



Dr. José Ramírez
Industrial Statistician
W.L. Gore & Associates

FROM GORE-TEX FABRIC TO GUITAR STRINGS

W.L. Gore's production reliability increases with SAS®

Industry

Manufacturing

Business Issue

Enhance product quality and increase yields through process knowledge discovery.

Solution

SAS® analytics and quality applications help Gore leverage manufacturing information, processes and controls to make intelligent decisions and realize better results.

Known head to toe to most people for “wearable weather protection” GORE-TEX fabrics, W.L. Gore & Associates of Delaware is just as well-known and respected among high-tech companies for its high-end research and development of specialty membranes, electronic technologies, and advanced medical devices.

Gore might just as well be known for the visionaries and thought leaders on its employee roster. And whether they're developing fibers for the space suits astronauts wear while exploring the universe or enhancing the means by which we talk to each other here on Earth, Gore's engineers and researchers rely on SAS to continually improve production processes and product quality across their manufacturing sites.

SAS helps Gore control its processes by providing intelligence about raw materials, temperatures, times, humidity and many other factors that affect production and yield volumes for effective business results. With SAS, Gore enjoys:

- Stable, predictable and logical processes and controls.
- Reduced waste.
- Lower inventory levels.
- Maximum yields.
- Higher-quality products.
- Greater customer satisfaction.

Eliminating the code-writing

“SAS software is used throughout the manufacturing process at W.L. Gore & Associates as we design the future,”

says Dr. José Ramírez, an Industrial Statistician at Gore. “Without SAS, we would find it difficult to successfully carry out many experiments and confidently report and act on our findings.”

The SAS Quality Solution with ADX Interface gives scientists and other researchers a point-and-click solution for designing and analyzing experiments to improve processes and products. “Our engineers love ADX because it guides them through the steps of designing a statistical experiment, analyzing the data, and then creating Web-based results that they can place on their intranet site for company access – all without writing a single word of code,” says Ramírez.



For example, Gore used components of SAS/STAT® to gauge the shelf life of MICROLAM dielectric, a Gore packaging material for semiconductors, by showing how it degrades with time and at varying temperatures. And using SAS/QC® in the optimization of a manufacturing process gave Gore a competitive advantage to improve process development and to see faster results. It was a complicated experiment, involving three stages and 16 factors, but SAS enabled Gore to easily develop an optimization process that increased yields, decreased lead

“In one case, we increased the already exceptional reliability of a particular fiber optics technology by more than 70 percent. We could not have reached that level of success without SAS and the collaborations with the SAS developers and technical support teams.”

Dr. José Ramírez
Industrial Statistician
W.L. Gore & Associates

times, lowered process costs and reduced the product travel footprint.

“Without SAS, we couldn’t have done any of this,” Ramírez says. “With SAS, we’re talking state-of-the-art. SAS helps us identify improvements that save money all the way around.”

Gore uses SAS extensively, thus enabling the company to efficiently analyze mountains of important reliability data. And Gore has employed screening methods enabled by SAS to detect defect-prone devices early in the manufacturing process.

SAS collaboration brings competitive advantage

Gore deals with tons of data from many areas of its manufacturing facilities – from the production of GLIDE dental floss to ELIXIR guitar strings. The company uses SAS to turn all of that information into valuable intelligence. Equipped with this information, Gore engineers have been able to realize even more benefits, reducing production times, enhancing product quality and maximizing yields. And throughout the company, SAS applications are at the core of many of Gore’s processes.

“SAS has been instrumental to Gore’s competitive advantage in the area of product

reliability,” Ramírez says. “In one case, we increased the already exceptional reliability of a particular fiber optics technology by more than 70 percent. We could not have reached that level of success without SAS and the collaborations with the SAS developers and technical support teams.”

And as in their other manufacturing efforts, Gore followed an extensive testing process to determine whether the highly sensitive parts met rigorous quality standards. With SAS, Gore engineers were able to discover the signature characteristics for a device that was prone to early failure, allowing them to remove it before it reached the customer. Advances like that have helped Gore maintain a high degree of customer satisfaction. “It’s simply unacceptable to have a product with even a low failure rate,” Ramírez says. “SAS helps us make sure that doesn’t happen – that’s how important SAS is.”

SAS helps avoid quality issues

SAS data mining powers the statistical modeling that Ramírez relies on to troubleshoot broad operations, allowing him, for example, to tweak the manufacturing process at a remote plant. He also relies on the SAS models to identify variations in output at specific points during the manufacturing process to fix or avoid production quality problems. Such use

of SAS for statistical process control (SPC), analytics and statistical modeling at Gore has led to the development of SAS applications in other creative ways across the organization.

“We’re training all of our engineers and scientists to use SPC to coordinate and streamline our efforts,” Ramírez explains. “In the design and analysis of experiments, they deal with tons of data. We’re teaching them how to get the most out of the data, how to understand it and how to derive intelligence from it. And we’re teaching them to do it in SAS – which is very intuitive and helps us make sure it’s done right.

“Over the years, my interactions with SAS have evolved from a customer-supplier relationship to partnerships, collaborations and friendships,” he adds. “I know that I can depend on SAS not only for the reliability and flexibility of their software, but also for their hands-on approach to help me with my data gathering, advanced analysis and information delivery opportunities.”



SAS INSTITUTE INC. WORLD HEADQUARTERS 919 677 8000
U.S. & CANADA SALES 800 727 0025 www.sas.com

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies. Copyright © 2007, SAS Institute Inc. All rights reserved. 100648_423502.0107