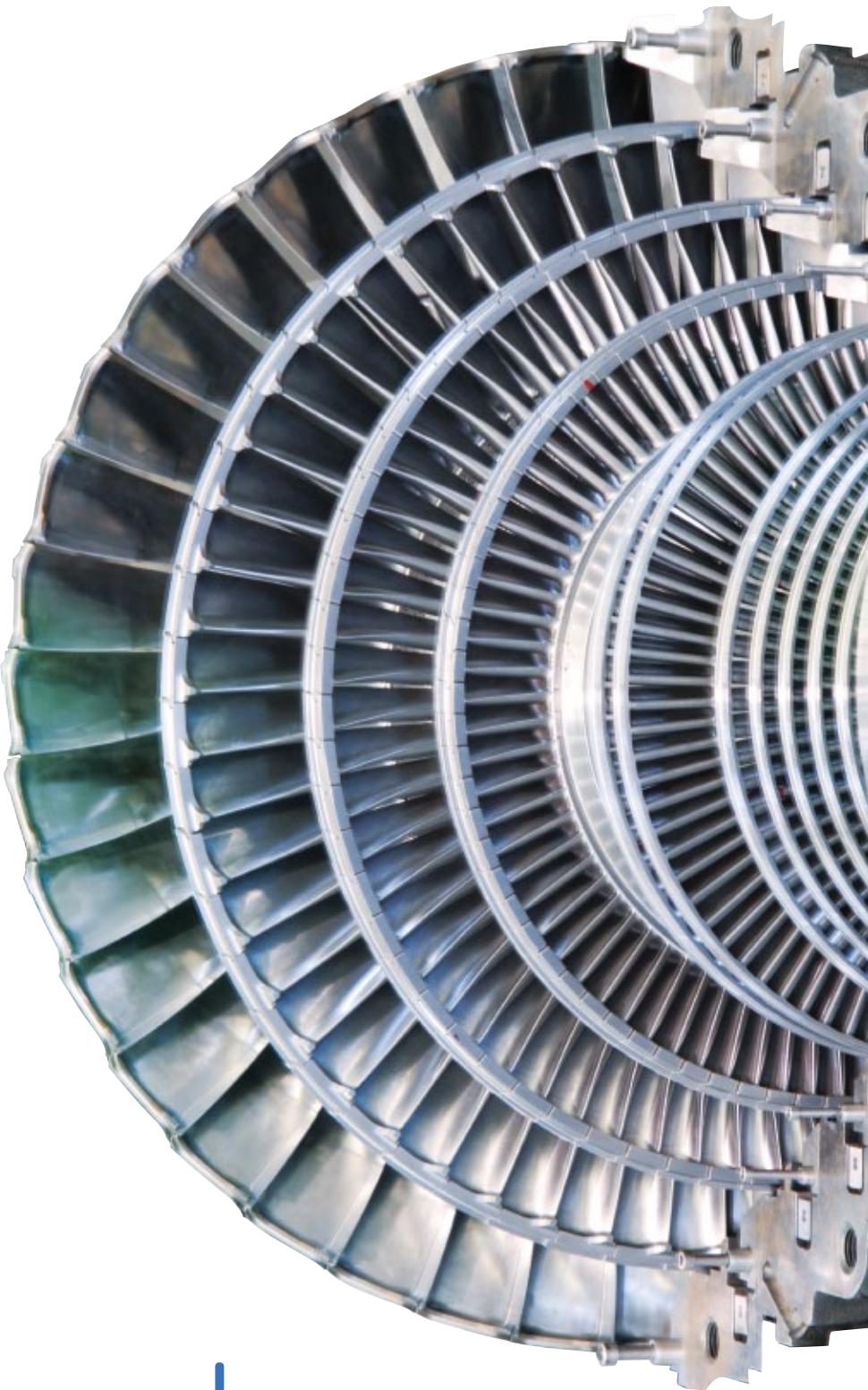


GE
Intelligent Platforms



Proficy SmartSignal



imagination at work

Introducing Proficy SmartSignal

Proficy SmartSignal: a family of advanced predictive-diagnostic solutions—innovative and proven.

"We found that traditional tools required a great deal of time to prepare the data, configure the tools, and analyze the data. They also did not capture the breadth and depth of emerging equipment problems as did our Proficy SmartSignal solution."

David Lebeter
*Executive Director, Generation Operations
BC Hydro*

Proficy* SmartSignal solutions can identify impending equipment failures well before they happen—often weeks or months before other systems. With this added lead time, you transform from reactive maintenance to a more proactive maintenance process—and help avoid surprise equipment failure.

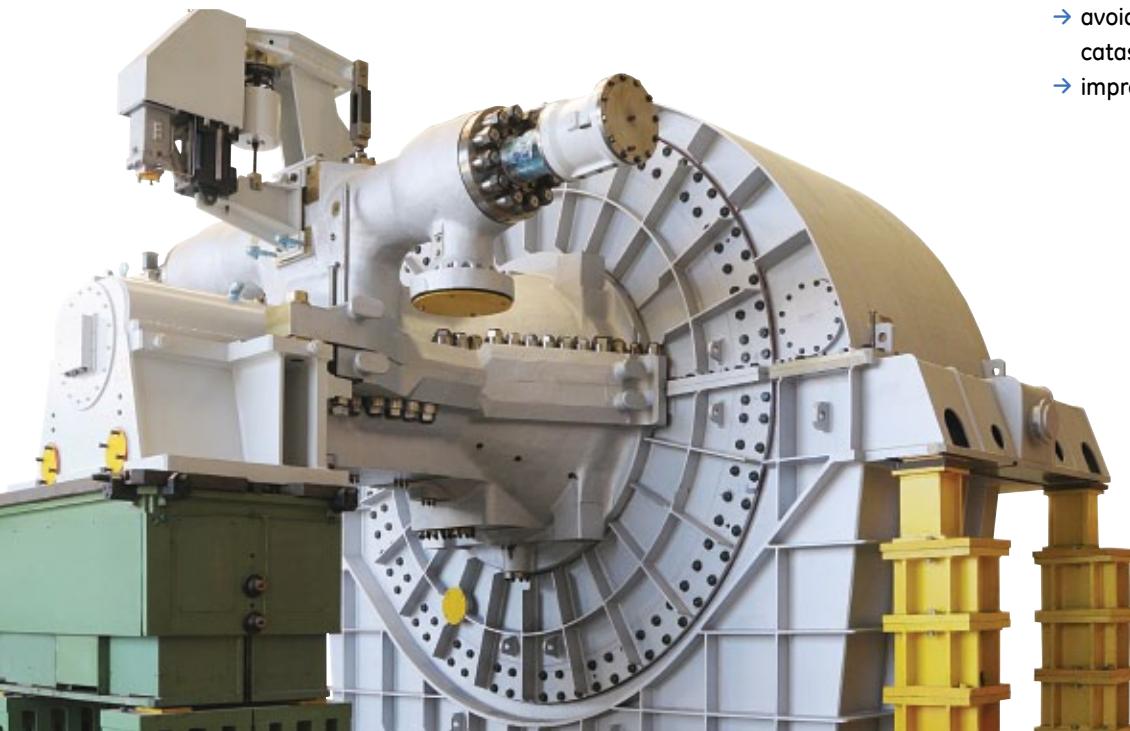
SmartSignal solutions work by leveraging your existing data and infrastructure to provide early and actionable warnings of impending equipment and process problems—thus allowing your workforce to focus on fixing problems, not looking for them.

The solutions are easy to implement and use. And, they provide information in a way that you can standardize and leverage

across your organization—across all your critical rotating and non-rotating equipment, across your fleet. SmartSignal solutions can detect the broadest range of equipment problems across the widest variety of assets, load ranges, and failure modes.

SmartSignal solutions help you increase availability, reliability, efficiency, and profitability—and, at the same time, overcome challenges of inexperienced and aging workforces, aging equipment, limited budgets, and data overload. With SmartSignal solutions, you get the help you need to prioritize and plan your maintenance procedures, which can result in:

- reduced maintenance
- reduced overtime and equipment-replacement costs
- reduced damage to critical equipment
- avoided unexpected shutdowns and catastrophic failures
- improved safety



Proven Solutions

Over the past decade and more, we've identified tens of thousands of developing equipment problems and thousands of operational errors for our customers.

Global monitoring

SmartSignal solutions currently are integrated into the performance-improvement initiatives of the most progressive companies in Power Generation and Mining, along with supermajors in Oil & Gas. We're monitoring over **12,000** assets, and we serve the combined-cycle, coal, wind, nuclear, hydro, upstream, gas transportation, downstream, and mining industries in the Americas, Europe, Asia, and Africa.

Our value

Our customers claim high value from our solutions. In fact, the average SmartSignal customer achieves ROI in 6-12 months, some much sooner, and saves millions/year from early failure warnings. Each year, 99% of our customers renew their maintenance contracts—we think this says a lot about the value and service our customers obtain.

"Operators were skeptical at first, but tracking equipment degradation helps make their lives easier. Before, it was like driving without a speedometer."

Martin Catka
Generation Performance Analyst
DTE Energy
Control Engineering



What would you do with these lead times?

3 weeks-early warning of a combustion liner failure in a gas turbine

3 days-early warning of a bearing failure in a coal pulverizer mill

16 hours-early warning of a transition piece failure in a gas turbine

400 hours-early warning of generator stator cooling water plugging

3 months-early warning of seal degradation

45 days-early warning of catalyst fouling

9 months-early warning of thrust bearing failure

9 days-early warning of a rod drop problem

2 months-early warning of reactor coolant pump seal degradation



Predictive Diagnostics

Drive productivity. Avoid surprises.



How our technology works

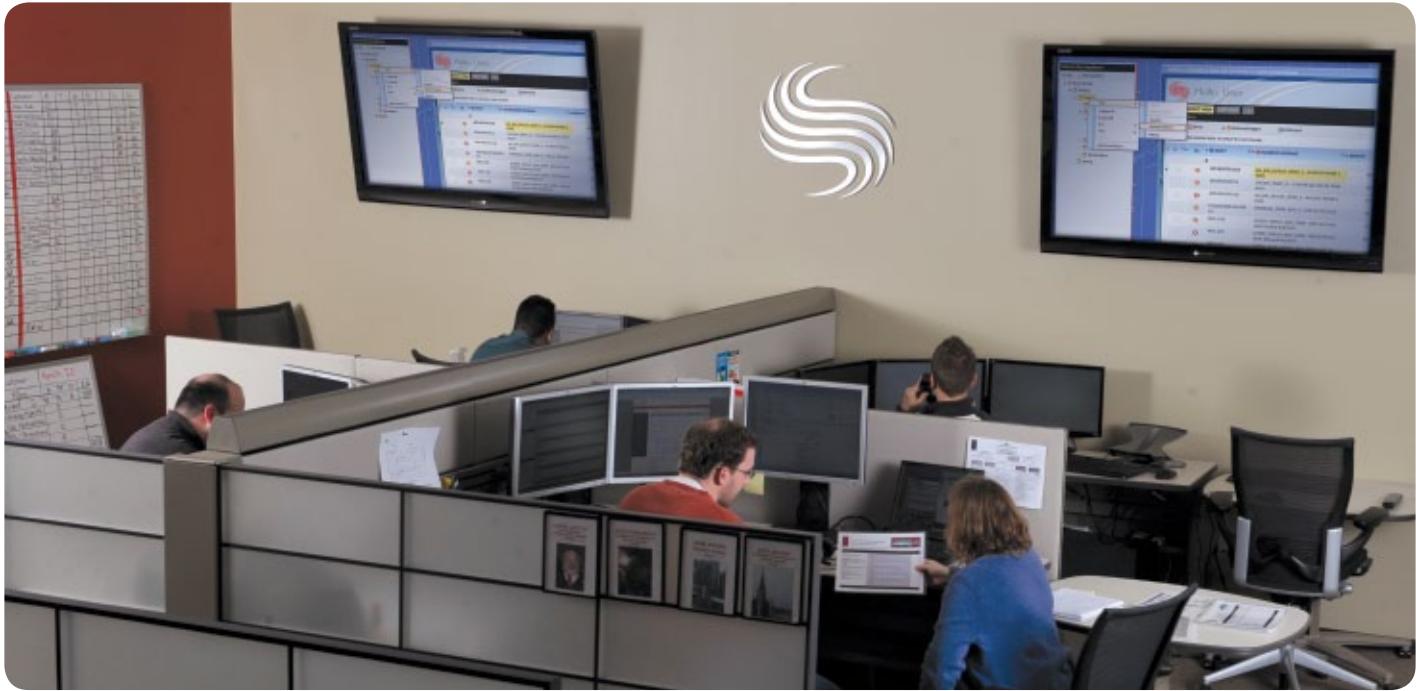
We use a data-driven empirical approach that leverages your existing instrumentation and IT infrastructures. Our software constantly samples data from your historian and analyzes the data to detect, diagnose, and prioritize impending problems.

In SmartSignal solutions, each piece of equipment is unique, as reflected in its own historical data. Our advanced modeling, protected by over 40 patents, puts into context the normal operating relationships among all relevant parameters, such as load, temperatures, pressures, vibration readings, and ambient conditions. In real time, the software compares actual sensor readings to that particular machine's normal, predicted values.

SmartSignal software detects and identifies events and abnormal behavior by the differences between real-time, actual data and predicted, normal behavior—not by thresholds on actual values. The software then provides exception-based notifications of developing problems to users, along with diagnoses and prioritizations. This enables information management by exception. The software does this automatically, continuously, and relentlessly, 24 hours/day.

SmartSignal solutions are readily scalable because of our data-driven approach to modeling and our configurable model templates. By using the data-driven approach, we do not rely on machine-specific, First Principles approaches, such as performance curves. A typical early incident alert from a SmartSignal solution occurs 3-10 weeks before other systems.





The Availability & Performance Center. It provides full, flexible, and proven advanced predictive-diagnostic services 7 days/week to leaders in the Oil & Gas, Mining, and Power Generation industries.

What makes us different?

Innovation, experience, services, ease, and speed

We initiated predictive analytics for equipment health, and we continue to lead the industry with product and service enhancements and new-product introductions—always keeping our customers on the leading edge. Recently, we introduced the industry's first and only predictive-diagnostic solution, along with the industry's first and only software to identify problems in combustion turbine start-ups.

Experienced innovators

We have over 200,000,000 hours of equipment-monitoring experience, and have established a community of Power Generation, Mining, and Oil & Gas customers, monitoring thousands of assets.

We provide complete professional support and services, from implementation training, to model maintenance, to classes in best practices. We even can provide full-service deployment, maintenance, and monitoring services in our own in-house Availability & Performance Center. The center currently monitors over 4000 assets every day for customers around the world.

Whether you choose a premise-based option or a hosted option, we can deploy quickly—often within a few weeks—with little time and resources on your part, seamlessly integrating with your historian and other software. This allows you to obtain value from your investment quickly and to achieve payback within months.

For more information about how Proficy SmartSignal solutions can deliver results for your business, visit www.ge-ip.com/smartsignal

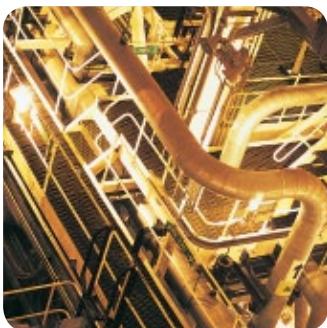


"Deviations are detected much earlier than the control system alarm levels."

Moh Saleh
Engineering Manager, O&M
Salt River Project

"The Proficy SmartSignal solution's anticipation of the problem saved us a great deal of money. The system's power lies in its ability to boil down complex mathematical data into something that's easy to understand. Now our plant operators have a much clearer picture of what's going on, and they are aware of subtle changes in performance that could become serious problems."

Keith Christianson
Project Coordinator, Generation Operations
TransAlta



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