmental impact
- Robust emergency management



# Commissioning Phase Support

Key benefits include:

- Shorter and lower cost construction programmes
- Earlier milestone payments
- Reduced need for specialist vessels
- Reduced staffing costs
- Improved project risk management
- Low community impact
- Low environmental impact
- Earlier first power
  - Six month acceleration of 500MW = £130MM NPV





**MAXIMUM ACCESS – SAFE MOTIVATED WORKFORCE – MAXIMUM PRODUCTIVITY**



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