



A fleet approach to asset management

As the industry scales up, Sereema argues the case for wind asset management at a global level: flexible enough to make centralized strategy and operational level daily decisions. Could this approach to wind sector management and analysis deliver an additional layer of understanding of asset behavior and performance?

The ambitions and records of the wind industry make headlines every year. According to the last WindEurope Financing and investment Trends report, Europe invested €41.4bn in new wind farms in 2021, corresponding to 24.6 GW of new wind energy capacity, more than any other year in history.

In the EU alone, a record of 19 GW of new wind farm capacity was financed in 2021. However, compared to the target it falls short by 40% of the 30 GW which are needed to be installed each year between 2021 and 2030.

Despite the free flow of capital in markets to finance new wind energy capacities, permits continue to be the main bottleneck for the expansion of wind in Europe. To feed their development plans, the majority of players are looking for existing capacities to acquire, not only brown and greenfield projects, but also operated wind farms.

This race for additional capacity boosts the trend of consolidation in the sector, where small IPPs tend to be bought up by larger players. This has been seen with Iberdrola acquiring Aalto Power, Ventient acquiring Iberwind, and Total Energies acquiring Quadran.

Although the M&A giant keeps growing, with larger groups absorbing smaller IPPs, the strategies of asset management have largely been concentrated at the wind farm level. Consolidating new wind capabilities involves dealing with the challenge of integration of heterogeneous/varied assets and teams.

As long as operations are managed at the wind farm level and the investment structures mainly remain managed via Special Purpose Vehicles along with dedicated P&Ls, the industrialisation of data processing remains a challenge. Simply aggregating SCADA data from each wind farm is not sufficient.

Industrializing data processing toward a fleet approach

A fleet approach to the data would give a better understanding of performance issues, in terms of pure AEP gain and also in terms of operations, maintenance and benchmarking of different technologies, to better target future fleet development.

Today, the main difficulty in such an approach comes from the disparity and low quality of information available, often only accessible on heterogeneous, single-source platforms, mainly SCADA sourced, and very oriented towards financial asset management. Many players still have a strong affinity towards availability of wind turbines; relegating performance to a lower level of priorities.

This is also linked to a lack of high quality data able to provide the right level of information.

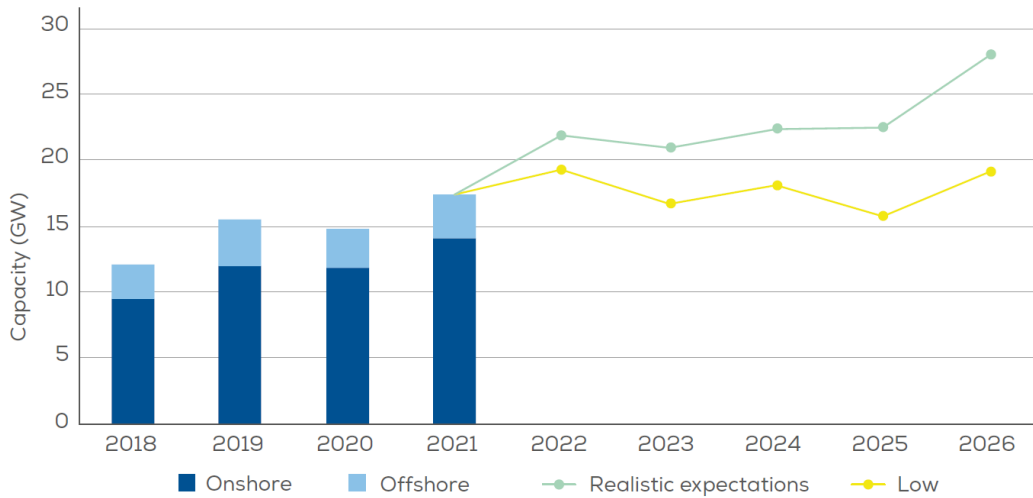
Thus, considering implementing performance management at a fleet level implies a multi-source data approach: integrating different sources of information, while automating their processing is key, as manual treatment won't be an option with the huge volume of data to be considered.

The industrialization of data gathering and processing is part of a large asset owner's strategy. Most have developed internal systems to handle and centralize their data, but it remains mainly fed by manufacturers' SCADA data.

It may be a challenge for the owners to have access to additional independent data and to set up the right processes to manage these different data sets. Sereema is aiming to replace its in-house SI systems. As an add-on solution, they will be able to integrate within the existing platforms, providing them with



2022-2026 new onshore and offshore wind installations in Europe – WindEurope’s scenarios



Source: WindEurope

high added value information to address performance issues.

Shared and harmonized performance strategy

The absence of performance monitoring at fleet level also minimizes the ability to share/ harmonize information and experiences between different entities. Indeed, the lack of high quality processed data makes experience exchanges less powerful, as the information to be shared is more decentralized, less specific and less relevant.

During discussions with asset managers from different entities, clear disparities often emerge between the ‘philosophies’ and strategies of asset management adopted by each team. These differences become more pronounced in groups with a large international footprint, mainly due to the lack of a common reference framework.

The idea is not to develop a single monolithic and uniform way of managing the assets within each group, but to design a shared base on which each local entity can adapt its own specifications and requirements, linked to the wind farm location, type of technologies used, the internalized or outsourced maintenance methods, etc. The efficiency of developing the common performance management knowledge will depend on the ability to deploy the approach at a fleet level instead of keeping managing it at wind farm level.

Automate the expertise to empower the asset manager

Many utilities and large IPPs try to manage performance by centralizing technical expertise in a single performance unit, staffed with dedicated experts. The limit of this strategy is scale: it is impossible for the team to cover the whole spectrum of issues to be detected and corrected all over the operated fleet.

The idea with Windfit is to take a fleet approach to automate the performance diagnosis and analysis and to provide the asset manager with pre-processed information they can convert in real action plans to fix in the field the under-performance issues. By doing so, the expertise is spread across all the assets at the asset management level. This also provides the performance expert unit with specific data and information for them to focus on critical issues, where their expertise combined with our data brings the highest added value.

Sereema considers wind asset management at a far more global level: flexible enough to make centralized strategy as well as operational level daily decisions. For example, at a machine level to optimize the performance of each unit by detecting and fixing under performance or lifetime issues linked to specific components such rotor or yaw systems.

At farm level, to process a wider performance analysis, integrating machines interactions, wake effects, wind sector management and analysis, to get an additional layer of understanding of the asset’s behavior and performance.

And finally at fleet level to be able to get one more layer of information that helps define a shared base for performance and maintenance strategies that could be adapted to local conditions, technologies etc. It will also help in fine tuning technologies and benchmark for future assets development.

The industry is ready for scale and Sereema’s approach helps asset management get the best, no matter the scale or the speed of deployment.

Windfit Asset Performance

Diagnosis
 ROTOR BALANCE
 YAW ALIGNMENT
 TOWER VIBRATIONS

Analysis
 AEP CALCULATOR
 WIND SECTOR MANAGEMENT
 DATA STUDIO

Optimization

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