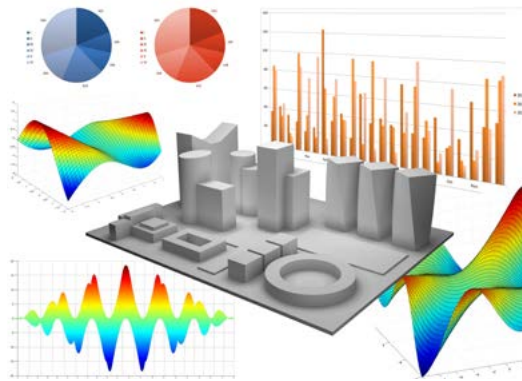


# Reliability Engineering Solutions

## Accelerated Life Testing



With ReliaRisk at your side, you will be able to:

- Free up your valuable engineering staff to focus on core values
- Integrate failure mode and effect methodologies into your test designs
- Determine the robustness level required for a product reliability target
- Decrease warranty and field service costs by fully understanding product performance before launch
- Expose process-related variations in manufacturing and how they affect field performance
- Uncover supplier quality issues for components and reduce supplier selection time

ReliaRisk offers world-class expertise in developing, implementing, supporting and analyzing reliability tests. We work with commercial and government customers to design reliability tests for electrical, mechanical and electromechanical systems and components. Our accelerated methodologies shorten reliability tests, and our expertise in developing stress models tailored to Accelerated Life Testing of systems and components ensures accurate performance calculations. We work one-on-one with customers to develop test strategies that match overall objectives and requirements of their reliability programs, while working within resource constraints.

ReliaRisk engineers analyze Accelerated Life Testing results to provide definitive answers about the long-term reliability of systems and components. Through our consulting services, you can rely on us to create solid test strategies for your products, freeing up your engineering staff to focus on core competencies and new product development rather than being bogged down with reliability planning.

Reliability is our business – we understand test planning and procedure development, and we know what data needs to be gathered and how to document it. We offer the tools and expertise to transform data into relevant and accurate reliability predictions and analysis.

Our effective and efficient testing results from utilizing analytical techniques such as Finite Element Analysis, Computational Fluid Dynamics and fracture mechanics integrated with reliability testing techniques.

### LIFE PREDICTIONS & DESIGN ANALYSIS

Accurately determining field performance before product release is critical to understanding risk levels regarding warranty claims and reliability. That's why we use Design for Reliability methodologies to take the guesswork out of determining the dependability of your products.

### TEST PLANNING

Ad hoc teams often lead to high expenditures and no results. ReliaRisk's thorough understanding of the physics of failures and operational profiles helps customers better design products and optimize test execution. We help you develop testing models that replicate real-world applications and real-world working conditions.

### TEST PROCEDURE & DEVELOPMENT

ReliaRisk engineers have numerous years of experience in test methodology and data collection. Our expertise in collecting data early on in the product development process helps determine risks early on, plus optimizes test operations.

# Reliability Engineering Solutions

## TECHNICAL SUPPORT

ReliaRisk engineers have numerous years of experience in Accelerated Life Testing and Highly Accelerated Life Testing in applications such as vibration testing, fatigue, thermal fatigue, corrosion, electronics, electromechanical components, bio-materials, composite materials and membrane testing. Our engineering team can help you navigate complicated test design environments.

## SUPPORT FROM GROUND ZERO

ReliaRisk offers expertise in test design, Design of Experiments, instrumentation and Data Acquisition Systems, allowing you to better understand test setup and integrate fault management into your test methodology. Our proficiency includes laboratory methodologies and techniques.

## ACCELERATED LIFE TESTING SOLUTIONS

ReliaRisk's consulting team understands how Finite Element Analysis, Computational Fluid Dynamics and fracture mechanism methodologies can be used to better optimize Accelerated Life Testing designs. We are ready to demonstrate how combining analytical methodologies with Accelerated Life Testing techniques will enable you to better understand potential variability issues associated with operations or manufacturing.

For more information on our products and services, please visit us at [www.reliariskllc.com](http://www.reliariskllc.com).

## Accelerating Product Validation in the Medical Industry



Medical device manufacturing is becoming more and more complex and high-technology oriented. The advanced technology inherent in medical devices and their production requires that all aspects of a system, including mechanics, electronics, software and hardware, are evaluated in order to determine product reliability. However, FDA evaluators commonly rely on data derived from existing harsh environment standards and on manufacturers' expertise to determine performance levels – but neither of these risk management strategies foresee issues specific to implantable medical devices. Although specific standards are in place for some medical devices and systems, a general set of standards does not currently exist for a number of implantable electronic devices.

ReliaRisk combines Design of Experiments methodology with Accelerated Life Testing to enable medical device manufacturers to investigate potential operational environments and replicate field conditions in a timely manner. As a result, FDA evaluators have access to data collected during analysis, enabling them to better understand test results and how they relate to an actual operational environment.

Our engineers also merge Finite Element Analysis with Design of Experiments and Accelerated Life Testing to verify the best test strategy for demonstrating the life expectancy of a product in an actual medical manufacturing environment.

## Service Features and Benefits

- Drive reliability improvement by design, both qualitatively and quantitatively, while infusing Design for Reliability activities with relevant information that can be used for next-generation designs
- Use data-driven analysis to address today's demanding performance specifications, while capturing enterprise-wide knowledge within a self-improving, closed-loop system
- Bridge organizational silos of reliability activities by allowing engineers to share and leverage data, analytics and knowledge
- Effectively integrate Failure Mode and Effect Analysis in both design and manufacturing to identify potential failures, effects and causes, in order to uncover failure mechanisms needed to properly design a test
- Accurately predict reliability performance during the warranty period to improve customer satisfaction and realize significant bottom line savings
- Integrate Highly Accelerated Life Testing with Accelerated Life Testing methodologies to achieve component robustness and life projections to a specific failure mechanism

## SERVICES AVAILABLE

- Vibration
- Humidity Test
- Failure Mechanisms in Electronics
- High and Low Temperature Effects
- Thermo Cycling
- Temperature – Humidity Relationships
- Arrhenius Relationship
- Eyring Relationship
- Life Distributions
- Reliability/Unreliability Plots

*From Data to Wisdom!*



Contact Us

Phone: +1 952 270 1630  
Email: [service@reliariskllc.com](mailto:service@reliariskllc.com)  
[www.reliariskllc.com](http://www.reliariskllc.com)