SAB Maltings adopts latest Wonderware technology for batch tracking and reporting
by Wonderware Southern Africa

Goals:
• Track products through the production process in order to get a complete view with respect to production variables applicable to each batch;
• Reports detailing product transfer times and vessel occupancy times.

Challenges:
• The merging of production and process timelines into a single source of information with all the data in context for meaningful numerical and graphical reports regarding production KPIs;
• The safeguarding of existing system investments.

Wonderware Solution:
• InTouch HMI;
• Wonderware Equipment Operations Module;
• Wonderware System Platform.

Results:
• The new system has highlighted operational and plant issues, which had previously been ‘hidden’ from view;
• True vessel occupancies and transfer times can be determined;
• Providing real-time data in the correct format now has made users more aware of true realities and they want more;
• Meaningful information is helping SAB Maltings achieve its overall objective of continuous process improvement.

“All in all, for the first time, we now have an automated system giving us the information to achieve what everybody is striving for – continuous improvement.”

Eddie Jordaan,
IS manager, SAB Maltings
Caledon, South Africa - SAB’s involvement in the barley and malting industries in South Africa stretches back more than a century but moving to more modern times, barley growing started in the Caledon, Swellendam and Bredasdorp areas in the Western Cape in the early 1970s.

Southern Associated Maltsters (SAM) was established in April 1978 as a joint venture between SAB and two cooperatives. During the mid 1990s, a second barley growing area was established under irrigation in the Vaalharts and Taung areas. In 2006, more than 800 farmers were planting barley for the malting industry. Caledon Maltings is now one of the biggest in the Southern Hemisphere with an annual capacity of 180,000 tons. Caledon Maltings runs a 24/7/365 operation. Every 14 to 16 hours, a 306-ton batch of malt is produced. Each batch is equivalent to nine rail wagons and will produce 7.8 million cans of beer. SAM is now called SAB Maltings.

SAB Maltings at Caledon (Western Cape Province) is a wholly owned subsidiary of the South African Breweries Limited and has been operating since 1981. The company’s business is to turn barley into 180 000 tons of malt every year for the brewing industry and that’s why it’s the biggest producer of malt in the southern hemisphere. With malt batches exceeding 300 tons and taking nine days to complete, SAB Maltings decided to improve insights into its production with a batch tracking and reporting system from Wonderware.

Project Goals

“We needed a system that could track our product through the production process in order to get a complete view with respect to production variables applicable to each batch,” says Eddie Jordaan, IS manager, SAB Maltings. “From a user perspective, we wanted to supply a system that could generate a report per batch detailing the production KPIs numerically and graphically. In addition, we needed reports detailing product transfer times and vessel occupancy times. This information would assist us in optimising processes.”

From this requirement arose the need for a batch tracking system for production and process data. Previously, the system consisted of an InTouch HMI (Human Machine Interface) and Wonderware Historian providing process data and some trending but there was a lack of production information and no automated reports.

So, the project objective became the merging of production and process timelines into a single source of information with all the data in context for meaningful numerical and graphical reports regarding production KPIs (Key Performance Indicators).

Another project requirement was the safeguarding of existing system investments.

Solution Selection

This last project requirement mandated the use of the latest offerings from Wonderware and this meant growing the system by adopting the Wonderware System Platform based on ArchestrA technology.
In addition, Wonderware Equipment Operations Module would be responsible for capturing the production data that would then be stored in the Wonderware Information Server while Microsoft Reporting Services would be used for the generation of the necessary reports.

This choice of solutions would provide seamless integration with the existing Wonderware investment.

Wonderware Equipment Operations Module is designed to help improve the consistency and effectiveness of plant operations by helping to execute production activities consistently, as well as providing accurate visibility into the status of operations.

It’s also used where there are demands for end-to-end traceability of materials, equipment and other resources across production processes. Compatible with the ISA-95 industry standard, Wonderware Equipment Operations Module includes genealogy functions for correlating events and information captured across multiple areas and process segments.

“In view of the solution choice, we needed a Cape-Town-based and ArcheStrA-certified system integrator that could provide a turn-key solution and that also had a local support infrastructure,” adds Jordaan. “AMR Automations was eventually selected after following a standard tender process.”

Solution Implementation

AMR Automations made a point of understanding SAB Maltings’ business requirements before starting any engineering effort. “Once we understood what was required, we drew up a functional specification which was agreed upon and signed off by everyone including the production personnel,” says Andrew Rennie, director, AMR Automations. “This also applied to the report layouts and content.”

AMR Automations even went further through a Factory Acceptance Test for a complete simulation of the solution before starting any implementation in order to make sure that the system complied with SAB Maltings’ requirements in every detail. It took approximately one month to establish the base-infrastructure on site.

“Although this is a hybrid solution featuring a legacy InTouch HMI installation connecting to newer System Platform software, the integration is so seamless that you would never know it,” says Rennie. “Wonderware System Platform’s underlying ArcheStrA technology allowed us to define and apply standards that reduce engineering effort and provide for its reusability. Notably, this is the first installation of the Wonderware Equipment Operations Module in SAB.”
Delivering the Information

• Wonderware Information Server provides for web-based delivery of information with security. Along with Wonderware System Platform, AMR Automations had the opportunity to use the Microsoft SQL Server technology and this combination proved to be a really effective way of delivering the required information to those who need it while making use of the Microsoft security layers;

• Microsoft Reporting Services’ reporting functionality was designed using Microsoft Reporting Services that provided interactive reporting with drill-down capability to view production and process data;

• Dashboards and KPIs are visualised using published InTouch HMI graphics.

Results

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“The eventual solution exceeded my expectations,” says Jordaan. “The first version produced the desired reports with about 80% accuracy. The inaccuracies were traced to mainly operational and plant issues which were subsequently identified and which we are currently addressing.”

Figure 3: System Platform in action – ‘The model says it all’.

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Eddie Jordaan, IS manager, SAB Maltings.