

Reliable Bakery Ingredients Batching

British Bakels, Bicester, is a leading supplier of baking ingredients. They operate from modern production facilities and offer high service levels to commercial bakeries and other food manufacturers. Bakels required a system that would simplify the production of hundreds of products whilst providing consistent quality; they chose Wonderware's InBatch software system which was deployed by Stratos Control Systems Ltd.

Nick Luxemburg, Bakels' Engineering Manager said, "The system that has been installed provides us with major competitive advantage and the ability to deliver right on schedule"

British Bakels is a member of the International Bakels Group and has more than 100 years experience in the development and manufacture of bakery ingredients. Located on a 5.5 acre site in Bicester, Bakels has invested over £15m in powder blending and wet production, and in warehousing. Production volumes exceeded 20,000 tonnes in 2005. Alongside its manufacturing is a brand new bread assessment laboratory to support its key product groups of bread and roll improvers in liquid, paste and powder forms, release agents, divider oils, shelf life extenders, speciality bread mixes, confectionary mixes and glazes.

the centre of a business that requires flexibility and consistent quality with an overriding discipline of food hygiene and compliance with trade accreditation schemes.

Bakels has invested in equipment, tools and training that allow continuous business growth to be achieved. To provide smooth and effective operation it was foreseen that the company would need a solution that could flexibly handle the full permutation of recipes and mixes that they needed to process. At first consideration was given to a wholly PLC based system but it soon became clear that this was inappropriate to the scale of the problem. Bespoke computer solutions were also dismissed as being an unacceptable business risk. Stratos proposed a far more powerful and standard solution centred upon Wonderware's InBatch software system, following evaluation this was adopted.

Top to bottom information...

The use of Wonderware's InBatch software and other FactorySuite components is part of a comprehensive scheme that automates the entire business process. The company's manufacturing plan is held with a Microsoft® Dynamics Axapta MRP system which produces a daily schedule, the end result of which is pallets loaded with the required dry basic ingredients for the day's production, wet ingredients being pumped automatically. The InBatch software system takes this schedule information and under the principle supervision of Simon Dawson, Process Engineer, produces step by step production instructions for operators and automation controllers. The process involves weighing, mixing, dosing, blending using a carefully controlled sequence of vessels for melting, dissolving, mixing and cooking. The many combinations of ingredients to make



Process Operator loading mixer

Flexible batching...

The production flexibility required by Bakels is astounding, involving hundreds of raw ingredients and hundreds of finished ingredient products. The company is therefore placed in



Production equipment

Bakels' products are in this way easily handled without error and with the ability to produce high daily volumes from many differing orders. Production at Bakels is arranged in lines, each having flexible operation and capacity to meet differing production demands. CIP is built in to the system and is also under full automatic control. The company has defined expansion plans to establish further lines within the same production area to support planned business growth, the efficiency and flexibility of the batching system contributing to the basis for the business model for this investment.

Doing the work...

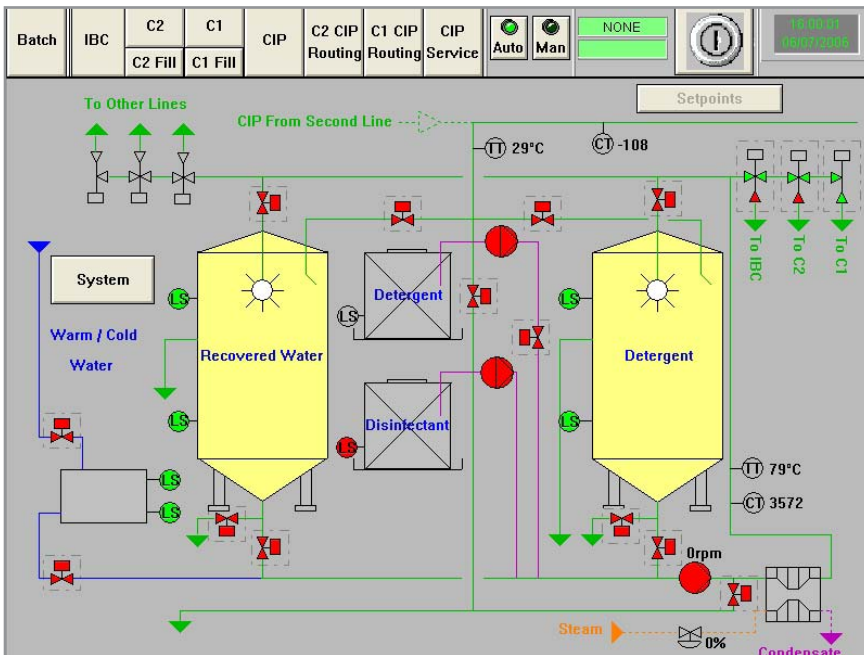
The development of the system was done jointly by Bakels' and Stratos' engineers, with assistance in the Batch Management consultancy by Wonderware United Kingdom batch specialist Dr Geoff Brown. The architecture of the system involves dual server redundancy, Ethernet and wash-down Advantech touch screens on the plant itself. The system allows both manual and automatic operation and quickly gained operator acceptance following in-house training. The partnership with Stratos Controls is very effective for Bakels, with development engineer, Andrew Leather (Stratos) providing on-going development and other support

by remote access whenever there is a requirement.

Consistent Quality...

Away from all this activity is Bakels' product development laboratories, here new recipes are developed both speculatively and also at the request of bakers. Once developed, the production method has to be scaled up to deliver the same characteristics in volume manufacture. Products are formulated to suit each market sector and British Bakels has teams that focus on serving the particular needs of each sector. Bakels' operation is BRC level "A" accredited (which was the subject of a recent audit by EFSIS that they passed with "flying colours") and the company has further accreditation as a Halal Food Authority approved supplier and by The Soil Association, as producer of organic products. Bakels is also very proud of being voted Oxfordshire Business of the Year in June 2006.

Nick Luxemburg, Bakels' Engineering Manager said, "The system that has been installed provides us with major competitive advantage and the ability to deliver right on schedule", adding, "The working relationship with Stratos is key to our success as was the ready understanding of our production requirements that was demonstrated by Stratos in the very



InBatch workstation - operator display

The PLC uses Profibus DP to communicate with the inverter drives and weighing stations. There is a bridge from the Profibus DP network to a Profibus PA network. This network contains field devices for monitoring pressure, temperature and conductivity. To further communicate with an existing tank farm installation CC link is use. The PLC also has four ASI networks containing both ASI 1 and ASI 2 devices. These control the process valves and other remote I/O devices.

Andrew Leather, Stratos Controls, “The customer’s requirement for a totally flexible recipe system singled out InBatch software as the only practical solution. With the support and consultancy visits from Geoff Brown of Wonderware United Kingdom the project was commissioned in a short period of time. The inherent flexibility of the system means that new modules can be added quickly and with minimal cost.”

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early days of the project; and the InBatch software system was the correct choice.”

Technology Focus

The system consists of three servers, two running Wonderware InBatch software® in a redundant configuration and the third server running Microsoft® SQL for data logging. The servers are connected via a dedicated high speed Ethernet link to the production line HMI’s running Wonderware InTouch HMI® and the production line PLC’s. The servers also act as a secure gateway between the production network and the site network and internet. This allows for remote access to all functions within the network including, diagnostics, upgrades and maintenance. If required the entire system can be securely remote controlled from anywhere by the internet.

The Advantech® HMI screens allow the operators to rapidly access large amounts of information on the state of the production line. With the correct user login the HMI screens also give a clear but complete method of manually controlling the various aspects of the system. The InBatch software Active-X components of the HMI screen give easy access to the recipe control system.

“The customer’s requirement for a totally flexible recipe system singled out InBatch software as the only practical solution...”

Finished product

Delivery tanker



Wonderware UK wishes to thank the following companies for their valued contribution to this success story...

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