

UPGRADES MADE BY NORDEX

Nordex Rotor Blade Ice Detection System

As the manufacturer, we know your turbines best. With our **Upgrades made by Nordex** we provide individually tailored retrofits. These upgrades improve the performance, the availability and the safety of your turbines, helping you to achieve even larger yields.

➤ Brief technical description

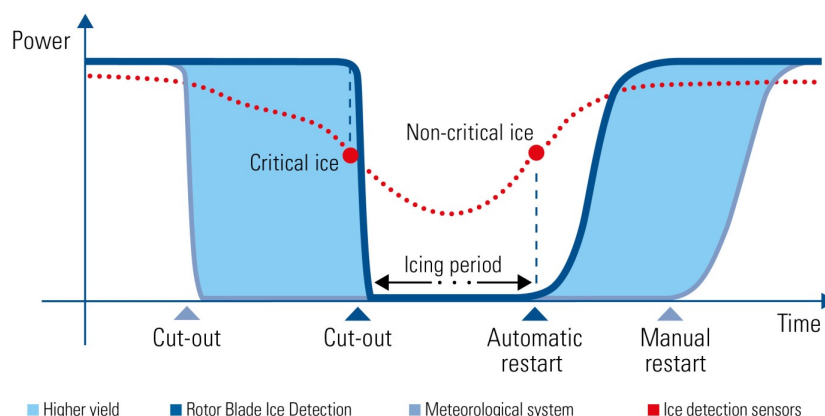
The **Nordex Rotor Blade Ice Detection System** continuously monitors the condition of the turbine’s rotor blades and reduces downtimes in the cold season.

The measuring system detects the formation of ice on the rotor blade, even when the turbine is not in operation. If critical ice is detected on the rotor blades, an alarm message is displayed and the turbine shuts down. The system independently determines whether the rotor blades are once again free of ice and automatically re-starts the turbine.

The system is based on vibration measurements of the rotor blades performed by a sensor located in each of the rotor blades. The measurement results are compared with the current operating conditions, such as the pitch angle, power, speed, and the ambient conditions, such as the ambient temperature and wind. By analysing this data, the system detects changes in the blade weight, which arise due to the formation of ice. The system is certified by Germanischer Lloyd and TÜV NORD.

The **Nordex Rotor Blade Ice Detection System** is extremely reliable and precise compared to conventional ice detection systems, as the sensors measure the formation of ice directly on the rotor blade.

This upgrade is available for our Gamma/Delta generation turbines.



➤ Benefits

- Automatic shut-down of the turbine in case of genuine ice formation
- Automatic re-start when free of ice
- Compliance with official requirements
- Ice formation is even detected when the system is not in operation (idling)