CHALLENGE

Improve the yield and quality of different product lines manufactured in large volumes with stringent quality requirements.

SOLUTION

JMP helps Soitec improve yield and product quality by providing a standard, easy-to-use tool for visualizing data, analyzing the manufacturing process, and identifying potential opportunities.

RESULT

Using JMP has allowed Soitec to enhance customer satisfaction by embracing a process of continuous improvement.

MORE INFORMATION

www.jmp.com
www.soitec.com

Soitec: More innovation and imaginative thinking with JMP®

A world leader in semiconductor materials is improving its yield and product quality to increase customer satisfaction and achieve steady growth.

Innovation and quality lie at the heart of Soitec's values and technologies.

As a world leader in developing and producing ultra high-performance semiconductor materials for the electronics and energy markets, Soitec has built its reputation on its sense of innovation and the quality of its products.

The firm is now at the cutting edge of the technological advances that determine the performance of high-demand products in the fast-moving IT, telecommunications, automobile electronics, and lighting markets. It develops and designs mass production runs of products that require a minute level of precision and that can be built with different dimensions, substrate properties, and thicknesses of silicon layers on an insulation material.

"The products we develop are designed to support our customers' growth and performance. Our aim is to position ourselves at the point where technological differentiation drives maximum value for finished products in the electronics and energy markets," explains Annick Vuillermoz, Yield/Process Control System Senior Manager.

As a result, Soitec must rely on cutting-edge development and production infrastructure to meet extremely stringent quality criteria in a fast-changing and highly competitive technological environment subject to rigorous constraints.

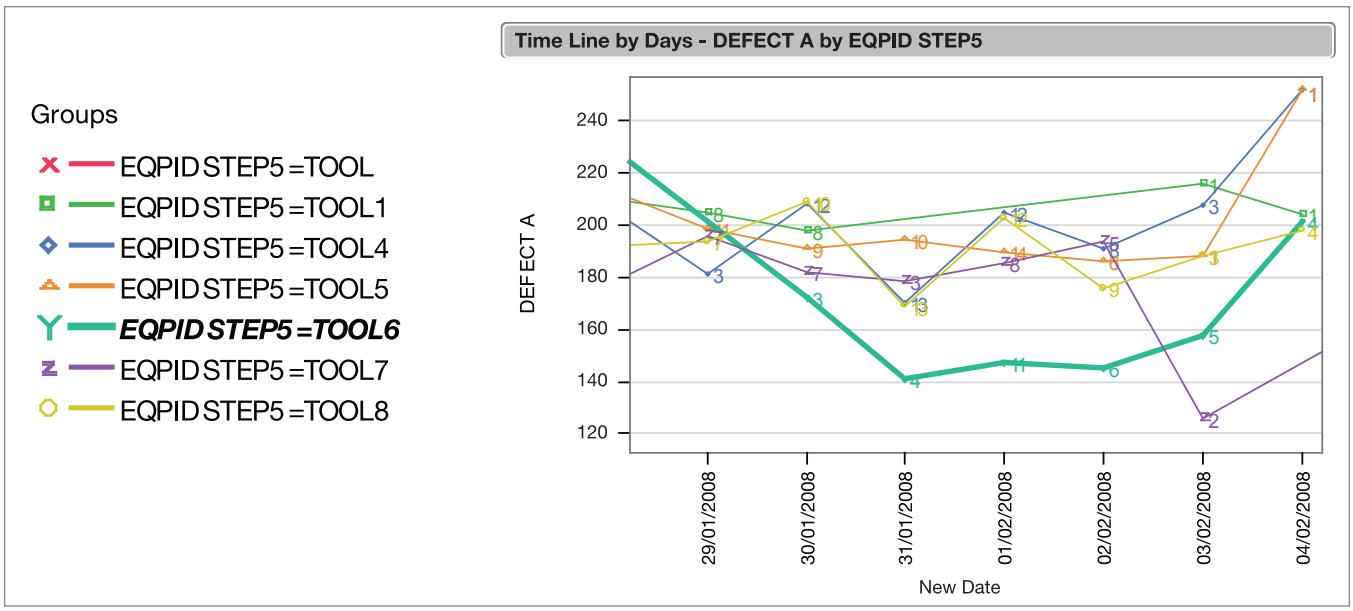
The role of the Yield/Process Control System – optimizing yields and improving product quality – is essential. Among other things, the team in charge of optimizing yields and quality has to cope with short product life cycles and highly standardized, precise processes in order to guarantee product reliability.

Another constraint is that it operates in a clean-room environment with very stringent measurement requirements. In fact, Soitec measures millions of particles, some as small as 100 nanometers. The result is that the team has a large volume of statistical data to analyze, in both qualitative and quantitative terms, for monitoring yield and quality on different product lines.

"JMP has become an essential tool for optimization activities."

Annick Vuillermoz

Yield/Process Control System Senior Manager



Visual analysis: Parallel plot shows the change in the rate of defects per machine over time (daily average). The behavior of machine 6 stands out from the rest.

Soitec was already using a statistical analysis solution but found it only met its requirements on limited volumes and with extremely long response times, which had a negative impact on team productivity and the effectiveness of their role. Furthermore, some statistical tests were not available for developing or improving the quality of new processes, which cast doubt on the relevance of the results.

A user-friendly, efficient, high-performance tool

"JMP was already being used by 10 or so users to produce statistical analyses for monitoring yield and product quality, across their various product lines. After two years of using it, the only constraint they faced was the fact their colleagues kept asking them to do their searches, tests, and calculations!" recalls Vuillermoz. "Because innovation and quality are our leitmotif, the whole company needed to increase its efficiency. This initial experience gave us every opportunity to be persuaded by the power, potential, and user-friendliness of the tool. As a result we didn't hesitate to extend its use, at the appropriate time, to support the development of our activities to the whole of the business," she adds. More than 300 people in the company are now using JMP.

Ease of use, the speed of data processing and statistical performance have made all the difference. Thanks to JMP's exhaustive range of statistical functions and interactivity, the team responsible for improving yield and product quality has a standard, easy-to-use tool for visualizing the structure of their data, analyzing the manufacturing process, and identifying potential opportunities.

Time for innovation and imaginative thinking

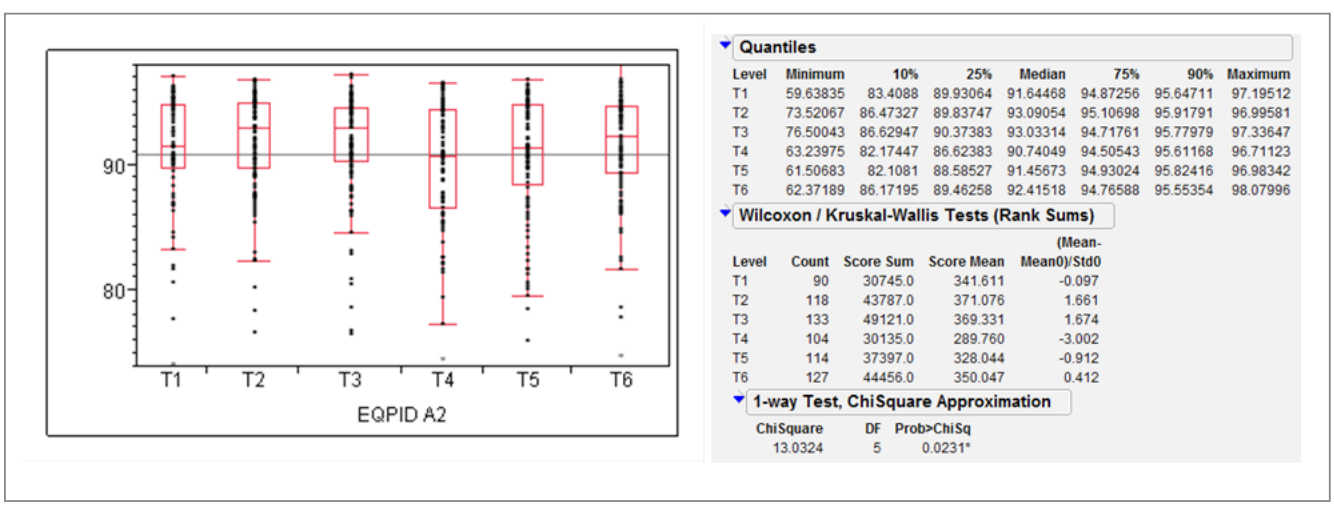
Where data retrieval and analysis had previously taken up to three or four hours, it now only takes a few minutes to extract tens of thousands of data items with JMP. Dynamic linking between graphs, plots, and data let analysts understand the structure of complex data better and more quickly. Thanks to the time saved and the elimination of time-consuming tasks with limited added value, the team in charge of improving yield and optimizing quality has increased its productivity significantly and now has more time to concentrate on analytical work and other high-value tasks.

JMP can also be used to handle problem resolution programs and improve the yield of existing technologies and products. “Day-to-day monitoring of the yield on the line is now managed by JMP. We have automated the production of reports that allow us to monitor changes in elements that have a negative impact on yield quality. JMP not only allows us to resolve the causes of quality-related problems on the line more quickly, but also to identify the causes of any discrepancies and quickly decorrelate them,” according to Vuillermoz. “We can now predict more effectively and adjust any factors that have an impact on the manufacturing of products that are in demand from our clients using the modeling module,” she adds.

Using JMP has enabled Soitec to increase the efficiency of its activities and improve its product quality as a result of process changes. “JMP has become an essential tool for optimization activities,” according to Vuillermoz.

“The statistical results facilitate the choice of solutions, and the speed with which they are produced frees up more time for innovation and imaginative thinking. JMP allows us to work faster and perform more effectively, increase our customer satisfaction, and, in the case of customer feedback, provide more relevant answers and embrace a process of continuous improvement,” she adds.

The decision to use JMP has allowed Soitec to support its strategy of continuous innovation and growth in a market that is characterized by speed and technological change. Soitec is now preparing to use experience plans to support the R&D teams in developing new processes, by giving them the chance to explore opportunities and increase the relevance and speed of their work.



Detailed statistical analysis: Univariate analysis of one response (defect rate) on different machines.

SAS Institute Inc. World Headquarters **+1 919 677 8000**

JMP is a software solution from SAS. To learn more about SAS, visit: **sas.com**
For JMP sales in the US and Canada, call 877 594 6567 or go to **jmp.com**