

Case study

bp Wind Energy blade inspection project reduces severe damage by 50%



3500+ images reviewed



50% reduction in severe damages



Client - Large fleet owner/operator

bp's large and growing US wind energy business provides clean power while developing and deploying new technologies to deliver that energy more efficiently.

bp Wind Energy operates 9 onshore wind farms across 6 US states.

Example

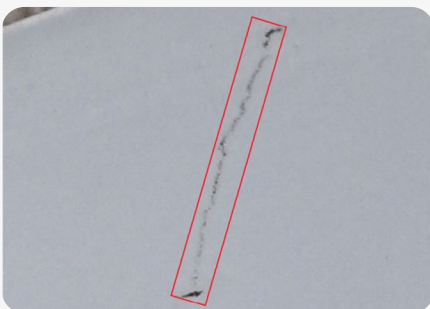


Figure 1: Grease Streak

Severity 4 crack identified as grease streak and recognised to avoid wasted resources



Challenge

bp Wind Energy reported a significant volume of blade damage from an external visual inspection. The repair season is short, only during the summer months, and determining maintenance priorities at each site takes hundreds of engineering hours.

Blade designs have high variability and, without blade design expertise, it is difficult to know when a damage has potential to grow to cause further blade damage in the future.

Solution

Severity 5
39% reclassified

84 - Original Rating

51 - ONYX Rating

Severity 4
54% reclassified

420 - Original Rating

195 - ONYX Rating

ONYX engineers reviewed over 3500 inspection photos and their history, revised the severity rating if needed, and noted those damages recommended for repair. Regular reports and discussion with bp Wind Energy allowed the recommendations to be customized to their requirements.



Having ONYX's expert support in helping to review our blade inspection and repair data was **instrumental** in ensuring we were mitigating our most critical blade issues and risks throughout the year.



Megan Harris Diba

Reliability Engineering Team Leader, bp Wind Energy

Most Valuable Insights

Time Saving and Scheduled Maintenance

- Outsourcing this seasonal review allowed bp Wind Energy to focus on scheduling repairs and handling other tasks without hiring another engineer.
- Work on other maintenance tasks can continue in parallel while ONYX is managing the review.

The Value of Seasoned Experts

- Knowledge of known issues and sensitive areas of blade design comes from ONYX blade engineers' deep technical experience designing and testing blades.
- ONYX applied this knowledge to bp Wind Energy's damages to improve ratings and enabling them focus on most severe priorities.



Figure 2: ONYX's Megan Rotondo inspecting blade damage for a root cause analysis

Crowd Sourced Knowledge, Quickly Applied to your Fleet

- As an independent engineering company, ONYX works with many different clients and is exposed to various damages across the world.
- ONYX applied its wide experience and learnings to bp Wind Energy's fleet, bringing in global knowledge and understanding to determine the potential for further damage and issues that have led to catastrophic failure at other sites whilst also making recommendations.

Cost Saving

- 50% of bp Wind Energy's severe damages (rated 4-5) were downgraded to severity 3.
- By limiting the number of repairs performed to only high risk damage ratings, bp Wind Energy saved significant costs on unnecessary repairs.



We apply our blade engineering design experience in order better prioritize the damages that occur in our customer's fleets. The amount of damages that are identified through visual inspection from drones, now an industry standard, is **staggering**.

Here at ONYX we utilize our data science teams as well as blade engineering knowledge to go through these damages efficiently and with high quality.

Megan Rotondo

Senior Consulting Engineer, ONYX Insight

