MULTI . engineering

Sea fastening design for monopile transport

Enhancing efficiency, safety, and cost-effectiveness

Van Oord Offshore Wind has been contracted to transport and install 76 wind turbine generator (WTG) monopiles and 2 offshore substation (OSS) monopiles for the Baltic Power Offshore Wind Farm, located in the Polish Exclusive Economic Zone of the Baltic Sea, approximately 22 kilometres from the Polish coast. The monopiles, varying in length from 70 to 90 metres, in diameter from 8.6 to 9.1 metres, and weighing up to 1,800 tonnes, will be transported from the fabrication yard in Nordenham, Germany, to the marshalling harbour in Ronne, Denmark.

CLIENT

Van Oord is an international marine contractor specializing in dredging, offshore wind, oil and gas infrastructure, and marine construction projects. With a strong focus on sustainability and operational excellence, Van Oord delivers solutions that contribute to the global energy transition and the development of critical maritime infrastructure.

SCOPE

Designing a sustainable and reusable sea fastening system for the transport of varying monopile sizes.

ADDED-VALUE MULTI.ENGINEERING

Thanks to this integrated approach, Van Oord can rely on a robust and validated sea fastening solution that enhances efficiency, safety, and cost-effectiveness during monopile transport for the Baltic Power Offshore Wind Farm.

NO ENGINEERS, NO FUTURE !

FACTS & FIGURES

- 76 WT
- 2 OSS monopiles
- Length: 70 - 90 m
- Diameter: 8.6 - 9.1 m
- Mass: up to 1,800 t

SERVICES PROVIDED

- MP integrity calculations
- Motion response analysis and Stability calculations
- Vessel strength assessment and calculations
- Structural calculations incl. FEA of the MP seafastening and integration
- Full comprehensive design report
- Full package of basic construction plans and detail fabrication drawings
- Design risk assessment and operations manual
- Cost analysis
- Design approval
- Liaison with fabrication party

SPECIFICATIONS AND CHALLENGES

MULTI.engineering was tasked with developing an innovative and operationally efficient sea fastening concept, followed by basic and detailed engineering. The challenge lay in designing a sustainable and reusable fastening system that could safely accommodate the wide range of monopile dimensions while ensuring structural integrity throughout transport operations.

RESULT

Our Design & Engineering Office prepared multiple sea fastening designs suited to the SPMT load in/out methodology, conducted motion response and stability analyses, vessel strength assessments, and finite element analyses of the sea fastening structures. This comprehensive engineering package was delivered alongside construction plans, detailed fabrication drawings, risk assessments, and operational manuals.

092025

MULTI . engineering

MULTI.engineering is an engineering company. We support customers' success by offering flexible engineering solutions. We have Offices in Temse (BE), Vlissingen (NL), Zwijndrecht (NL), Delft (NL) and Komarno (SK).
Working with us is always a great experience!

CONTACT US
MULTI.engineering
Maritime & Offshore
Orlaylaan 10, 9140 Temse, Belgium
+32 3 710 58 10
sales.maritime@multi.engineering