Scottish Southern Energy

ONYX InSight vibration detection and analytics deliver ROI through improved O&M and enable more confident warranty claims.

CLIENT
Scottish Southern Energy (SSE) is one of the Big Six Energy Suppliers in the UK. SSE works closely with ONYX InSight who provides their vibration condition monitoring service using Fleet Monitor™.

CHALLENGE
As the turbines leave warranty SSE are liable for any undiscovered failures and the associated financial risks. As part of the process SSE need a strong specialist partner to support them in their transition to in house O&M.

SOLUTION
Through combination of a thorough understanding of the turbines derived from the monitoring service and the engineering expertise applied to the drivetrain inspections and reporting: ONYX delivered a reduced scope end of warranty inspection campaign on time and to budget.

BENEFITS
ONYX provides SSE with a condition monitoring service which gives advanced warning of major component failures allowing them to plan well in advance for jack up campaigns.

Greater Gabbard Wind Farm is the world’s 6th largest operational offshore wind farm, at 504MW with 140 Siemens 3.6 MW wind turbines. The 147sqkm site, a 50:50 joint venture between SSE and RWE, is situated 23km off the Suffolk coast and is operated by SSE plc, the second largest supplier of gas and electricity in the UK.

As part of the site turbine asset integrity management strategy and in support of an End of Warranty (EOW) programme, SSE selected ONYX InSight to assist with major component vibration monitoring analysis and physical on-site inspections. The capabilities of ONYX and their Fleet Monitor™ software and drivetrain expertise allow for improved transparency of the assets condition and forward planning decision making.

Data-Driven Approach with Fleet Monitor™ Reduces SSE Cost for Conducting EOW Inspections

ONYX has been working with SSE at Greater Gabbard Wind Farm since 2012 performing “shadow” monitoring on their vibration and SCADA data and providing drivetrain inspections on selected assets. During this time ONYX has delivered a value-adding service, empowering SSE to make better operational decisions on major component asset integrity. The shadow monitoring allowed SSE and ONYX to build the expertise in advance of the end of warranty programme. Bruce Turner, Engineering Manager at SSE explains: “The monitoring service providing by ONYX really empowers our engineering decision making”.

Conducting an EOW inspection campaign on 140 turbines, offshore, is logistically challenging and expensive. Fortunately SSE had built great confidence in ONYX’s capability to identify turbines at risk. They took a data driven approach, leveraging the shadow monitoring and ‘deep dive’ health assessment near to EOW, to reduce the number of physical inspections needed. Alex Pucacco, Consultant at ONYX InSight explains:

“The vibration and SCADA analytics allowed the health of each gearbox and main bearing to be rank ordered for assignment in a targeted inspection list. This list was split into two phases to allow inspections to be performed in favourable conditions and for the second phase to be increased in size should the damage found in the first phase of inspections justify. This allowed SSE significant claim preparation time ahead of their EOW deadline in the autumn”.

The quality of the monitoring reports delivered by ONYX InSight prior to the EOW was such that SSE was able to make the decision to significantly reduce the number of drivetrain inspections. The turbines inspected were targeted based on a data-driven approach. This targeted approach to inspection saved the customer a significant sum in the order of hundreds of thousands of pounds.
Using Field Pro™ Increases Efficiency and Quality of Inspections

To increase efficiency of inspections, ONYX’s service and inspection app, Field Pro™, was used to gather all the inspection data up to power including borescope images which can be seamlessly uploaded into the inspection database. Field Pro™ is designed to save time on reporting, improve the standardisation of data capture and benchmark damage progression. For the project manager, Field Pro™ allowed terminology and data ready to review as each inspection is completed. For the inspector it reduces administration with a streamlined approach to the job.

Field Pro™ is a further addition to the data-driven approach to wind farm O&M. Every inspection photograph and comment is recorded in a database for SSE, allowing the data to be mined for different purposes over the life of the asset.

SSE and ONYX InSight: A Long-Term Engagement

ONYX presents monthly vibration reports to the SSE engineering team via email with follow up technical meetings, during which site activities such as major component replacements, scheduled maintenance and oil and grease data are discussed. These add further data streams and context to ONYX’s monitoring service and Fleet Monitor™ software, which supplements the service.

Fleet Monitor™ was developed in-house by ONYX and is designed to serve as a centralised independent tool for interacting with, and analysing reliability data; maintenance records, vibration data from CMS, SCADA data, oil and grease records and particle counters. These data records typically all exist in different software platforms provided by different suppliers.

Fleet Monitor™ allows a monitoring engineer to interact with all this data forming a reliability passport for each turbine and then benchmarking these turbines with the rest of the SWT-3.6 turbines monitored by ONYX. This web based tool is very powerful, user friendly and serves as a knowledge transfer tool for any operator wishing to bring condition monitoring in house such as SSE.

As part of the service provided to SSE, a quarterly Health Assessment is also performed which reviews and presents the SCADA data across the fleet and allows SSE to focus their efforts on reducing downtime and increasing production through addressing outliers within the fleet in parameters such as yaw angle, bearing temperatures and grease alarms.

Benefits

- Advanced warning of failures using ONYX’s condition monitoring service
- Increased inspection efficiency and reduced reporting time using Field Pro™
- Data-driven end of warranty approach saving money and building stronger claims
- User-friendly and powerful knowledge transfer tool, Fleet Monitor™ is crucial to decision making and managing risk

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