Power up profitability in the renewable energy sector with optimized assets

Increasing global energy demand coupled with ambitious regulatory and sustainability targets for governments, businesses, and consumers has resulted in unprecedented growth in the renewable energy sector. According to a report from the International Energy Agency (IEA), "[T]he world's capacity to generate renewable electricity is expanding faster than at any time in the last three decades, giving it a real chance of achieving the goal of tripling global capacity by 2030 that governments set at the COP28 climate change conference."

The challenges that are top of mind for renewable energy executives include some that they can't control fully, or at all, such as political instability, fluctuating market conditions, public perception, complex grid integrations, and landowner revenue models–farmer revenue share or the Crown Estate for sea-based turbines in the UK, for example. But executives still must navigate these uncertainties while ensuring their businesses remain profitable and environmentally responsible.

One of the keys to reaching peak operational efficiency and profitability is optimizing those factors that can be controlled. Tangible infrastructure, such as wind turbines, solar panels, and land can represent 50% or more of a renewable energy company's investment. Managed efficiently throughout their lifecycles, these physical assets represent the best opportunity to make a substantial positive impact on the bottom line.

The wealth of data available from physical assets can enable renewable energy companies to make better decisions throughout the asset lifecycle: capital planning and acquisition, storage, operation and maintenance, and decommissioning or disposal. The data can help determine the optimal timing and location of capital investments; the frequency and type of maintenance required; how to efficiently leverage technicians and other resources based on qualifications, availability, and location; whether to repair or replace equipment; how to ensure regulatory and environmental compliance; and the best time to decommission assets as indicated by their degradation of efficiency and impact on operations. Capturing and acting on this data can significantly impact a company's ability to deliver consistently and expand capacity as needed while maintaining a healthy, viable operation.

3 Ways to Power Up Profitability

1. Collect asset data that drives visibility

Asset lifecycle management software provides a platform to help renewable energy companies collect, analyze, and act on data about their infrastructure, equipment, and other resources. A seemingly simple but critical place to start is with contextual information–the breadth and depth of the operation. Where are the assets located? What factors will come into play in accessing them? For example, a wind farm that is out to sea versus one spread across farmland will have very different and unique logistical considerations. Asset software that integrates this information with GIS enables energy providers to accurately visualize their asset portfolio.

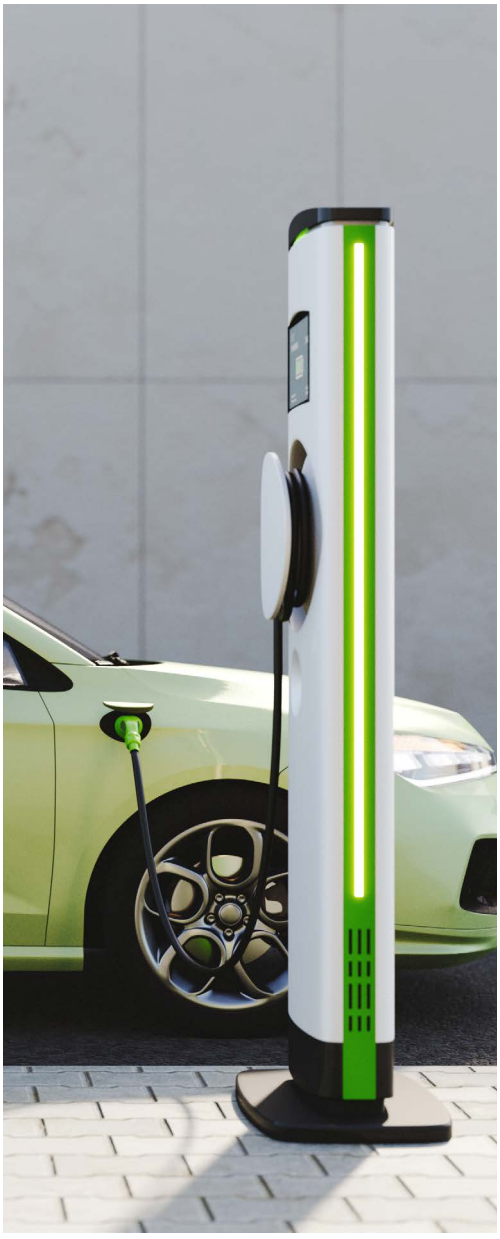
In addition to context, an asset management system should provide attribute data: information about the asset's capacity, design, and identifying information. Examples of attributes for a wind turbine include rotor diameter, blade length, and tower material. Attribute data enables informed decision-making regarding maintenance, replacement, and overall asset lifecycle management, minimizing risks by allowing for proactive planning.

Advanced asset management with AI combines this contextual and attribute information with data about asset health. The health of a physical asset can be assessed by doing time series analysis to detect anomalies. As an asset's performance erodes, the quality of its output also declines while energy use and other costs increase.

Once the asset management system determines that the asset will fail, it is critical that it also suggests an action and the appropriate time to take that action: repair, or create a work order; or replace, or create a purchase order. Once the connected worker takes the action, that outcome–even if it was wrong–is fed back into the AI engine to update its algorithm, ensuring the continuous finetuning of the accuracy of its predictions.

This type of asset management software like IFS tracks and surfaces this information as asset-related metrics like mean time to repair (MTTR), asset longevity, cost, and measures that address health, safety and the environment (HSE). It can also tie these things back to the assets' contribution to the company from a production standpoint, and often with regard to financial profitability or nonfinancial measures like order fill rates and quality metrics.

Apart from asset context, attributes, and health, which are mechanical assessments, asset management for renewable energy providers also involves physical condition inspections. Exterior damage might not be picked up by sensors because it's not impacting the ability of the equipment to work at this stage, but it could deteriorate the asset's performance over time. Drone inspections are one way of assessing linear or physically dispersed assets, such as railway tracks or wind turbines, producing photographs that can be overlaid and studied to help in maintenance and capital investment decision-making



2. Drill into the data for better decision making

Collecting all of this information is the first step. Bringing it all together in one place–the asset management system–is critical in enabling a power generation provider to analyze the data and create a plan of work. Whereas service management is focused on the most efficient allocation of resources to go from one job to another, work management based on condition assessment is more about grouping work, often several days' worth, at one location.

If equipment degradation is taking place with renewable energy assets, it may not be economically feasible to send a technician out to do a single repair. The complexity and cost of repairs and the logistics involved in sourcing and transporting parts require a plan to be made and a project put in place to bring the equipment back up to specification within an acceptable timeframe. To illustrate why planning ahead is important, consider an individual wind turbine blade or fin. The largest in the world currently measures 131 meters long. Pre-planning is required not only to obtain and finance such equipment, but to move it.

Work management also factors into running a more sustainable operation. Pre-planning work at a wind farm, for example, means as much work as possible is combined into a single trip to the area, reducing travel. In addition, monitoring these assets through an asset management system reveals those that have decreased output, which would require that the energy be sourced from somewhere else in the grid–typically from oil or coal. Keeping assets at optimal performance reduces downtime and maximizes output of clean energy.

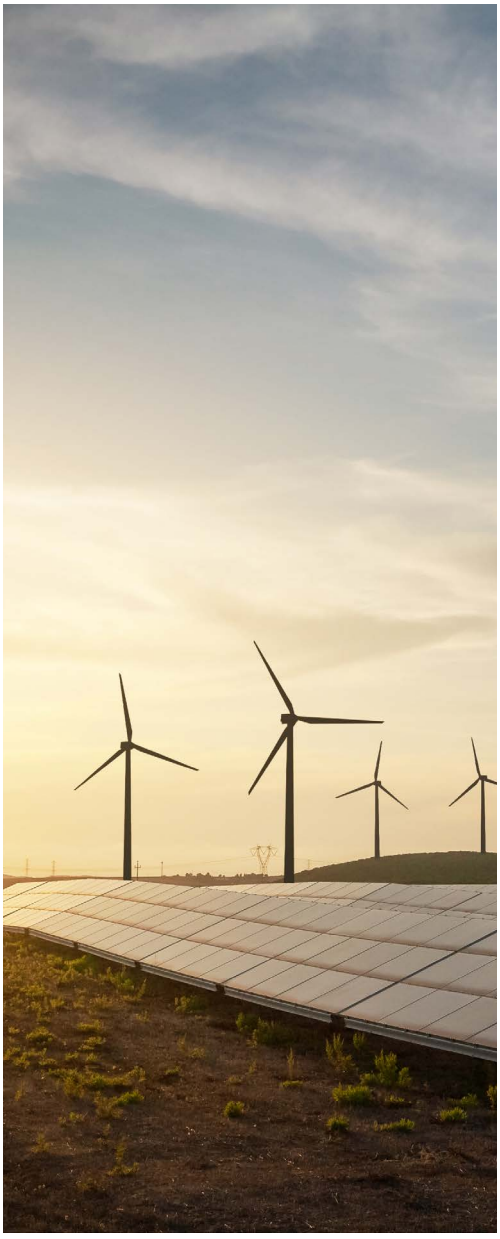
Asset management enables power generation companies to create a plan through data collection and analysis that determines the most efficient way of doing the work with the least impact on the ability of the assets to provide data. The guiding principle in creating an effective plan is balancing cost, risk, and performance.

3. Optimize asset health and the bottom line

With at least half of a renewable energy's investment dedicated to tangible infrastructure, it is clear that focusing on optimized efficiency of those assets will have a significant impact on the bottom line. Understanding the asset inventory, being able to collect and analyze data, and ultimately gain visibility and control over the impact of assets is accomplished with a sophisticated asset management system. Data generated by and about physical assets forms the basis for better operational decision making–ultimately keeping customers connected, workers safe, and operating margins healthy.

How IFS empowers renewable energy companies with optimized assets

IFS Enterprise Asset Management offers seamless asset management including mapping and GIS integration, asset design management, and mobile optimization. Capabilities include asset planning and implementation, asset operations and maintenance, and asset performance management.



The solution enables energy providers to take a structured approach to managing all aspects of the asset and maintenance lifecycle:

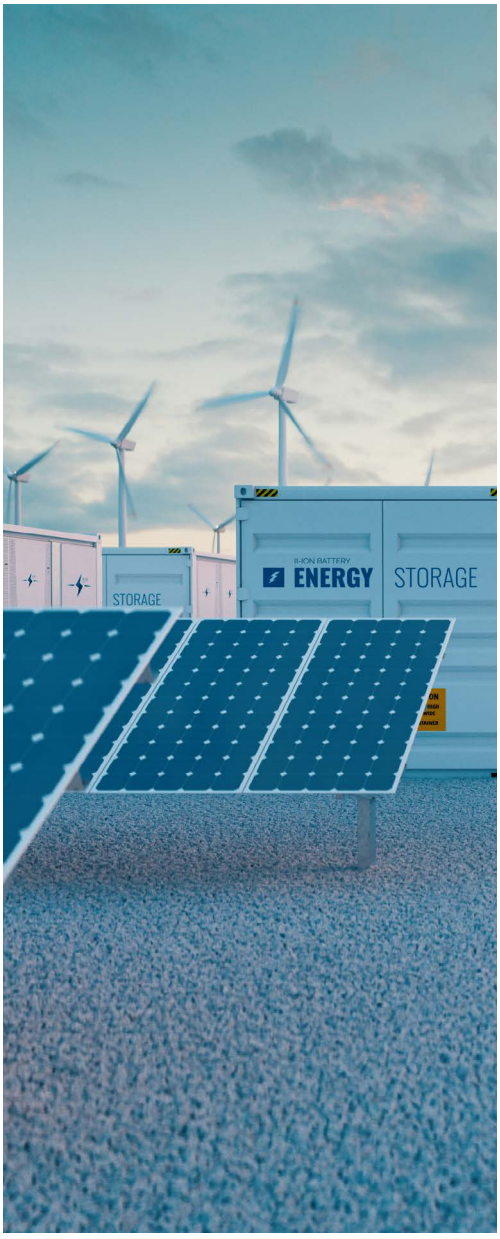
- Improving visibility across the asset lifecycle
- Monitoring and accessing up-to-the-minute data about asset and health performance with a color-coded, drillable dashboard
- Leveraging valuable data insights to inform decision making
- Managing assets at optimum levels throughout their lifecycles with predictive asset maintenance

IFS Asset Management with AI offers time series analysis to detect anomalies in asset performance and health. It determines the rate of equipment degradation and the optimal time to repair or replace it. Once the asset management system determines that the asset will fail, it suggests what action to take, and when, to resolve the issue in the most efficient manner.

Renewable energy companies transforming their operations with IFS

EDF Renewables UK and Ireland is a joint venture between EDF Renewables Group (EDF's global renewable business) and EDF Energy (EDF's UK generation business) and specializes in wind, solar and battery technology. The company chose IFS to manage its assets.

> IFS forms a key part of our future growth strategy," said Piero Maggio, Director of Asset Operations, EDF Renewables UK & Ireland. "The platform will allow us to scale our business more efficiently and consistently, whilst also capturing the richer management information needed to drive continuous improvement and inform key decision-making."



Brookfield Asset Management moved to IFS from a legacy system that required them to operate on separate databases for more than 600 legal entities. Now, Brookfield can run all of these businesses on a single instance of IFS, on a common database--driving efficiencies and greatly reducing IT infrastructure cost and complexity.

Brookfield is one of the world's largest alternative investment management companies, with over US$900 billion of assets under management in 2023. It focuses on direct control investments in real estate, renewable power, infrastructure, credit and private equity. Said Brookfield Corporate Operations Vice President of Global Strategic Sourcing Roman Kruczaj: “IFS will provide us best-in-class applications to manage the diverse set of businesses we operate around the globe.”

RES is the world's largest independent renewable energy company, having been in the sector for more than 40 years. As of 2023, the company had established more than 23 gigawatts of renewable energy projects worldwide and supported more than 12 gigawatts operations.

“As RES has grown, our processes have been trying to keep up,” said Richard Russell, Group CFO, RES. “In the digital transformation of RES, we see IFS as the central pillar to the efficiency of our internal processes, end to end.”

Find out more

To learn more about the ways IFS Cloud can help your renewables business drive efficiencies with connected assets, remote monitoring, effective planning, predictive maintenance and more, visit our website at IFS.com.