

# Don't let your assets freeze



## Rotor Blade Ice Detection

**SIEMENS** Gamesa  
RENEWABLE ENERGY

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# Reliable ice detection directly on the rotor blade

Accumulation of ice on the blade reduces the aerodynamic performance. Ice can lead to stop the turbine and some wind farm owners report a substantial Annual Energy Production (AEP) loss due to icing.

Icing events can pose a hazard for the surrounding area and the system itself. If ice detaches from the rotor blade, it can be thrown a considerable distance depending on the hub height, the length of the rotor blades and the rotor speed.

At locations where ice accretion on the wind turbine poses a risk, it is essential that information about the icing status of the rotor blade is available. This is why, all wind turbines are equipped with ice detection systems.

As a global leading provider of wind power products and service solutions, we believe it is essential, to optimize the energy production of your wind turbines, even if they are located in icy environments.

That is the reason why we propose you, our new Rotor Blade Ice Detection system for Senvion wind turbines. This system immediately detects ice on the rotor blade, thereby allowing for precise measuring during both operation and standstill.

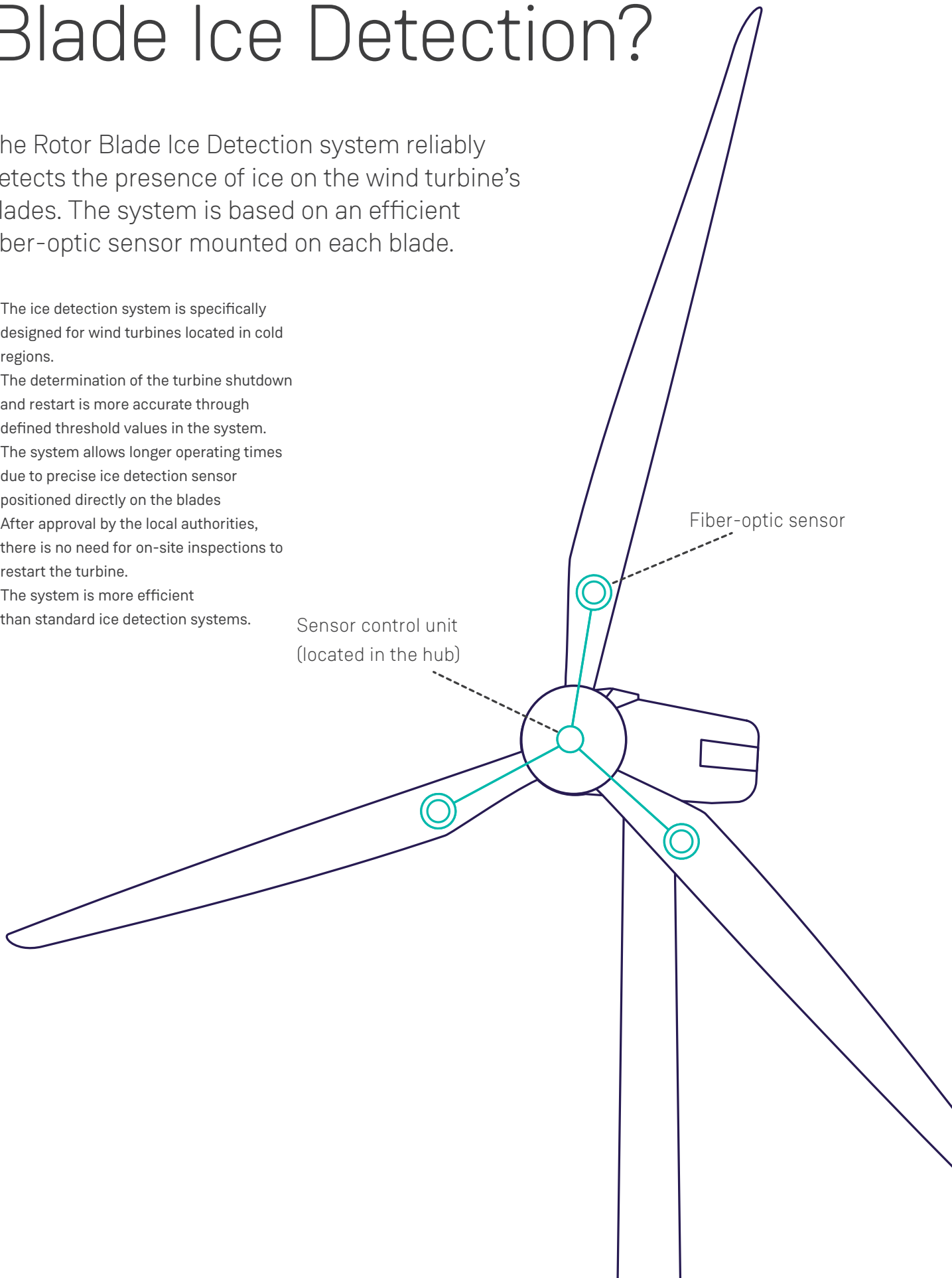
The use of fiber-optic vibration sensors means that electrical conductors in the rotor blade are no longer required. The system has also been certified for automatic restarts and can be installed on your existing Senvion MM and 3.XM fleet.



# What is Rotor Blade Ice Detection?

The Rotor Blade Ice Detection system reliably detects the presence of ice on the wind turbine's blades. The system is based on an efficient fiber-optic sensor mounted on each blade.

- The ice detection system is specifically designed for wind turbines located in cold regions.
- The determination of the turbine shutdown and restart is more accurate through defined threshold values in the system.
- The system allows longer operating times due to precise ice detection sensor positioned directly on the blades
- After approval by the local authorities, there is no need for on-site inspections to restart the turbine.
- The system is more efficient than standard ice detection systems.

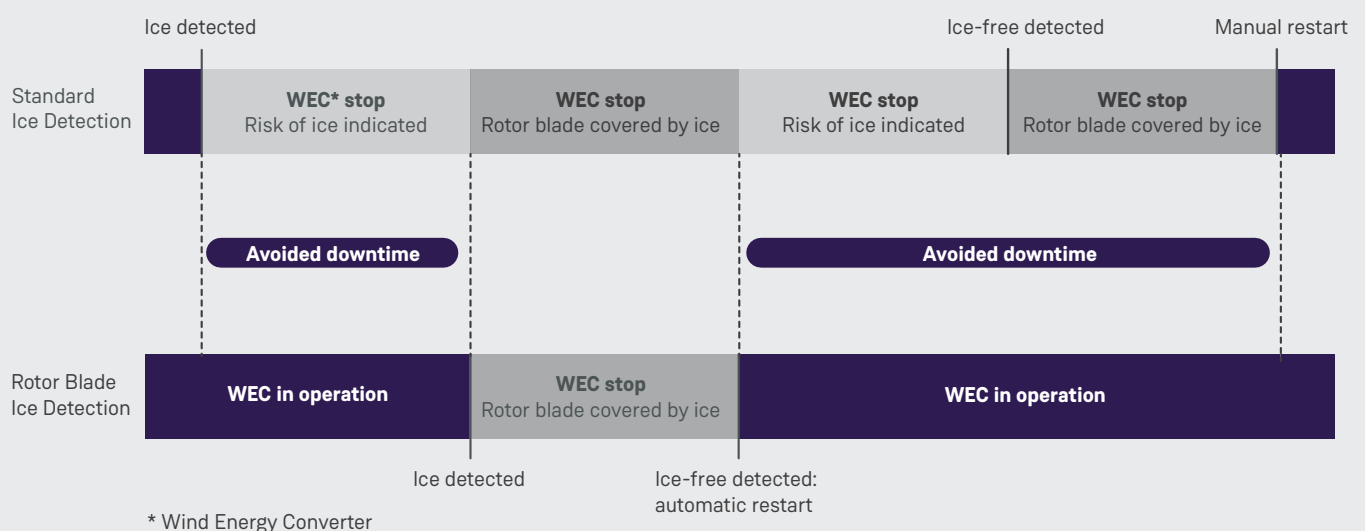


# How does Rotor Blade Ice Detection work?

The wind turbines needs to be stopped when ice is detected, resulting in Annual Energy Production loss. This product maximizes your turbine's performance under icy conditions by increasing the operating time efficiently and reliably, while reducing stops.

- Each blade is monitored individually. When the presence of ice is critical for the wind turbine, the system will stop the wind turbine, but as soon as the system detects improved conditions, the wind turbine can be restarted automatically.
- The fiber-optic sensors mounted on the blades continuously monitor the behaviour of the blades and the data is reported in the control system.
- The SCADA system uses the data to stop and restart the turbine automatically (if the local authorities approved the automatic restart).
- The sensors are so efficient, that they can detect the accretion of ice, weighing less than 10 kilograms on each blade.
- The Rotor Blade Ice Detection system will be covered in your existing service contract with Siemens Gamesa Renewable Energy Service GmbH.

Longer operating times in comparison to standard ice detection system



# The benefits of Rotor Blade Ice Detection

- No visual inspection required to restart the wind turbine
- Increased turbine availability by reducing downtime
- More accurate detection of ice and automatic restart of the wind turbine
- Optimized performance by increasing the Annual Energy Production in icy conditions

## Product requirements

- Controller: Bachmann electronic MCP 293, MC210
- Software: 5.26 and later
- Platforms: Senvion MM (excl. MM70) and Senvion 3.XM





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