ROTOR MONITORING SYSTEMS

Improving rotor performance and protecting the wind turbine from damage

The Moog Rotor Monitoring System (RMS) is a proven, robust, measurement system designed specifically for wind turbines that delivers increased turbine availability and improved operation costs over the lifetime of the wind turbine.

Moog delivers cost effective, real-time, monitoring and early fault detection for wind turbine operators using fiber optic sensing technology. The Moog RMS helps improve turbine productivity and availability, while reducing the cost of ownership and enabling safer operation.

Using technology and deployment methods proven in the wind turbine market, RMS can be retrofitted to an operational turbine in typically two days or installed during turbine manufacture to deliver accurate, reliable data.

Moog offers a full data analysis service around the turbine rotor performance that assists OEMs in designing next generation turbines and operators in improving performance and lowering maintenance costs.

ADVANTAGES

- Designed specially for wind turbines
- Based on a mature fiber optic sensing platform
- Promotes safer operations
- Maximizes energy generation capacity
- Improves reliability / longevity by avoiding costly secondary damage
- Validates design calculations and improve future designs

APPLICATIONS

- Turbine rotor performance
- Rotor imbalance detection
- Blade damage detection

Blade damage detection

Provides real-time alarm notification of damage impacting the structural or aerodynamic performance of a blade. Enables more effective planning of remedial action, preventing costly secondary damage.

Rotor imbalance detection

Provides real-time data on rotor imbalance, measuring yaw misalignment, wind shear and turbulence in addition to differences in blade mass and aerodynamic performance.

RMS imbalance detection enables earlier and planned remedial action, maximizing generation capacity and avoiding costly secondary damage.

TECHNICAL DATA

Rotor imbalance detection	
Aerodynamic efficiency	Comparative value per blade
Static bearing bending moment	Vector and value (kNm)
Mass imbalance	0.5 % of blade mass
Shaft bending moments (torque, twist, nod)	Vector and value (kNm)
Pitch imbalance	Derived from output data
Response time	User definable (1 second to 10 minutes)
Turbulence	Derived from output data
Yaw misalignment	In development
Blocked drain hole	Derived from output data
Gross blade damage detection	
Change in performance	Changes in performance of the blade for example due to delamination of leading, trailing edges, internal delamination of shear webs and box beams, gross cracking of laminate
Change in blade mass	Loss of part of the blade
General system data	
Initial set up an zeroing	Automatic
Data transmission	Options include GSM/ GPRS to central monitoring server, wireless communication to nacelle and direct interface to monitoring system
System integration	Open archicture designed to integrate to existing PLC / SCADA systems

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This technical data is based on current available information and is subject to change at any time. Specifications for specific systems or applications may vary.

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