

# GE introduces new software for wind turbine management

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NEW ORLEANS-May 24, 2016-Today at the American Wind Energy Association's WINDPOWER 2016 event, GE Renewable Energy (NYSE: GE) introduced a new software applications suite for its Digital Wind Farm ecosystem.

Offered as part of GE's flexible service agreements, the apps are compatible with the company's new 2 MW and 3 MW wind turbines and were developed to enhance annual energy production (AEP) and improve wind farm profitability. The programs are built on the Predix\* software platform, the foundation for all GE's Industrial Internet applications, and include its specialized cyber security protection for operational technology.

Anne McEntee, President & CEO of GE's Onshore Wind business, said "The Digital Wind Farm is changing the future of our industry. We are actively working with our customers to develop new software technology applications that generate more production, better availability and ultimately higher profit across the lifecycle of a wind farm."

One such customer collaboration resulted in GE's new Energy Forecasting application. Developed in cooperation with Exelon Power as a strategic way to improve wind farm profitability, the app utilizes weather forecasting data to generate more accurate financial modeling and better predict the next day's grid supply and demand fluctuations. It also offers real-time forecasting for identifying production ramps throughout the day to improve profitability for dispatchers and traders in PPA or merchant energy markets.

Energy Forecasting was recently deployed for testing at four new wind projects in the U.S., and Exelon expects the software will deliver one-to-three percent of additional revenue per site.

In addition to business optimization, GE also unveiled two new apps that help streamline wind farm operations. Digital Plan of the Day is a scheduling application that improves operations and maintenance efficiency for field service teams. The app combines a variety of disparate data sets, including SCADA information, diagnostic readings, weather conditions and even geolocation data, to organize and prioritize daily maintenance schedules across a site.

The second operations-focused app is the next generation of GE's popular Wind PowerUp\* Services platform, which is now capable of increasing a wind farm's annual energy production by up to ten percent. The newest version of PowerUp Services builds on GE's earlier capabilities in making small hardware and software adjustments based on performance and reliability data, but now it expands the concept by introducing an iterative tuning process to monitor a site's specific wind environment and lock in the appropriate settings based on the most current information available.

"When we initially launched PowerUp Services a few years ago, we were using historical data to make hardware and software adjustments that would yield up to five percent more AEP," explains McEntee. "We've now taken all that learning from the initial version and put it back into our software development to speed up the adjustment cycle and generate more value for our customers. Today, PowerUp Services is capable of delivering up to the double the AEP improvements of just a few years ago. That's the benefit of the Digital Wind Farm-it's always learning."

The final two applications in GE's new wind software suite are focused on asset performance management. The Diagnostics app uses operating data for advanced anomaly detection analysis and then incorporates that analysis into a detailed case management and recommendation system. The Prognostics app uses operating, maintenance and inspection data to project future operating conditions and predict turbine component reliability.

By shifting from unplanned outages to predictive maintenance, the Diagnostics and Prognostics apps can help wind farm operators reduce maintenance costs by up to 10 percent.

Many of the new applications introduced today are already being deployed with pilot customers, and they will be broadly available as part of GE's flexible service agreements beginning later this year.

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