

Mühlenchemie, specialists for enzyme-containing compounds for pasta flours, has opened a trials laboratory for pasta and is considerably expanding its efforts in this field. The German company sees the interlocking of expertise in raw materials and plant and equipment as a promising way to advance the development of innovations and product optimisations for the pasta market. Dr Lutz Popper studied at the Technical University, Berlin between 1979-85. He holds a Ph.D in food technology. He has been a scientific director at the Stern Wywiol Group since 1993 and is also head of R&D. Milling and Grain Magazine spoke to Dr Popper about the latest developments and rising to challenges in the industry.

Dr Lutz Popper, please tell us a little bit about your background and your role at Mühlenchemie?

When I was asked in 1993 to join Mühlenchemie as head of the research and development department, I was working as assistant professor in the food technology department of the Berlin University of Technology, where I also obtained my diploma as food engineer, and my Ph.D. degree with a thesis on antimicrobial enzymes. Cereal technology was a main subject of my studies, and baking my hobby, which might be the reasons for my employment by Mühlenchemie. At the beginning, there were only three people in the R&D – including myself! The whole Mühlenchemie team was nine people. Now the R&D has almost 30 people, and Mühlenchemie more than 120.

Mühlenchemie are clearly committed to vitaminized flour for the world. What is the present status of mandatory flour fortification in Europe?

Honestly, this is a sad story. There is almost no mandatory fortification in Europe, with the exception of the United Kingdom and maybe soon Macedonia. Several reasons prevent the politicians to take the decision for fortification, none of them are of scientific nature. According to epidemic studies, fortification (in particular with folate and iron) would be of great benefit for all Europeans – for health and economic reasons. And flour would be one of the best vehicles to get fortified food to citizens of all social classes and ages.

Mühlenchemie are known for their expertise in the field of enzymes and additives but are now more involved in the production of pasta with the launch of a new pilot plant. What was the deciding factor behind investing in this new area?

Curiosity. A few years ago, the effect of enzymes in baking was already quite well understood. We had a broad range of enzymatic tools for bread baking and some for biscuits and cracker. But then we were wondering whether enzymes could also be useful in pasta production, with its limited availability of water and oxygen. The bets were 50:50. So, trials were performed with small kitchen machines and, in a larger scale, at the IGV near Potsdam. Surprisingly, several enzymes showed effects, though not all of them are really useful. With friendly customers we confirmed the results. In order to be able to offer pilot scale trials with their raw materials to our customers, we decided to invest in a near-commercial pasta press and a dryer.

What makes the new pasta plant in Ahrensburg unique?

As in the industry, the pasta press works with a vacuum system to reduce the inclusion of air bubbles. The capacity is only 70 kg per hour, so we can run trials with rather small amounts of flour or semolina. We are even able to prepare in the flour in our lab, because we possess a large-scale lab mill with an output of about 10 kg flour per hour. A segment of industrial pasta dryer completes the setup and enables us to run tests, which come very close to industrial scale. Very few of the pasta pilot plants have been installed in the world, and the combination with the pilot flourmill, our flour rheology laboratory and our flour and additive know-how makes it unique.

What concrete benefit does your new trials laboratory offer a pasta manufacturer?

The plant is so flexible that practically every manufacturing process can be simulated. This lets us test various enzyme systems for the client until they are exactly right for use, and the client does not have to interrupt his routine production to perform his own tests. Obviously, this saves enormous amounts of time and money. And it gives the client reassurance that no major problems should be expected when he switches his own production system to the new recipe.

Tell us about the practical side of this client support, what steps are involved in developing a product?

To start with, the client sends us his raw material, which we analyse for protein and gluten content, water absorption properties, ash and many other parameters. We also enquire about other aspects of his pasta production: for how long is the dough mixed, how high is the temperature, how much water is added, what is the drying process like? And, of course, we need to know what the customer wants to achieve. Sometimes it is just a question of reducing loss at the cooking stage, sometimes bite is an issue, or a different colour.

Can customers come to your lab in Ahrensburg and be present at the trials?

We are happy to let clients look over our shoulders. That is in fact the ideal situation. When a project is developed in a direct dialogue with the client, we usually find the best solutions.

From your observations, what would you say is the biggest problem for pasta manufacturers?

The quality of the flour! Durum is the ideal variety of wheat for pasta. But due to fluctuating prices and limited availability, many manufacturers have to use soft wheat or mixtures of hard and soft wheat instead. That often causes problems.

