



# Outsmart the future with digitalisation

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Wind energy is proven to be a reliable way of producing clean renewable energy, and the net inflow of financial investors reflects that the industry has matured. Wind energy is clean and safe and simply constitutes a smart investment. The business will, however, see some challenges going forward. Generating new electricity has always depended on national support schemes whether it has been carbon-based or generated by renewable sources.

Wind and solar will be the first renewable technologies to break this barrier in reaching the point where they can operate continuously and profitably without public subsidy. To ensure business sustainability, it will be increasingly important to continue and develop further efforts to reduce investment requirements and operating

costs. Wind turbines will continue to grow in size. The components and the forces applied to the turbines will continue to grow. Which is why increasing our knowledge and understanding of how turbines operate and function is the key to reducing costs, especially as the wind business enters a critical transformative period.

## **Integrated operations**

Data is increasingly driving the understanding of wind farms and their day-to-day operations. Various control and monitoring systems are available for all aspects of a wind turbine, from planned maintenance to lifecycle management.



remotely, to obtain insight for optimal decision making which focusses on data aggregation and visualisation, safety and operational awareness, engineering and performance optimisation, and performance benchmarking.

Kognifai also provides the data infrastructure to move Kongsberg EmPower applications to the cloud, and through this, it is possible to deliver a truly efficient workspace for wind farm management companies. Kognifai is being used as a platform to enable greater communication across all features of Kongsberg EmPower applications. Advanced sensors and cutting edge computing can be easily applied through the system, but the most important feature is that it provides a secure cloud-based environment fully aligned with all requirements for end-to-end security and critical infrastructure.

#### Early adopter

Independent wind asset operations management specialist OutSmart BV is the first in the industry to move its operations to an integrated management system on Kognifai, from which it will manage its extensive onshore and offshore wind turbine portfolio. OutSmart provides services to wind farm owners, fund managers, and wind project companies in Northwestern Europe, helping them to maximise the revenues of their wind assets. Part of Deutsche Windtechnik Offshore and Consulting GmbH, the company currently operates more than 400 onshore and offshore wind and solar assets, 1.8 GW in total, in Germany, the Netherlands, and the UK.

With such an extensive operational network, OutSmart's decision to further digitalise was not taken lightly. However, the combination of its own vast experience as an independent service provider in the European wind industry and the expertise and technology of Kongsberg Digital has resulted in a set of applications on Kognifai that represents a breakthrough in the way fleets of onshore and particularly offshore windfarms are operated.

OutSmart's use of Kognifai will bring a significant increase in efficiency both in the operating rooms at its facilities and out in the field. Field technicians can expect closer collaboration and better information about the challenges at hand when they travel to the site. They will know that with a company like OutSmart supported by KONGSBERG, the challenges at hand are better validated and planned than when using conventional systems. And while operational efficiency sees gains, so does the safety of the field technicians.

With a common digital platform providing data storage and data security for the asset owner, the new applications rationalise the operations of OutSmart and its clients and

However much of this technology comes from different vendors, and this can lead to a mix and match approach to digitalisation and therefore negate the efficiency gains of deploying the technology in the first place.

It's in this context that oil and gas, maritime and renewable energy technology specialist KONGSBERG developed its integrated approach to wind farm management systems. The Kongsberg EmPower decision-support solution is an integrated software suite, developed to bring the digital power plant closer to the operator and turbine owners.

The key word is integration. Integrating information from disparate sources through the help of advanced analytics coalesces it into a single system, making it possible to improve EHS, gain a deeper understanding of contractual obligations, and acquire profound insight into a wind farm's capabilities.

From a management perspective, an integrated solution can tell operators who is where and what they are doing at any time, ensuring efficient distribution of a workforce for both planned and unscheduled maintenance. Crucially, the system also provides real-time data on the

condition and performance of the wind turbines, contributing to more effective planned maintenance and support.

Additionally, easy look-up of contractual obligations is integral to the system, ensuring that information on what needs to be delivered at any time and indeed, information on what the penalties are if alternatives have to be evaluated, is always available.

#### Digital platform

This combination of operational data and data taken from sensors directly on wind turbines delivers deep insight enabling better-informed decision making. But KONGSBERG has developed another level of digitalisation that provides an integrated, holistic solution for wind farm management companies working with tens or hundreds of installations for different clients in different regions.

The enabler for this next step is KONGSBERG's new digital platform. Kognifai® is an advanced open ecosystem, a high-tech solution for real-time data management integrating people, processes, and technology. It is helping to reinvent operational concepts and business models in diverse industries, by enabling all stakeholders, on-site and

provide access to proven tools including advanced analytics to optimise performance and reduce operational cost for the assets. OutSmart believes that short and mid-term efficiency can be predicted well and can be influenced, despite the harsh conditions the renewable energy sector is facing. By migrating to fully digital management, the company is convinced that along with its clients it is now very well placed to deal with the changing characteristics of the contemporary wind energy industry.

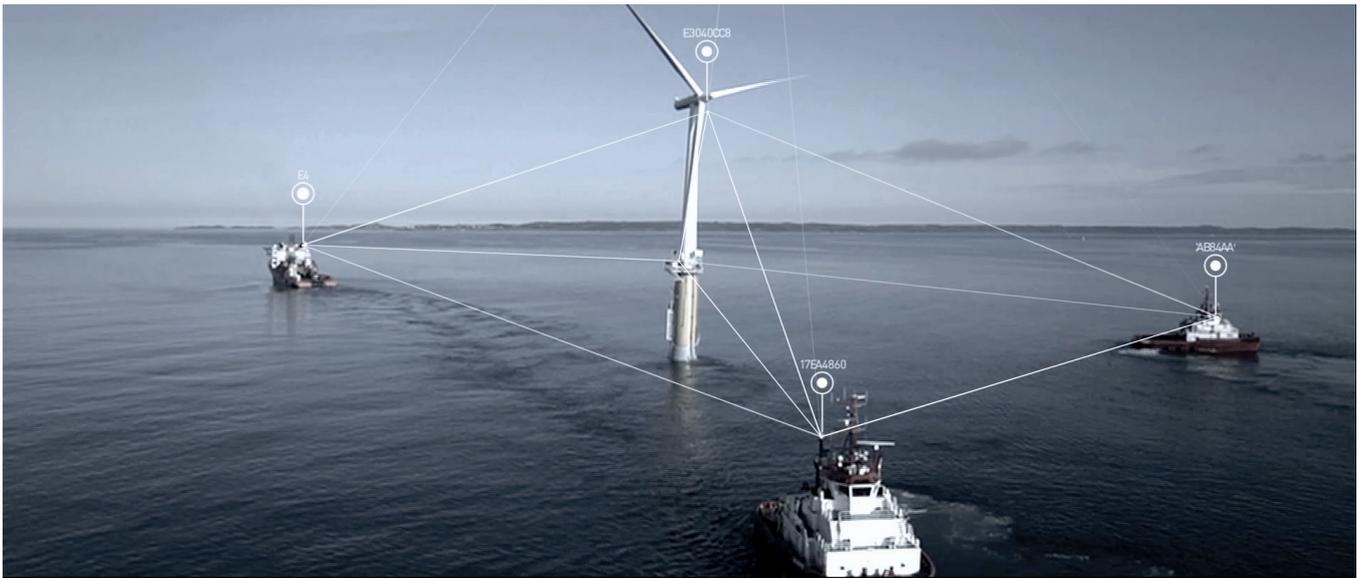
An integrated, cloud-based system that focusses on collaboration and secure data sharing between management companies and clients is the logical next step in dealing with growing complexity and cost pressure in renewables. For OutSmart, it means a step change in productivity of daily operations and results in better situational awareness.

The integration of all data into a single system accessible by approved parties offers better analytic insights and makes reporting more efficient. Considering OutSmart's impressive breadth of experience in intelligent operation management for wind assets and its distributed client base, this holistic approach will deliver efficiency for its own business while truly giving wind farm owners control of their data.

**Future-ready**

OutSmart's adoption of Kognifai is a perfect example of its unique ability to provide a secure, holistic platform for disparate data streams and act as a single solution for diverse industrial operations.





And considering the transformation the wind energy business is facing, it comes at the right time.

It is almost a certainty that the turbines will continue to get bigger and as a result, there will be more calls for them to be installed offshore. Whilst the next generation of even larger turbines will indeed be highly complicated technical solutions onshore, moving them offshore presents its own highly unique and incredibly demanding complications, not least the size of the components and the cost and difficulty of sending engineers to sea.

A future where offshore wind farms with new

larger turbines are common means that operations must be planned in even greater detail, especially considering that human intervention on site will be reduced due to both cost and safety concerns. Kognifai and its integrated wind applications are already prepared to help operators and owners take on the challenges of today, but the solution is also being used to integrate new technology for tomorrow, such as digital twins, which can deliver even deeper insight into all aspects of an asset.

By combining, for instance, weather forecasts and improved turbine analytics, digital twins make it possible to improve efficiency and reliability, while delivering

more scope for autonomous operations that will become essential going forwards.

While digitalisation of the wind business is here and for forward-thinking companies like OutSmart already well advanced, there are still essential new technologies taking hold. The true effects that digital twin technology and autonomous operations will have on the industry are yet to be seen, but their potential to contribute to greater efficiency and enable a future offshore, shows that investing in digitalisation now can not only pay dividends today but also provide future-proofing as the industry continues to develop.

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