Digital diet for offshore O&M

Data-crunching at heart of research project aiming to take the sting out of maintenance bills, writes **Amir Garanovic**

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A flagship European Union-funded research project led by Iberdrola of Spain is on track to develop next-generation systems for offshore wind operations and maintenance by 2022.

The 'Reliable OM decision tools and strategies for high lcoE reduction on Offshore wind' (Romeo) project is making "good progress" two years into a five-year programme, said Iberdrola head of innovation Cesar Yanes.

The aim is to drive down offshore O&M costs through better planning of maintenance and reducing the number of inspections required on substructures and key wind farm components.

The 12-member project consortium is developing "third generation" condition monitoring systems, models and tools for early fault detection and diagnosis of components.

"Physical models have already been developed for critical failures on the turbine gearbox, converter, generator, blade bearing and main transformer and the outputs will feed data driven models," said Yanes.

Enhancing the real-time condition monitoring is also expected to maximise the lifetime of the components while improving reliability, he added.

The €16m project will culminate in testing of the models and tools developed by the Romeo team at three offshore wind farms in European waters. Work is scheduled to kick off in mid-2020 at two Iberdrola-owned projects, the 714MW East Anglia 1 off the UK and 350MW Wikinger in the Baltic Sea off Germany. The technology will also be put to the test at the EDF's 62MW Teesside wind farm in the UK North Sea.

The trials will evaluate the Romeo technology in the field before it is rolled out to the wider offshore wind industry.

A key element of the project backed by a €10m Horizon 2020 grant is the design and implementation of a Cloud-based Internet of Things platform to process the large volume of data generated by the condition monitoring systems.

Indian IT outfit Minsait is playing a leading role in the design of the real-time data integration platform, which will also be fed by advanced predictive and performance monitoring analytics.

Other consortium partners include IBM Research Zurich, Uptime, Bachmann, Adwen, Ramboll and Siemens Gamesa. Yanes said: "Considering the contribution of O&M costs to the cost of energy, any reductions will help to make offshore wind even more competitive."

He will present an update on Romeo during the 'Digitalisation: creating value in O&M' conference session at WindEurope on Thursday. ■

DATE WITH ROMEO: Iberdrola's 350MW Wikinger wind farm in the German Baltic Sea Photo: Iberdrola

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