CURTISS – WRIGHT

Healthcare & Condition monitoring for wind turbines
Efficiently harnessing wind energy

Wind turbines must function at optimal levels to efficiently harness and convert wind energy to electricity. To insure peak performance and maintain high turbine availability, a state of the art condition monitoring system called SWANwind™ can be applied. Regardless of when failures occur during a wind turbine's life cycle, they start as small discrepancies and progress to larger ones that result in secondary damage, unacceptable operating conditions or catastrophic failure. Traditional condition monitoring techniques such as vibration analysis do not provide a clear indication of problems until late in the failure process, if at all, and perform poorly in low speed machinery.

SWANwind offers a cost effective way for monitoring the mechanical condition of wind turbines for the purpose of early detection of mechanical degradation and wear. The patented Swantech stress wave monitoring and analysis system is ideal for applications where the equipment being monitored is subject to rapidly changing operating conditions and external forces, The SWANwind system uses sound, rather than motion, to identify and directly measure friction and mechanical deterioration. Stress wave measurements, provide a direct measurement of the friction and wear, even early in the turbines life cycle. Thus stress wave analysis provides a major advantage: an early warning of developing problems, so that maintenance actions can be conveniently scheduled and undertaken while actual damage is still of a minor nature. Stress wave monitoring can even be used to identify lubrication problems.

Scientech has participated with well known manufacturers of wind turbine equipment, as well as major integrators, on demonstrations of the effectiveness of the stress wave technology in a wide range of trials. In every instance stress wave technology has demonstrated its effectiveness and superiority. For example, stress wave can detect issues within a planetary gear system. The SWANwind condition monitoring system and diagnostic tools provide continuous monitoring of the health of land-based and offshore turbines providing:

- Correlation of operational and environmental parameters from SCADA systems

- Integration with Condition Monitoring Maintenance Systems (CMMS)
- Reduction in the number of site visits for mechanical assessments

SWANwind technology provides additional important benefits for the OEM:

- Effective design and reliability testing, identifying component and manufacturing defects.
- Confirms machinery performance levels during commissioning
- Reduces the effect of infant mortality issues and the overall financial exposure during warranty term.

SWANwind Features

- Multiple options for on-site communications
- Continuous monitoring of thrust bearings, gearbox, generator bearings, planetary gears, main drive and lubrication system
- Automated data collection and analysis with site SWANview
- Optional Internet connectivity for remote access, automatic file transfer. . e-mail alerts and system administration
- Option for additional field input signals: analog and status
- Optional automated delivery of data in XML file format
- Start with a single wind turbine and expand fleet as required
- Rugged construction and exterior rated packaging

The SWANwind System

The SWANwind system includes, as a minimum, one SWANguard+™ unit, plus a site server running SWANview™ software. The SWANguard+ unit monitors wind turbine stress wave levels and collects stress wave "snapshots" whenever readings exceed pre-assigned "advisory' or "alert" thresholds. Using their desktop PCs and a web browser, site and corporate personnel can view the collected information and run an analysis on the data to determine the general health of the wind turbine and, determine the probable source(s) of the mechanical degradation. If other operational or environmental parameters are being monitored (such as RPM and wind speed) then it is possible to correlate stress wave energy levels with those parameters and gain further operational insight. Although the SWANview analysis software provides a powerful analytical tool, it is easy to use and requires minimal training on the part of the technician or maintenance personnel doing the work.
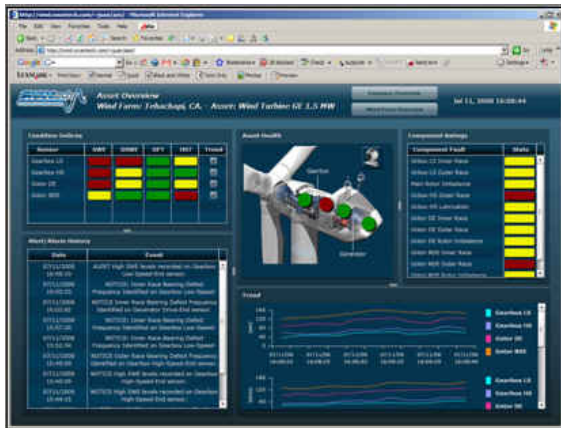
Page Views

Fleet View

Site View
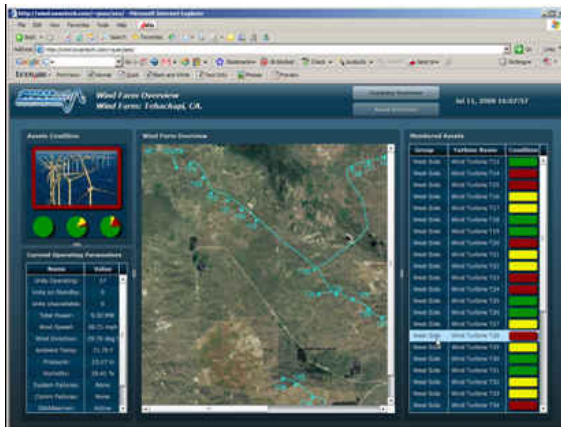
Turbine View

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