The Full Rage Test Site for Offshore Wind Power

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NearshoreLAB Frederikshavn

THE FULL RAGE TEST SITE FOR OFFSHORE WIND POWER

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The test field at Frederikshavn

The test field is placed in the northern part of the harbour, where DONG in 2002 have established 4 prototype wind turbines which is now a part of the NearshoreLAB complex.

The NearshoreLAB complex:

- A prototype of the bucket foundation placed under a Vestas V90 3,0 MW turbine. The foundation and tower is equipped with accelerometers and monitored for on-line frequents analyses.

- 4 "0-series wind turbines ranging 2,3-3 MW, two Vestas, one Siemens and one Nordex.

- A 35.000 sq. m test pit with undisturbed seabed used for scale test with 2x2 / 4x4 meter test buckets and 100 tons pull tests.

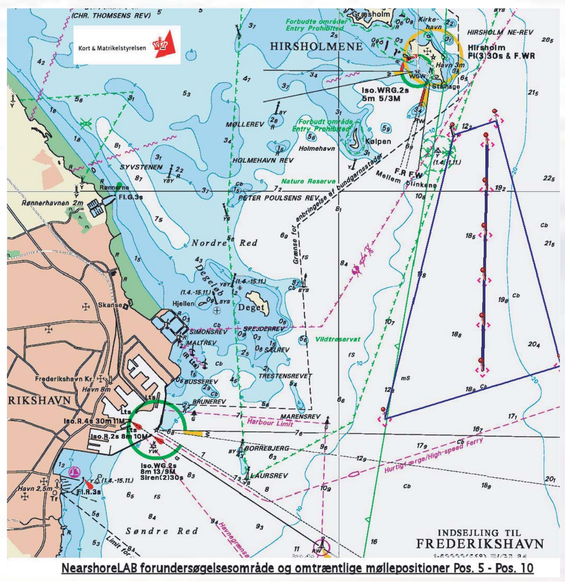
- A 20.000 sq. m test pit with undisturbed seabed which can be used for further test purposes.

- The near shore sea in front of the prototype wind turbines, which can be used for scale test of structures and energy systems.

- An offshore test field, 5-6 km of the habour, is in the application process for establiment of 6 "0-series" wind turbines. Approval expected June 2008.

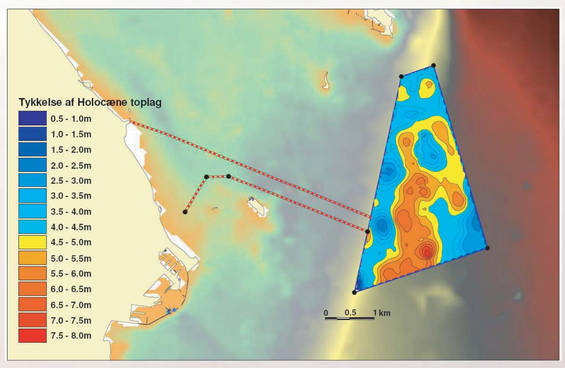
At the nearshore site it is planened to initiate demonstrations of different systems, concepts and products. The plan is to carry out the demonstrations projects in close cooperation with relevant stakeholders e.g. suppliers, constructers, installators, etc.

Interesting issues for thise demonstaton projects:
- Up to 6 different "0-series" turbines
- Up to 6 different foundation concepts
- Installation concepts
- Cabling, cabel protection
- Scour protection
- Access systems
- Power system adaptation
- Etc.



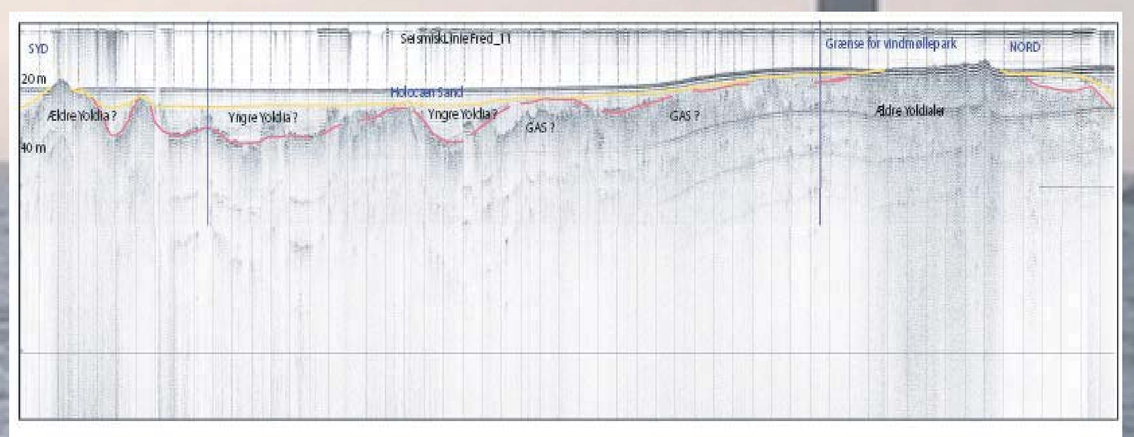
NearshoreLAB forundersøgelsesområde og omtrentlige mållepositioner Pos. 5 - Pos. 10

The extent of the test site area and the positions of the wind turbines



Map of the thickness of the Holocene top layers

Visualisation of new turbines seen form the south, old turbines to the left



Geophysical profile showing the complex geotechnical properties along the positions of the foundations for the 6 wind turbines

Visualisation of new turbines seen form the west, old turbines to the left

Visualisation of new turbines seen form the north, old turbines to the right