FLUIX • FOR WIND POWER

How Digitization of Field Operations Benefits Wind Power Companies

The wind power industry is now catching on. The fast-paced development is visible especially in China and the U.S. where renewables are finding capital faster than fossil fuels. At the **beginning of September 2020, Apple unveiled their plans to invest** into construction of two of the largest onshore wind turbines. As they noted in their newsroom, such a decision will allow the company to approach 100% carbon neutral balance for the entire business, manufacturing supply chain and product life cycle by 2030.

In parallel to this, the U.S.' Energy Information Administration (EIA) estimates that the total amount of power produced from both onshore and offshore wind will grow by 14% by the end of 2020.
With luck all these might define our era. But there's a bit of stillness in the wind turbine operations and maintenance.

What challenges wind power companies face

The operations and maintenance (O&M) strategy has a long-lasting impact on the profitability and efficiency of a wind site's operations. This is why it requires a delicate, yet straightforward approach. Per facts most research publications unveil that factors influencing planning costs of O&M are:

- **Frequency of inspections**
- **Availability of maintenance crew**
- **Spare parts and vessels**
- **Economic parameters**
- **Weather conditions**

Recently, the wind power world met another weighty reason. When in April 2020 the pandemic took a heavy toll on the industry disrupting the global supply chain, managers who used to be on construction site taking control over work, were suddenly forced to work remotely with almost no idea of how that process should look like, sound like, or even be.

It turned out that inputting findings from field reports into centralised logs was still manual. **Senior field engineers could spend 30-50% of their time on recording the information using pen and paper**, which made it harder to track health and performance of turbines.

Another thing to be added into that boiling kettle is the uncertainty about logistics. Hardly ever it is possible to plan the arrival of the turbine's workpieces. If before the pandemic it was possible to prepare the site to receive blades on time, now the necessary components could be stuck on the road indefinitely. The way crews of workers operate on site has also been changed due to the distance restrictions between people.

It has become hard to come up with forecasts. Before the pandemic, the wind energy business was growing about 10% a year. But recently The American Wind Energy Association has estimated that the pandemic could pose a **risk to $35 billion in investment and around 35,000 jobs in 2020.** Given it all, even the shadow of recalcitrance about the necessary transition to digital technologies has faded away. Operation and maintenance is a great piece of business, and the faster the focus will lay on digitization the fewer costs in casualties occur.

The 2020 pandemic could pose a risk to:

$35 billion
in investment

~35,000
jobs globally

The energy industry is blowing towards digitization

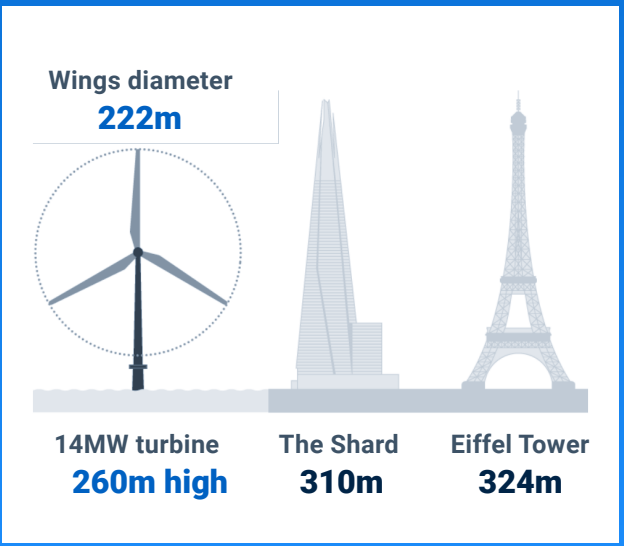
Almost half of the finance industry, which is 47% of renewable energy investors, agree that digitization is a core part of their investment strategy. Let's figure out why they do think so.

Wind energy is a highly competitive industry. It's important to note that with raising competition the height of turbines is growing too. There it is, no wonder why — the growing size of wind turbines helps lower the costs of wind energy to the point that it is economically beneficial compared with fossil-fuel alternatives. To better feel the size, imagine something high as Eiffel Tower with the blades longer than a regular stadium in your city.

Thus, a bigger turbine means bigger blades, bigger vessels, bigger cables, bigger factories, and greater financial losses if the machine goes down. And that means massive turbines cannot be allowed to stop except for some extra situations or planned maintenance.

Siemens Gamesa Renewable Energy SA, will build the 14-megawatt machine with a rotor diameter of 222 meters (728 feet).

According to Bloomberg



As a rule, wind farms extend over vast areas and are located at a distance from the coast, which creates additional costs for both energy transportation and the global wind turbine operations and maintenance (O&M).

All of these things make it harder to manage and balance the power system. Wind turbine manufacturers admit that even a small step to field operations digitizing will address a series of pressing challenges.

1. **It allows field engineers to check the health of every turbine component in real-time.**
2. **The inspection team can log their reports and checklists directly into cloud-based systems, via mobile or tablet devices, and make the information available instantly to other teams.**

And for wind turbine manufacturers it is important to collect and analyze data smartly because it leads to better maintenance of turbines.

They have already spent years trying to find out the best efficient design, now it's time to keep the turbines running at the highest level.

To illustrate the whole picture of how giants in the renewable industry were making moves towards digitization, let’s travel back 7 years ago to the year of 2013.

SIEMENS Gamesa
RENEWABLE ENERGY

Key benefits SGRE gain with Fluix:

- **2,000 man-hours saved a year on inspection**
- **Reduced technician trainig time**
- **Accelerated approval & verification**

Siemens Wind Power, now in 2020 it's SGRE, like other big players in renewables used to print tens of thousands of pages yearly for workers to fill in a variety of different forms, from inspection checklists to what-have-been-done reports or risk assessments and instructions. Field engineers worked with these paper documents offshore and then took the entire binder back onto the site, which limited flexibility for the site managers to ask timely questions while technicians were still on site. **And now, in 2020 Siemens Gamesa is proud to have built an absolutely paperless workflow.**

That turn of events didn't come by chance, out of nowhere. Back in 2013 the company aimed to digitize their field operations and started looking for a software solution.

The decision was made not to hire an entire software development team, but rather try to find an off-the-shelf solution that would meet SGRE's requirements, the level of flexibility, and premium service the company needed.

This is how they found Fluix. From the beginning, it was an experiment with the goal of finding the most efficient way to reduce paper inspection costs and faster project delivery. Results were not long in coming, **Fluix rearranged the established principles of O&M workflow format. While using Fluix, Siemens Wind Power managed to unify the document management process across the board in digital format. That means getting complete control over: storing, distributing, editing, checking, and tracking on-site documents.**

To answer the question "Why Fluix?", it's best to name few specific product capabilities, which have become crucial for Siemens Gamesa in their paperless move.

Intuitive and easy to use interface of the app allowed to get the buy-in from the teams on site and hence scale the solution to multiple teams in different countries, both onshore and offshore. After Siemens Wind Power joined forces with Gamesa it was as seamless to scale the product to the former Gamesa teams around the globe who needed a mobile solution for on-site documentation without too much training or user adoption.

Standardization of data reporting allowed the company to analyze trends in individual turbine performance and avoid additional service visits to the site, providing substantial cost savings.

Flexibility of the platform empowered project managers and site leads to create workflows of any complexity and adjust them to the individual needs of every single team.

As a result, today nearly 5,000 SGRE employees around the globe use Fluix at the turbine original equipment manufacturer (OEM) on a daily basis, focusing on their key tasks, instead of paperwork.

A single platform for every company

No matter how big the company is, whether it's a manufacturer or subcontractor, Fluix adds value to the operations from day one. Be those enterprises like **Siemens Gamesa, Renewable Energy, and RWE**, with thousands employees working across the globe onshore and offshore on installation, commissioning and services, or a small team with a very specific use case, they will all find a solution to reach their goals.

Among numerous benefits Fluix can help solve the following tasks:

- **Storing.** Fully removes printing and handling costs keeping every time-increasing amount of reports, calculation, checklists in the cloud.
- **Time.** Reduces inspection time by providing smart workflows.
- **Mobility.** Empowers site teams with a mobile solution that works both online and offline.
- **Quality.** Eliminates the manual way of filling out sheets with a risk of human error.
- **Accuracy.** Allows to file professionally looking reports to the customers.
- **Efficiency.** Builds efficient communication between the site and office, letting technicians and managers discuss any issues here and now.
- **Traceability.** Prevent important documentation lost by allowing the admin to see who, when, and which device was used to work with documents.
- **Simplicity/intuitiveness.** Reduces the load on IT for support thanks to easy and fast onboarding of the field service team.
- **Credibility.** Provides visibility of data to sites to easily see trends and spot issues.

Summary & Conclusion

While every forecast shows rapid growth of investments in the wind power industry, the offshore environment is under harsh conditions. Project managers of wind farms face logistical and safety issues, spending 30-50% of their time on paper documentation, which costs almost as much as the cost of the wind turbines construction or installation. Individual turbines, which are nothing but big machinery, require 5 visits per year. With technological progress, the number of visits can be shortened to 3 or 4. So simple math says: a wind farm consisting of **200 turbines will therefore need 3 000 check visits per year.**

O&M visits are typically carried out by helicopter, drone, or boat that can only be operated with an engineer who can then climb onto the turbine. With the pandemic spreading so fast across the countries, the work on wind turbine installation and their maintenance is becoming more challenging.

As a result, the wind power companies are moving to digitization of their field operations. A rough calculation suggests that **completing an inspection checklist with an automation tool can be 3,5x faster than manual paper work.** The story of Siemens Gamesa Renewable Energy shows that deployment of Fluix helped the company reduce inspection costs and achieve smarter communication within the team(s).

“One of the biggest benefits of Fluix is its scalability. The solution can easily be used within a small office environment or across multiple departments across the globe”

Kathryn Ridsdale,
IT Coordinator Team Lead, SGRE

“Fluix is a Gold Standard. It’s tremendously easy to start making workflows and managing your documents in an efficient way.”

Brian Carlton,
Data Analyst & Administrator, SGRE

FLUIX

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