

Wind farm optimization through rotor balancing

Optimizing the production is a key issue for every developer and operator of renewable assets.

In an effort to ensure continuous improvement, RES Group carefully selects and regularly works with innovative partners in order to maximize the performance of its wind assets.

In that context, RES and Sereema worked together on an optimization campaign for a six-turbine wind farm operated by RES.

Hoping to optimize production, RES trusted Sereema with a deep oversight analysis of its performance, as it did not meet the targeted objectives.

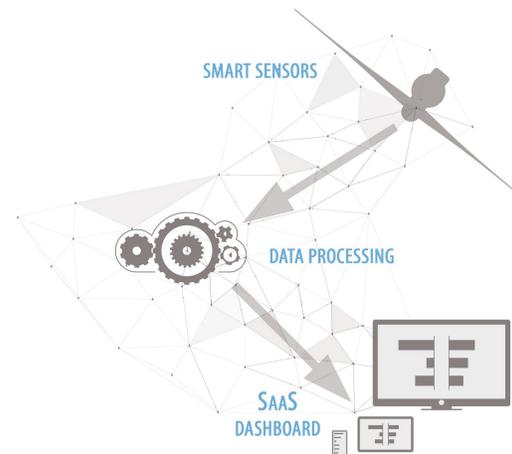
Method

Each one of the farm's six wind turbines is equipped with Windfit® since November 2016.

The Windfit® Box, with its wireless smart sensors and IoT technologies, continuously measures the wind turbines activity. The acquired data is automatically transferred to the Windfit® Cloud.

A continuous acquisition from these sensors combined with our specific expert algorithms allows to monitor the wind turbines operation. Results of the data analysis are made available through an online dedicated dashboard.

Efficiency and maintenance issues can be addressed and the settings readjusted to optimize the farm's performance.



In this case, the rotor, blades, yaw system, performance index, north and nacelle's movement functions have been monitored. With Sereema's support, RES experts analyzed the results each week.

Two out of six wind turbines were identified as presenting an aerodynamic imbalance of the rotor. On-site checking confirmed the diagnosis and showed that both imbalances were caused by pitch shifts. A 1.6 degrees and 1.7 degrees shift was respectively identified on two distinct blades.

RES has implemented a corrective action plan.

Results

As a result of the monitoring performed by Sereema and the remedial measures taken, the **gain in annual energy production** is estimated at **2% for a 1° correction**.

A comparison before and after the correction shows a decrease in the vibratory strains on the rotor and the turbine's structure. The components life expectancy is also increased.