

Site-Suitability Assessment



For sustainable and profitable wind energy projects, it is important that the selected wind turbines match perfectly with the local wind, climate and terrain conditions. Site-suitability assessment provides assurance that the environmental conditions, which affect loading, durability and operation of the turbines, are in compliance with the turbine design.

Site-suitability is evaluated according to recognized standards such as IEC 61400-1. Wind speed and turbulence parameters determine which wind turbine class is suitable for the site. Within wind farms, wind loading can experience unproportional rise due to turbulence or wake effects caused by neighboring turbines. The result of turbulence assessment can provide statements regarding the structural integrity of the wind turbines.

Our experts from TÜV NORD are available to support you from the early planning phase up to the final wind farm layout, including modifications and wind farm extensions.

For example these conditions are checked by TÜV NORD:

- Climate conditions (e.g. air density)
- Mean wind speed
- Weibull shape factor “k”
- 50-year wind
- Effective turbulence intensity
- Vertical flow inclination
- Wind shear
- Complex terrain

If one of these conditions does not match with the Type Certification, site specific assessment of the load assumptions and subsequent component load comparison is possible. Separated evaluation of turbulence can be done as part of structural integrity assessment, which is required in some countries for acquiring building permits. For complex or threshold situations, advanced CFD simulation can be performed.