

## **New PLCs provide tons of improvement for Crisp at Great Ryburgh**

**An upgrade project featuring Mitsubishi Electric's latest PLCs has been completed in record-time, allowing Crisp to make a range of process improvements.**

**Process control solutions represent the central nervous system of a manufacturing line and so have a large impact on efficiency and product quality. When the UK's leading independent malting company decided it was being held back by a legacy control system, it turned to Mitsubishi Electric for a solution. The upgrade, implemented in only four days, slashed downtime and empowered operators at Crisp to fully govern its manufacturing processes, leading to improved product quality and consistency.**

Since 1870, Crisp has been processing a broad variety of barley, cereals and other grains, supplying quality malts to leading food and beverage producers all over the world. Presently the company owns five production sites across the UK and has additional malting capacity in Germany and Poland.

To ensure optimal productivity and product quality, the Norfolk based plant employs automatic control systems that monitor all the processes involved in the conversion of grain into malt. Malting is a very delicate process, as the quality of the raw materials can vary and the grain kernels must be kept alive in order to germinate. This means that small improvements in process control can reap big rewards in terms of quality.

### **Removing the burden of legacy systems**

Keeping the malting process balanced requires a highly responsive control system and timely upgrades to the plant are regarded as essential by the company. Increasing the speed at which process anomalies are detected and responded to has a significant impact on the overall process. With batch sizes measured in tons, this was the main reason why Crisp decided to replace six legacy GEM80 PLCs with new high-performance Mitsubishi Electric Q Series systems.

David Spiers, Group Engineering Manager at Crisp explained: "The existing PLCs were becoming unreliable which left us exposed to the risk of long-lasting unplanned downtime events. For example if we had a power outage it would take the engineers 3-4 hours to return the system to full operation, which with our production process and fixed delivery schedules to meet really wasn't acceptable."

In addition, it was difficult for Crisp to find spare parts when necessary. This issue was becoming increasingly impactful as the PLC components were reaching the end of their service life and needed to be replaced. Also, engineers at the malting production site struggled to interrogate the old control system in order to troubleshoot, repair or modify the existing functions. Neither could the maltsters<sup>1</sup> operating the plant adjust the processes involved to the extent they wanted.

To address these issues, Crisp contacted Suffolk Automation, local specialist in process control systems. To source the new PLCs, Suffolk Automation's software engineers turned to their preferred process automation vendor, Mitsubishi Electric.

Mark Chisnall, Managing Director at Suffolk Automation, commented: "We're familiar with Mitsubishi Electric's full range of automation components and we like working with the company's PLCs in particular. Technically they are well supported and for the customer the cost versus performance is very good, they are reliable, high-quality products." David Spiers agrees: "It wasn't just the integrator's recommendation that convinced us, we considered various suppliers and were sold on Mitsubishi Electric's offering thanks to a reputation for speed, reliability and flexibility."

### **High-speed PLCs that fitted in with existing systems**

Paul Judge, Key Account Manager at Mitsubishi Electric adds. "Due to the limited room available in the existing panels, conducting a phased system migration was not a feasible option." Therefore, Mitsubishi Electric, Suffolk Automation and Crisp had to complete the entire re-fit operation in one go. In order to minimise plant downtime the three partners worked together and used a scheduled service window to replace the control system in a record time of four days.

The six Q-series PLCs were installed in specific locations around the factory, where the existing devices had been located. Technically this encompassed two plants at Ryburgh malthouse. All the PLCs were then connected via CC-Link IE, open Ethernet network with 1 Gigabit bandwidth, using fibreoptic cables. In this way, Crisp could benefit from real-time communications between the different manufacturing areas and upwards to enterprise level software systems.

### **The seed of automation germinates offering greater product consistency**

Replacing the old control system addressed the reliability issues of the plant and the ongoing support issues related to the GEM80 PLCs. David Spiers observed: "If we experience a power cut now it takes minutes to restart the system, not hours. The new PLCs save the live process data into permanent memory, so the system does not lose operating data or any updated parameter settings during a power loss."

The new automation solution also provided Crisp with the level of detail needed to have a greater understanding of real-time variations in the process. The operations team can now monitor and access parameters such as temperature and throughput live, anomalies are quickly detected and acted upon thanks to visible alarms. The wider management team benefits in-turn from better plant performance and more accurate reporting.

Looking forward, the maltsters now have a control system that is user-friendly and easy to adjust. They are free to modify and fine-tune the functionalities and process parameters that govern different aspects of the malt as required. In this way, the malthouse has access to state-of-the-art tools that can be used to improve and refine the quality of its products.

David Spiers concludes: "The key to successful system migration lies in the expertise and support provided by Mitsubishi Electric and Suffolk Automation, it's safe to say we are extremely pleased with the results of this collaboration. As there are other areas in our plants that could also benefit from more up-to-date process automation, we will continue with the upgrade of our control systems and work towards achieving a smarter factory."

<sup>1</sup> A 'maltster' is a person whose occupation is making malt.

**Image captions:**

**Images 1+2:** Six Q-series PLCs were installed in specific locations around the Crisp factory and connected via CC-Link IE.

[Source: Crisp]

**Image 3:** Malting is a very delicate process, as the quality of the raw materials can vary and the grain kernels must be kept alive in order to germinate.

[Source: Crisp]

**Image 4:** The company owns five production sites across the UK and has additional malting capacity in Germany and Poland.

[Source: Crisp]

**Image 5:** The company owns five production sites across the UK and has additional malting capacity in Germany and Poland.

[Source: Crisp]

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**Note to Editor:** if you would like the text in another language please contact Carolin Heel at DMA Europa – [carolin@dmaeuropa.com](mailto:carolin@dmaeuropa.com).

## About Mitsubishi Electric

With nearly 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Embracing the spirit of its corporate statement, Changes for the Better, and its environmental statement, Eco Changes, Mitsubishi Electric endeavors to be a global, leading green company, enriching society with technology. The company recorded consolidated group sales of approximately 40.7 billion dollars\* in the fiscal year that ended on March 31, 2019.

Mitsubishi Electric Europe, Industrial Automation – UK Branch is located in Hatfield, United Kingdom. It is a part of the European Factory Automation Business Group based in Ratingen, Germany which in turn is part of Mitsubishi Electric Europe B.V., a wholly owned subsidiary of Mitsubishi Electric Corporation, Japan.

The role of Industrial Automation – UK Branch is to manage sales, service and support across its network of local branches and distributors throughout the United Kingdom.

*\*At an exchange rate of 111 Yen = 1 US Dollars, last updated 31.03.2019 (Source: Tokyo Foreign Exchange Market)*

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