Innovations for a better world. How does Bühler succeed in responding to the challenges of the times – while at the same time securing the organization’s future? How can we further develop our process expertise together with outside partners – while establishing a new and open innovation culture? What role does our creativity, our spirit of discovery, and our passion for innovation play in this? Important questions to which we here have twelve initial replies.
Innovations for a better world

Because globalization has accelerated the pace of innovation, success today means being successful globally. A successful company must constantly innovate in order to stay one step ahead of its global competition. Besides customers' expectations and growing competition, also in new markets, the entry of more and more partners in the value chain due to outsourcing drives the need for constant improvement.

Our brand represents high quality and innovative solutions. That is why the determination to maintain our cutting edge is an integral part of our corporate culture.

Partnership in innovation is extremely important for the future of our company. We achieve this through a process of open innovation that begins with making the best possible use of our internal potential. First and foremost, this requires a degree of freedom for staff members to become involved and empowered and take responsibility for the results. Our main internal platform in this respect is the biennial Innovation Challenge competition where we invite all our Bühler employees, and some external partners, to participate in developing new ideas.

“Innovation means taking high risks and making tough entrepreneurial decisions. You can sit in your office and spend your time dwelling on certain things, or you can go out and expose yourselves to the markets and their needs, and maybe develop the ideas for the future. In our tough and fast-paced competitive environment, planning innovation requires immersion in these questions. Developing new ideas from an office desk is not a successful strategy: We have to collaborate with customers, academics, suppliers, and other companies in order to understand how the world is turning.

“Ultimately, our success lies in ensuring the success of our customers.”

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Our ambition is to develop Innovations for a better world. In order to meet the challenges of the world we live in, we have to do things differently. We cannot go back to the past; we have to develop new ideas that work. My desire is for our staff to have the confidence that we can solve these problems, and I wish for Bühler that we will have the passion to make it happen.
Innovating with Passion.

An interview with Ian Roberts (Bühler Corporate Technology) on why innovation is driven by customer relations, mobilizing of employees’ creative potential, and the aim of creating a better world.

Why is innovation especially important for Bühler?
Innovation is the heart-blood of a company. Throughout our history, we have grown through innovation. Indeed, the company was born in 1860 with the capability of casting steel rolls, leading to the invention of the roller mill and the replacement of stones in flour mills.

Our products and services touch the lives of billions of people every day, and we are committed to enhancing their quality of life in many crucial areas, such as food security, energy efficiency, mobility, and connectivity.

“IP remains important, but this must be balanced with an unprecedented need for speed and collaboration.”

Are the requirements of innovation different today than in previous decades?
Yes, innovation is evolving in such a way that how we innovate is becoming more important. Today, innovation is more holistic; this applies to our business model as well as to our products and services. For instance, the internet has changed our lives in extraordinary ways. IP remains important, but this must be balanced with an unprecedented need for speed and collaboration. Today’s generation collaborates and communicates across networks to find solutions and deliver innovations. In addition, connectivity and enhanced process intelligence are key to improving efficiency of resource utilization in order to guarantee food safety and consistent end-product quality.

What are the ideal prerequisites for an innovation culture that brings forth creative and novel ideas?
We should take one step back and ask: Why do we need innovation? Our aim is to engineer customer success better than our competitors, so we must understand the marketplace, our customers, and our customers’ business models, and we must bring more relevant, better-performing solutions into the marketplace.

Additionally, we must contribute through Innovations for a better world. There is a broad spectrum of areas, including the drive for sustainable solutions; leveraging our broad food value-chain coverage to improve food security and reduce food loss and malnutrition; improving resource efficiency, in particular energy use; and our role in offering mobility solutions through the die-casting business, lightweight structural parts for cars, and emissions reductions. All of these areas give people a very real sense of purpose to innovate with passion.

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These ideas have to be adapted to regional requirements and be relevant to the markets if the markets are to take them up. Absolutely. One success driver of Bühler is the understanding that you can’t have a one-size-fits-all solution for every culture and region. Every entrepreneur has different needs; every culture has different preferences, business demands, and raw materials. The end products and the preparation of our food are linked to local culture and tradition. →
Bühler works with external partners and institutes. Is it not mandatory that research and development should take place within the company’s own premises? On the contrary, I would say it is a mandatory that it is not. No company can afford the R&D resources required to solve every problem. An intelligent company will develop external partner networks as part of their innovation capability. We partner across our value chain with our suppliers and our customers and of course, we work with academic partners. Considering customer relationships, we evolve from a supplier-customer relationship to a partnership where we have sufficient trust to have open discussions and say: “I’m facing this problem; how do we work together to bring the best solutions?”

Our annual Supplier Innovation Challenge is really bearing fruit. We have established some close partnerships, brought in some new innovative suppliers, and are pursuing several promising initiatives. And of course, occasionally, a customer approaches us with a request for help with a certain problem and we realize: “This is actually a great business opportunity.”

How important is it for the food industry to collaborate closely with academia? It’s becoming increasingly important. We have a number of academic partnerships around the world, including a few where we focus more resources. For example, at ETH in Zurich, we co-founded the World Food System Center which brings together 33 professors and multiple industry partners. The latter act as counterparts to the professors to ensure industrial relevance. We look at scenarios for future availability of key crops, something relevant to all the food value chain, and also develop technology solutions for sustainable alternative protein-based foods.

“...the expertise in its products. Much broader in its application coverage and has developed tremendous knowledge and capability; it is really extraordinary what people proposed, and we learned greatly from them at each event. The local teams are very much involved to make sure we pick the ideas that are really relevant. Really, the hardest thing is to pick those that we are going to push forward into the competition. You see how the ideas evolve, the teams interact, and the support that comes from across the company. We had a team in India supporting an idea in Africa. It becomes very passionate and emotional, and people contribute strongly and in the process develop their networks across the company.

“We use our understanding of global trends and markets to focus on solving the relevant problems, but we must remain open to new ideas. This is why we innovate openly with the outside world.”

On a more personal note, how do companies and managers avoid overreaching in the pursuit of ever more new ideas and developments? The risk is that you become blinkered. Fortunately, we are well linked to our customers who challenge us to bring more efficient and value-creating solutions to enable their business growth.

“We innovate openly with the outside world. The ideas of our employees are extremely valuable to us. And we will continue to support them to turn their ideas into businesses.”

Pargem, our processing solution for unlocking the intrinsic nutrition in pulses, was also born in the competition and has now been commercialized. So we see commercial benefit, but we also touch many, many people through the competition. The ideas of our employees are extremely valuable to us. And we will continue to support them to turn their ideas into businesses.

Do they still manage to surprise you with novel and unexpected ideas? They always surprise me! Well, I mean, that’s the beauty, isn’t it? In the last competition, I went to China and listened to 30 ideas, then to India, South Africa, Brazil, the USA, and Europe. It was absolutely extraordinary what people proposed, and we learned greatly from them at each event. The local teams are very much involved to make sure we pick the ideas that are really relevant. Really, the hardest thing is to pick those that we are going to push forward into the competition. You see how the ideas evolve, the teams interact, and the support that comes from across the company. We had a team in India supporting an idea in Africa. It becomes very passionate and emotional, and people contribute strongly and in the process develop their networks across the company.

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There are two areas that are very important. We have a wealth of knowledge inside our company; and innovation isn’t just the job of R&D. It’s everybody’s responsibility to improve our offerings and make them more customer-relevant, and to improve how we do business. Also, our supplier base has tremendous knowledge and capability; it is much broader in its application coverage and has more profound expertise in its products. Could you explain how Bühler taps the innovation potential of its employees? Our Innovation Challenge allows all our employees to contribute their business ideas. In 2012, several thousand participants invested virtual funds in the ideas they believed were the most important for the future of our company. Based on their investments, we promoted three ideas to the main competition.

Did they choose the ideas that you expected them to? They picked three ideas that clearly reflected what people care about, focused on food security, nutrition, and accessibility to food in India and Africa. We had eight teams that received training, business advice, and coaching, and four of these presented their ideas to the executive board.

We’ve turned two of the final ideas into key development projects for the future. A third idea is already commercialized only nine months after the final. From previous competitions, we have kisgoy, which is a wonderful idea born in Africa for Africa: A small mobile maize mill that allows you to stabilize your maize and produce maize flour on a communal level. This has now been launched in Africa, and we’re getting a lot of interest.

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Innovations for a better world

A further development of vacuum deposition technology, ion-beam sputtering enables smoother, denser, and zero-defect coatings to be produced for different precision optics applications.

A high-energy ion beam transfers the material toward the substrate.

How to unlock the full potential of advanced laser technology: most cost-effective for consumer devices, most precise for medical purposes, most powerful for material cutting and welding?

A further development of vacuum deposition technology, ion-beam sputtering enables smoother, denser, and zero-defect coatings to be produced for different precision optics applications.
Could a more convenient instant solution for congee match the local tastes for this traditional Chinese breakfast?

Bühler’s modern extrusion technology has been used to produce a popular Chinese breakfast food, congee. Extruders expand the rice or grain kernels so that they dissolve easily in hot water. Thanks to this localization strategy, the new process for this convenience food is attracting renewed interest in the local market. Bühler is aligning the increasing demand for staple foods with the specific cultural features of the Chinese market – and meeting the complex requirements for processing local raw materials.

1. Congee is the most popular breakfast dish in China.
2. Cutting mode and process conditions inside the extruder play a crucial role in giving the product its form and texture.
How to create a modern pellet mill satisfying the market needs for sustainable production?

With its new Kubex T, Bühler has once again opened its innovation and development process to the expertise of its customers. Customers were involved in the pellet mill development process from the very start in a targeted and structured way. The operating and commercial experience thereby gained has been given consideration in the process and the design of the pellet mill. Following successful testing of a prototype, a convincing solution has been developed for producing formulated animal feed. Additional benefits include improved food safety, appreciably lower operating costs, and reduced energy consumption.
How much material and weight can we take out of die cast aluminum components for automotives yet still maintain their structural properties?

The lost core process enables even components with complex internal geometries to be made by the die casting process. With this approach, the internal geometry is mapped by a salt core which is flushed out using high-pressure water after molten aluminum has been cast around it. Bühler can offer its customers systems capable of efficiently manufacturing such parts of elevated complexity, in particular in the field of automotive engineering.
Can we increase the efficacy of animal feed?

The animal nutrition project quantifies the effects of current feed milling processes on animal performance and optimizes them. The project focuses on the impact of grinding method (roller or hammer milling), particle size, and pelleting on the nutritional value of broiler feed. Bühler’s goal is to find the grinding and pelleting settings that result in the optimal particle size and pellet quality for corn-and wheat-based feeds to achieve highest possible performance and animal health.

1. Animal producers worldwide aim to produce meat (or milk or eggs) at lowest feed costs while insisting on maximum food safety at the same time.
2. Sympatec QICPIC image analysis unit.
3. Particle size analysis with shape recognition in the particle analysis laboratory.
How can we use our experience to develop a food-safe and energy-efficient solution for producing atta flour in India that satisfies local consumers’ preferences?

In collaboration with local Indian partners, new processes have been developed allowing efficient production of basic flours, i.e. also atta flour, the staple ingredient in making flat breads. The new HC Power Mill and the PESA Mill are capable of replacing conventional chakki or stone mills without compromising the special properties of these flours. What is more, the new process offers benefits in the form of improved food safety, appreciably lower operating expenses, and reduced process complexity.

1. The experimental roller mill of the HC Power Mill offers significant benefits in the areas of food safety, maintenance, and energy requirement.
2. Bühler Application Center in Bangalore, India.
Cocoa demand is going to exceed supply. So, how can we optimize its current exploitation?

The CocoaBoost process enables our customers to obtain cocoa-based dietary fiber from current byproduct cocoa shells (up to 15%) and use it as a valuable addition to cocoa powder. The name CocoaBoost reflects the technology’s potential to rapidly boost customers’ yields and profits by minimizing byproducts and exploiting the full economic potential of cocoa.

1. Cocoa bean shells as obtained in cocoa processing.
2. Stirred tank reactor (pilot-scale) filled with cocoa bean shells ready for hydrolysis to produce cocoa-based dietary fiber.
How do you sort out a toxin invisible to the naked eye so that silos of contaminated corn (maize) do not go to waste?

Using optical analysis and chemistry techniques, we have developed an online high-throughput sorting solution for targeting grains which have a high likelihood of being contaminated with mycotoxins. This configuration allows contaminated product to be “cleaned” to a level where it can be safely used. The reduction of mycotoxins in maize (corn) using optical sorting contributes significantly to optimizing food safety and reducing waste product.
Can we make rice processing more energy-efficient whilst ensuring high quality?

The UltraLine series is a new generation of rice milling machines developed to deliver the best performance at the highest capacity with the minimum use of energy. They have been designed using a combination of the latest R&D tools such as high-speed video studies, discrete element modeling, computational fluid dynamics simulation, functional analysis, and strain gauge measurements. This innovative approach resulted not only in our latest, next-generation machines, but also created a technology platform on which future generations of machines can be developed.

1. The UltraPoly™ polisher delivers outstanding polishing performance and ensures uniform milling and higher yields of rice.
2. Rice field, Nepal.
Can we deliver a food-safe, high-quality, yet affordable solution to produce Indian snacks?

Development of a dryer for snack foods tailored to the Indian market where snacks are bought as ready-to-cook products and prepared into finished foods at home. Thanks to a simpler design, energy-saving air flow control (recycled air), and knowledge of the local conditions, Bühler was able to offer its Indian customers a product with an attractive price yet still of high quality.

1. Belt drive und tensioning module for the three-pass dryer.
2. Perforated dryer belt with exchangeable elements.
3. In very much the same way as is done with pasta, the final stage of snack preparation is carried out at home – here by deep-frying.
How does Bühler react to the need for improved and hygienically designed drying solutions identified by many customers?

Dryers used in the Ready To Eat (RTE) cereal market pose some of the biggest challenges in terms of cleaning, sanitation, and allergens. Bühler’s objective was to develop an easy-to-clean (within one hour), hygienically designed, cost-effective sanitary dryer. The new Ceres sanitary cereal dryer is the result of Bühler’s initiative to collaborate with its customers – collecting input from many companies, evaluating their requirements, aligning them, and producing a single solution for next-generation dryers.
Can we bring a lifetime of operational experience into our process intelligence?

The development of a measuring system for continuous and complete monitoring of the particle size distribution of flour and semolina unlocks new possibilities in quality checking, process monitoring, fine-tuning, and traceability of products. With its online particle size measuring system MYTA, Bühler is offering its customers a solution promising them markedly higher added value with regard to quality monitoring and efficiency.