



Sentinel PHMPro® Product Suite

Prognostic Health Management for Electronic Subsystems

Prognostics, Diagnostics—What's the Difference?

Diagnostics may be able to tell you the reason why a component has failed. Ridgetop Group prognostics have vastly greater value because they detect impending device failures before they occur. Using prognostics, you can keep critical systems in service and avoid unnecessary replacements.

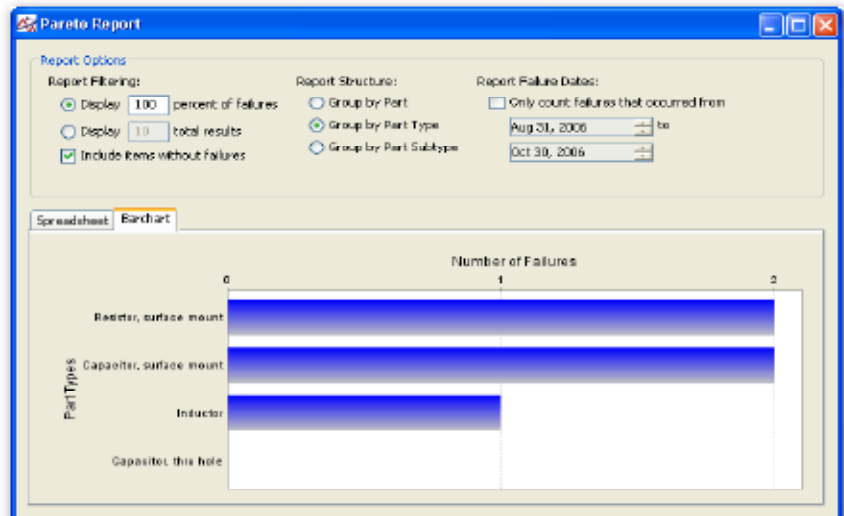
Today's shrinking process geometries have had the effect of reducing semiconductor lifetimes. The Ridgetop Group developed and introduced the world's first prognostic cell libraries predicting TDDDB/gate oxide failure, hot carrier damage, radiation effects, and NBTI – all of which are catastrophic in critical electronic systems.

Using the Sentinel PHMPro® Prognostic Health Management Professional software platform, you define the digital-based assemblies and subassemblies you want to monitor for condition-based maintenance and reliability analysis. One method of monitoring the results is shown below in a Pareto report.

Our Sentinel Silicon™ semiconductor device prognostic libraries accurately predict pending failures caused by stress and aging in a predetermined, timely manner, and trigger a prognostic warning before the wear-out region begins.

Features & Benefits

- Monitor reliability in real-time with the Sentinel PHMPro® software application.
- Predict semiconductor failures with the Sentinel Silicon™ prognostic fault libraries.
- Manage failure & maintenance activities.
- Cross-platform Graphical User Interface (GUI) for enterprise deployment.
- Centralized library and data management.
- Powerful data import / export using XML interfaces.



Pareto Report in Bar Chart Format



Features and Benefits

Benefits

Accurate Health Assessment

With Sentinel PHMPro® you're not reacting to costly failures, you have real-time health status data.

- 40% reduction of Could Not Duplicate (CND) errors and false alarms.

Remaining Useful Life (RUL) Prediction

Accurate RUL enabling condition-based maintenance and autonomic logistics.

- 50% improvement in operational readiness of assets.

PHM Monitors Placed in the Host System

Our "canaries" or in-situ monitors age and degrade since they are subjected to the same environmental climate as the host system.

- Advance, precise notice of impending failures through proper scaling and calibration of canaries.
- Dedicated monitoring for:
 - FPGA processors – SJ BIST®
 - Power systems – RingDown™
 - IC devices – Sentinel Silicon™

Integration with Autonomic Logistic Systems (ALS)

Through PHM, ALS can address "what-if" trade-off questions considering cost, invasiveness, and overhead for provisioning spares and optimizing maintenance.

- Accurate, fact-based decisions made about component changes.

Extensible Across the Business Enterprise

A Graphical User Interface (GUI) that runs on all major operating systems for enterprise deployment.

- Powerful data export and import capabilities via XML providing maximum flexibility for embedding in custom systems.

Advance Notice of Impending Failure

Avoid catastrophic events, increase reliability and mission success, and promote safety.

- 70% prediction rate for impending failures.

Physics of Failure Models and Failure History

Failure models increase understanding of the system, help development of new algorithms, and enable statistical trending analysis.

- 50% reduction in maintenance costs.

Proven and Continually Advancing Technology

Constant enhancement and extension of our prognostics line for the advanced process geometries used in today's semiconductor manufacturing.

- Ridgetop's electronic prognostic tools offer the advantages of proven capabilities and application on critical systems for the DoD, NASA, and commercial firms.

At Ridgetop Group, we develop families of intelligent prognostic tools and libraries. Our Sentinel PHM™ technologies provide techniques to improve the management of complex electronic systems in critical automotive, aerospace, and medical applications.

These solutions are part of a suite of prognostic tools covering electronic devices from in-situ test structures on silicon to software tools for tracking and managing assets across the globe.

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The Ridgetop Group nanoDFM™ technologies and PDKChk® are covered by U.S. patent 7,239,163 and other issued and pending patents.

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