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Aart Wismeijer
Senior Researcher, HTE
AkzoNobel

AkzoNobel partner with Tessella to double capacity and increase effectiveness of HTE

When AkzoNobel needed to create a more focused custom interface to their Bosch High Throughput Experimentation (HTE) system, they called on Tessella's unique blend of scientific and IT expertise. The resulting solution has enabled AkzoNobel to double experimental capacity, make the capability available to the global community of scientists, and maximise return on their investment in the HTE system.

Business Background and Challenge

With global headquarters in Amsterdam, AkzoNobel is the world's largest producer of paints and coatings, and a major producer of specialist chemicals.

The organisation has 60,000 employees across 80 countries and produces some of the world's most famous consumer and industrial brands, including ANAC, Bermocoll, Chartek, Devoe, Dissolvine, Dulux, Elotex, Glidden, Hammerite, Lesonal, Resicoat, Sadolin, Sico, Sikkens and Trimetal.

AkzoNobel's strapline and focus is "Tomorrow's Answers Today", which puts rapid, innovative R&D at the heart of the business. One of the core functions of the company's Research, Development

and Innovation Laboratory in The Netherlands is the formulation of advanced, sustainable, high value-add products. During formulation it is possible to create an almost infinite combination of basic ingredients. So, in order to vastly increase the number of combinations that can be tested, and boost time-to-market for new products, the laboratory invested in a state-of-the-art Bosch HTE robot.

The HTE robot is capable of working non-stop, automatically preparing and analysing a tray of up to 200 chemical formulations a day.

Aart Wismeijer, Senior Researcher, High Throughput Experimentation at the AkzoNobel Research, Development and Innovation Laboratory explains further, "We found that the breadth and flexibility of the HTE robot interface meant it was taking our lab



technicians up to half a day to set-up and configure each experiment. We realised that the key to higher throughput was creating a more focused and customised Analysts System user interface that would enable faster experiment design, set-up and turn-around.

“We also wanted a secure and reliable way of storing the results of each experiment to allow future data mining and analysis. And finally, in order to fully leverage our investment in the HTE system, we wanted to make the design of experiments and analysis of results accessible to our community of scientists around the globe.”

Solution

Aart also recognised that AkzoNobel needed to invest in external, professional software expertise to achieve its goals. He continues, “We spoke with a number of organisations and decided to partner with Tessella because of their unique blend of scientific and IT expertise. They quickly grasped what we were trying to achieve, and really helped sharpen our requirements.”

Through a series of workshops with key stakeholders, Tessella established a common understanding of the objectives and role of the Analyst System in the HTE cycle. Tessella then used an iterative development process to ensure AkzoNobel were able to fully shape the functionality and usability of the new system.

The Analyst System is an ASP.NET web application using SQL Server as the secure data store. It enables scientists to design experiments using carefully predefined building blocks, each individually proven for effectiveness on the robot. The system makes use of existing, specialist Design of Experiment (DoE) tools to perform detailed formulation of the samples.

Once the scientist has established the design, the lab technician uses the Analyst System to prepare the configuration of the experiment, which is passed to the robot using an XML interface.

Once configured, the robot automatically prepares and screens samples before publishing the results, which are made available to scientists through the Analyst System following a validation stage. The analysis of these results then provides the final modelling stage of the HTE cycle.

Benefits

“Our investment in the Analyst System was relatively modest compared to the significant cost of the HTE robot, but it has enabled us to open up the powerful capabilities of the system to our global community of scientists. It is now much easier for scientists to design experiments and view results, but more importantly it has cut configuration time for the robot for each experiment from half a day to less than half an hour.

“This means we have been able to double the number of experiments per day, significantly increasing our overall capacity, efficiency and quality.

“It was important to the business to fully leverage this vital HTE resource. Tessella’s background in science and their professional approach to system design and development has made this possible.”

For further information on Tessella’s solutions and technologies, visit www.tessella.com

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