



GE Renewable Energy

# 3 MW PLATFORM

POWERFUL AND EFFICIENT

Since entering the wind industry in 2002, GE Renewable Energy has invested more than \$2.5 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 to 5.5 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/renewableenergy](http://www.ge.com/renewableenergy)

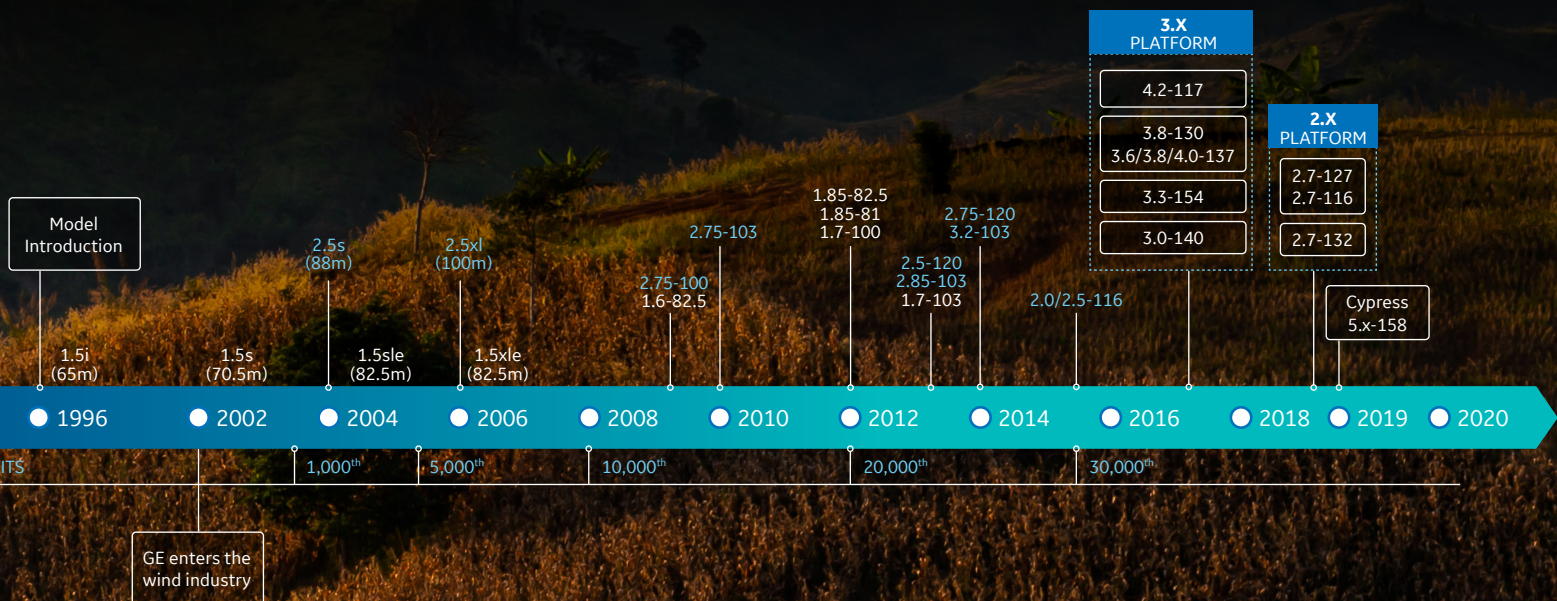
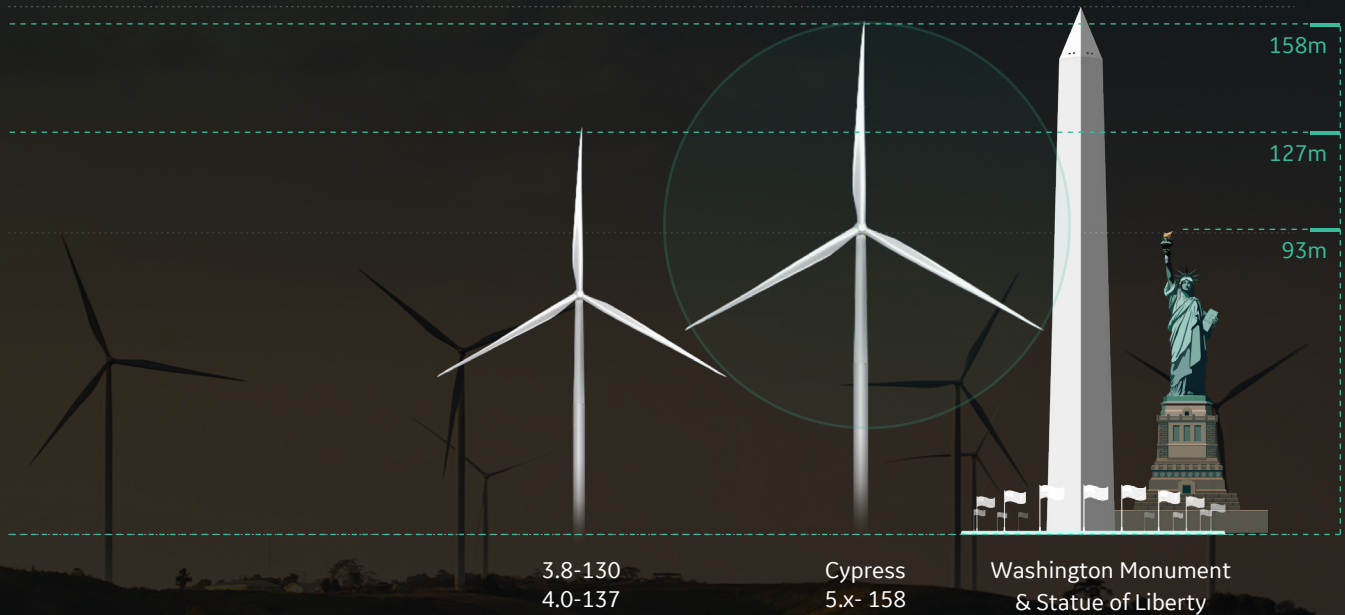
# GE'S 3 MW PLATFORM

Extending the capability of the Digital Wind Farm to our 3 MW machines, GE's powerful and efficient 3.2 to 4.2 MW platform is adaptable to a full spectrum of wind regimes. The platform includes the 4.0-137, our highest performing turbine for low to medium wind speed class.

GE has employed selected legacy components with proven performance for the 3 MW platform, helping to ensure the consistent performance and reliability for which GE wind turbines are known. Turbine models within the 3 MW platform share drivetrain and electrical system architecture, with both systems scaled and upgraded for improved performance and greater energy production, as compared to previous models.

## PARAMETERS OF THE 3 MW PLATFORM

GE's 3MW platform can be customized based on nameplate, rotor diameter and hub height.

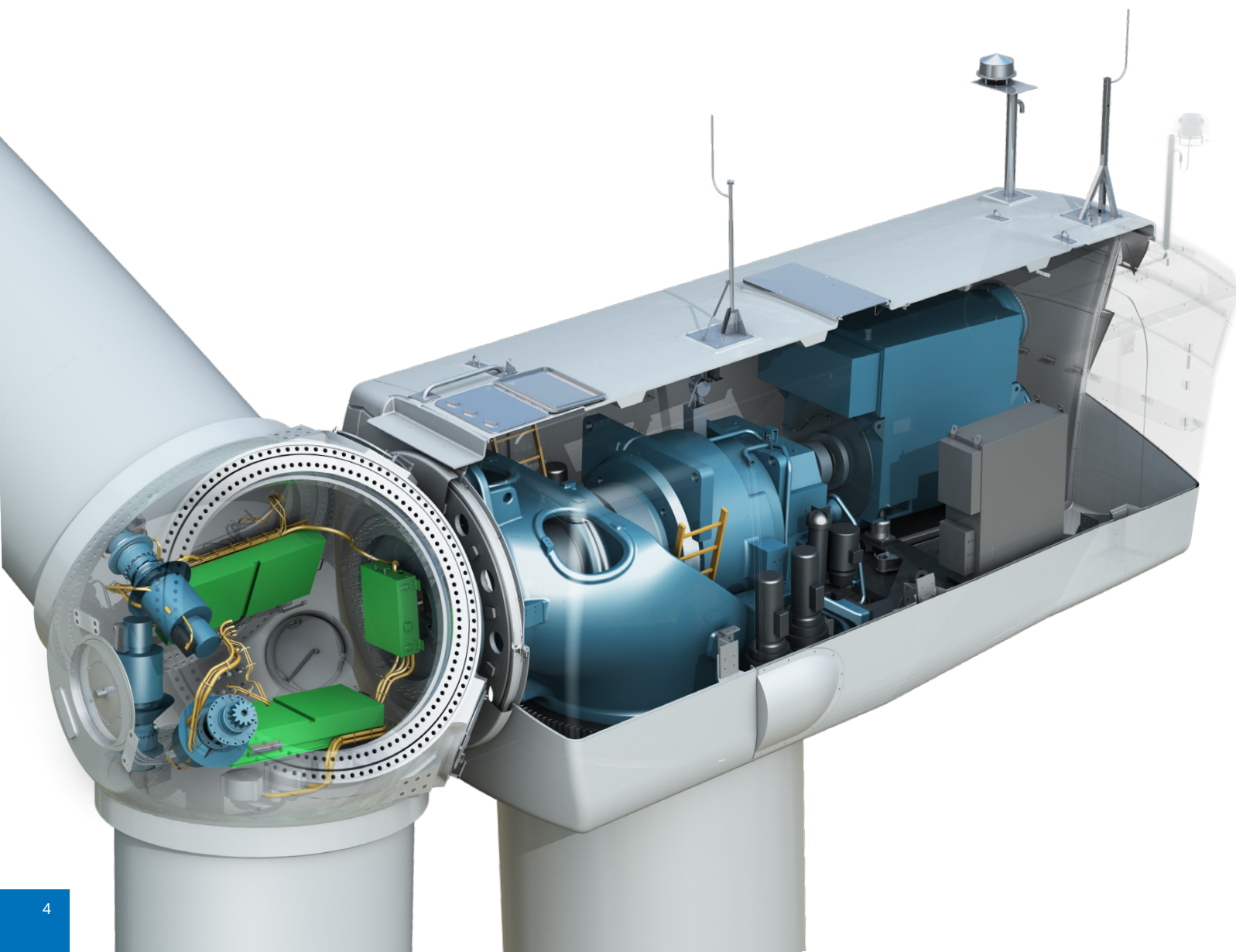


# BUILDING UPON PROVEN TECHNOLOGY

Built from the maturity of its predecessors, the 3 MW platform increases the capacity factor, Annual Energy Production (AEP) and application space. Component enhancements to the GE 2.75-120 and GE 3.2-103 models have resulted in a substantial performance increase, enabling the use of 117 m, 130 m and 137 m rotors on the 3 MW series and a nameplate ranging from 3.2 MW to 4.2 MW. These enhancements include gearbox and controls improvements, and a new aerodynamic structure enabling a greater blade length. Crafted for high reliability, GE's 3 MW platform offers excellent availability that is comparable to the 1 MW and 2 MW platforms operating in the field today.

## Technical Description

GE's 3 MW platform machines are three-blade, upwind, horizontal axis wind turbines with a rotor diameter ranging from 117 to 137 meters. The turbine rotor and nacelle are mounted on top of a tubular steel tower, with a range of hub height options that includes 76.5 m to 134 m (up to 164.5-meter for hybrid towers) variants. The turbines use active yaw control to keep the blades pointed into the wind. The 3 MW platform is engineered to operate at variable speeds and uses a doubly fed asynchronous generator with a partial power converter system.



# Specifications

## 3 MW Platform

- Standard and cold weather extreme options;
- Ice Mitigation System (IMS) and desert package are available for specific configurations;
- Standard tower corrosion protection: C2 internal and C3 external with C4/C5 options available;
- Rotational direction: Clockwise viewed from an upwind location;
- Speed regulation: Electric drive pitch control with battery backup;
- Aerodynamic brake: Full feathering of blade pitch.

## GE's 3.2-130 IEC IIB

- Up to 15% higher output than GE's 2.75-120;
- Improved load management system and more efficient drive train technology;
- Same electrical system as 3.2-103 turbine;
- Sound power level of 106 db(A), reduced noise modes available;
- Tip heights include 150 m, 175 m, and 199 m.

## GE 3.8-130 IEC IIB/S

- Up to 27% higher output than the GE 2.75-120;
- Increased electrical rating of 3.8 MW combined with 130 m rotor;
- 107 dB(A) normal operation sound power level, reduced noise modes available;
- Tip heights include 150 m and 175 m.

## GE 3.6/3.8/4.0-137 IEC IIB/S

- Up to 36% higher output than the GE 2.75-120;
- New blade for more efficient production in low wind conditions;
- Sound power level of 107 db(A), reduced noise modes available;
- Tip heights include 150 m, 160 m, 178.5 m, 180 m and 200 m, and 223 m.

## GE 4.2-117 IEC IA/T/S

- Up to 32% higher output than GE's 3.2-103;
- Powerful turbine for extreme wind conditions thanks to a strengthened drive train technology and reinforced tower;
- Sound power level of 107 db(A), reduced noise modes available;
- Tip height includes 135 m, 143.5 m, 156.5 m and 168.5 m.

# Features and Benefits

- Engineered to meet or exceed the 1 MW and 2 MW platform's historic high availability;
- Available grid-friendly options: Enhanced Reactive Power, Low & Zero Voltage Ride Thru, Power Factor Control, WindFreeReactive Power;
- Wind Farm Control System; WindSCADA;
- Available in both 50 Hz and 60 Hz versions (depending on configuration).

## Construction

### **Towers:**

Logistic friendly tubular steel sections towers for a hub height of 76.5 m, 81.5 m, 85 m, 98 m, 110 m, 111.5 m, 131.4 m, 134 m and site specific;

Hybrid pre-cast concrete/tubular steel towers for multiple hub heights;

### **Blades:**

LM 56.9 m (117 m rotor), LM 63.7 m blade (130 m rotor); 67.2 m blade (137 m rotor).

### **Drivetrain components:**

GE's 3 MW platform uses an enhanced gearbox, main shaft with double bearings, and generator with appropriate improvements to enable the 117 m, 130 m and 137 m diameter rotors in low, medium and high wind speeds.

# Enhanced Controls Technology

### **The 3 MW platform uses enhanced controls features:**

- GE's patented Advanced Loads Control reduces loads on turbine components by measuring stresses and individually adjusting blade pitch;
- Controls were developed by GE Global Research to reduce extreme loads, including those near rated wind speeds, to improve annual energy production (AEP).



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