

Ensuring that everything runs smoothly

Comprehensive solutions for wind power plants



On the safe side.





DEKRA. On the safe side.

As the largest expert organization in Germany, DEKRA offers you comprehensive expertise on the topics of safety, tested quality, and environmental protection. Thanks to our extensive network, DEKRA's range of services is available to you in your location – across Germany as well as in many European countries.

Complete expertise for wind power

Renewable energies are the future. Therefore, for many years they have been one of the very central areas of expertise at DEKRA. For plant manufacturers and operators, this does not mean just a valuable edge in experience. You also benefit from a seamless range of expertise and services.

When it comes to wind power plants, this range covers all project phases, from the selection of the materials and development to certification and approval procedures, accompanying tests and inspections during the construction phase, to commissioning and the subsequent operation. In the process, our experts collaborate closely, in the DEKRA Laboratory for Materials Engineering and Damage Analysis as well as the laboratories for non-destructive testing, materials analysis, materials consulting and inspection of DEKRA Incos, in

the DEKRA expert and consultant team, in the certification area of DEKRA Testing and Certification, and in the training center of the DEKRA Academy.

Take advantage of this cumulative expertise related to the safety of your on or offshore plants. Be it about necessary testing, independent expertise, or individual consulting services, you have a contact: DEKRA. We look forward to talking to you.

Enjoy these advantages

- > You have an independent, experienced partner at your side
- > You receive all production, material, and plant testing expertly from one source
- > You act in a more economically efficient manner than if you were to obtain all the individual services from different providers
- > You reduce your downtimes thanks to simultaneous approval of the various testing areas by DEKRA expert teams
- > You have just one go-to point for all testing areas and project phases
- > With DEKRA as a licensed vehicle testing station (LVTS), you are on the safe side legally
- > You secure consistent support for yourself – from a leading test service provider that is there for you across Germany and beyond



Safety from production to operation

In line with a changed environmental awareness, the global significance of regenerative energies is becoming technically ever more complex. Therefore, DEKRA offers you comprehensive services related to the technical safety of your wind power plants. Our experts accompany you in all project phases – from planning and development to the testing in the operation phase.

Service for operators and manufacturers

Wind power plants must cope with high and fast-changing loads. Downtime or accidents can cost the operator dear. Therefore, maximum safety during construction and operation is indispensable.

DEKRA supports you as a plant manufacturer or operator with type and component certification, building inspections (condition monitoring), material and substance testing, as well as independent testing prior to commissioning. Even before the end of the warranty periods, our experts are on site for you as neutral consultants and document the condition of the wind farm.

In addition, we perform all the periodic testing on your plant for you, with a transparent testing scope, seamless documentation, clear description of faults, and con-

crete recommendations for action. In the event of damage, we produce for you expert reports that are recognized before court and by insurance companies, manufacturers, and operators in equal measure.

What can we do for you?

Our experts are at your side as skilled consultants in all matters as well as for testing and measuring of all types. We are also the right partner for qualifying and training your employees. If necessary, we find you qualified specialists for your projects.

Please see the accompanying, initial overview of DEKRA's range of services for wind power plants. We would be happy to inform you regarding details – talk to us.

OUR CERTIFICATIONS AND ACCREDITATIONS::

- > Accredited according to DIN EN ISO/IEC 17025 (DAkkS)
- > Accredited according to DIN EN ISO/IEC 17020 (DAkkS)
- > Accredited according to DIN EN ISO/IEC 17065 (DAkkS)
- > Notified testing center according to BWE/DIBt
- > Accredited measuring body according to Section 29a BImSchG
- > Licensed vehicle testing station (LVTS) according to BetrSichV

Plant testing and operation

DEKRA also offers safety in all areas of testing for plant operators, including as a recognized testing center according to BWE/DIBt, an accredited measuring body according to Section 29a BImSchG, and a licensed vehicle testing station (LVTS) according to BetrSichV. So that everything always runs smoothly with your plant from the day of commissioning onwards.

Operational safety

- > Risk assessment pursuant to BetrSichV
- > Inspection of work equipment pursuant to BetrSichV (stepladder/protective equipment, crane facility, lifting tools, personal protective equipment against falling/points of impact)
- > LVTS testing of the lift, pressure system, and hydraulic system
- > Risk analysis pursuant to machinery directive
- > HSE management
- > Road safety inspection
- > Building site coordination (OHS)
- > Rotor blade inspection to preserve insurance cover

Technical inspection

- > Construction documentation with UAV
- > Static stability of tower and supporting framework
- > Electrical safety
- > Technical fire protection
- > Testing at commissioning
- > Warranty inspection
- > Periodic tests pursuant to BWE/DIBt

Measurement and expertise

- > Sound immission and sound emission measurements as well as forecasts
- > Vibration measurements
- > Testing and expertise pursuant to Section 29a BImSchG
- > Damage assessments and expert opinions /reports for court cases
- > Technical due diligence

Test for continued operation after 20 years.

- > Stability-relevant components
- > Load-transferring components
- > Functionality of the safety devices
- > Control system
- > Brake systems



Staff qualification

Obtain current safety expertise for manufacturing, assembly, and operation of wind power plants from the experts of the DEKRA Academy. The opportunities on offer range from annual staff training sessions to professional qualification and training to the managers seminar.

Technology and safety

- > Electrical engineering
- > Welding techniques
- > CNC turning and cutting
- > Assembly
- > Fire protection
- > Explosion protection

Transportation safety

- > Cargo securing
- > Hazardous materials
- > Maneuvering training
- > Car and truck driving training
- > Further training for professional drivers
- > Forklift trucks and telescopic forklifts

- > Lifting platforms
- > Construction machines and cranes

Occupational health and safety

- > General occupational health and safety
- > Health and safety officers
- > Personal protective equipment (PPE)
- > Skin protection
- > Hazardous substances
- > Lifting and carrying
- > Attaching loads
- > Ladders and steps
- > Fire seals and catching devices
- > Rising lines, hydrants, extinguishing wells, and water-conducting valves
- > Electrical operating equipment

- > Risk assessment
- > SCC training
- > External company coordination
- > Building site coordination
- > Liability risks
- > Managers seminars

Environmental protection

- > Immission protection
- > Waste law
- > Chemical prohibition ordinance
- > Hazardous substance collection points
- > Liability risks

Material and substance testing

With the expertise and reports of the experts in the DEKRA material laboratories, you as a plant or parts manufacturer produce the legally required proof of goods monitoring. In addition, you can detect and eliminate possible error sources at an early stage. Our laboratories are accredited according to DIN EN ISO/IEC 17025 Europe-wide.

Mechanical, technological, and metallographic testing

- > Tensile and pressure tests
- > Notched bar impact tests
- > Hardness and micro-hardness tests
- > Folding tests
- > Fatigue tests
- > Metallography
- > Structure tests
- > Thin section production
- > Stress analysis using DMS technology

Corrosion testing and environmental simulation

- > Salt spray tests
- > Condensation testing climates
- > Combined cyclic corrosion tests
- > Cyclic temperature and climate tests
- > UV weathering
- > Color and gloss measurements
- > Stone chip resistance of coatings
- > Resistance to wear, adhesive strength, and resistance to scratching
- > Corrosion protection and corrosion expertise on site

Non-destructive testing

- > Radiography testing
- > Ultrasonic tests
- > Special test procedures (phased array, TOFD)
- > Photogrammetric surveys
- > Inspections with UAV
- > Visual inspections with magnetic carriages
- > Visual inspections with vacuum carriages
- > Visual inspections with endoscopes
- > 3D laser scanning

Material damage expertise

- > Fracture causes and fracture mechanisms on metal and plastic workpieces
- > Abrasion measurement through analysis of the gearbox oils and hydraulic oils used
- > Expertise on preservation of evidence

Plastics testing

- > Identification of plastics
- > Determination of the glass transition area
- > Determination of the melting temperature
- > Detection of solvents
- > Detection of fibers and fillers
- > Testing the effectiveness of stabilizers
- > Hardening properties of thermosets
- > Determination of crystallinity
- > Scanning electron microscope
- > Tensile, pressure, and bending tests
- > Impact and notched bar impact strength
- > Hardness testing according to Shore

Process monitoring

- > Shop inspection
- > Expediting
- > Incoming goods inspection
- > Pre-inspection of documents
- > Welding monitoring and documentation

Type and component certification

For the approval of your plants, DEKRA Testing and Certification inspects the conformity of the plant type and its components according to the certification process pursuant to IEC 61400-22, in compliance with the standard series 61400 as well as other technical regulations. The assessment covers the overall concept and the design of the plant including its management.

Certification criteria

- > Construction base
- > Design loads
- > Control and safety system
- > Rotor blades
- > Mechanical engineering components
- > Tower
- > Electrical systems
- > Personal safety
- > Manufacturing
- > Type testing





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