

GE Power & Water
Renewable Energy

Introducing GE's 2.75 MW Wind Turbines 2.75-100 2.75-103

Increased customer value...
through product evolution

a product of
ecomagination



imagination at work

Introducing GE's **2.75-100** and **2.75-103**

Product evolution. It's one of the things GE does best. Especially when it comes to the next generation of wind turbines. Building on a strong power generation heritage spanning more than a century, our onshore wind turbines deliver proven performance, availability and reliability—creating more value for our customers.

As one of the world's leading wind turbine suppliers, GE Energy's current product portfolio includes wind turbines with rated capacities ranging from 1.5 MW–4.1 MW and support services extending from development assistance to operation and maintenance.

GE's 2.75-100 Wind Turbine

GE's 2.75-100 wind turbine offers a 6.8% increase in Annual Energy Production (AEP) at 8.5 m/s when compared to the 2.5-100 wind turbine. This nameplate rating increase allows greater energy capture and improved project economics for wind developers. GE's proprietary 48.7 meter blade uses the same proven aerodynamic shape found on the 2.5-100.

GE's 2.75-103 Wind Turbine

GE's 2.75-103 wind turbine offers a 6% increase in swept area and a 9.2% increase in AEP at 8.5 m/s when compared to the 2.5-100. This increase in blade swept area allows greater energy capture and improved project economics for wind developers. GE's proprietary 50.2 meter blade uses the same proven aerodynamic shape as the 48.7 meter blades found on the 2.5-100 and 2.75-100. Our new, Low Noise Trailing Edge serrations are employed on this turbine to enable siting in sound sensitive areas at full rated power. Testing has shown this design for the blade enables improved turbine acoustics. Low Noise Trailing Edge technology allows increased tip speed tolerance to capture more energy.

GE's 2.75-100 and 2.75-103 wind turbines are available with 75 (50 Hz only), 85, and 98.3 meter hub heights that provide flexible options for Class II and III wind sites, allowing customers to capture the most free fuel in the wind.

GE's stringent design procedures result in a turbine designed for high performance, reliability and availability. Building on the exceptional turbine performance of its predecessors, coupled with selected minimal electrical component modifications, GE's 2.75-100 and 2.75-103 wind turbines provide increased nameplate rating and AEP, with the same reliable performance as the 2.5-100 turbine.

Building Upon the Proven 1.5 MW and 2.5 MW Platforms

The evolution of GE's multi-megawatt turbine design began with the 2.5s turbine introduced in 2004. The 88-meter rotor diameter turbine was soon increased to 100 meters for the 2.5xl turbine, introduced in 2006. GE's 2.5-100 and 2.75-103 build upon the maturity of their predecessors. This evolution ensures increased capacity factor and availability.

Designed with high reliability to ensure continued operation in the field, GE's 2.75-100 and 2.75-103 can provide greater return on investment.

Technical Description

GE's 2.75-100 and 2.75-103 are three-blade, upwind, horizontal-axis wind turbines with 100-meter and 103-meter rotor diameters, respectively. The turbine rotor and nacelle are mounted on top of a tubular steel tower providing hub heights of 75 (50 Hz only), 85, and 98.3 meters. The machine uses active yaw control to keep the rotor facing into the wind. The turbine is designed to operate at variable speed and utilizes a full-power conversion system. The Transformer, Switch Gear and Auxiliary Equipment can be supplied internal to the base of the tower, or mounted in external housing.

Specifications

2.75-100 Wind Turbine:

- Designed to IEC 61400-1
 - TC S: 8.5 m/s average wind speed; B-turbulence for 85 meter tower
 - TC S: 8.0 m/s average wind speed; B-turbulence for 98.3 meter tower
- Standard and cold weather extreme options
- Tower corrosion protection, standard C2 internal and C3 external with optional C4 internal and C5 external available
- Rotational direction: Clockwise viewed from an upwind location
- Speed regulation: Electric drive pitch control with battery backup
- Aerodynamic brake: Full feathering

2.75-103 Wind Turbine:

- Same as the 2.75-100 with the following changes
- Designed to IEC 61400-1
 - TC S: 8.5 m/s average wind speed; B-turbulence for 85 and 98.3 meter towers
 - DIBt WZ II
- Low Noise Trailing Edge serrations for ultra-quiet power production
- Larger 103 meter rotor to capture more energy

Enhanced Controls Technology

The 2.75-100 and 2.75-103 wind turbines employ GE's patented Advanced Loads Control. This feature reduces loads on turbine components by measuring stresses and individually adjusting blade pitch.

Construction

Towers: tubular steel sections provide variable hub heights from 75 meters to 98.3 meters.

Blades: GE's propriety 48.7 and 50.2 meter blades provide high energy capture without sacrificing acoustic performance.

Drivetrain components: GE's 2.75-100/2.75-103 use proven design gearboxes, mainshaft and generators to enable the uprate from 2.5 MW to 2.75 MW.

Condition Based Monitoring

GE's Condition Based Monitoring (CBM) and SCADA Anomaly Detection Services, a complementary suite of advanced condition monitoring solutions, proactively detect impending drive train and whole-turbine issues enabling increased availability and decreased maintenance expenses. Built upon half-a-century of power generation drivetrain and data anomaly monitoring experience, this service solution is available as an option on new GE Units and as an upgrade.



Features and Benefits

- Higher AEP compared to 2.5 MW predecessors
- Designed to meet or exceed the 1.5 MW platform's historic high availability
- Grid friendly options are available
 - Enhanced Reactive Power, Voltage Ride Thru, Power Factor Control
- Wind Farm Control System; WindSCADA*
- Sharing of components within GE's product family
- GE proprietary 50.2 and 48.7 meter blades
- Ultra-quiet power production Low Noise Trailing Edge serrations as an acoustic enhancement for the 2.75-103
- Available in both 50 Hz and 60 Hz versions for global suitability

Low Noise Trailing Edge Serrations



Introducing

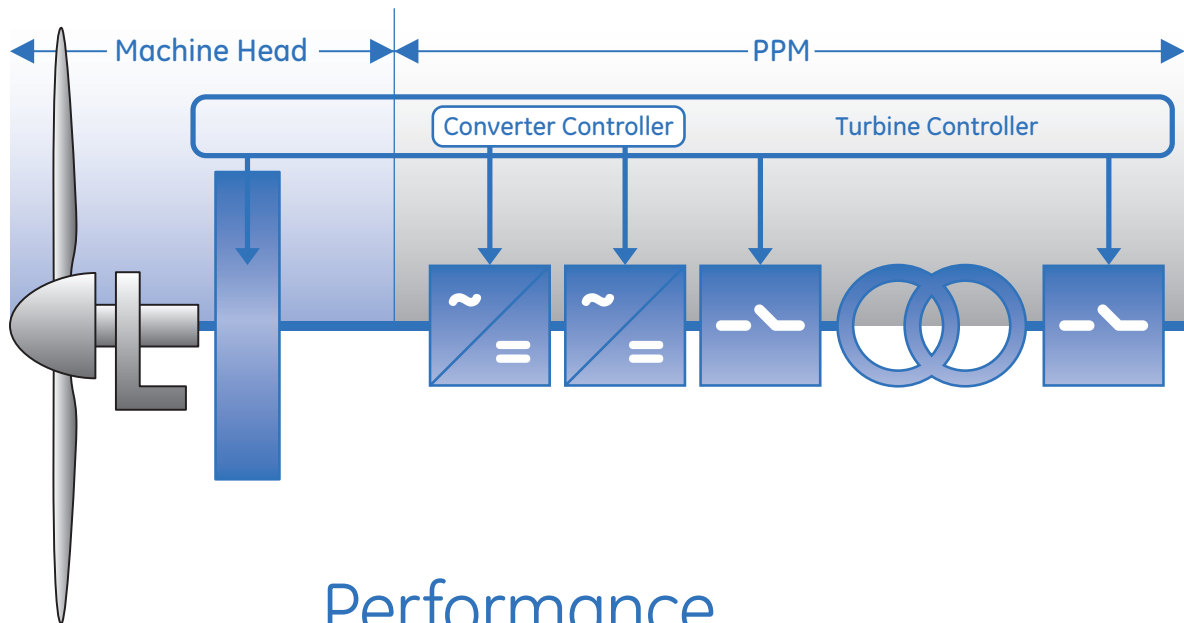
GE's 2.75-100 and 2.75-103

GE's 2.75 MW Turbines

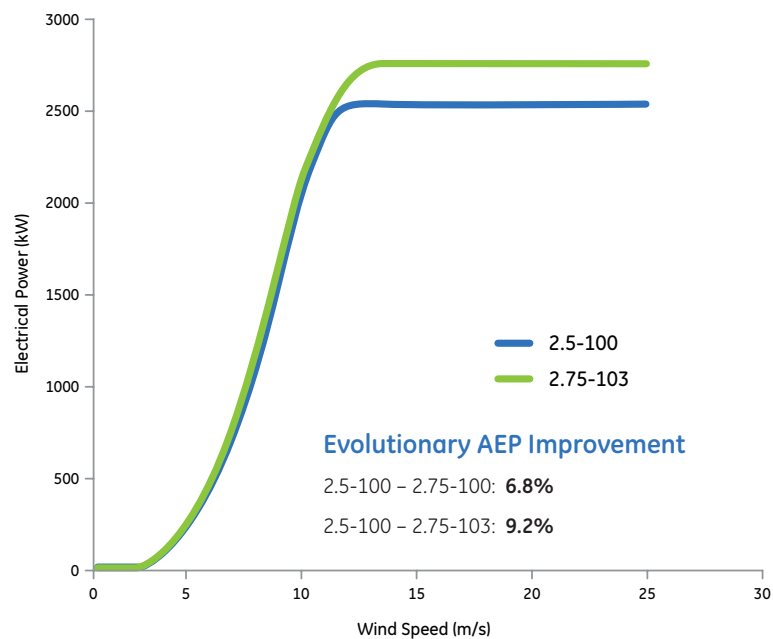
- **Continual investment**
 - Focused on increasing customer value
- **Evolutionary development strategy**
 - Built on the world's best running fleet
- **Portfolio flexibility**
 - Value where you need it, even in sound sensitive locations

Higher Efficiency

The 2.75 MW wind turbine is equipped with a permanent magnet generator that enable high efficiency even at low wind speeds. Employing magnets instead of copper coils in the generator rotor reduces electrical losses in the generator and current flow through the rotating parts of the generator.



Performance



Powering the world...responsibly.

For more information please visit www.ge-energy.com/wind.



* Denotes trademarks of General Electric Company.

© 2011 General Electric Company. All rights reserved.

GEA18657 (04/2011)