

GE Renewable Energy

A POWERFUL TURBINE

GE's 3.2-103



www.ge.com/wind

Since entering the wind industry in 2002, GE Renewable Energy has invested more than \$2 billion in next-generation wind turbine technology to provide more value to customers—whether at the turbine, plant or grid level. Through the use of advanced analytics, GE Renewable Energy is redefining the future of wind power, delivering with proven performance, availability and reliability. With the integration of big data and the industrial internet, we can help customers manage the variability that comes with this resource for smooth, predictable power. Our onshore product portfolio includes wind turbines with rated capacities from 1.6-3.4 MW and flexible support services that range from basic operations and maintenance to farm- or fleet-level enhancements.

For more information visit our website:
www.ge.com/wind

GE's 3.2-103...A Powerful Turbine

GE's 3.2-103 brilliant wind turbine generates an impressive amount of energy for medium-to-high wind speed sites. Building on the exceptional performance of the 2.5 MW fleet, GE's 3.2-103 wind turbine provides a 5% increase in energy output, with the same reliable performance as the 2.85-103. With towers for hub heights ranging 70 to 98 meters, the 3.2-103 helps wind developers generate higher annual energy production, even in tip height constrained sites.

As a brilliant turbine, the 3.2-103 utilizes the power of the Industrial Internet to help manage the variability of wind, providing smooth, predictable power. By analyzing tens of thousands of data points every second, the 3.2-103 integrates energy storage and advanced forecasting algorithms while communicating seamlessly with neighboring turbines, service technicians and operators.

Building Upon Proven Performance

With an installed global fleet of over 25,000 units, GE's technology runs at 98%+ availability. Together with GE's tailored customer service options, GE can enhance the value of the assets over their lifetime and reduce the cost of electricity for our customers.

As one of the world's leading wind turbine suppliers, GE provides an evolutionary wind turbine product portfolio and support services extending from development assistance to operation and maintenance for the successful implementation of projects. This creditable track record supports customers with the financeability of their wind projects.

A Proven Track Record of Delivering Reliable Power Efficiently

Sharing the experience from over 1,200 operating 2.5 MW turbines, GE's 3.2-103 is based on this proven platform. The 3.2-103 wind turbine is engineered to meet certification requirements for IEC Wind Class II environments. GE's patented loads control system proactively measures stress during operation. The individually adjustable blade pitch system from GE is used to operate the unit for high-energy generation. The GE power converter system efficiently converts the produced energy into the grid, enhancing the annual energy production. With over 25,000 wind turbines in operation, GE has the worldwide reputation to meet the strictest grid requirements and deliver reliable energy into the grid.

Focusing on performance, reliability and efficiency, GE's 3.2-103 wind turbine will provide high customer value through evolutionary engineering.

Product Features

GE's 3.2-103 offers the following technical features:

- 103-meter rotor diameter
- 50/60 Hz
- Towers supporting hub heights from 70- to 98-meters
- 105 dB(A) standard sound power level
- Optional integrated battery storage

GE's 3.2-103...Integrated Energy Storage

GE is redefining the future of wind power by harnessing the power of the Industrial Internet with GE's advanced wind technology. By integrating a GE Energy Storage solution at the turbine level and pairing it with advanced forecasting algorithms, power producers are able to drive higher output and create new revenue streams for wind operators.

GE's engineers have created three battery-enabled software applications that integrate seamlessly with the wind turbine to provide enhanced wind power availability. Wind developers and operators can select the application or combination of applications that best suits individual site needs.

- **Ramp Control.** Today, when wind speed increases quickly, the grid cannot always absorb the extra wind power produced. GE's Ramp Control App allows the brilliant turbine to capture "wasted" wind power and store it in the battery, meaning operators can capture revenue previously left on the table.
- **Predictable Power.** Power producers must be able to provide consistent and predictable power to the grid, but the variability of wind can make smooth grid integration challenging. The Predictable Power App allows the brilliant turbine to smooth out the short-term peaks and valleys in wind power and make it predictable over periods of 15-60 minutes.
- **Frequency Regulation.** Power demand changes throughout the day, and grid operators must keep up with its constant fluctuation. Grid operators look to power producers to respond rapidly to keep the grid balanced. The Frequency Regulation App allows wind farms to store energy in the battery and respond immediately to load changes with precision.

Tailor-Made Service Solutions

A flexible service agreement is offered on GE's 3.2-103. Enhance turbine operating performance and life by adding predictive condition monitoring services, unplanned maintenance with advanced services and up tower repairs, as well as options for turbine performance and life extension enhancement. Under this comprehensive package GE provides the customer with high-level performance. For customers that prefer to manage the O&M of their assets in another type of structure, flexible options to support our customers are available:

- Service support
- 24/7 Remote control
- Upgrades packages
- Performance improvements
- Spare part centres
- Lifetime extension

We have 1,000+ service professionals—available to you 24/7.

A POWERFUL TURBINE



TORQUE

MAKING RENEWABLES THE ENERGY OF CHOICE FOR A CLEANER FUTURE

www.ge.com/wind

DIGITAL WIND FARM

WindSCADA™

CONNECTED MACHINES

YAW

INDUSTRIAL INTERNET

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