



Case Study : Offshore Wind

# Cathie enables noise reduction at Arkona Offshore Wind Farm in Germany



Expertise, Seabed and Below.

[cathiegroup.com](http://cathiegroup.com)

Image Source: E.ON



**CATHIE**

As one of the largest offshore wind farm operators in the world, E.ON are heavily involved in the field of offshore wind energy with wind farms in Great Britain, Germany, Sweden and Denmark.

Arkona, also known as Arkona Becken Südost, is a 385MW offshore project, developed by a partnership of E.ON and Statoil. The wind project is situated 35km off the North-East shore of Rügen Island in the German Baltic Sea, and is expected to be fully operational by 2019. The wind farm will be able to supply up to 400,000 households with renewable energy, saving 12 million tons of CO<sub>2</sub> annually.

The installation of the 60 monopiles and transition pieces at the windfarm has been completed ahead of schedule.

## **Challenge**

Successful driving of monopiles is often in conflict with water borne noise restrictions especially in the German sector. E.ON required an independent and focussed technical engineering expertise that could help resolve the challenge while achieving the required target penetration depth within the driving pile time restrictions applicable in Germany.

## **Solution**

We were appointed as the independent geotechnical expert for the planning of monopile installation operations at Arkona.

Although reducing the energy helps in reducing the resultant noise in the water column, the challenge was in achieving a fine balance. We enabled the development of a hammer energy profile which allowed monopiles to be driven at reduced energy levels while achieving the required target penetration depth within the driving pile time restrictions applicable in Germany.

We ensured that the recommended energy profile was optimised to drive the monopiles to the required depth within the 180-minute time restriction by the BSH in Germany while verifying that the monopile fatigue during driving remained low despite the increased number of hammer blows associated with a reduced hammer energy.

## **Impact**

E.ON completed the design of the Arkona noise mitigation system based on the outcome of our study. The use of reduced hammer energy levels successfully contributed to reducing the noise in the water column produced by the pile driving process, versus a more standard hammer energy profile.