



Industrie Service

**Choose certainty.
Add value.**

Ice-throw Risk Analysis by TÜV SÜD – Safer Operation of Wind Turbines.

Are you planning to erect a wind power plant in a region with winter weather conditions? If so, a risk assessment of ice-throw is indispensable for your project.

In cold and humid climate ice may accumulate on the rotor blades. The icing impairs the turbine's aerodynamics and causes additional weight and imbalances. Continued operation of the turbine under these conditions may lead to material fatigue and damage the rotor blades. Iced-up anemometers on the turbine's nacelle show incorrect values. In these cases, smooth operation is no longer ensured and production losses result.

This problem may pose a major safety hazard if ice fragments – which may weigh up to several kilograms – are shed from the rotor blades and fall to the ground. Ice throw or ice shedding depends on a variety of parameters. Influencing factors include the type of wind turbine, in particular the rotor diameter and the hub height, the local wind speeds and the main direction of wind. Leave the preparation of your ice-throw report in the expert hands of TÜV SÜD's wind power specialists.

Our experts calculate the maximum throw distance for your site and type of wind turbine and for the expected sizes of ice fragments. Starting from the assumption that ice may detach from the tip of the rotor blade, the throw trajectories are modelled in the form of elliptical curves and the danger zones are clearly identified. This ensures the safe operation of your wind turbine.

TÜV SÜD Services

- Calculation of the ice-throw distance
- Direction-related identification of danger zones
- Calculation of the buffer zones to be observed (e.g. distances from traffic routes)
- Estimation of the size and weight of the ice fragments thrown/shed
- Statistical calculation of the probability of icing
- Calculation of production loss caused by interruptions in operation due to icing
- Calculation of the hazard potential caused by ice throw
- Provision of a site-specific early warning system which evaluates the meteorological conditions

TÜV SÜD Industrie Service GmbH • Tel. / Fax: +49 (0)941 460212-0 / -29
Contact: Peter H. Meier • E-mail: peter-h.meier@tuev-sued.de

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