

Barley malt producer increases productivity with smart condition monitoring

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Muntons, one of the UK's largest producers of malted barley protect vital parts of their production process against unscheduled downtime by using the Smart Condition Monitoring (SCM) system from Mitsubishi Electric.

Used to make beer, spirits and a range of popular foodstuffs, malted barley is produced in large batches where environmental conditions are critical to a consistent product. Each batch is very valuable, not just in monetary terms but also to the customer, so Muntons is extremely pro-active when it comes to the servicing and maintenance of its equipment.

As in many food industries, the principles of the barley malting process are quite traditional, but Muntons relies heavily on automation, electro-mechanical equipment and sensors to provide fine control over air flow, heat and moisture. Fans and motors are critical to the operation: the Muntons processes many tonnes of product at a time, with key operations relying on a steady supply of blown air. The chosen SCM installation provides condition monitoring for two large 315kW fan sets and a single 90kW fan set. Sensors monitor the electric motor, power transmission coupling and main fan shaft bearing on each fan set.

Plant Engineer Michael Plawecki says: "We now have a clear picture of the health of the fan sets and advance warning of any required

maintenance. Remote monitoring and fast diagnosis of any issues has also made us very responsive should the limits on operating parameters that we have set be approached. As promised the system was easy to install and relatively simple to commission.”

The impetus for the SCM installation came from issues previously experienced with difficult-to-reach bearings inside a large fan housing. A bearing failure inside a fan assembly caught the Muntons engineering team unawares, and proved significant in terms of downtime. “We only realised we had problems when it was too late, and we had to make an unscheduled stop on one of the lines to make repairs,” says Plawecki.

Determined to learn from that lesson, Muntons looked for a monitoring solution with predictive maintenance technology that could be linked into the company’s existing SCADA system. Its requirement was for a system that would provide the maximum forewarning of any problems yet which would be quick and easy to install. “We found what looked like an ideal solution in the form of the SCM from Mitsubishi Electric, an automation brand we trusted,” says Plawecki.

The SCM solution provided by Mitsubishi Electric comprises smart sensors that can be attached to bearing housings, gearboxes, pumps and motors to detect when equipment starts to operate outside its normal envelope due to wear. It provides a sophisticated early warning system for critical pieces of rotating plant equipment. Vibration frequencies and temperature readouts are monitored continuously and fed back to an L Series Mitsubishi Electric PLC via an industrial Ethernet network cable.

The PLC offers simple integration to other network system hardware and software platforms, in this case integrating seamlessly with the SCADA system at Muntons Malt.

The sensors, developed by bearing expert FAG, monitor for changes in the complex vibration patterns specific to the type of equipment it is attached to. The software compares that data with highly developed data models from thousands of previous installations, providing an effective analysis and alert system for the user.

Live information and any alarms are displayed on a Mitsubishi Electric GOT Series HMI mounted to the control enclosure. The system can work autonomously of any other automation, with multiple sensors located and recognised by unique IP addresses. At Muntons, the visual information and the alarms being generated were easily connected into the existing automation software platform.

With the SCM installed on the three fan sets, the Muntons engineering team is now looking at the potential for smart conditioning monitoring elsewhere in the plant. "We are reviewing the entire facility now to make a decision on which other parts of the plant we include, with the aim of speeding up maintenance and reducing scheduled maintenance periods. We recognise that the investment in automation and predictive maintenance pays off very quickly by avoiding unscheduled downtime but can also be used to increase operational effectiveness and productivity."

Image Captions:



Image 1 + 2: Fans and motors are vital within Munton’s large-scale production process, by using Mitsubishi Electric’s Smart Condition Monitoring (SCM) system these are protected against unscheduled downtime.

[Source: Mitsubishi Electric Europe B.V.]



Image 3: Munton's, one of the UK's largest producers of malted barley is using predictive maintenance technology from Mitsubishi Electric to increase its productivity.

[Source: Mitsubishi Electric Europe B.V.]

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With around 145,817 employees the company recorded consolidated group sales of approximately 40.7 billion dollars* in the fiscal year that ended on March 31, 2019.

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

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