

A photograph of an offshore wind farm under construction. In the foreground, a yellow cylindrical structure with a metal ladder and a platform is visible. In the background, several wind turbine towers are being erected, and a large white construction vessel with multiple cranes is positioned in the water. The sky is clear and blue.

# GEOTECHNOLOGY IN WIND ENERGY

SOLUTIONS IN GEOLOGY, GEOPHYSICS, AND GEOTECHNICS

[WWW.RAMBOLL-WIND.COM](http://WWW.RAMBOLL-WIND.COM)

**RAMBOLL**

# GEOTECHNOLOGY IN WIND ENERGY

## UNIQUE INTEGRATED CLIENT SERVICES WITHIN THE FIELDS OF GEOLOGY, GEOPHYSICS, AND GEOTECHNICS FOR WIND TURBINE FOUNDATIONS

Ramboll's specialists within the fields of geology, geophysics, and geotechnics work in close collaboration to innovate and illustrate the best design to our Clients.

And through our dedicated team of offshore geotechnical engineers we offer to our Clients, some of the best offshore representatives on the market.

We believe that through the use of our knowledge inputs in high quality geotechnical models we will ensure an optimized foundation design and the identification of ground based hazards for the offshore wind projects.

We integrate our 3D site models to include geological descriptions and geotechnical design parameters and we incorporate statistical site data in our geodatabases.

Ramboll provides services in geotechnology software packages: Bentley gINT, Datgel, SMT Kingdom Suite, Bentley Microstation, GeoScene 3D, PDI GRLWEAP, PDI Capwap, FATIMA, Ramboll ROSAP, RONJA, FENRIS, SESAM, SIMULIA Abaqus, ANSYS, LUSAS, PLAXIS 2D & 3D, GeoStudio GEOSLOPE, AQWA, GeoGis and many others.

### Marine Geology

Understanding the geological setting provides valuable knowledge of the site's history and spatial variation of geological strata.

Our services include:

- Feasibility studies and preliminary design including ground based desk studies
- Conceptual geological models

### Marine Geophysics

We plan, execute, supervise, and interpret a variety of geophysical surveys including:

- Bathymetric
- Seismic
- Side scan sonar
- UXO Magnetometer
- Geodesy and geographical coordinate systems

### Marine Geotechnics

Our geotechnical expertise includes:

- Planning and specification of soil investigations
- Tender documents for soil investigations
- Assistance to procurement of soil investigations in standard contracts FIDIC, LOGIC, ICE ect.
- Certifying body & authority Contacts
- Clients Representatives on soil investigations
- Planning and specification for laboratory testing of soil samples
- Soil investigation interpretation
- Determination of design soil parameters
- Choice of foundation solution
- 2D & 3D FE-modeling
- Cyclic loading & cyclic degradation
- Scour protection
- Drivability and driving induced fatigue analysis of steel monopiles
- Pile bearing capacity from Pile

Driving Analysis, PDA

- Evaluation of noise from pile driving
- Supervision of pile driving
- Calculations of leg penetration and evaluation of punch-through risk for jack-up platforms

For further information please contact:

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### Who are we?

We have provided soil information for more than 60% of the existing offshore wind farms in the world.

Furthermore, we have 30 years of offshore experience within the fields of geotechnology from the oil and gas industry mostly in the North Sea.

The Ramboll Group employs close to 10.000 dedicated specialists. We are a leading knowledge-based company operating in a broad international context from close to 190 offices around the world. We provide engineering, consultancy, project development, and operating services within the areas of Buildings and Design, Infrastructure and Transport, Energy and Climate, Environment and Nature, Industry and Oil/Gas, IT and Telecom, Management and Society.