

Case Study

Producing protein concentrates from pulses

Bühler builds processing plant for Müller's Mühle

Pulses are key to closing the protein gap and provide 50 percent more – or 265 million tonnes – protein for up to 10 billion people in 2050. They are gluten-free, have a high fibre and protein content, are low in fat, and boost important micronutrients such as iron, potassium, magnesium, and zinc.

Lentils, beans, or chickpeas require only about 160 litres of water to produce 500g; by comparison, 500g of beef require nearly 7000 litres of water.

Working in partnership, Bühler and Hosokawa Alpine have installed a processing plant for their German customer Müller's Mühle, in order to produce concentrates from pulses.

At full capacity, the facility can process up to five tonnes of pulses per hour into protein concentrates, as well as enabling Müller's Mühle to enter the promising growth market for plant-based proteins.

"We have been processing pulses for around 125 years and also sell them as our own brand," says Markus Prantl, Managing Director at Müller's Mühle in Gelsenkirchen, Westphalia, Germany.

"The trend towards healthier, more sustainable diets and the increased demand for meat substitutes for vegans, vegetarians, or flexitarians – people who live on a predominantly vegetarian diet but occasionally consume high-quality meat – has accelerated in recent years.

"We were unable to produce the protein concentrates used for these foods in line with customer requirements using our technology at the time. So, after a thorough analysis, we decided to build 'Plant II' on our premises, which focuses on the production of protein concentrates."

From the very beginning, Müller's Mühle wanted to work with Bühler and Hosokawa Alpine – who started a strategic collaboration in June 2021 that will accelerate and strengthen

the production of healthier and more sustainable plant protein solutions – to design and build the process equipment. "We have been working with Bühler in particular for decades and are very satisfied with their expertise and service," comments Mr Prantl.

Seamless process steps

In this state-of-the-art plant, Bühler covers the upstream steps of both coarse and fine cleaning, as well as dehulling. Then the pulses are transferred to Hosokawa's process steps of fine grinding and air classification stages. In this step, the protein and starch fractions are separated. The goal is always to achieve the highest possible protein content and maximum yield.

Alexander Langer, Area Sales Manager Food Division at Hosokawa Alpine, says: "Consistently high quality throughout the entire value chain not only guarantees flawless end products, but also reduces food waste and ultimately increases Müller's Mühle's yield and margins."

The fact that Müller's Mühle wanted to enter the fast-growing market for meat substitute products came as no surprise to Randy Urban, Team Manager Customer Service Sales at Bühler.

"I have been privileged to support Müller's Mühle for many years with our solutions for processing pulses and rice," states Mr Urban. "With the exploding demand for concentrates made from pulse proteins to produce plant-based meat alternatives, it was the logical step for Müller's Mühle to enter this market."

More than a plant

"Plant II" in Gelsenkirchen is emblematic for an accelerating trend. "The fact that pulses are making such an incredible comeback to our menu and enable Müller's Mühle to open up new areas of business naturally makes us very happy," adds Mr Urban.

"But the plant here is also a sign that consumers are



increasingly concerned with the impact of their diet on health, on sustainability, and on our environment as a holistic system," he explains.

The entire project originated from Bühler's Customer Service department, from customer consulting to commissioning of the plant. In addition, after years of planning, the project team started the installation in the middle of the second Corona wave in November 2020, which required maximum flexibility from everyone involved.

The journey has only just begun

At full capacity, Müller's Mühle can process up to five tons of pulses per hour into protein concentrates – that's 120 metric tonnes per day. With this ultra-modern plant, Müller's Mühle is ideally equipped for the ongoing boom in the plant-based meat alternatives business.

"We see our plant here in Gelsenkirchen as a foundation for a promising future. Pulses offer a lot of potential for further growth, for example as alternatives to dairy products. It is good for us to know that with Bühler and Hosokawa, we can count on a well-coordinated team with which we can successfully continue on our chosen path," says Markus Prantl.

Müller's Mühle GmbH is part of GoodMills Deutschland GmbH, based in Hamburg. Since 1893, the Müller's Mühle brand has stood for the utmost care in the selection and expertise in the gentle processing of plant-based raw materials.

From its mill in Gelsenkirchen in Germany, the company supplies customers from the wholesale and retail trade as well as the food industry throughout Europe as the largest processor on the continent.