

Bühler's NIR sensors help to get the protein level Nelstrops' customers require



Case Study FLOUR MILL

Flour power

Bühler proves a key quality ingredient in Nelstrops' recipe for success

For more than 200 years, Nelstrops has been making the finest quality flour. In 1820, aged just 19, William Nelstrop crossed the Pennines from his family's farm in Yorkshire to establish his eponymous flour mill in the UK town of Stockport, now a historic but still fully functioning milling site.

In juxtaposition of the traditional site, in 2017 Bühler installed a brand new flour mill for Nelstrops at the same location in Cheshire, UK. Side by side, the two mills convey the traditional past versus contemporary present and evolution of Nelstrops. The new site features cutting-edge technology that helps to ensure the quality that the company has become well known for.

Nelstrops is proud to still be an independent family business with seventh generation Nelstrop, Kate Syers at the helm running the new mill's day-to-day technical and quality assurance operations.

Nelstrops has won numerous awards for the exceptional quality of its flour, which is made from the finest wheat and sold to large bakeries, discerning chefs, as well as craft and home bakers throughout the UK.

Quality assurance

Extending to the technology that it invests in, Nelstrops' uncompromising commitment to quality is evident in its selection of Bühler as its key partner. Bühler maintains a strong focus on digitalisation, with a wide range of online sensing solutions and digital services.

Bühler's sensors are able to analyse various quality

characteristics of bulk raw material, flour and semolina in real time. Installed at different critical points in a mill they enable automatic adjustments to be made to a miller's process during operation.

Bühler is the trusted supplier of the NIR Multi Online Analyzer (MYRG) which allows highly accurate online analysis of wheat entering the mill, as well as the finished flours that are milled.

The NIR Analyser enables rapid production stream adjustments, with waste and downtime minimised and

Online particle-size measurement system MYTA delivers accurate data in real time



MYRG detect subtle color deviations and contamination and releases an alarm to alert the miller of any issues



quality assured. It comes with a large selection of pre-calibrated applications and data is automatically saved and stored, making product quality transparent and traceable.

“Bühler installed a brand new flour mill for us in 2017 and the NIR Analyser was part of that project,” says Conrad Syers, Joint Managing Director at Nelstrops. “As the company has progressed, we’ve kept close to Bühler’s evolving product portfolio. We’ve used the MYRA [Bühler’s first sensor] since the late 1980s, although we still use it and it operates just as it should, investing in the NIR Analyser was a natural progression for us.

“We’re also replacing our MYFB damping equipment with the newer Automatic Moisture Control System (MYFE). I want to minimise downtime and sticking with the Bühler brand facilitates that.”

As Kate Syers reveals, Nelstrops uses its new NIR sensor heads to “ensure constancy and repeatability,” adding that “it provides us with a highly efficient way to add the precise amount of gluten to get our flour to the protein level customers and bakeries require. There’s absolutely no waste, which saves us money on vital wheat gluten, which is very expensive.

“In both our mills we have a starter bin, we put less in the newer mill’s starter bin than we would in the other mill’s one because the NIR Analyser provides the precision that allows us to put in the exact right amount. As a miller, you see wide variations in wheat protein, but the NIR Analyser evens it all out, resulting in reduced gluten usage.”



MYRB allows highly accurate analysis of wheat in the mill

Alarm and specks count

“The main benefit of the NIR Analyser is greater control of our final product quality. With it operating in real-time, we can watch the flour as it’s being made. We can gauge trends. It provides peace of mind because it practically looks after itself; it runs over night while we’re sleeping,



7th Generation Kate Syers runs the mill's day-to-day technical and quality assurance operations

all the maintenance it needs is the occasional brush down,” states Ian Nickson, Assistant Chief Engineer at Nelstrops.

“The NIR Analyzer keeps our flour in spec, if there’s a problem it makes a decision to either adjust settings or shut down. It’s an integrated part of the control system that works very well for us. It gives us a real idea of our wheat and flour protein loss.

“Plus, we’re able to keep a constant eye on the bran speck count, even with varying types of wheats.”

Indeed, the bran speck count is conducted by Bühler’s Online Colour and Specks Measurement Unit (MYHB) - a sensor add-on to the MYRG system - which continuously monitors end product colour and specks classification during flour production.

In real time, it can detect subtle colour deviations and contamination and releases an alarm to alert the miller of any issues.

Precise measurement

When asked how the NIR Analyzer’s measurement precision compliments laboratory analysis, Kate Syers replies: “The NIR Analyzer is reliable and it’s live in the production flow, so much faster than lab analysis techniques.” Having real-time measurement of protein content allows the mill operators to run the production at its optimum.

The NIR Analyzer has been designed to withstand the rigors of the milling process. Its sensors have a sturdy casing that can deal with the dust and vibration that occurs during the milling process. The NIR Analyzer system is flexible and can be retrofitted into existing flour mills.

It can consist of up to six sensors connected to one control unit, with only the sensor head needing to be installed within the production line.

As well as the new online NIR Analyzer and the Online Colour and Specks Measurement Unit (MYHB), Nelstrops

also uses the Online Particle Size Measurement system (MYTA).

MYTA is Bühler’s online particle-size measurement system for flour and it also delivers accurate data in real time. Nelstrops’ millers are able to monitor grinding processes and granulation without having to stop processes for quality checks and machine adjustments. “The Online Particle Size Measurement system (MYTA) is great as a final safeguard, if there’s a burst in the mill or any product fluctuations, it will alert us and pick it up very quickly,” says Mr Nickson

Competitive advantage

“Investing in the very best technology enables businesses such as Nelstrops to remain market leaders – it provides competitive advantage,” comments Darren Frost, Head of Sales, Grain Processing & Milling Solutions at Bühler for UK & Ireland.

“Many customers have already invested in the latest version of the Bühler NIR Analyzer, while others are considering upgrading their MYRA and MYRB. The benefits are certainly worthwhile. Millers with older technology tend to carry out manual analysis, which is far more wasteful and costly, when they could save money by upgrading to the MYRG. When they see the results, it really captures the hearts of flour millers,” he adds.

“We’re delighted with the NIR Analyzer, it’s proved to be another great investment for our business. We also have a very close relationship with Darren and his Bühler colleagues. There’s a lot of trust between us, we’ve worked and moved forward together for more than 30 years.

“As a business, our main aims are to supply quality product, feed the nation and invest in the future and Bühler helps us to achieve those goals,” concludes Nelstrops’ Conrad Syers.