



CUSTOMER CASE STUDY

How Bristol-Myers Squibb obtained real-time multivariate analytics with the PI System™

Bristol-Myers Squibb - www.bms.com

Industry - Pharmaceuticals

Partners - Seeq | Sartorius-Stedim

Challenge

- Batch data latency and lack of data context hobble real-time processing.

Solution

- Using the PI System to collect, contextualize and deliver trustworthy and ready-to-consume data to facilitate multivariate analytics.

Result

- Increased quality, optimized process performance, and empowered operators with real-time fault direction.

For a pharmaceutical company, delivering life-saving medicines means product quality couldn't be any more critical a priority. To ensure a high probability of batch success, one such pharmaceutical, Bristol-Myers Squibb, is using the PI System to digitize the drug development and manufacturing process and create a single source of truth for its operations data. Accessing historical and real-time data is critical for optimizing process performance, reducing production variation, and identifying crucial process events.

Bristol-Myers Squibb, like other pharmaceutical companies, faces increased pressure to ensure economical, higher throughput, and faster-to-market products while still maintaining compliance, superior quality, and good manufacturing practices (GMP). To successfully thread this needle, Bristol-Myers Squibb is adopting a data-driven approach that focuses on "golden batch."

To build a foundation for a data-centric organization, the company began using multivariate process analysis that leveraged historical and real-time data from the PI System. In addition, Seeq used historical data from the PI System to identify batch start and end time through capsules, and to retrieve data formatted to match the requirements of SIMCA. The data was imported into SIMCA to build offline models.

What is multivariate process analysis?

Multivariate data analysis (MVDA) is an advanced analytical approach that identifies all the influencing variables and underlying patterns in a data set. Importantly, MVDA also finds correlations between variables and how they impact each other. This is essential to understanding and interpreting complex process behaviors at a manufacturing site and optimizing process performance as part of process design.

“Rather than having 12 highly correlated independent variables, you can get it down to two or three,” said Matthew Morrow, an IT Business Partner at Bristol-Myers Squibb. “Therefore, you get better meaning from your data by focusing on fewer signals for your process.”

This means that if a plant is using MVDA to analyze its manufacturing data, the operator no longer needs to look at individual trends and alarms on multiple HMI screens. Mission-critical information is automatically aggregated on a single screen, which greatly reduces operator overload and increases insight into the process.

Putting data in context

As an Enterprise Agreement (EA) customer, Bristol-Myers Squibb relies on the PI System as a data infrastructure to gather, contextualize, and prepare data for further analysis in SIMCA-online, a solution provided by Sartorius-Stedim Biotech. SIMCA-online delivers multivariate monitoring and enables users to perform analysis based on correlation.

Bristol-Myers Squibb faced challenges transitioning from its static offline models in SIMCA – which used historical data – to dynamic, real-time process monitoring in SIMCA-online. SIMCA-online requires real-time batch data to accurately track batch progress against the model.

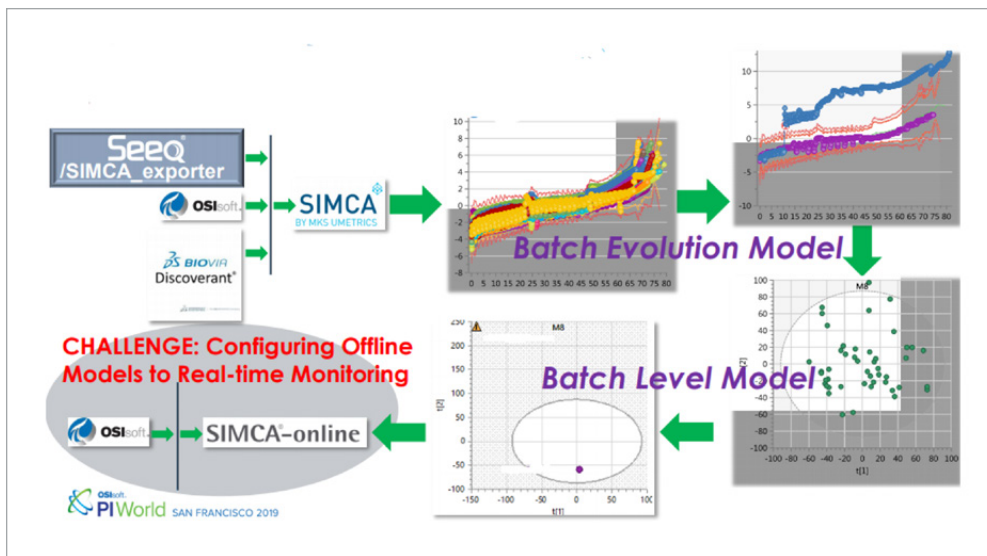
However, the batch structure in SIMCA-online and Asset Framework (AF) – the contextualization layer of the PI System – were not aligned. SIMCA-online did not facilitate all aspects of AF and EF. The engineering team managed to work around the challenges, creating a real-time batch context by utilizing AF Analytics functionality that removed batch data latency issues and provided real-time batch context that could be parsed by SIMCA-online.

“All of this was built with out-of-the-box tools in AF Analytics.”

-

Matthew Morrow,

IT Business Partner at Bristol-Myers Squibb



Multivariate data analysis and batch evolution modeling enables Bristol-Myers Squibb to gain real-time insight into their batch processes.

The results are in

Bristol-Myers Squibb is already seeing the benefits of its real-time MVDA solution; it has already optimized the biologics process in a number of instances. Based on the many business benefits of the system,

Bristol-Myers Squibb plans to include additional biologics process stages, new equipment and pharmaceutical products, as well as other biologics sites to their multivariate modeling method underpinned by PI System and its data contextualization.

For more information about Bristol-Myers Squibb and the PI System, [watch the full presentation here.](#)