LOAD ANALYSIS AND CERTIFICATION OF WIND TURBINES

BUSINESS CHALLENGE

 Loads serve as inputs to the design of individual components of the wind turbine. Their accurate calculation is therefore a prime concern.

 Standards have been developed by the International Electrotechnical Commission (IEC) and provide methods, processes and requirements for calculating loads with accuracy. They are the results of decades of cooperation within the wind industry.

 Conformity assessment of loads by an accredited, independent third party provides assurance to stakeholders that the designs of all components of the wind turbine rely on approved load assumptions.

BENEFITS FOR YOUR BUSINESS

Confidence in your design - The certification will confirm that your wind turbine is designed and manufactured in conformity with internationally recognized technical standards, improving confidence of all stakeholders in the safety and performance of the wind turbine.

International recognition - Bureau Veritas Certification France is accredited for the certification of wind turbine under COFRAC, N° 5-0051, for both IEC 61400 and GL guidelines schemes. This ensures that your certificate will be recognized by your clients and other certification bodies worldwide.

OUR APPROACH

Load assessment within Type Certification

Within Type Certification, the loads will be assessed for conformity with wind turbine class requirements.

A detailed documentation review will be performed aiming at evaluating:
• wind model (speed, turbulence intensity, shear);
• hydro-aero-elastic model accuracy;
• design load cases completeness;
• partial safety factors;
• extreme analysis;
• fatigue calculations.

A parallel independent analysis of loads will be performed using the software LMS Samtech Samcef Wind Turbines from Siemens PLM Software. The structural behaviour and the results for design driving load cases will be compared.

This load assessment is one of the main elements of type certification of onshore wind turbines and of Rotor Nacelle Assembly component certification of offshore wind turbines.
Load assessment within Project Certification

Within Project Certification, the loads will be assessed for conformity with given site-conditions. The principle of this assessment is the same as the one described above but a special attention is given to the hydrodynamic and soil model assumptions for which a detailed parallel calculation will be performed using LMS Samtech Samcef Wind Turbines from Siemens PLM Software. This load assessment is one of the main elements of project certification of offshore wind farms. In particular the loads on the support structure (monopile, jacket or gravity base foundations) and on the tower are highly influenced by the offshore site specific parameters (water elevations, wave heights, soil conditions, currents).

SKILLS AND TOOLS

Skills
Bureau Veritas Certification France is member of the Technical Committee TC88 in charge of developing and maintaining IEC 61400 standards gathering wind industry stakeholders.

Tools
Load independent calculations are performed using LMS Samtech Samcef Wind Turbines. This software is part (as NX Nastran) of Siemens PLM Software suite.

Load assessment within Project Certification

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WHY CHOOSE BUREAU VERITAS

Reputation
Created in 1828, Bureau Veritas is a global leader in Testing, Inspection and Certification, delivering high quality services to help clients meet the growing challenges of quality, safety, environmental protection and social responsibility.

Knowledge and expertise
Certifications are performed by qualified experts with a strong experience in composite materials and rotor blade structures, operating under a controlled quality system. Bureau Veritas Certification France’s expertise is acknowledged by the COFRAC accreditation.

Global network
With more than 63,000 employees in 1,330 offices and laboratories covering 140 countries, Bureau Veritas is able to act quickly on its clients’ behalf anywhere in the world. Our inspectors will always be close to your factories, allowing for a greater reactivity and reduced transportation costs.

Customer focus
Bureau Veritas’ core values include integrity and ethics, impartial counsel and validation, customer focus and safety at work. As a trusted partner, Bureau Veritas offers innovative solutions that go beyond simple compliance with regulations and standards, reducing risk, improving performance and promoting sustainable development.

FOR FURTHER INFORMATION ON OUR RANGE OF SERVICES PLEASE CONTACT:

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