

*SCIENCE FOR THE BOTTOM LINE*



## ABOUT WINDRISK

### An “enabling change” for the wind industry

WindRisk is a risk management and services company providing a unique integrated suite of risk management, condition monitoring, enterprise management, insurance and financial services to wind park owners, lenders, equity investors and carbon credit buyers.

*WindRisk provides solutions to the issues confronting the wind industry arising from the increasing importance of risk management, insurance loss ratios, operations and maintenance, equipment performance and life cycle management for the current generation of multi-MW wind turbine projects.*



These issues have arisen because of the dramatic growth in the size and capital cost of individual wind turbines and wind park installations – indeed, they have become so pertinent that even the industry’s leading insurers have noted that the fast pace of growth of the wind industry has been accompanied by the realization that major components fail long before reaching their design lives and that maintenance and repair costs are significantly higher than planned.

WindRisk can reduce the risk and optimize the availability and performance of wind park assets, thereby maximizing returns and minimizing losses, downtime and insurance claims. As a result, WindRisk aligns the economic interests of wind farm owners, financiers, operators, insurers and carbon credit purchasers, and enables a proactive, rather than reactive, approach to be taken to the risk profile and operational performance of wind park assets.

WindRisk’s approach is based on:

1. the Company’s proprietary wind industry risk management and assessment algorithms (the “WindRisk Assessment Tool”, after which the Company has been named); and
2. the Company’s sophisticated and proactive, technically-driven and risk management-centred approach to wind park enterprise management, which goes far beyond traditional facilities management and operations and maintenance by combining state-of-the-art, military-derived, intelligent condition monitoring systems with the proprietary WindRisk Assessment Tool.

WindRisk’s geographical focus for the provision of its services is Western Europe, North America, Australia, New Zealand and Asia.

## THE WINDRISK ENTERPRISE MANAGEMENT PLATFORM

### An integrated, engineering driven approach to modern multi-MW wind turbine operations

The WindRisk “Enterprise Management Platform” is a composite of (1) the well-known oil and gas services company business model (following the lead of successful service companies such as Halliburton, Schlumberger and Baker Hughes which made an early specialization out of optimizing oilfield performance) together with (2) the unique business model of the Hartford Steam Boiler Company, one of the most successfully demonstrated examples in the last 100 years of an integrated approach to equipment performance, risk management and insurance services resulting in reduced insurance claims and improved operational efficiency.

The Company’s proprietary WindRisk Assessment Tool, developed over four years, is at the heart of the WindRisk Enterprise Management Platform’s integration of condition monitoring, facilities management, operations and maintenance, risk management and Insurance. It enables:

- the quantitative rating of risk, including prescriptive recommendations for reducing risk and improving the risk rating;
  - the implementation of focused risk management, risk mitigation and operational strategies;
  - a real world understanding of all aspects of the risks of wind park ownership and operation, right down to the sub-station;
  - the quantitative assessment of the real value of wind projects;
  - the development and provision of appropriate and cost effective insurance cover linked to (1) the assessment and quantification of the actual inherent risks, based on the WindRisk Rating obtained, and (2) WindRisk’s integrated condition monitoring, facilities management, and predictive/preventive pro-active operations and maintenance services; and
  - advice on existing insurance cover at renewal time, where coverage is already in place, as well as advice on insurance claims handling.
- the specification, supply and installation of “Best-of-Breed”, military-derived, intelligent condition monitoring equipment and predictive/preventive maintenance programs, together with ongoing monitoring services which incorporate meaningful, easily comprehensible prescriptive alerts and reports to the wind park owner, financier or operator;
  - best-practice, proactive, integrated facilities management and project oversight services for wind parks which coordinate actual, real-time, day-to-day field operations management with state-of-the-art condition monitoring and cutting-edge predictive/preventive maintenance programs, using root cause analysis techniques and incorporating specialist software for spare parts management, maintenance scheduling and production of work orders, all designed to ensure maximum operational readiness and productivity; and
  - direct provision, where required, of a complete operations and maintenance service package for wind parks, bundled with WindRisk’s integrated condition monitoring, facilities management and project oversight services.

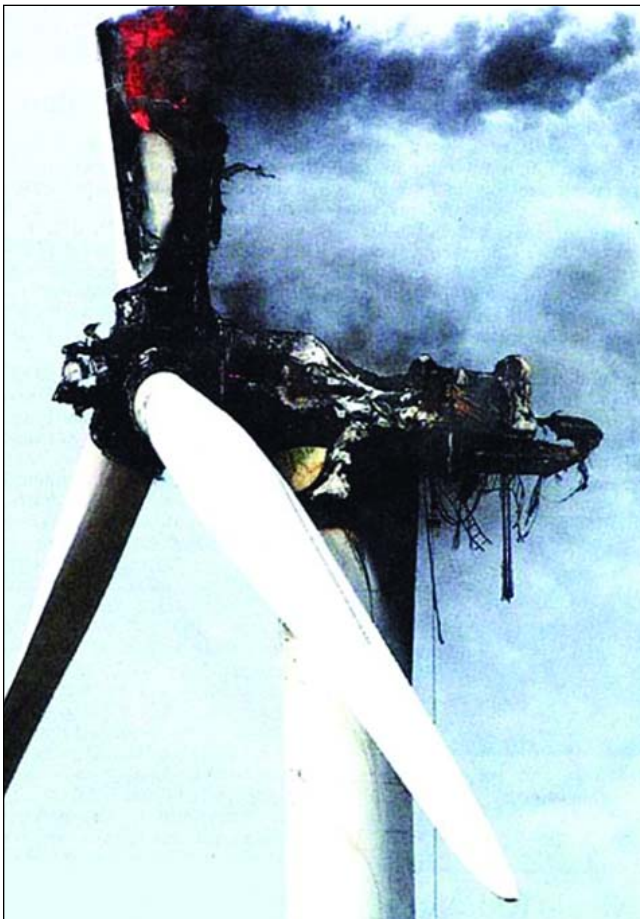


***WindRisk’s Enterprise Management Platform applies a sophisticated, technically-driven, integrated approach to modern multi-MW wind project operations which goes far beyond typical approaches in the wind industry, and enables the availability, operational efficiency and performance of wind park assets to be optimized, thus maximizing returns to stakeholders.***

**State-of-the-Art Risk Analysis and Rating for Wind Parks**

The ownership, operations and insurance risks that are inherent in wind park assets require effective management in order to achieve anticipated economic returns. The signature feature of the WindRisk approach to the wind power industry’s operational difficulties is its proactive focus on risk management and its ability, through the proprietary “WindRisk Assessment Tool” to accurately assess, quantify and manage risk.

The Company developed the WindRisk Assessment Tool over the past 4 years to satisfy its requirement for an effective, quantitative, consistent and objective method of assessing and rating wind power assets. The WindRisk Assessment Tool draws on the WindRisk management team’s accumulated engineering knowledge, operational expertise, and 4 years of specific industry research and analysis, to enable the identification, quantification, and objective rating of all relevant risks associated with the development, ownership, financing, operation and insurance of wind power assets and the carbon credits derived from them.



The Company’s proprietary WindRisk Assessment Tool has no parallel in the wind industry. It enables WindRisk to quantify and rate wind park operational and performance risks and to offer focused, proactive condition monitoring, facilities management and operations and maintenance services which are designed, through the application of the Tool’s quantitative assessment and re-assessment capability, to reduce operational risk and optimize wind park performance.

In addition to the potential for providing a consistent, quantitative and objective risk rating for wind parks, the WindRisk Assessment Tool is designed to provide wind park owners and operators with specific and detailed recommendations, which when acted upon through WindRisk’s integrated condition monitoring, facilities management and operations and maintenance capability, will result in an improved WindRisk Rating and improved wind park performance and availability, reduced downtime, better insurance rates and terms of coverage, as well as reduced financing costs. The resulting improvements to the WindRisk Rating can also reduce the underwriting risk to insurance carriers, and may even enable higher values to be received from the increasingly common transactions trading in the carbon credits which are derived from the generation of electricity from wind power.

WindRisk expects its unique, standardized, objective wind asset rating system to become the industry standard risk-rating benchmark, used by wind industry investors, asset owners, lenders, financiers, operators, insurers and carbon credit traders/brokers/buyers.

***The Company’s proprietary WindRisk Assessment Tool has no parallel in the wind industry and will set the risk-rating benchmark.***

## CONDITION MONITORING SYSTEMS & SERVICES

### The Ultimate Operational Tool for Early Fault Detection to Minimize Equipment Failure and Optimize Wind Park Performance

In recent years, wind turbines have grown from small kilowatt class turbines to multi-MW class turbines. Wind farms now contribute utility size energy blocks to the grid and demand the same high-level operations and maintenance practices as conventional power plants. An important feature of these conventional power plant operations and maintenance practices is the utilization of state-of-the-art condition monitoring systems, which have, until very recently, been lacking in the wind industry.

These condition monitoring systems have the following objectives:

- Improve overall availability of the turbines;
- Reduce unscheduled maintenance outages;
- Reduce the overall maintenance cost;
- Detect problems before they lead to catastrophic failures of components or systems;
- Gather “normal” and “abnormal” statistical data;
- Set monitoring system alarms and equipment trip parameters;
- Enable trend analysis of critical components and develop plans for exchange or refurbishment;
- Life cycle management by using the outputs from condition monitoring trends, predictive/preventative maintenance programs and equipment/component failure history reports; and
- Facilitate design verification for new turbine models, new turbine design features, and new turbine prototypes.

The insurance industry has been the prime mover in forcing the industry to begin to adopt condition monitoring systems because of the extent to which the wind industry has experienced (1) failure of major components long before they reach their design lives and (2) significantly higher maintenance and repair costs than planned.

However, thus far, the use of condition monitoring by the industry is in its early stages and wind park owners and operators have had difficulty determining what condition monitoring systems they should install to comply with these new insurance requirements, and how to interpret and use the raw data which is provided by the various condition monitoring systems once they are installed.

To assist the industry with these challenges, WindRisk delivers the industry a “Best-of-Breed” condition monitoring system, which can in each case be custom-tailored to fit the many different turbine designs and to specifically address the critical components for each turbine model. WindRisk’s condition monitoring system exceeds the specifications currently being developed by the insurance industry through combining state-of-the-art continuous vibration monitoring with on-line oil particle detection, temperature monitoring, nacelle movement monitoring, tower & foundation stress monitoring, blade flap and edgewise deflection monitoring, as well as transient process analysis, to accurately assess the health of individual components and of the entire wind turbine machinery system.

WindRisk’s objective in providing a condition monitoring package that exceeds the requirements of the insurance industry is to provide on-going assessment of the overall machine health and status within its lifecycle, through the use of overlapping sensor technologies and intelligent analytical software systems which provide easily comprehensible analysis and prescriptive reports from the raw sensor data. These together form the basis of WindRisk’s proactive predictive and preventive maintenance strategy so as to enable early detection of faults and the scheduling of maintenance actions to avoid catastrophic failure of components, thus maximizing the machine lifecycle, as well as, in the case of new turbines under manufacturer’s warranty, maximizing the effectiveness of the warranty from the wind park owner’s perspective.

In order to achieve its condition monitoring systems objective, WindRisk has gained a major competitive advantage through joining with DLI Engineering Corporation (a wholly-

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owned subsidiary of ABB) whose researchers have designed and implemented cutting-edge condition monitoring systems for over 35 years (including for the US Navy’s nuclear aircraft carrier fleet). The resulting WindRisk condition monitoring systems package, in exceeding the requirements of the insurance industry as the “Best of Breed” condition monitoring system, is effectively the “iPod” condition monitoring system for the wind industry because it reduces its competition to the status of merely ordinary “MP3 players.”

## FACILITIES MANAGEMENT, OPERATIONS & MAINTENANCE SERVICES

### Focused and efficient OEM-standards for wind park performance optimization

Depending on the client's requirements, "enterprise management" functions can be carried out by WindRisk at two levels:

(1) Facilities Management, where WindRisk supervises, on the owner's behalf and from the owner's perspective, the owner's operations and maintenance contractor's activities, for the fully coordinated, risk management-focused oversight of the operation of wind park assets; and

(2) Operations & Maintenance, where WindRisk actually replaces the existing operations and maintenance contractor and carries out the day to day wind park operations and maintenance activities itself with its own crews.

In both cases, the WindRisk Enterprise Management Platform uses the state-of-the-art WindRisk condition monitoring system outputs and predictive/preventive maintenance system (including equipment failure history records) as the basis for the application of an industry-leading, proactive, coordinated wind park operations management strategy.

WindRisk's "enterprise management" approach considers all aspects of wind park operations on an integrated basis, from the purely technical aspects of machinery condition and performance history, using root cause analysis techniques and incorporating specialist software for spare parts management, maintenance scheduling and production of work orders, to the non-technical aspects such as the actual operating style and approach, including prescribing detailed operating procedures to better manage and control operational risks.

At present, the typical wind industry facilities management or operations and maintenance contractor usually delivers its services within the context of a standard cost-plus contract that has few built-in incentives to promote WTG availability and optimal economic asset performance. In fact, unscheduled maintenance invoicing may actually result in increased revenues for the typical operations and maintenance contractor, to the detriment of the wind park owner, as a result of their respective interests not being aligned.

Using WindRisk's integrated, risk-management based approach, costly unscheduled maintenance can be minimized and catastrophic equipment failure can be avoided through early fault detection, thereby maximizing wind park performance, availability and wind turbine lifecycles, while at the same time minimizing equipment downtime and insurance claims, all having the effect of enhancing wind park profitability. Importantly, WindRisk's approach, through ensuring a rapid and effective response to equipment and performance problems, is equally as important to a wind park owner, financier or buyer of carbon credits during the warranty period as during the post-warranty period.

In addition to its wind industry experience and insight gained from years of hands-on experience, WindRisk also has a key skills set differentiator that stands apart from traditional wind industry operations and maintenance providers, being the WindRisk management team's considerable experience in the technically sophisticated oil and gas sector, and the coal-fired, hydro and nuclear power industries.



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## **INSURANCE ADVISORY, LEASING & FINANCIAL SERVICES**

### **A knowledge-based approach to insurance and financial services for the wind industry**

#### ***WindRisk Insurance Services***

The WindRisk Insurance Services business unit consists of two divisions:

- An insurance product unit, whose function is to develop innovative, risk management-based insurance products; and
- An insurance advisory unit, whose function is to provide advisory, risk management and loss control services to wind industry insurers and insureds, regarding strategies to manage the claims process.

In the insurance context, WindRisk's Enterprise Management Platform enables:

- A return to a classic "back to basics" knowledge-based, underwriting-to-risk approach with consequently improved loss ratios and insurer profitability; and
- Enhancement of wind project economics through the availability of improved financing and insurance terms.

#### ***WindRisk Financial Services***

The WindRisk Financial Services business unit arranges appropriate equipment lease packages to finance its clients' installation of WindRisk's condition monitoring systems as part of the WindRisk Enterprise Management Platform's service package. The provision of WindRisk's condition monitoring systems to its clients by way of a lease eliminates an up-front cash outlay by WindRisk's clients and thereby assists the client's cash flows.

The WindRisk Financial Services business unit can also assist clients in arranging other innovative structured finance solutions to their wind asset financing requirements.



## *Windrisk — The Smart Play in Wind*

### **FOR INFORMATION, CONTACT:**

WindRisk Offices – WindRisk is headquartered in North America in Vancouver, with representative offices for Western Europe in Monaco, and for Australia, New Zealand and Asia in Sydney.

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