



## Coating Inspection Services for Wind Farms

To ensure the success of your wind farm project, we provide a range of services to support you at every phase of the project life cycle – from site selection, design and manufacturing, right through to operation.

Product Certification	Project Certification	Manufacturing Surveillance
Health & Safety	Marine Warranty Survey	Periodic Inspections
Due Diligence	Laboratory Services	Expert Reports
Training / Education	Management System Certification	Grid Connection
Project Planning Services	<b>Coating Inspection Services</b>	CE Marking
Condition Monitoring	Risk & Safety Management	

### Inspection of coating systems for wind turbines to ensure the best quality and durability

Wind turbines on the coastline are exposed to natural but sometimes severe sandblasting, while turbines at sea must withstand a mixture of salt and seawater that represents the most challenging site conditions when it comes to coating performance. At full speed the tips of the rotor blades exceed 50 meters per second, which further amplifies the abrasive effect of sand, salt and other airborne particles. In addition, levels of ultraviolet (UV) radiation are significantly elevated on the coastline and at sea.

The maintenance of wind turbine coatings is generally expensive, due to their dimensions, height and the remote places they are typically located in. For this reason, the coating of wind turbines requires high degrees of impact and abrasion resistance and UV-resistance. The blades of the turbines bend significantly under the loading of strong winds and this requires high elasticity. It is also essential that the

foundations of towers are afforded the highest levels of corrosion protection and seawater resistance.

In the preservation of wind turbines and foundations a number of factors play decisive roles, such as the quality of the steelwork or the application of the coating system, and these need to be ascertained by specialists.

#### Our experience - your benefit

With extensive experience in the field of damage analyses, coating tests and inspections for over 25 years, TÜV Rheinland is an established expert. We have well-equipped laboratories and cover the complete coating production chain to assess the causes of faults and advise remedial actions.

We offer extensive testing and evaluation services of coating systems in the wind energy industry to ensure corrosion protection, mechanical properties and wear resistance at such a level that the intervals between maintenance are maximized. We also help to develop test programs that fit best to the actual needs of your specific wind farm.

## Quality of coating application

Even when the best quality coating is chosen, it will not perform optimally unless it is applied correctly. The coating's effectiveness depends heavily on the preparation of the substrate and the skills of the coating contractor.

## Our testing and inspection services for wind farms coating systems include:

### Testing of coatings:

- Corrosion tests by spraying salt solutions, including cyclic testing
- Corrosion tests based on humid air and sulfur dioxide gas
- Corrosion tests with immersion in salt and chemical solutions
- Mechanical testing (wear resistance, impact resistance, scratch resistance, fatigue testing, etc.)
- Hardness measurements
- Adhesion tests
- Resistance to cathodic disbonding (testing under cathodic protection)
- Resistance to weathering (QUV testing, Atlas Weather-Ometer®, etc.)
- Color measurements (color match and discoloration)
- Characterization of wet paint products (chemical and physical analyses)

### Inspections and documentation:

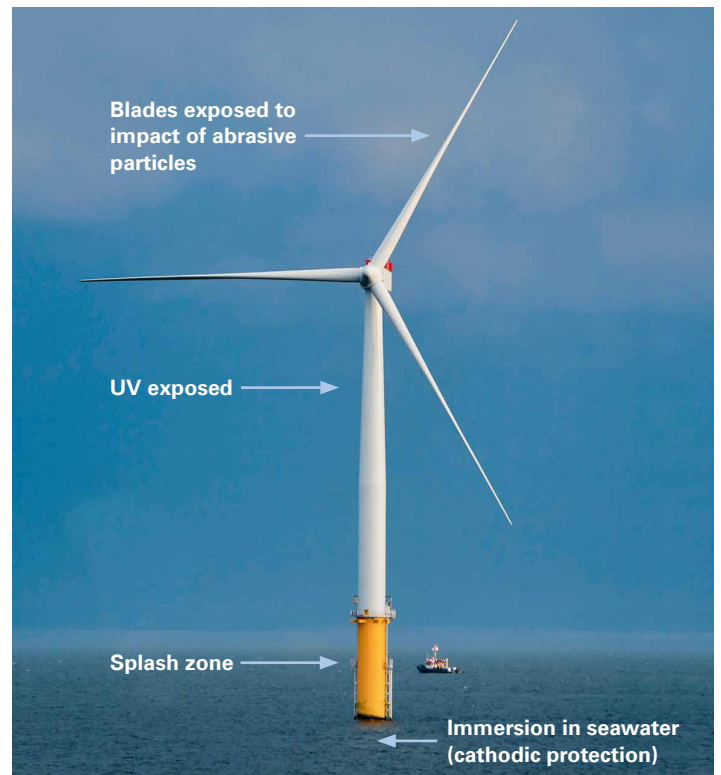
- Extensive services during production to ensure that all the relevant guidelines for the wind energy industry are met
- Evaluation of the coating condition of wind turbines at regular intervals during its operational life
- On-site monitoring by coating inspector (III), NS 476 - FROSIO certified

### Services to verify the entire production chain for:

- Design considerations
- Application of approved systems
- Batch composition of coatings, based on characteristics (constant quality of supplied coating materials)
- The highest steel quality
- Optimal surface pretreatment conditions (cleanliness, roughness, salts, dust, etc.)
- Application and curing in accordance with instructions
- Repair procedures according to the highest standards

## About TÜV Rheinland:

Founded more than 140 years ago, TÜV Rheinland is a global leader in independent inspection services, ensuring quality and safety for people, the environment, and technology in nearly all aspects of life.



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