

Vestavind Offshore

German Norwegian Offshore Wind Energy Conference
04. May 2010



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Vestvind Offshore

- Company established August 2009
- Marine renewable energy production
- Focus on offshore wind power
- Market Northern Europe
- Headquarters in Bergen, Norway



Vestvind Offshore

- Owned by "West coast alliance"
- Core business within renewable energy production and distribution, represent approx. 10% of Norwegian production (13 TWh i 2008)
- Long term approach
- Strong financial capability
- Public enterprise



Havsul project

- Havsul, project company owned 100% by Vestavind Offshore
- Norway's first full-scale offshore wind farm
 - Licence from NVE June 2008
 - Licence confirmed by OED in September 2009
- Havsul location
 - Harøya in the Sandøy community in the Møre & Romsdal region
 - Energy consumption in region 13-14 TWh
 - Energy production in region ~6 TWh
 - Connection to net distribution close to Ormen Lange



Havsul full-scale wind park

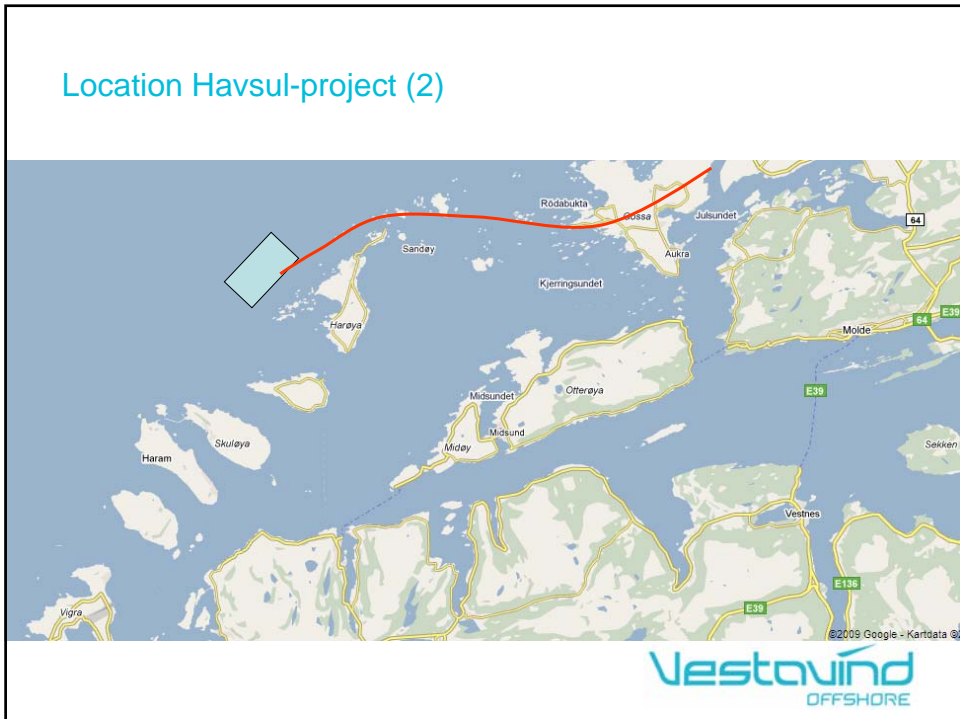
- Characteristics
 - Production per year: 1 TWh
 - Installed effect: 350 MW
 - Number of turbines: 70 x 5 MW
- Park area: ~ 60 km²
- Energy distribution
 - Sea cable internally: ~ 63 km
 - Sea cable export: ~ 52 km
 - Onshore cable export: ~ 9 km
 - Transformer offshore: 1-2 pcs
 - Transformer onshore: 1 pcs
- Full-scale investment: 7-10 bn. NOK



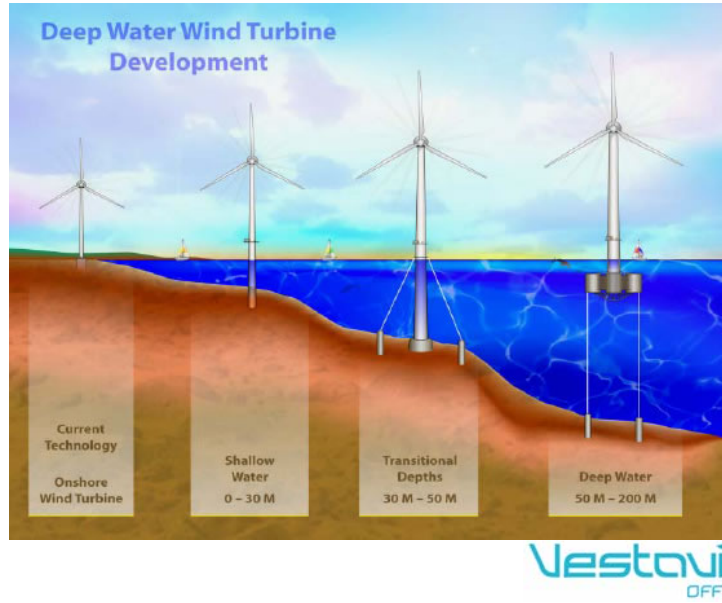
Location Havsul-project (1)



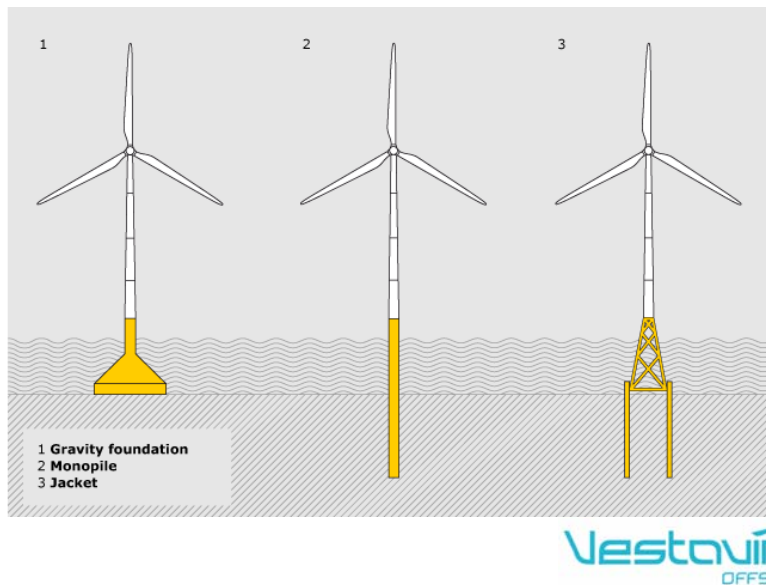
Location Havsul-project (2)



Technologies applicable for Havsul



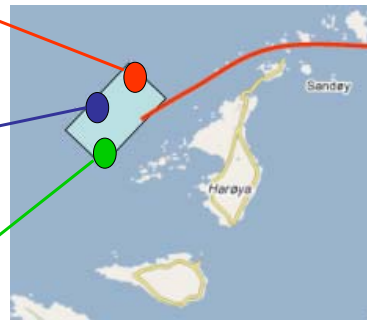
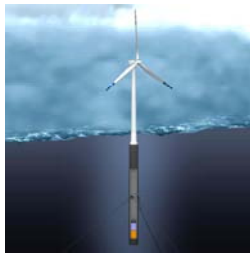
Technologies for fixed substructures



Test parks – different technologies

Typical demo:

- 15-35 MW
- 1+5/6 turbines



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Havsul "building brick" to future sustainable Offshore Wind energy industry

- Utilize proven technology in "new wrapping"
- Via demos/test parks, to
- Full-scale development of Havsul
- TARGET:
 - Substantially reduced cost and execution time through:
 - Optimized design and production of components
 - Substantially reduced offshore installation operations
 - Maintenance optimization

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Offshore Wind Farm Execution

- Present technology
- Present installation method substructure
- Template



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Offshore Wind Farm Execution

- Present technology
- Present installation method
- Jacket



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Offshore Wind Farm Execution

- Present technology
- Present installation method
- Windmill



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Offshore Wind Farm Execution

- Present technology
- Present installation method
- Installation complete



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Offshore Wind Farm Execution

- Present technology
- Present method
- Maintenance



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Offshore Wind Farm Execution

- Present installation technology – Characteristics:
 - Proven technology
 - Offshore Oil & Gas based
 - Costly, not optimized, vessels
 - Too many offshore operations
 - In total, very sensitive to weather conditions
- Conclusion: Not sustainable business

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Possible future Offshore Wind Farm Execution

- Possible scenarios
 - Installation



Example from Concrete Marine Solutions Ltd
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Possible future Offshore Wind Farm Execution

- Possible scenarios
 - Installation



Example from Concrete Marine Solutions Ltd
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Possible future Offshore Wind Farm Execution

- Possible scenarios
 - Installation



Example from Concrete Marine Solutions Ltd
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Possible future Offshore Wind Farm Execution

- Possible scenarios
 - Installation



Example from Concrete Marine Solutions Ltd
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Possible future Offshore Wind Farm Execution

- Possible scenarios
 - Installation



Example from: Concrete Marine Solutions Ltd
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Possible future Offshore Wind Farm Execution

- Possible scenarios
 - Installation



Example from: Concrete Marine Solutions Ltd
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Possible future Offshore Wind Farm Execution

- Possible scenarios
 - Maintenance position



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Possible future Offshore Wind Farm Execution

- Possible scenarios
 - Generic standardised solutions for different water depths



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Possible future Offshore Wind Farm Execution

- Vestavind Offshore's challenge/invitation to the industry:
 - Substantially reduced cost and execution time trough:
 - Optimized design and production of components
 - Substantially reduced offshore installation operations
 - Maintenance optimization
- Vestavind Offshore offers:
 - Havsul wind site for demoes/test parks
 - "Buy back" clauses for test parks for later commercial utilization
- Win – Win for the Offshore Wind industry!



Havsul- a prosperous future!

Fra Harøyburet, Sandøy (4,5 MW, revidert layout)



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Thank you !

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