Ridgetop Group Inc.

Engineering Innovation

Advanced Diagnostic and Prognostic Specialists

- Leader in Deterministic Reliability NFF, Condition-based Maintenance (CBM), and Prognostic Health Management (PHM) Solutions
- Commercial and Military industry experience with over 70 product innovations and project completions

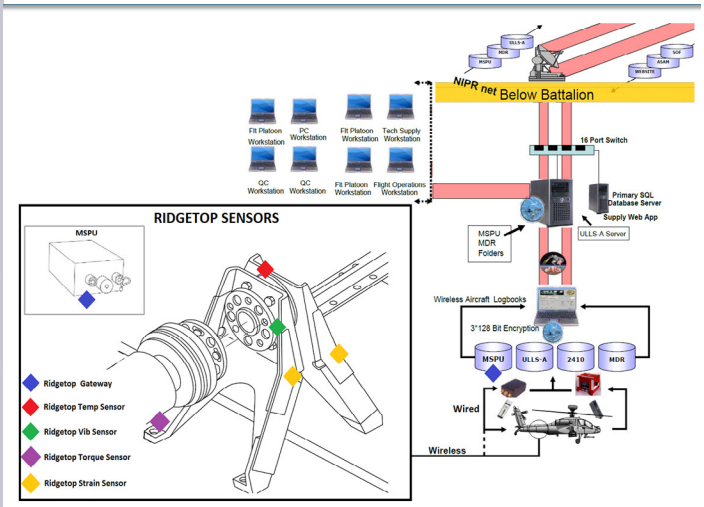
Sensor Array Solutions for Every Industry:

- Dramatically reduce life-cycle costs in complex critical systems with ***Sentinel Suite***™
- Extract high-resolution signatures from rotating components in extreme operating environments with ***RotoSense***™
- Utilize Ridgetop's modular Internet-of-Things (IoT) system architecture to bring cloud connectivity and edge computing to your unique data streams and applications

What Defines Ridgetop?

When your applications require advanced diagnostic and prognostic solutions at a system or subsystem level, Ridgetop offers high-quality, innovative products, and original answers that surpass conventional standards.

With Ridgetop Group, resolution is devised through our ***Engineering Innovation*** approach that defines the company mission.



Ridgetop provides innovative tools to prognostic-enable critical electronic modules and systems. Our unique collaborative design portfolio of IP and software tools address advanced diagnostics and predictive reliability. Ridgetop creates value-added results with applications from the integrated circuit level through all areas of complex systems design in both commerical and military sectors.

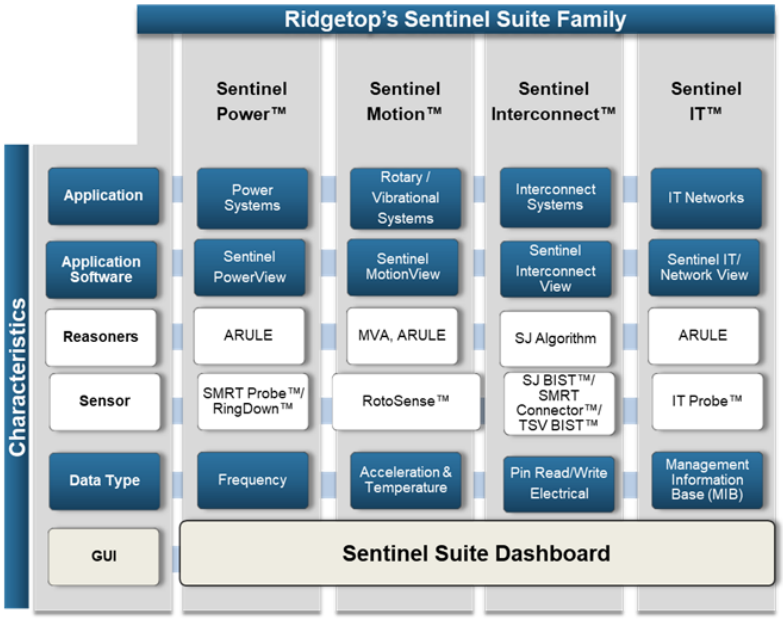
Ridgetop has specialized in the development of advanced diagnostic methodologies, CBM/CBM+, and Prognostic Health Management technologies that ensure precise identification and isolation of system anomalies, advance notice of impending failure, and the necessary combination of firmware, hardware, and software for mission critical systems.

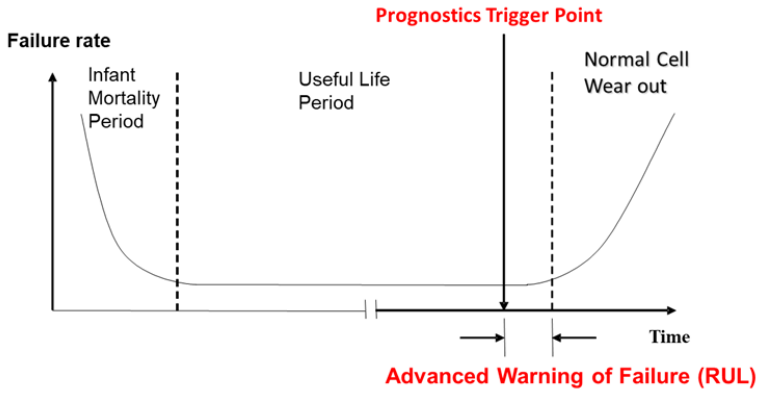
Ridgetop Group's broad range of sensor arrays address ***critical faults*** in three key areas:

Electrical Power Systems

Mechanical Systems

Complex Electromechanical Systems





Ridgetop's innovative technologies address critical faults and impending failures with real-time sensors and systems for:

Aerospace and Defense Automotive Industrial Automation

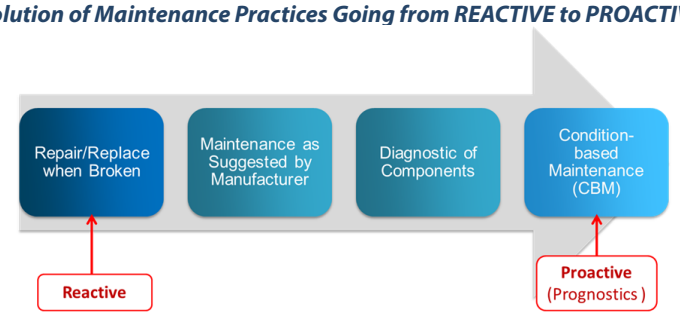
Medical Transportation Energy and Utilities

Finding Faults Through Characterization in Complex Electronic Systems

Prognostic Health Management (PHM)is vital to the efficacy and viability of the entire lifecycle of industry systems and equipment.

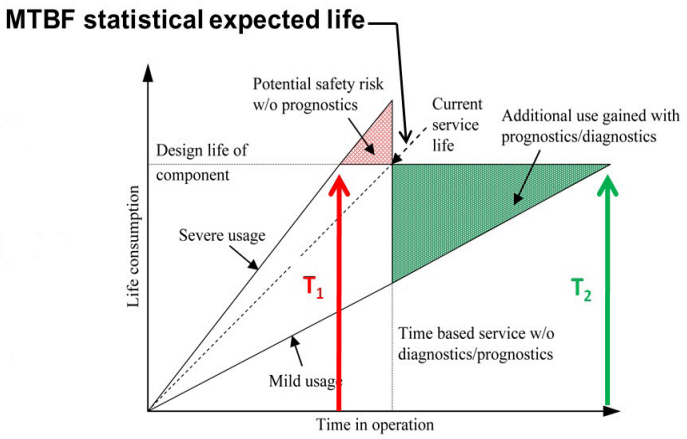
PHM turns 'Bad Actors', 'Intermittents', and 'Soft Faults' into scheduled maintenance, ensuring critical mission success.

Evolution of Maintenance Practices Going from REACTIVE to PROACTIVE



Condition-based Maintenance (CBM) utilizes real condition-based data to isolate degradation and provide optimal maintenance through preventive measures.

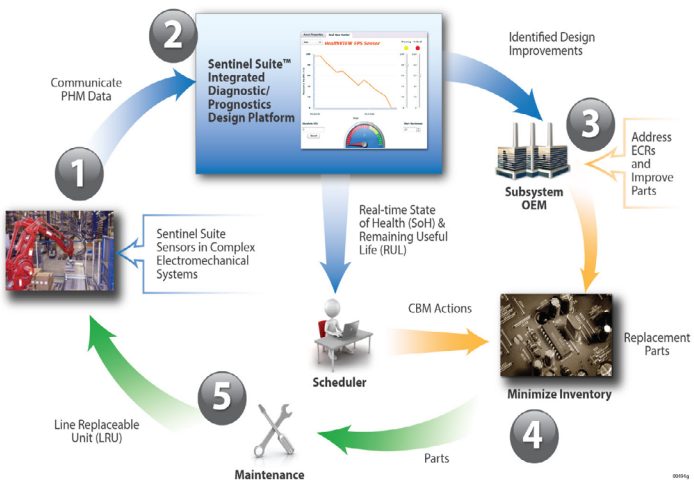
PHM enables replacement only upon evidence of need in a Usage Environment



Usage monitoring would provide a safety benefit if actual usage is more severe than predicted

Service life can be extended beyond normal replacement time if actual usage severity is known

Ridgetop's PHM products and services protect users throughout the entire equipment lifecycle



Integration of sensor arrays that identify, isolate and diagnose degradation and communicate SoH and RUL through the Sentinel Suite™ platform

Reassess system in real-time to schedule maintenance optimally, saving lifetime costs, reducing labor hours, and increasing part quality

Commercial and military industry benefits from Ridgetop CBM and PHM methods include:

Increased Safety and Mission Reliability

Maintain systems on an optimal maintenance schedule

Decreased Collateral Damage

More efficient maintenance planning Reduced spares

Reduced Logistics Costs

Prevent cascading effects onto healthy systems Maintain consumer confidence & product repuatation

Decrease in Unnecessary Maintenance

Improved mission planning Mission reassessment feasibility

Ridgetop's 3A Technology Focus Areas:

Awareness: Anomalies are discovered and monitored

Analysis: From being monitored, solutions to anomalies are predicted

Action: Once solutions are predicted, troubleshooting actions are executed for success for all

CBM & PHM Solutions

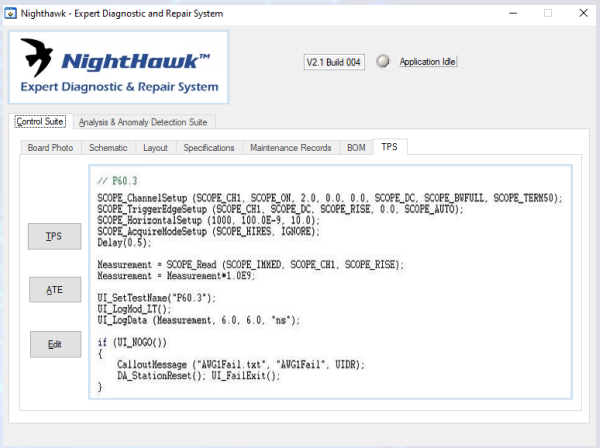
Ridgetop excels at employing innovative solutions through a broad range of sensor arrays that identify, isolate and diagnose degradation and qualification in complex systems.

Through various data aquisition and analysis methods, our sensor arrays isolate degradation data and organize the functional flow of that data in the modular system architecture of Sentinel Suite and other Ridgetop software platforms.

Our line of products include:

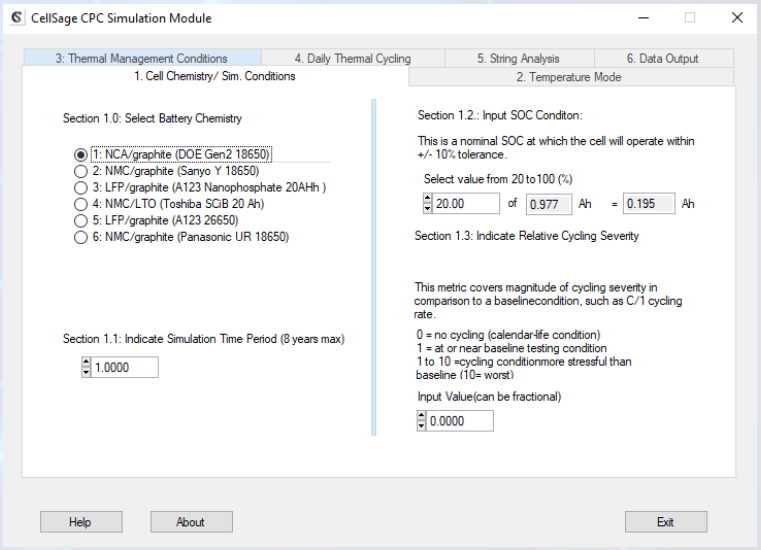
NightHawk™ NFF Reduction Software Tool

An interactive tool suite combining data and information management with advanced data analysis techniques serving to replace, eliminate, and/or reduce No Fault Found (NFF), Could Not Duplicate (CND), Retest Okay (RTOK), and other similar issues. The NightHawk anomaly detection algorithms and data analysis routines are used to isolate and identify 'soft' fault types that conventional test program sets -- including VDATS -- are unable to find. Augmenting existing test program sets with the increased coverage from NightHawk reduces the need for equipment relacement parts, minimizes repair times, and overall reduces lifetime maintenance costs.



CellSage

CellSage is an advanced battery and cell aging software simulation tool that represents over a decade of research in electro-chemistry, physics, and thermodynamics. CellSage helps battery end users and battery manufacturers optimize their investment in battery designs for target applications. CellSage asesses how various types of battery chemistries age and degrade in response to different usage profiles, and can take into account more than 10 environmental and operational parameters such as:



- Battery Chemistry
- Simulation Time
- State of Charge (SOC)
- Temperature Cycling
- Thermal Cycling
- Cell String Topology
- Annual Temperature Profiles for over 130 US Cities

Sentinel Suite™

This family of tools can dramatically reduce life-cycle costs by providing advanced diagnostic and prognostic capabilities for compex critical systems.

Sentinel Interconnect™

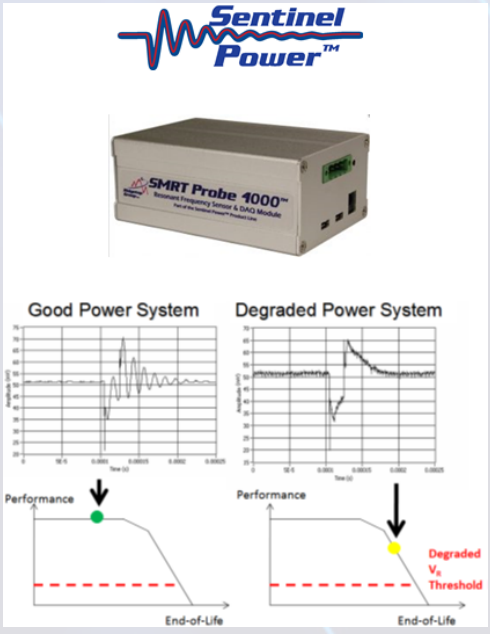
A customized toolbox of advanced software modules that are used to monitor intermittencies or failures from the solder joint level all the way to the phycial interconnect. This Sentinel Suite family member features the Solder Joint Built-In Self-Test (SJ BIST) algorithm that accurately detects and reports instances of high resistance and intermittent opens in FPGAs to board interfaces, connectors, cables harnesses, and other high density electrical interconnection systems.

Sentinel IT™

A software monitoring platform that improves network reliability and can assess the overall ***network health managment (NHM)*** allowing for quick IT decision making.

Sentinel Power™

An innovative product line that includes power signature monitoring sensors, prognostic reasoners and a visualization tool, allowing for the measurement of degradation signatures to provide advance warning of impending failure.

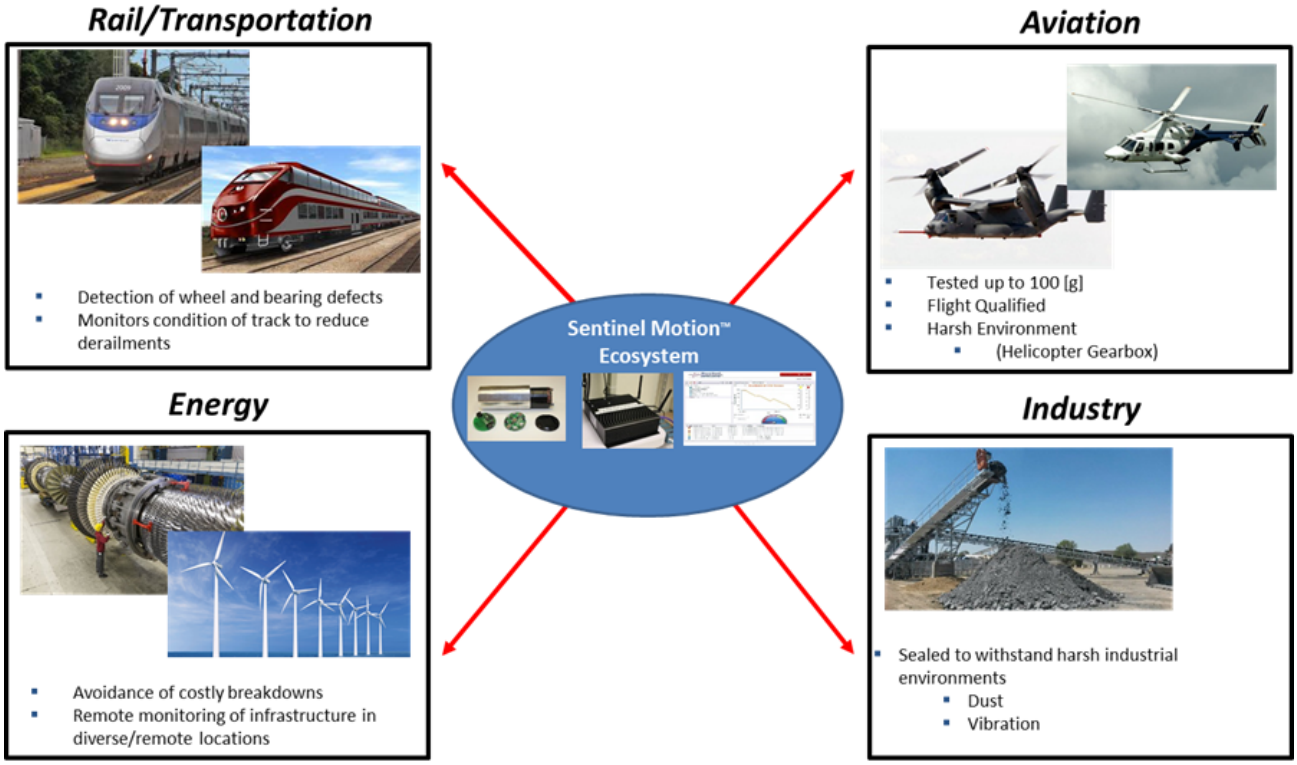


SMRT Probe 4000

Reasonant voltage-sampling sensor that is attached to a module or assembly to extract degradation signatures by injecting a voltage stimulus to measure effective r esistance a nd c apacitance, e nabling prognostic and degradation analysis.

Advanced Diagnostics and Prognostics

The Sentinel Suite family of advanced diagnostics and prognostic solutions extends throughout a number of applications including heavy industrial applications, diagnosis through profiling ***air temperature probes*** on aerospace vehicles, fiber optic detection systems that measure stress and strain, and wireless data monitoring with IoT-enabled smart sensors.



Sentinel Motion™

This product line focuses on monitoring and analyzing temperature, acceleration, and other data signatures in various electromechanical systems. Sentinel Motion comprises a wireless network of IoT smart sensors (such as RotoSense), the Sentinel Gateway communications device, and the Sentinel MotionView™ software package for data acquisition, analysis, and sensor-gateway management.

RotoSense™

An IoT based sensor system that monitors mission critical equipment observing any combination of temperature and linear, rotarory, or vibrational force.

Sentinel IoT Wireless Node

A versatile, low-power communication module that can be used in both lab and industrial operating environments to bring IoT connectivity to traditional hard wired data streams that communicate over an SPI ,UART, or USB interface.

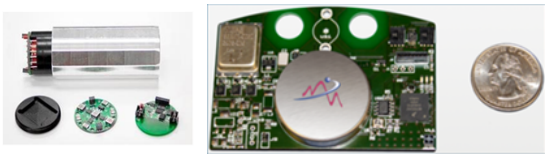
Structural Health Monitoring (SHM)

Using ***Fiber Bragg Grating*** (FBG) sensors and the Sentinel Gateway, structural health data signatures are wirelessly aquired from composoite materials found in helicopters, Unmanned Aerial Systems (UAS), and other aircraft systems that need accurate diagnostics for the strain and stress being observed by a structural frame member.

Prognostic Algorithms & Resonsers

ARULE™

Adaptive Remaining Useful Life Estimator (ARULE) is a powerful state estimator that can determine the Remaining Useful Life (RUL) and State of Health (SoH) of complex systems through aquired sensor data and employing advanced prediction methods related to extended Kalman-like filtering. This advanced reasoner can also be deployed on a system-on-chip (SOC) for low size, weight, and power (SWaP) applications.



RotoSense Series 1000 (Left), RotoSense Series 2000 (Right)

RotoSense Series 3000 for monitoring track, wheel, and bearing systems in the railroad industry

Innovative Technology Firm Providing CBM and PHM Products, Advanced Research, and Engineering Design Services

Mixed Signal Design Circuitry and Services for Harsh Environments

Supplier of IC Mixed Signal IP and IoT Sensors

DOD 1A Trusted Supplier of Design Services

Collaborative Services Focused on Changing Market Forces

Engineering Response Teams Specialized in Commercial Engagement

High Quality Products, Services, and Educational Training

Interactive Webinar Series Introducing Ridgetop Innovations

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Industry Certifications

AS9100D Certified
ISO9001 Compliant
DO-178B Design Rules
DO-254 Design Rules
DMEA Cetified "1A" Design House

Worldwide Locations

Support and sales locations for Ridgetop Group Inc. exist in Europe, Asia, and the United States.

For office locations and contact information, please call corporate headquarters or visit us on the web.

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