

Optimizing Material Selection to Assure Product Performance

Challenge

Select cost effective materials and manufacturing processes to meet durability performance goals.

Solution

Automated design and durability analysis, material and heat treatment selection, and evaluation processes.

Results

Optimized material and treatment selection, captured legacy knowledge, and delivered improved product performance at reduced cost and weight.

A range of clients, including aerospace, defense and automotive, have partnered with Prenscia Solutions for engineering services and software to optimize product designs. By configuring streamlined approaches for selecting materials and manufacturing processes, clients are able to reduce weight and costs, eliminate failures, increase reliability, and capture invaluable legacy knowledge.



nCode

ReliaSoft

Onnicon

The Challenge

Avoiding product failures and meeting durability goals while reducing weight and cost is a big challenge for many of our clients.

Selecting materials and manufacturing processes are critical factors influencing product durability. We need to understand physics of failure, the behavior of materials, and the impact of processing on durability.



The Solution

Prencia Solutions partnered with a number of clients to configure automated design, durability analysis, material and heat treatment selection, and evaluation processes to meet their needs.

Our deep knowledge of material behavior and the effects of manufacturing processes provided the basis for configuring a solution to ensure their products met the expected life and captured invaluable legacy knowledge.

The Results

Three client examples illustrate benefits:

- Created a “driveline durability design tool” to optimize design and material selection, and reduce testing;
- Used a DoE approach to create an optimized test matrix to estimate durability for material and surface treatment combinations for aircraft landing gear;
- Identified optimized material and heat treatment process that extended the life of key military vehicle suspension components by an order of magnitude.



About HBM Prencia Solutions

HBM Prencia Solutions ensures customer success through value-driven solutions for product and process development, and operational monitoring. We are a multi-disciplinary team with expertise in failure analysis; predictive analytics and modeling for reliability, durability, and deterioration; asset health and usage monitoring; prognostics; development and testing of embedded software and electronics to deliver robust solutions to our global clients. Our team of engineers, analysts, software developers, data scientists, and program managers, many holding United States Government security clearance, are readily available to provide technical expertise and deliver value-driven solutions. For more information, please visit www.hbmprencia.com/solutions