

Scour protection – offshore wind

► Installation and repair of all types of scour protection at offshore wind farms throughout Northern Europe.

Peter Madsen Marine Contractors have been involved in many aspects of offshore wind since the beginning of the industry over 20 years ago.

One particular sector is the installation and repair of scour protection and our vessels are suitable for handling all types used in this sector. Our vessels are equipped with either a backhoe hydraulic excavator or a wire excavator with grab and have a fixed hold for transportation of materials.

Although rock is still largely the most commonly used material, we have the capability and experience to place all of the current alternatives. These include, geotextile sand filled bags, rock filled filter units, tyre mattresses, tyre filled nets and concrete sections.

We have installed the only full scale geotextile sand bag scour protection currently deployed. At Amrumbank OWF in Germany some 40,000 bags were installed at 80 turbine positions.

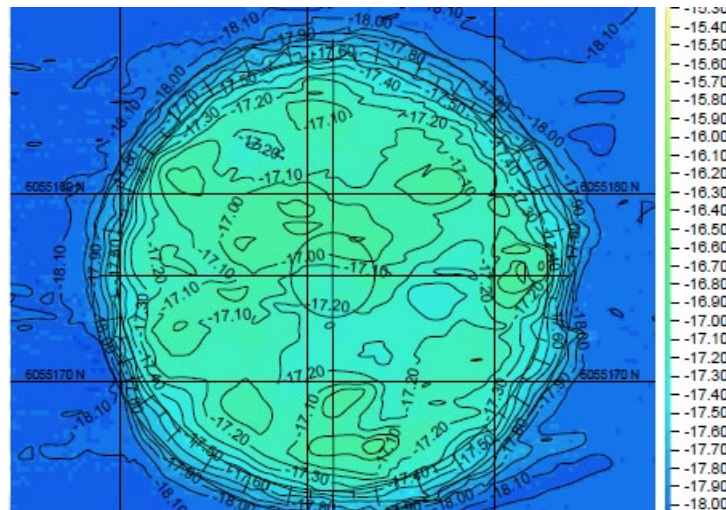
The addition of 'BlueView' sonar scanning equipment gives us the opportunity for real time visualisation of the installation process.



- All 6 vessels equipped for Scour Protection
- Vessels with hydraulic excavators or wire excavators
- Self-propelled and with own cargo hold
- Scour stone and rock armour
- Geotextile sand bags/pillows
- Kyowa filter unit placement
- Tyre mattresses or tyre filled nets (TFN)
- Positioning within +/- 20 cm
- 'BlueView' real time imaging
- Water depths of up to 30 m in standard mode
- Full MBES survey validation available
- Repair of existing scour protection

Examples of projects

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| ► Amrumbank (D) | Geotextile sand bags |
| ► Baltic 1 (D) | Stone at 21 monopiles |
| ► Lillgrund OWF (S) | Stone round gravity bases |
| ► Egmond An Zee (NL) | Filter and Rip Rap stone |
| ► Rødsand 2 (DK) | Rock protection for 91 MP's |
| ► Robin Rigg (UK) | Stone at 13 monopiles |
| ► Rhyl Flats (UK) | Stone at 25 monopiles |
| ► Burbo Bank (UK) | Stone at 25 monopiles |



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