A revolution in flour milling unfolds

Mill E3

Johannes Wick, CEO of Grains and Food (right) and Stefan Birrer, Head of Business Area Milling Solutions at Bühler Group, address the press on the company's revolutionary approach to flour milling in the 21st Century

A completely new approach to the plant, processes, and machinery of industrialised flourmills is about to take place with the launch at the Bühler Networking Days 2019 in Uzwil, Switzerland at the end of August.

Mill E3 will revolutionise the milling industry by setting new standards in the construction, equipping and energy required to operate the latest turnkey flour mill offered by the company. The new mill concept which is already being constructed in two locations with the first likely to come into production in mid- to late-2020 in the UK, offers mill operators tantalising advantages - a mill that occupies 30 percent less space, that takes 30 percent less time to build and require 10 percent less energy overall to operate. And there is one final advantage that is difficult to put into words.

"After the introduction of automation 40 years ago, Mill E3 is the next big step forward in milling," says Johannes Wick, CEO of Grains and Food at Bühler Group. The first customers will also benefit from Bühler blockchain technology to trace grains and provide greater transparency and food safety.

For decades industrial milling concepts have focused on optimising machines and processes, but the basic design concept remained unchanged and based on buildings with a minimum of five or six floors.

This completely new approach from Bühler now optimises the entire construction concept that allows for a more plug-and-play approach to flour mill construction making more efficient use of systems that do not rely heavily on gravity fed systems.

At its Networking Days 2019, Bühler showed that it is possible to build flour mills with the latest technology more cost-effectively, install them quicker and operate them with less impact on the environment.

Faster commissioning

The E3 in Mill E3 stands for three areas of efficiencies: construction time, space and energy saving. The construction of the Mill E3 building not only locks up less capital, it is also completed more quickly. By using pre-assembled modules, Mill E3 is installed faster than conventional flour mills.

"It's basically a plug-and-play mill," says Stefan Birrer, Head of Business Area Milling Solutions.

This means customers can set up their Mill E3s more quickly and start generating revenues faster. It significantly reduces infrastructure cost, construction time and complexity, he says.

Ongoing energy savings

Achieving the same output as a traditional production facility, a Mill E3 reduces energy consumption by up to 10 percent, without compromising yield or quality. This is down to the compact mill design and innovative process solutions such as the newly developed integrated grinding

system within the Arrius.

The Arrius has an integrated drive, which achieves energy savings up to 10 percent compared to conventional roller mills.

The Tubo Tubular Push Conveyor replaces specific pneumatic transport passages in order to save more energy as it's much more efficient and makes food production even safer. The product is transported gently, loses no weight due to drying and is more hygienic because the pipelines are self cleaning.

"Be it space, time, or energy, on all levels we were able to show that the plant will be better than anything others have on the market," says Mr Birrer.

"The design, the new grinding system and the blockchain application are revolutionising the milling industry," adds Johannes Wick.

Food traceability

The UK's largest milling company, Whitworths Holdings Ltd - incorporating Whitworth Bros Ltd and Carrs Flour Mills Limited - operates 17 mills on nine sites. It is the first company to rely on the Mill E3.

"Besides the obvious mechanical benefits E3 offers, we were also convinced of the digitalisation approach. Bühler is definitely on the forefront in this respect," says Mike Peters, Managing Director of Whitworth Bros. Ltd.

"For us, Mill E3 offers more than just a new technology approach. It will enable us to create complete transparency for our customers in the future," he adds.

Together with Mill E3, Bühler has proposed increasing transparency along the value chain by adding connectivity features, digital services and blockchain to help guarantee end-product quality.

Cloud connected

"With systems in place to trace grain back to farms, Whitworth is in a good position to do a blockchain project," says Stefan Birrer.

"What we have done is transform paper-based tracking into blockchain tracking."

"If we don't embrace these new digital technologies and embed them within our business now, in the longer term that could be a bar to entry into certain markets as pressure comes from the end consumer and eventually from regulators for increased transparency," says Mr Peters for the reason behind introducing a blockchain pilot withing the company.

The new mill is due to be completed towards the end of 2020. After that the monitoring phase will begin.

"IoT and blockchain will give us the opportunity to push the bar for food safety, food security and transparency through our supply chain," says Mr Peters.

Data from the fully connected mill will be monitored through Bühler Insights, a secure cloud service powered by Microsoft Azure. For milling companies that want to monitor and benchmark various production sites, the development of a 'digital yield management system' support them. It makes deviations between different recipes visible and comparable, from anywhere at any time.